EDEXCEL GCSE APPLICATIONS OF MATHEMATICS

MATHS



EXAM QUESTION PACK

UNIT 1 FOUNDATION TIER 5AM1F PAPERS

STEMUP

These questions belong to Pearson Edexcel, not to us.

The examination questions, mark schemes and examiner reports in this pack were written and published by Pearson Edexcel. They are past assessment materials, reproduced here so that students can revise from them.

What we do not own

STEMUP is not affiliated with Pearson Edexcel and does not own, and makes no claim to own, any of the question, mark scheme or examiner report material in this pack. Pearson Edexcel has not endorsed, approved or been involved in the production of it. Pearson Edexcel and the qualification titles used here belong to their respective owners and appear for identification only.

Where to find the originals

Pearson Edexcel publishes its past papers, mark schemes and examiner reports free of charge. Always check the current specification at qualifications.pearson.com before you revise, because content and wording can change between series.

If you hold the rights to any material in this pack and would like it amended or removed, contact admin@stemup.co.uk and we will act on it.

Pearson

Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE
Linked Pair Pilot in Mathematics
Applications of Mathematics (2AM01)
Foundation: (Calculator) Unit 1

edexcel

STEMUP.CO.UK

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2017
Publications Code 5AM1F_01_1706_MS
All the material in this publication is copyright
© Pearson Education Ltd 2017

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		−20	1	B1 cao
	(b)		Marked at 18	1	B1 cao
	(c)		Marked at 65	1	B1 cao
2	(a)		5 circles in Thurs 3.5 circles in Fri	2	B2 both correct oe (B1 1 correct, or both correct but transposed)
	(b)		25	2	M1 $2\frac{1}{2}\times 10$ oe A1 cao OR M1 $4 \times 10 + 5 - (2 \times 10)$ A1 cao
3	(a)	16 by 1 8 by 2 4 by 4	correct arrangement shown	2	B2 for 16 stones shown in a rectangle (ok if pond in the middle) or a rectangle with correctly labelled sides (B1 for rectangle drawn or 16 stones used)
	(b)(i)		14	3	B1cao
	(ii)		18 m²		B1 for 18 B1 for m²

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		(3,7)	1	B1 cao
	(b)		× at (5,2)	1	B1 cao
	(c)	$\frac{1+8}{2}, \frac{2+6}{2}$ Or Marks M on diagram	(4.5, 4)	2	M1 for either A1 Or M1 allow 2mm tol A1
5			Chart or table	4	B1 for suitable labels or key to differentiate the two garages B1 for each week clearly labelled B1 for accurately representing the data (allow 1 plotting error) C1 for a fully correct diagram or chart including labels
6	(a)		268	2	M1 for adding all amounts and dividing by 10 A1 cao
	(b)	200 240 250 260 270 280 280 280 300 320	275	2	M1 for ordering and selecting 270 and 280 A1 cao
	(c)		280	1	B1 cao
	(d)		120	2	M1 for 320 – 200 or 200 to 320 A1 cao

PAPER: 5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
7		155.30	5	M1 34 + 58 + (0) + 56 + 86 (= 234) M1 '234' × 45 (= 10530) M1 for '10530' ÷ 100 = ((£)105.30) M1 for 4 × 12.5(0) (= (£)50) A1 155.3(0) OR M1 34 × 45 (= 1530)(p) or 58 × 45 (= 2610(p)) or 56 × 45 (= 2520(p)) or 86 × 45 (= 3870(p)) M1 for '1530' ÷ 100 or '2610' ÷ 100 or '2520' ÷ 100 or 3870÷ 100 M1 '15.30' + 12.50 (=27.80) or '26.10' + 12.50 (=38.60) or '25.20' + 12.50 (=37.70) or '37.80' +12.50 (=51.20) M1 for '27.80' + '38.60' + '37.70' + '51.20' A1 155.3(0)

PAPER: 5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
8 (a)		April	1	B1 cao
(b)		4	1	B1 cao
(c)		2.49 3.54 3.99 23.95	4	B1 cao B1 cao B1 cao B1 ft for total
(d)		Cheaper to grow	2	M1 for 16 × 2.80 A1 ft for £44.8(0) and correct conclusion Or M1 "23.95"÷ 16 A1 ft £1.49 or £1.50 and correct conclusion
9 (a)		6.0	1	B1 for answer in range 5.8 to 6.2
(b)			2	B2 for circle, centre *P* and radius 2.5 cm (B1 for circle, centre *P* or radius 2.5 cm)

PAPER: 5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
10 (a)	$100 - (12 + 14 + 9 + 5 + 15 + 8)$	37	2	M1 for adding the percentages or 63 seen A1 cao
*(b)		Marek spends a greater percentage on food than the average adult	3	M1 for $\frac{65}{525} \times 100$ A1 for 12.3….. C1 (dep on M1) for conclusion ft from comparison of '12.3..' % and 12 % OR M1 for $\frac{12}{100} \times 525$ oe A1 for 63 C1 (dep on M1) for correct ft from comparison of "63" and 65

PAPER: 5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		18	2	M1 for $7 \times 2 + 4$ A1 cao
(b)		11	3	M1 for subtraction of 4 **or** divide by 2 (could be shown as inverse operations **or** as a reverse flow diagram) M1 (dep) for subtraction of 4 and divide by 2 (could be shown as inverse operations **or** as a reverse flow diagram) A1 cao **OR** M1 for $2x + 4 = 26$ M1 for attempt to rearrange with -4 and $\div 2$ shown A1 cao
12 (a)		6	1	B1 cao
(b)		4	1	B1 cao
(c)		30	3	M1 for $4x + x + x = 180$ M1 for correct method to solve '$4x + x + x = 180$' A1 for 30

PAPER: 5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
13 (a)		$\frac{1}{40}$	2	M1 for $\frac{3}{2\times 60}$ A1 cao
(b)		23.10	3	M1 for 34.65 ÷ 3 (= 11.55) M1(dep) for 34.65 −'11.55' or 2×'11.55' A1 cao accept 23.1, 23.10p **or** M1 for $1-\frac{1}{3}\left(=\frac{2}{3}\right)$ or 1 – 0.33 = 0.67 or $0.\dot{6}$ M1 for 34.65 × 2 ÷ 3 or 34.65 × 0.67 or 34.65 × $0.\dot{6}$ A1 cao accept 23.1, 23.10p

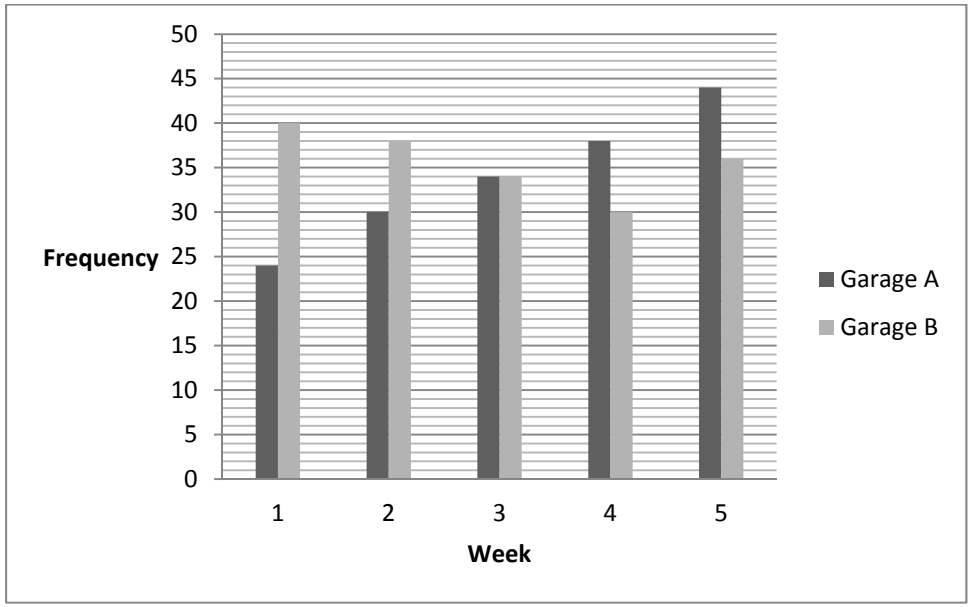
PAPER: 5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
*14		Alice plays longer	3	M1 for $\frac{80}{100}\times 90$ or $\frac{5}{6}\times 90$ M1 for $\frac{80}{100}\times 90$ and $\frac{5}{6}\times 90$ C1 for Alice (plays) longer oe with 72 and 75 **OR** M1 for 80÷100 (=0.8) or 5÷6 (=0.83…) M1 for 80÷100 (=0.8) and 4÷5 (=0.83…) C1 for Alice (plays) longer oe with 0.8 and 0.83… **OR** M2 for (5 ÷ 6) × 100 C1 for Alice (plays) longer oe with 83….%
15		132	4	M2 42 × 7.5 × 5 (= 1575) (M1 for the product of any two of these terms) M1 (dep on at least M1 achieved) '1575' ÷ 12 A1 cao OR M1 42 ÷ 12 (=3.5) M2 '3.5' × 7.5 × 5 (M1 for a product of any two of the terms) A1 cao

PAPER: 5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
*16		No As height of bus is more than 5m	4	B1 for a correct conversion eg 1 foot = 30 cm eg 6 feet = 1.8m − 2 m eg 1m = 3 feet − 3.4 feet M1 for method to find scale factor man to lorry eg 4.8 ÷ 1.6 eg sf = 2.8 − 3 A1 bus = 16 feet –19 feet **or** bus = 5.3 m – 6 m C1 (dep on M1) for conclusion supported by calculations eg No as 5.4 m is greater than height of bridge eg No as 16 feet < 18 feet
17 (a)		£0.40	2	M1 for 20 ÷ 50 oe or clear attempt to find gradient A1 for £0.4(0) or 40p
*(b)	From graph 80 units costs £26.50	Yes as cost will be lower	3	M1 for Tariff B price for 80 units 30 × 80 (=2400) **or** 0.3 × 80(=24) B1 for reading from Tariff A graph at 80 units C1 for £24 and £26.5(0) with 'yes' oe OR M1 for drawing a straight line (for Tariff B) through the origin A1 for the correct line up to at least no of units = 80 C1 for £24 and £26.5(0) with 'yes' oe

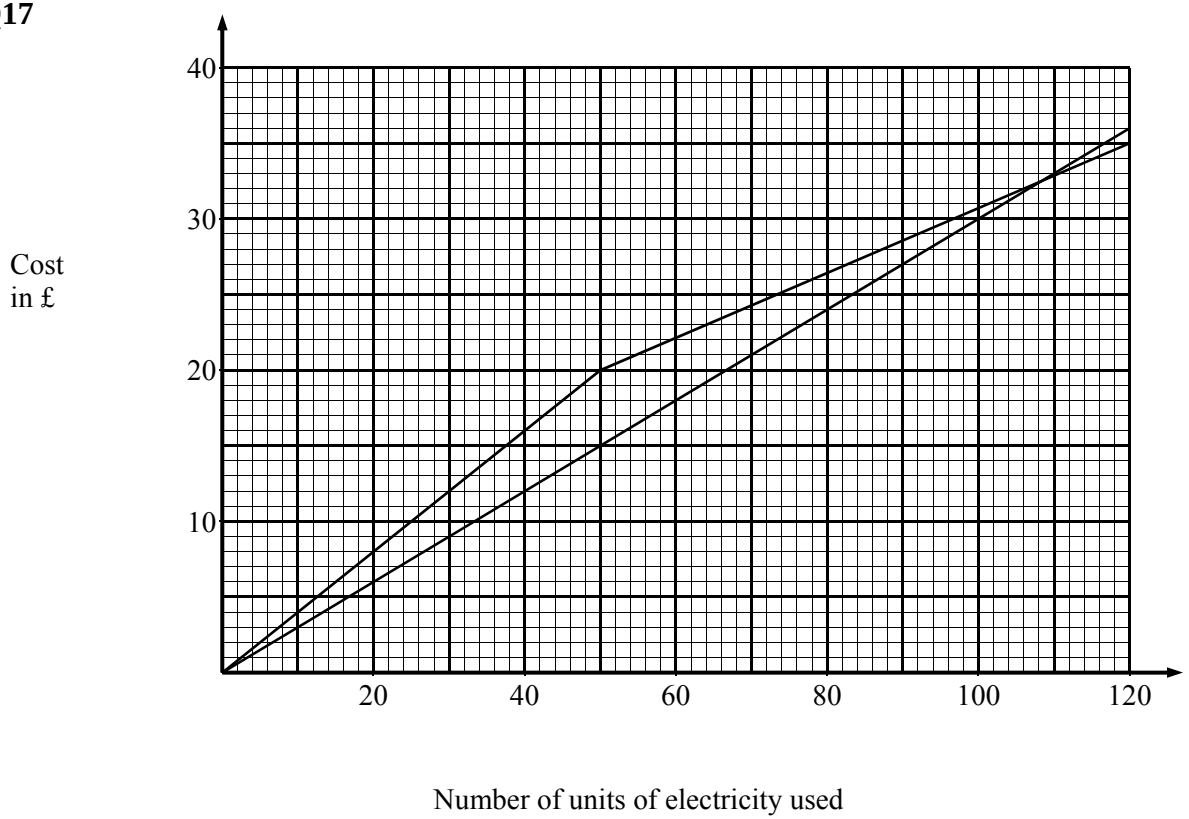
PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)		Point plotted	1	B1 for point plotted at (130, 35)
	(b)		Description	1	B1 for description of dynamic relationship or statement of positive correlation
	(c)		147 - 151	2	B2 for 147 – 151 **OR** M1 for a single straight line segment with positive gradient that could be used as a line of best fit or a horizontal line from 42.5 A1 for answer in the range 147 - 151 or ft their line of best fit
19	(a)		(Ramp) 50 42	2	B2 for (£)50 in B6 and (£)42 in C6 (B1 for one correct entry)
	(b)		= C2–B2 =B2+B3+B4+B5+B6	3	B1 for (=)C2–B2 oe B1 for (=)B2+B3+B4+B5+B6 or (=)SUM(B2:B6) oe or intention to add correct cells is clear B1 for using correct spread sheet notation, in both cases condone missing =
20	(a)	120× 0.08 = 9.60 120 – 9.60 + 8.50	118.90	2	M1 120 × 0.08 (=9.6(0)) A1
	(b)		34	1	B1 cao
	(c)		New total charge box with 8.50 replaced by 11	2	B1 ' total charge =' box with correct shape B1 8.50 replaced by 11

PAPER: 5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
21		20000	3	M1 for $150\,000 \div 5$ (= 30000) M1 for '30000' ÷ 3 × 2 oe A1 cao OR M1 $\frac{1}{5} \times \frac{2}{3} = \left(\frac{2}{15}\right)$ M1 for $150\,000 \div 15 \times 2$ oe A1 cao
22	$x + 2x + 2x + 6 = 101$ $5x + 6 = 101$ $5x = 95$	19	4	M1 for $2x$ or $2x + 6$ seen (any letter) M1 (dep) for forming equation x + '$2x$' + '$2x$ + 6' = 101 M1 for intention to isolate x term(s) in their equation if of the form $ax + b$=101 A1 cao dep on at least M1 awarded OR M1 for a correct trial with $x \geq 1$ to evaluate x, $2x$ and $2x + 6$ (algebraic expressions may not be seen) M1 for 3 values that sum to 101 M1 for intention to add $19 + 2\times19 + 2\times19 + 6$ (=101) A1 for 19 cao dep on at least M1 awarded

Q5


50
45
40
35
30
25
20
15
10
5
0
Frequency
1
2
3
4
5
Week
Garage A
Garage B

Q17


Cost in £
40
30
20
10
20
40
60
80
100
120
Number of units of electricity used

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

Write your name here

Surname	Other names

Pearson Edexcel GCSE

Centre Number | Candidate Number

Applications of Mathematics

Unit 1: Applications 1

For Approved Pilot Centres ONLY

Foundation Tier

Wednesday 5 November 2014 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM1F/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P44576A

©2014 Pearson Education Ltd.

6/6/6/

P 4 4 5 7 6 A 0 1 2 8

PEARSON

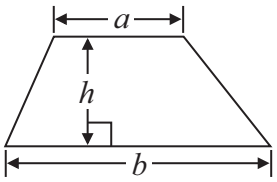
STEMUP.CO.UK

GCSE Mathematics 2AM01

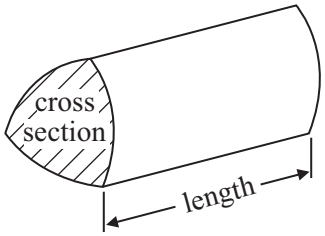
Formulae: Foundation Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section × length



STEMUP.CO.UK

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 17 450 people watched a cycle race.

(a) Write 17 450 to the nearest thousand.

.....

(1)

There were 148 people in the cycle race.

(b) Write 148 to the nearest ten.

.....

(1)

Bradley's average speed was 45.76 kilometres per hour.

(c) Write 45.76 to one decimal place.

.....

(1)

(Total for Question 1 is 3 marks)

2 Barry and Sylvie play darts.
Barry throws three darts at the dartboard.



He scores

50 19 8

(a) Work out Barry's total score.

.....

(1)

Sylvie throws three darts at the dartboard.
Her total score is 89

Sylvie subtracts her score from 301

(b) Work out 301 − 89

.....

(1)

Barry throws three more darts at the dartboard.

He scores less than 12 with each dart.
His total score is 25

(c) Write down three whole numbers less than 12 that add up to 25

.....

(2)

(Total for Question 2 is 4 marks)

STEMUP.CO.UK

3 (a) Here are the points that five people scored in a competition.

Name	Amy	Beth	Cathy	Danni	Ellie
Number of points scored	2750	3520	729	4992	1299

Put the number of points scored in order of size.
Start with the smallest number of points.

.....

(1)

(b) Mr Jones gave four of his students a test.
The total number of marks for the test is 80

Jamie got $\frac{1}{2}$ of the marks.

Andy got $\frac{2}{5}$ of the marks.

Robbie got $\frac{3}{4}$ of the marks.

Davy got $\frac{3}{5}$ of the marks.

Write the fractions in order of size.
Start with the smallest fraction.

.....

(3)

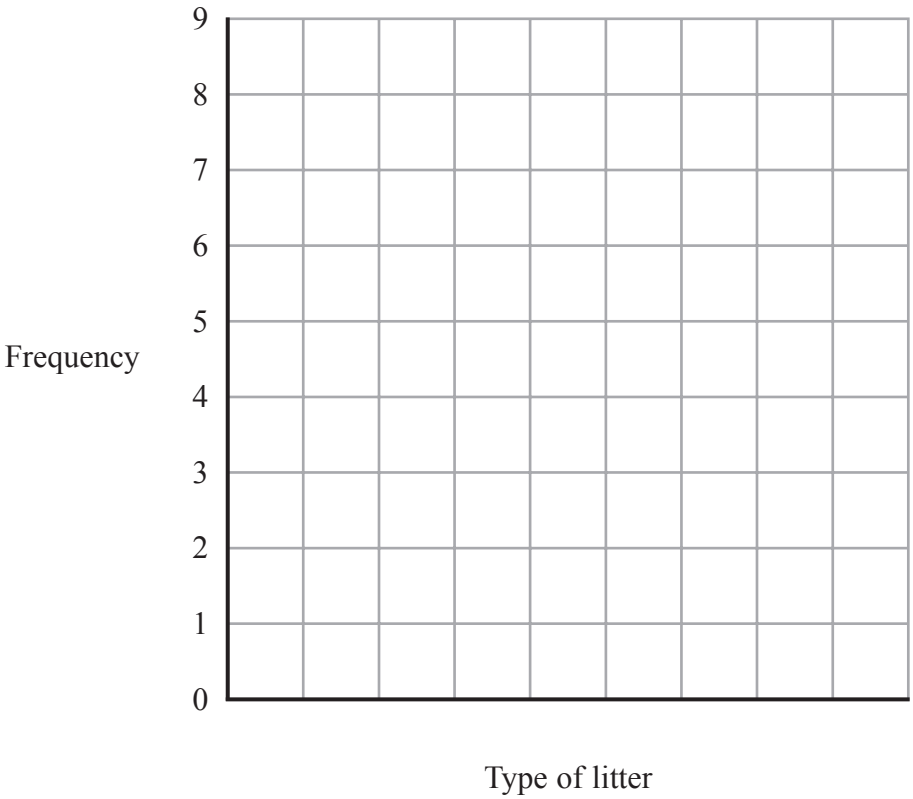
(Total for Question 3 is 4 marks)

4 Rina carried out a survey about the type of litter dropped outside her house.

Here are her results.

Type of litter	Frequency
Crisp packet	5
Chewing gum	4
Choc bar wrapper	7
Fast food box	3

(a) On the grid, draw a bar chart to show this information.



(3)

(b) Write down the type of litter that is the mode.

.....

(1)

(Total for Question 4 is 4 marks)

STEMUP.CO.UK

5 (a) Write down an appropriate unit for measuring

(i) the distance from Birmingham to Glasgow,

.....

(ii) the weight of a bag of potatoes.

.....

(2)

(b) Write down a sensible estimate for

(i) the height of a normal door,

.....

(ii) the amount of liquid in a can of cola.

.....

(2)

(Total for Question 5 is 4 marks)

***6** Simon goes to a car boot sale.

He buys

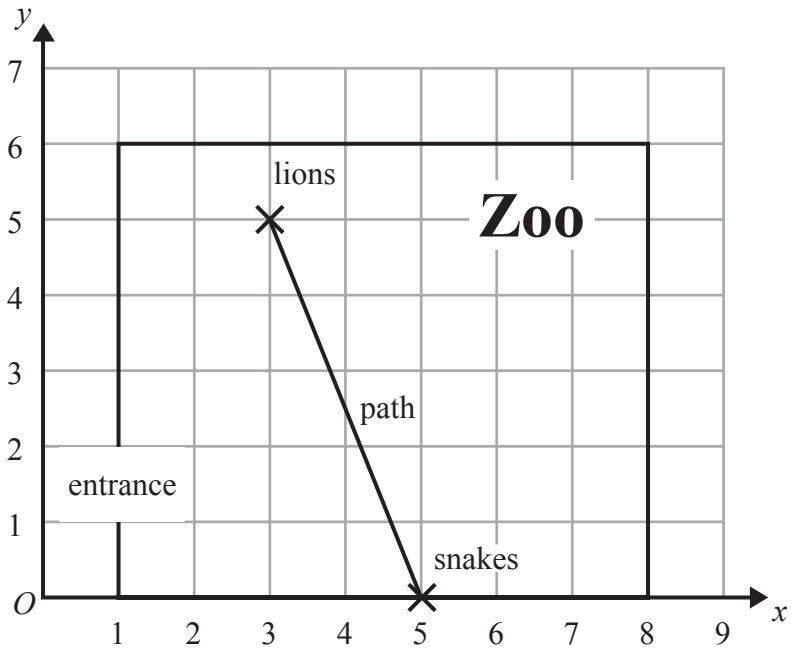
4 cups and saucers for a total of £15.95
4 plates for £1.35 each
6 egg cups for a total of £7.20

Simon sells all the items he buys for a total of £45.75

Does he make a profit or a loss?
You must show all your working.

(Total for Question 6 is 4 marks)

7 Here is a map drawn on a coordinate grid.



Su Ling uses this map to find her way around the Zoo.

(a) Write down the coordinates of the cross marking

(i) the lions,

(..... , ...)

(ii) the snakes.

(..... , ...)

(2)

The elephants are at (7, 3)

(b) Mark with a cross (×) the position of the elephants.

(1)

There is a path from the lions to the snakes.

(c) Find the coordinates of the midpoint of the path.

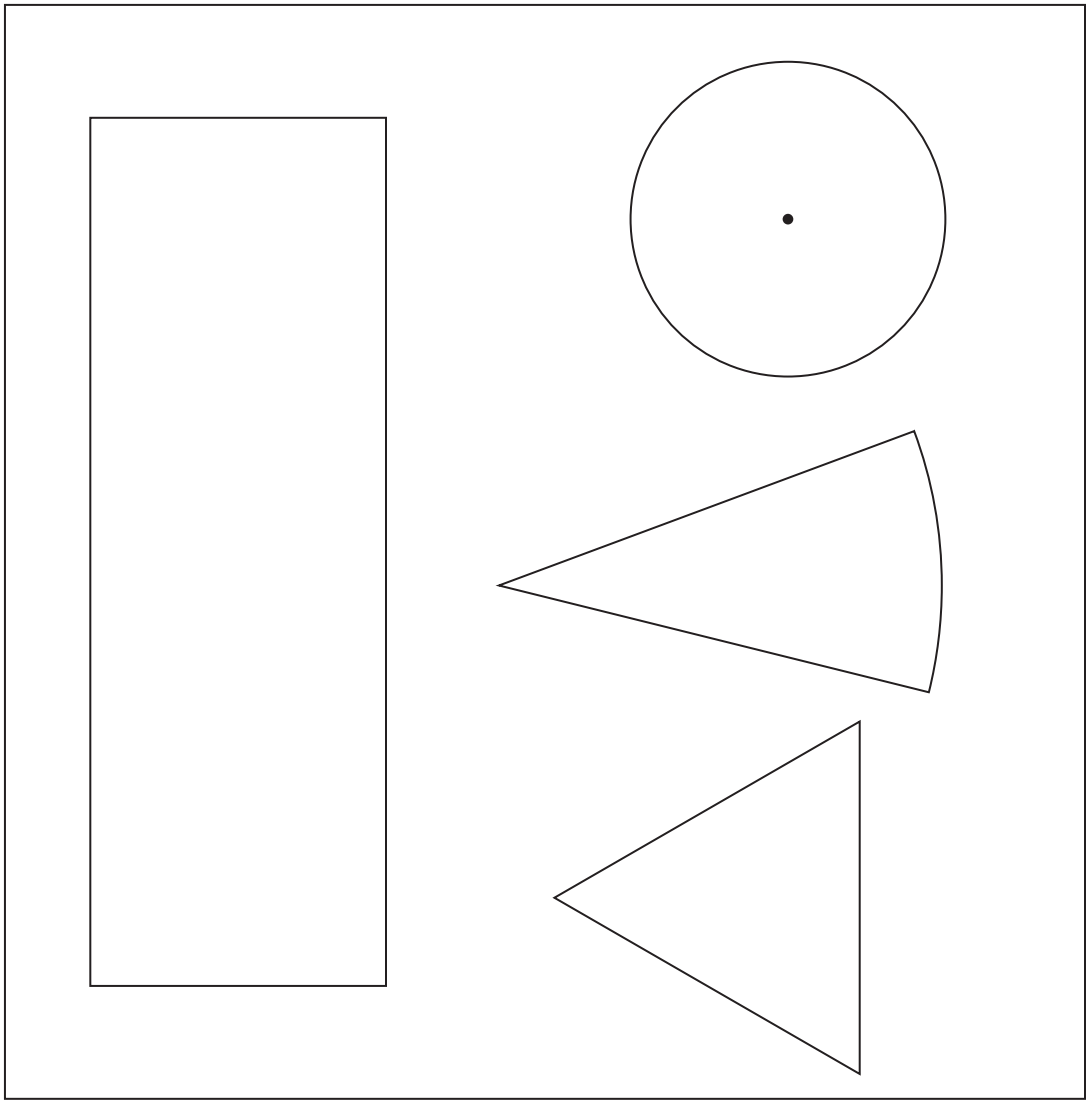
(..... , ...)

(2)

(Total for Question 7 is 5 marks)

STEMUP.CO.UK

8 Here is a diagram of a sports field.



(i) Draw a diameter in the circle.

(ii) Label the sector with an S.

(Total for Question 8 is 2 marks)

***9** The table shows the average midday temperatures, in °C, in London and in Rome one summer.

	Apr	May	Jun	July	Aug	Sept
London	18	20	22	25	23	20
Rome	16	22	22	28	30	25

Show this information in a suitable chart or diagram.

STEMUP.CO.UK

(Total for Question 9 is 4 marks)

10 There are boat trips from Dedham to Flatford and from Flatford to Dedham.

An adult ticket for a boat trip costs £5.50
A child ticket for a boat trip costs £2.75

The table gives information about the leaving times of the boat trips every day.
The table also gives information about the tickets sold one day last week.

Trip number	Leaving time	Trip	Adult tickets sold	Child tickets sold
1	10 15	Dedham to Flatford	4	0
2	11 00	Flatford to Dedham	6	2
3	11 45	Dedham to Flatford	5	4
4	12 30	Flatford to Dedham	8	2
5	13 15	Dedham to Flatford	10	0
6	14 00	Flatford to Dedham	6	6
7	14 45	Dedham to Flatford	4	8
8	15 30	Flatford to Dedham	8	4

(a) Work out the total cost of the tickets sold for Trip number 1 and Trip number 2

£ .....

(4)

STEMUP.CO.UK

Josh is planning a day out next week.
He is going to arrive at Flatford at 10 30

Josh will

have a boat trip to Dedham,
have lunch in Dedham,
have a boat trip back to Flatford.

Each boat trip takes 30 minutes.
Josh wants to have one and half hours for lunch in Dedham.

*(b) Plan a schedule for Josh.
You must give the leaving times of the boat trips and the times the boats arrive.

(4)

(Total for Question 10 is 8 marks)

11 The diagram shows part of the frame of a cycle.

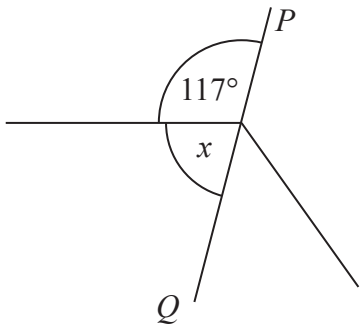


Diagram **NOT** accurately drawn

PQ is a straight line.

(a) (i) Work out the size of the angle marked x.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

This diagram shows a different part of the frame of the cycle.

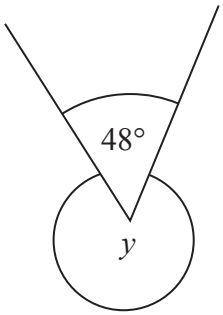


Diagram **NOT** accurately drawn

(b) (i) Work out the size of the angle marked y.

.....°

(ii) Give a reason for your answer.

.....

.....

(2)

(Total for Question 11 is 4 marks)

STEMUP.CO.UK

12 Here are the amounts of money earned each week by 10 workers in a company.

£150 £100 £200 £100 £300 £100 £400 £300 £150 £200

(a) Work out the mean.

£ .....

(2)

(b) Work out the median.

£ .....

(2)

(c) Work out the mode.

£ .....

(1)

(d) Work out the range.

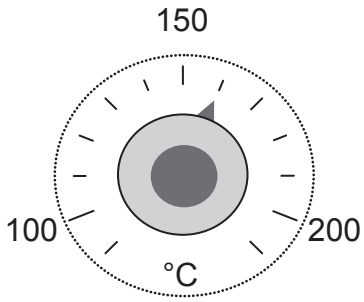
£ .....

(2)

(Total for Question 12 is 7 marks)

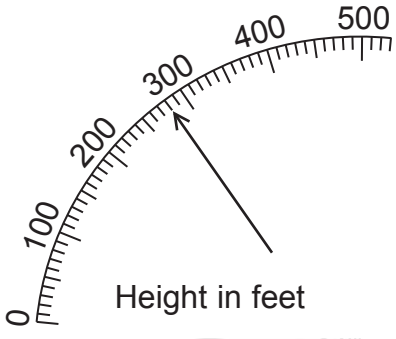
13 Write down the reading shown on each of these scales.

(i)



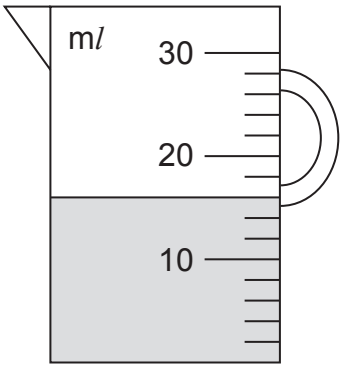
..... °C

(ii)



..... feet

(iii)



..... ml

(Total for Question 13 is 3 marks)

STEMUP.CO.UK

14 Jeremy invests £300 for two years at 4% simple interest each year.

(a) Work out the amount of interest he will get at the end of two years.

£ .....

(3)

Jeremy buys a TV.
He pays £450 plus 20% VAT.

(b) Work out the VAT.

£ .....

(2)

(Total for Question 14 is 5 marks)

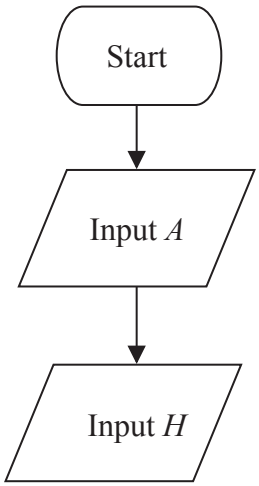
STEMUP.CO.UK

15 The table shows information about the pay of workers in a factory.

Age of worker	Pay per hour
Less than 20 years	£5.03
20 years or older	£6.31

A worker aged A years works for H hours.
The worker is paid P pounds.

Complete the flow chart for working out the pay for any worker.



(Total for Question 15 is 4 marks)

STEMUP.CO.UK

16 Here is a rectangular sheet of metal.
A square hole is cut out of the metal.

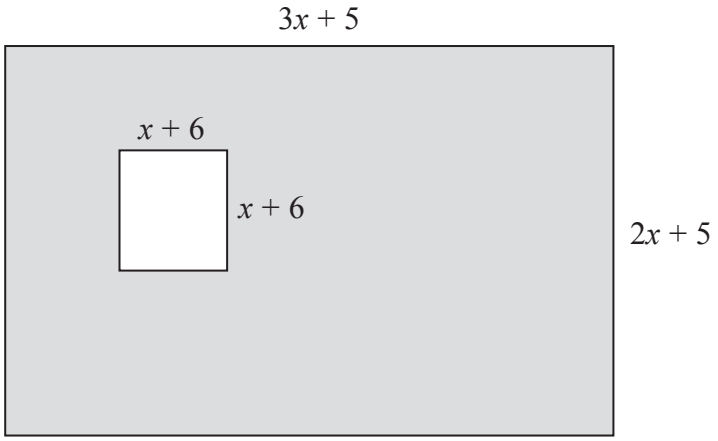


Diagram **NOT** accurately drawn

The length of the rectangle is $3x + 5$
The width of the rectangle is $2x + 5$
The square has sides of length $x + 6$
All measurements are in centimetres.

The perimeter of the square hole is $\frac{3}{5}$ of the perimeter of the rectangle.

Work out the length of a side of the square hole.

.....cm

(Total for Question 16 is 5 marks)

17 Jane has to work out the cross-sectional areas of some circular containers.

She uses the expression $\frac{C^2}{4\pi}$ where C is the circumference of the container.

Work out the cross-sectional area when C is 65 cm.

.....cm^2

(Total for Question 17 is 2 marks)

STEMUP.CO.UK

18 Julie is going on holiday to France.

She changes £400 into euros (€).
The exchange rate is £1 = €1.20

(a) How many euros does Julie get?

€ .....

(2)

Julie brings back 150 euros (€) from her holiday in France.
She changes the euros into dollars ($).

The exchange rates are

£1 = €1.20
£1 = $1.56

(b) How many dollars does Julie get?

$ .....

(3)

(Total for Question 18 is 5 marks)

19 The diagram shows a photograph of a church in a frame.



Diagram **NOT** accurately drawn

The photograph has a length of 10 inches and a width of 8 inches.
The frame has a length of 12 inches and a width of 10 inches.

The frame is made from four rectangular pieces of wood.
The frame is shown shaded in the diagram.

Work out the area of the frame.

.....square inches

(Total for Question 19 is 4 marks)

STEMUP.CO.UK

20 Ronni owns a shop.
She sells plain crisps, salt & vinegar crisps and barbecue crisps.

On Monday evening Ronni has these packets of crisps left.

24 packets of plain crisps
54 packets of salt & vinegar crisps
18 packets of barbecue crisps

On Tuesday morning these boxes of crisps are delivered to the shop.

5 boxes of plain crisps
4 boxes of salt & vinegar crisps
3 boxes of barbecue crisps

There are 48 packets of crisps in each box.

Ronni sells equal numbers of packets of plain crisps, salt & vinegar crisps and barbecue crisps.
Ronni now has no packets of barbecue crisps left.

How many packets of plain crisps and how many packets of salt & vinegar crisps does Ronni have left?

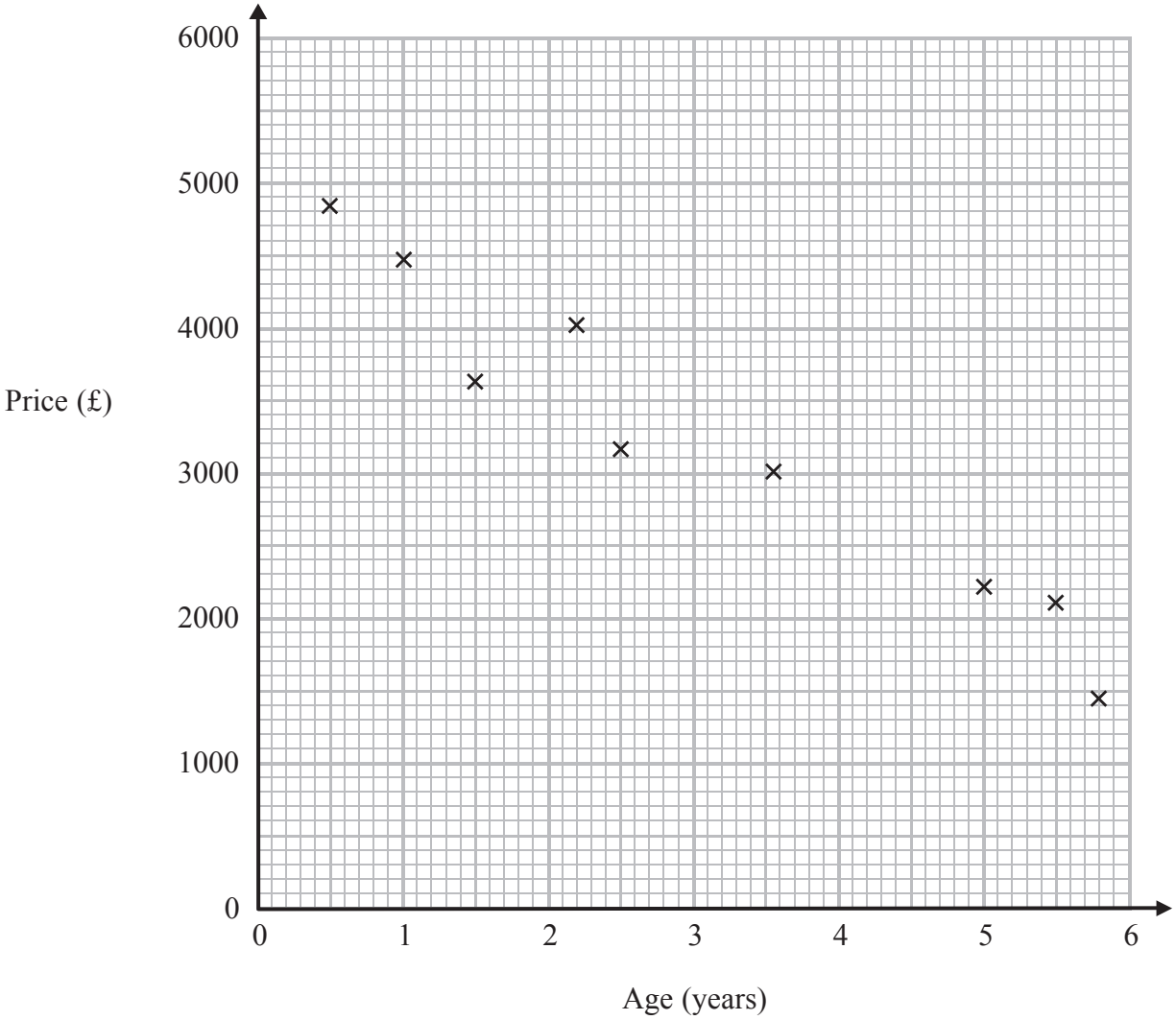
Plain ..... packets

Salt & vinegar ..... packets

(Total for Question 20 is 4 marks)

21 Jason sells cars.
Last month he sold 9 cars.
All the cars he sold were the same make and model.

The scatter graph shows the ages and prices of the cars.



Jason also sold a 4 year old car of the same make and model for £2300

(a) Show this information on the scatter graph.

(1)

A car of the same make and model is 3 years old.

(b) Estimate the price of this car.

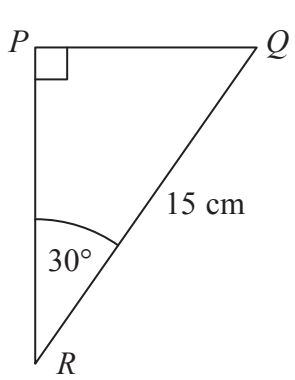
£ .....

(2)

(Total for Question 21 is 3 marks)

STEMUP.CO.UK

22 Here is a diagram of two shelf supports.



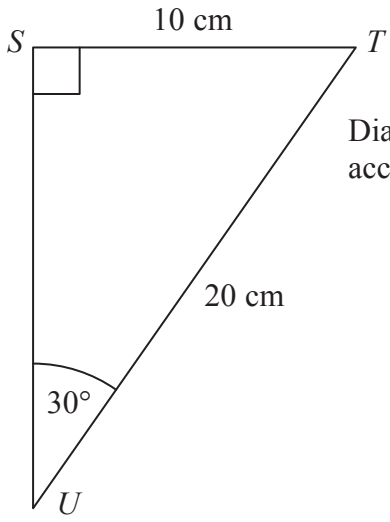


Diagram **NOT** accurately drawn

Triangle *PQR* is similar to triangle *STU*.

*(a) Why?

.....

.....

(1)

(b) Work out the length of *PQ*.

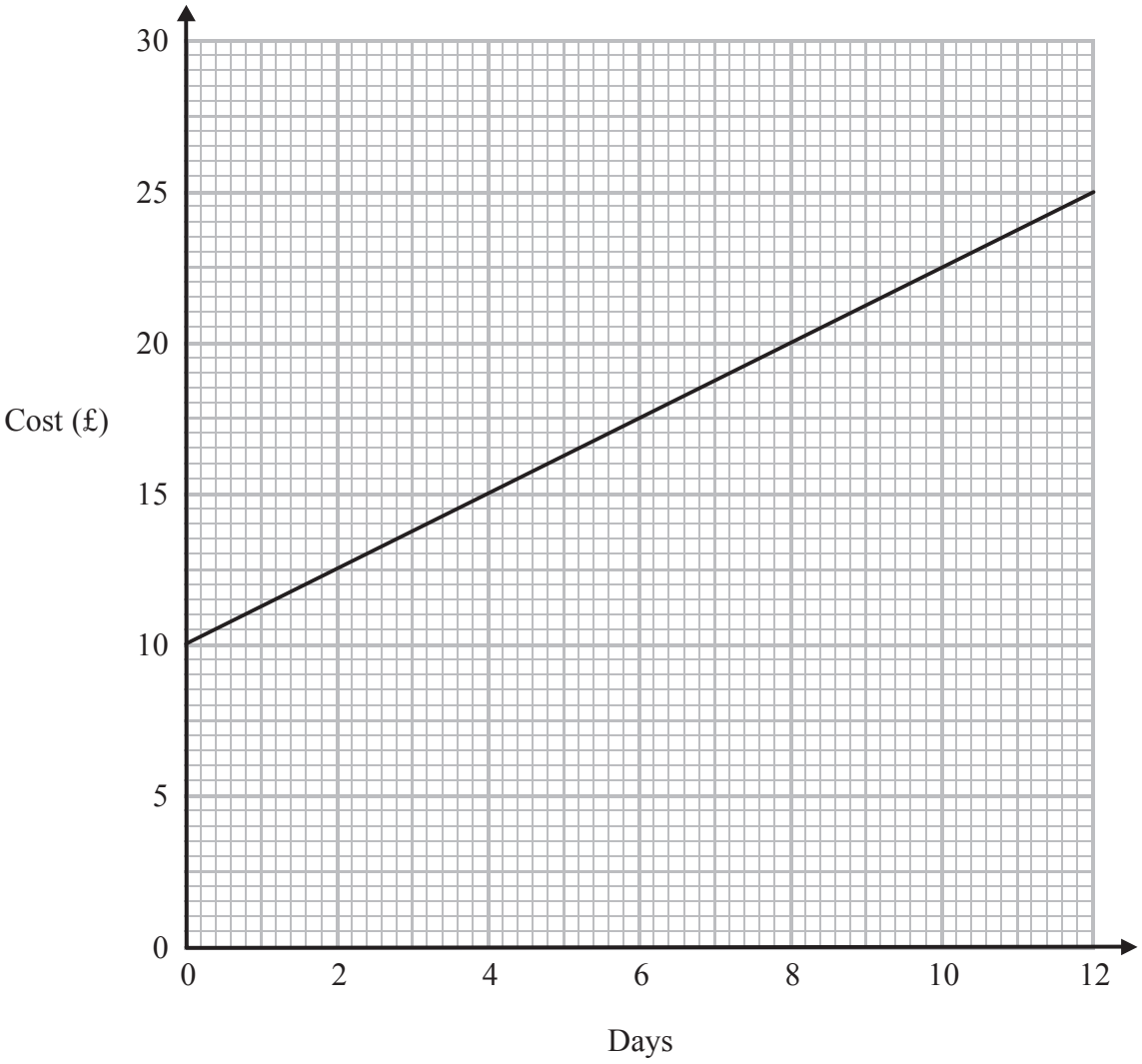
.....cm

(2)

(Total for Question 22 is 3 marks)

23 Salome hires a chainsaw from the **Saws are Us** company.

This graph shows the cost of hiring a chainsaw from **Saws are Us** for up to 12 days.



(a) Find the cost of hiring the chainsaw for 6 days from **Saws are Us**.

£ .....

(1)

The cost of hiring a chainsaw from **Saws are Us** is £10 plus a daily rate.

(b) Work out the daily rate.

£ .....

(1)

Salome wants to compare the cost of hiring a chainsaw from **Saws are Us** and from **Saws to You.**

Saws to You charge £3 for each day of hire.

Salome hires chainsaws for different periods of time.
She wants to use the cheaper company.

(c) Which of these two companies is the cheaper to hire the chainsaw from?
You must show your working and explain your answer.

.....

(3)

(Total for Question 23 is 5 marks)

24 Chris has two children, Beth and Amy.
Beth is 10 years older than Amy.

Chris says,

"I am twice as old as the sum of Beth's age and Amy's age."

Chris is 40 years old.

How old is Amy?

.....years old

(Total for Question 24 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

STEMUP.CO.UK

edexcel

Mark Scheme (Results)

November 2014

Pearson Edexcel GCSE
Linked Pair Pilot in Mathematics
Application of Mathematics
Foundation: (Calculator) Unit 1

ALWAYS LEARNING
PEARSON
STEMUP.CO.UK

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2014
Publications Code UG040234
All the material in this publication is copyright
© Pearson Education Ltd 2014

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		17 000	1	B1 for 17000 (accept in words)
	(b)		150	1	B1 for 150 (accept in words)
	(c)		45.8	1	B1 cao
2	(a)		77	1	B1 cao
	(b)		212	1	B1 cao
	(c)		3 numbers less than 12 adding to 25	2	M1 for writing 3 numbers less than 12 and adding. A1 for 3 numbers less than 12 which add to 25
3	(a)		729, 1299, 2750, 3520, 4992	1	B1 cao
	(b)		$\frac{2}{5}, \frac{1}{2}, \frac{3}{5}, \frac{3}{4}$	3	M1 for correct method to change two fractions to marks or percentages or fractions with a common denominator or decimals with at least one conversion correct. M1 for correct method to change two fractions to marks or percentages or fractions with a common denominator or decimals with all conversions correct A1 for the correct order.
4	(a)		Correct bar chart	3	B1 for labelling bars B2 for four correct bars drawn (B1 for two or three correct bars drawn)
	(b)		Choc bar wrapper	1	B1 ft from their graph or the frequency table

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a) (i)		Miles/km	1	B1 for miles or kilometres oe (do not accept m)
	(ii)		pounds/kg	1	B1 for pounds or kilograms oe
	(b)(i)		2m/ 6ft 6 in	1	B1 for 1.9 – 2.1m or 6ft 4 in to 6ft 8 in oe
	(ii)		300 - 400ml or $\frac{1}{2}$ pint	1	B1 for answer in range 300 – 400 ml oe or ½ pint, accept 130 – 170 m*l*
*6		15.95 + 4 × 1.35 + 7.20 = 28.55 45.75 – 28.55	Profit of £17.20	4	M1 for 4 × £1.35 or sight of 5.40 M1 for 15.95 + "5.40" + 7.20 or sight of 28.55 M1 for 45.75 – "28.55" C1 (dep on M1) for statement of profit of £17.20 with associated accurate calculations (SC B1 for statement of profit of £21.25)
7	(a)(i)		(3, 5)	1	B1 cao
	(ii)		(5, 0)	1	B1 cao
	(b)		Cross at (7, 3)	1	B1 for cross at (7, 3)
	(c)		(4, 2.5)	2	B1 for *x* coordinate 4 B1 for *y* coordinate 2.5 oe
8	(i)		Diameter drawn	1	B1 for drawing a diameter.
	(ii)		Sector identified	1	B1 for identifying the sector of the circle.

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*9	(a)		Appropriate correct graph drawn	4	B1 for key or suitable labels to identify London and Rome B1 for diagram(s) or chart(s) set up for comparison e.g. dual bar chart, line graph etc. B1 for correct heights for temperatures in London and Rome, dependent on a linear scale C1 for fully correct diagram or chart to include all 6 months labelled and temperature axis correctly scaled and labelled
10	(a)	(4 + 6) × 5.5 = 10 × 5.5 = 55 2 × 2.75 = 5.50 55 + 5.50 **Or** 4 × 5.50 + 6 × 5.50 + 2 × 2.75 22 + 33 + 5.50 **Or** 4+ 6 = 10 adults 2 children (10 + 2 ÷ 2) × 5.50	60.50	4	M1 for totalling adults or children M1 for multiplying their adult's total by 5.50 or their children's total by 2.75 M1 (dep M1) for adding their adult total amount and their children's total amount A1 for 60.5(0) **Or** M1 for finding the cost of one trip e.g. 4 × 5.50 or 6 × 5.50 + 2 × 2.75 M1finding the cost of both individual trips e.g. 4 × 5.50 and 6 × 5.50 + 2 × 2.75 M1 for "4 × 5.50" + "6 × 5.50 + 2 × 2.75" A1 for 60.5(0) **Or** M1 for totalling adults or children M1 for realising that 2 children is 1 adult cost M1 for (10 + 2 ÷ 2) × 5.50 A1 for 60.5(0)
	*(b)	Leave Flatford 11 00 or 12 30 Arrive Dedham 11 30 or 13 00 Finish lunch 13 00 or 14 30 Leave Dedham 13 15 or 14 45 Arrive Flatford 13 45 or 15 15	Leave Flatford 11 00 Arrive Dedham 11 30 (Finish lunch 13 00) Leave Dedham 13 15 Arrive Flatford 13 45	4	B1 for leaving Flatford at 11 00 or 12 30 B1 for arriving at Dedham at 11 30 or 13 00 B1 ft for leaving Dedham at 13 15 or 14 45 C1 (dep on first B1awarded) for correct timetable with allowance of $1\frac{1}{2}$ hours for lunch and correct arrival time back at Flatford

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)(i)	180 –117	63	2	B1 cao
	(ii)				C1 for angles in a straight line add up to 180º
	(b)(i)	360 – 48	312	2	B1 cao
	(ii)				C1 for angles at a point add to 360º
12	(a)	(150 + 100 + 200 + 100 + 300 + 100 + 400 + 300 + 150 + 200) ÷ 10	200	2	M1 for adding to add all amounts and dividing by 10 A1 cao
	(b)	100, 100, 100, 150, 150, 200, 200 ,300, 300, 400 (150 + 200) ÷ 2	175	2	M1 for ordering and selecting 150 and 200 A1 cao
	(c)		100	1	B1 cao
	(d)		300	2	M1 for 400 – 100 or 100 to 400 A1 cao
13	(i)		160	1	B1 for 158 – 162
	(ii)		280	1	B1 for 275 – 285
	(iii)		16	1	B1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)	$\frac{4}{100} \times 300 \times 2$	24	3	M1 for $\frac{4}{100} \times 300$ oe M1 for "12" × 2 A1 cao **Or** M1 for $\frac{PRT}{100}$ oe M1 for substituting into the formula A1 cao
	(b)	$\frac{20}{100} \times 450$	90	2	M1 for $\frac{20}{100} \times 450$ oe A1 cao
15		See end	Correct flow chart	4	B1 for including decision box for $A < 20$ oe B1 for including box for calculating total pay when $A < 20$ e.g. $P = H \times 5.03$ or when $A \geq 20$, e.g. $P = H \times 6.31$ B1 for output box with Output £P oe C1 for fully correct flowchart with all boxes the correct shape
16			12	5	M1 for writing a correct expression for the perimeter of the square or the rectangle e.g. $4(x + 6)$ or $10x + 20$ or for the semi-perimeter M1 for equating the two (semi) perimeters correctly M1 for resolving the fraction e.g. $20x + 120 = 30x + 60$ or for rearranging the equation to the form. $a = bx + c$ M1 for $10x + 60 = 120$ or $24 = 2x + 12$ or $x = 6$ A1 cao
17		$\frac{65^2}{4 \times \pi}$	336	2	M1 for $\frac{65^2}{4 \times \pi}$ or 4225 written as a numerator or 12.56(637…) written as a denominator A1 for answer in range 336 to 337

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)	400 × 1.20	480	2	M1 for 400 × 1.2 oe A1 cao
	(b)	150 ÷ 1.2 = 125 125 × 1.56 **Or** 1.56 ÷ 1.2 = 1.3 150 × 1.3	195	3	M1 for 150 ÷ 1.2 or 125 M1 for "125" × 1.56 A1 cao **Or** M1 for 1.56 ÷ 1.2 (= 1.3) M1 for 150 × "1.3" A1 cao
19		12 × 10 – 10 × 8 120 – 80 **Or** (12 – 10) ÷ 2 × 12 × 2 = 24 (10 – 8) ÷ 2 × 8 × 2 = 16 24 + 16 **Or** (12 – 10) ÷ 2 × 10 × 2 = 20 (10 – 8) ÷ 2 × 10 × 2 = 20 20 + 20 **Or** (12 – 10) ÷ 2 × 12 × 2 = 24 (10 – 8) ÷ 2 × 10 × 2 = 20 24 + 20 – 4	40	4	M1 for 12 × 10 or 120 M1 for 10 × 8 or 80 M1 for 12 × 10 – 10 × 8 A1 cao **Or** M1 for (12 – 10) ÷ 2 × 12 × 2 (= 24) M1 for (10 – 8) ÷ 2 × 8 × 2 (= 16) M1 for "24" + "16" A1 cao **Or** M1 for (12 – 10) ÷ 2 × 10 × 2 (= 20) M1 for (10 – 8) ÷ 2 × 10 × 2 (= 20) M1 for "20" + "20" A1 cao **Or** M1 for (12 – 10) ÷ 2 × 12 × 2 (= 24) M1 for (10 – 8) ÷ 2 × 10 × 2 (= 20) M1 for 24 + 20 – 4 A1 cao

APER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20		Plain 5 × 48 + 24 = 264 S & V 4 × 48 +54 = 246 BBQ 3 × 48 +18 = 162 Amount left Plain 264 –162 = 102 S & V 246 – 162 = 84 **Or barbecue first** BBQ sold is 3 × 48 + 18 = 162 Plain left = 5 × 48 + 24 – 162 = 102 S & V left = 4 × 48 + 54 – 162 = 84 **Or boxes sold** (5 – 3) × 48 + 24 – 18 = 102 Plain (4 – 3) × 48 +54 – 18 = 84 S & V	Plain 102 S & V 84	4	M1 for one of 5 × 48 + 24 (= 264) or 4 × 48 +54 (= 246) or 3 × 48 +18 (= 162) M1 for all of 5 × 48 + 24 (= 264) and 4 × 48 +54 (= 246) and 3 × 48 +18 (= 162) M1 for 264 –"162" (= 102) or 246 – "162"(= 84) A1 cao **Or** M1 for correct method to work out number of barbecue sold e.g. 3 × 48 + 18 (= 162) M1 for correct method to calculate number of packets left for one flavour e.g. 5 × 48 + 24 – "162" or 4 × 48 + 54 – "162" M1 for correct method to calculate number of packets left for both flavours e.g. 5 × 48 + 24 – "162" or 4 × 48 + 54 – "162" A1 cao **Or** M1 for (5 – 3) × 48 or (4 – 3) × 48 M1 for (5 – 3) × 48 + 24 – 18 or (4 – 3) × 48 +54 – 18 M1 for (5 – 3) × 48 + 24 – 18 and (4 – 3) × 48 +54 – 18 A1 cao
21	(a)		(4, 2300) plotted	1	B1 cao
	(b)		3200	2	M1 for drawing a suitable line of best fit A1 for answer in range 3000 – 3400

<table>
<tr><th colspan="6">PAPER: 5AM1F_01</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>22</td><td>*(a)</td><td></td><td>Explanation</td><td>1</td><td>C1 for all angles of the triangles are equal or two angles are equal (so all three are equal)</td></tr>
<tr><td></td><td>(b)</td><td></td><td>7.5</td><td>2</td><td>M1 for 15 ÷ 2 oe
A1 cao

Or

M1 for $\frac{3}{4} \times 10$ oe
A1 cao</td></tr>
<tr><td>23</td><td>(a)</td><td></td><td>17.50</td><td>1</td><td>B1 for 17.5(0)</td></tr>
<tr><td></td><td>(b)</td><td></td><td>1.25</td><td>1</td><td>B1 cao</td></tr>
<tr><td></td><td>(c)</td><td><table><tr><th>Days</th><th>SAV</th><th>STY</th></tr><tr><td>3</td><td>13.75</td><td>9</td></tr><tr><td>4</td><td>15.00</td><td>12</td></tr><tr><td>5</td><td>16.25</td><td>15</td></tr><tr><td>6</td><td>17.50</td><td>18</td></tr><tr><td>7</td><td>18.75</td><td>21</td></tr></table></td><td>Comparison made</td><td>3</td><td>M1 for drawing line for Saws to You through the origin or for line with gradient 3
C2 for a correct line and making a statement of which is cheaper up to 5 days and which is cheaper for 6 days or more
(C1 (depM1) for making any correct comparison from their graphs)
Or
M1 for any three correct costs for Saws to You
C2 for correct figures for 5 days and 6 days for both companies and making a statement of which is cheaper up to 5 days and which is cheaper for 6 days or more
(C1 (depM1) for making any correct comparison from their calculations for the two companies)</td></tr>
</table>

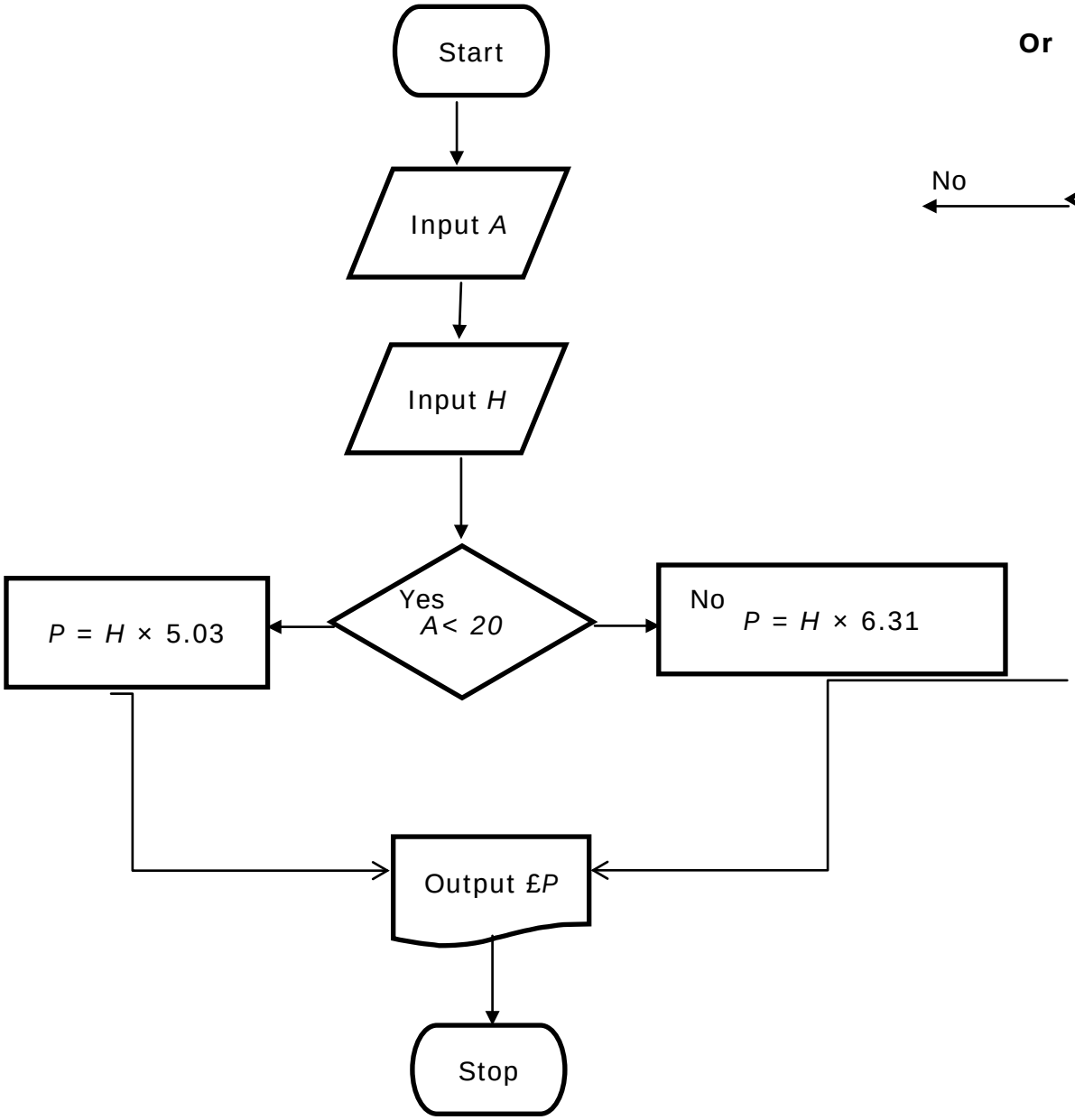
<table>
<tr><th colspan="6">PAPER: 5AM1F_01</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>24</td><td></td><td>$2(x + x + 10) = 40$
$4x + 20 = 40$
$4x = 20$
$x = 5$

Or
$2(x + x – 10) = 40$
$2x – 10 = 20$
$2x = 30$
$x = 15$

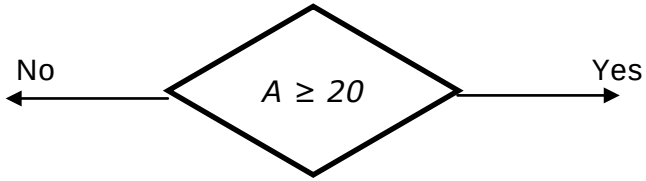
Or
<table><tr><th></th><th>Amy</th><th>Beth</th><th>Chris</th></tr><tr><td>$x = 2$</td><td>2</td><td>12</td><td>28</td></tr><tr><td>$x = 4$</td><td>4</td><td>14</td><td>36</td></tr><tr><td>$x = 6$</td><td>6</td><td>16</td><td>44</td></tr><tr><td>$x = 5$</td><td>5</td><td>15</td><td>40</td></tr></table></td><td>5</td><td>4</td><td>M1 for algebraic method to set up Amy and Beth’s ages as x and $x + 10$
M1 for setting up the equation $2(x + x + 10) = 40$ oe
M1 for $4x + 20 = 40$
A1 cao
Or
M1 for algebraic method to set up Beth and Amy’s ages as x and $x – 10$
M1 for setting up the equation $2(x + x – 10) = 40$ oe
M1 for $4x – 20 = 40$
A1 cao

Or
M1 for establishing Amy is x and Beth is $x + 10$ (can be implied by one correct trial)
M1 for strategy to involve 3 trials with correct ages (totals not needed) or 2 trials with correct ages and totals
M1 for a trial where Chris’ age < 40 and trial where Chris’ age > 40 or 5, 15 and 40 identified as the answer
A1 cao</td></tr>
</table>

Question 15.



Or



Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5AM1F_01			
Question		**Modification**	**Notes**
Q02		Picture removed	
Q04		2 cm grid	
Q07		$2\frac{1}{2}$ cm grid	
Q07	(b)	'with a cross x' removed	
Q08		Rectangle put on the right hand side	
Q09		Vertical axis $15 \times 1\frac{1}{2}$ cm Horizontal axis $12 \times 1\frac{1}{2}$ cm	
Q10		Table – remove row for trip number 8	
Q13	(i)	Just circle given with °C in centre 100, 150, 200 marked off around $\frac{2}{3}$ of the circumference with 5 divisions for each 50	

PAPER: 5AM1F_01			
Question		**Modification**	**Notes**
Q13	(ii)	Straight line labelled 100 to 400 in hundreds 1 cm space – spaces marked	
Q13	(iii)	Handle and pourer removed Markings extended outside of jug	
Q16		*x* changed to y 2y + 5 moved to left of diagram Square is shaded Shading removed from rest of diagram	
Q19		Photograph picture removed The word 'photograph' inserted Measurements put on the diagram	
Q21		$1\frac{1}{2}$ cm grid Crosses changed to filled in circles	
Q21	(a)	2300 changed to 2500	
Q23		$1\frac{1}{2}$ cm grid	

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Write your name here

Surname	Other names

Pearson Edexcel GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Applications of Mathematics

Unit 1: Applications 1

For Approved Pilot Centres ONLY

Foundation Tier

Monday 9 June 2014 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM1F/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P43387A

©2014 Pearson Education Ltd.

5/6/1/1/c2/

P 4 3 3 8 7 A 0 1 3 2

PEARSON

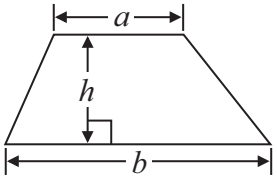
STEMUP.CO.UK

GCSE Mathematics 2AM01

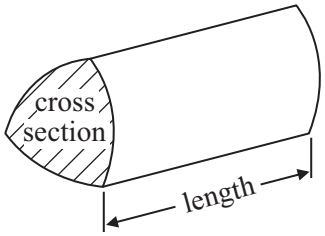
Formulae: Foundation Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section × length



STEMUP.CO.UK

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Karim does the accounts for his cricket team.

Here are his accounts for part of May.

Date	Description	Deposit (£)	Withdrawal (£)	Balance (£)
1st May	Opening balance			50.00
2nd May	Match fees	66.00		116.00
8th May	New bat		30.00	86.00
15th May	Refreshments		10.00	76.00
23rd May	Match Fees	66.00		.....
.....	.....		.....	.....

On 25th May he makes a withdrawal of £51.50 for pitch hire.

(a) Write this information in Karim's accounts.

(2)

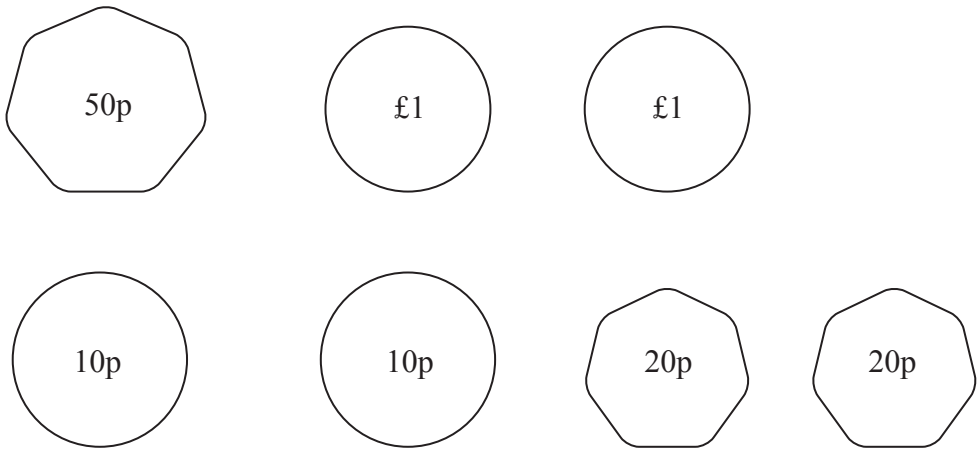
(b) Complete the balance column.

(2)

(Total for Question 1 is 4 marks)

2 Jim wants to park his car in the car park.
He will have to pay 110p.

Jim has only these coins.



Jim wants to use as few of his coins as possible to pay 110p.

Show how he can do this.

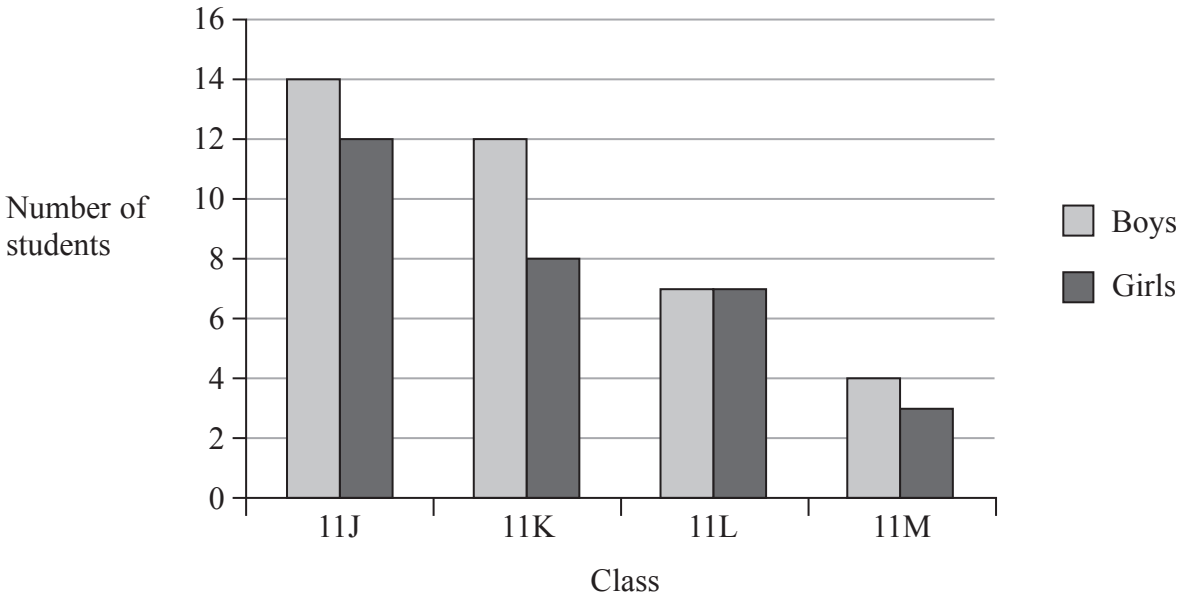
.....

(Total for Question 2 is 2 marks)

STEMUP.CO.UK

3 There are 4 year 11 classes in a school.

The bar chart gives information about the numbers of students in these 4 classes.



(a) Write down the number of boys in class 11J.

.....

(1)

(b) Write down the class that has equal numbers of boys and girls.

.....

(1)

(c) Work out the total number of students in year 11

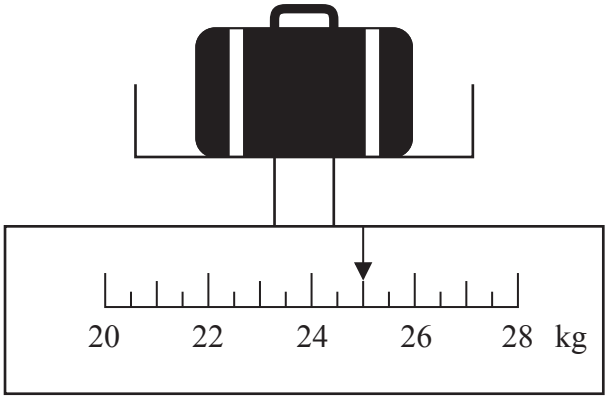
.....

(2)

(Total for Question 3 is 4 marks)

4 Keith is going to catch a plane.

He weighs his bag on some scales.



(a) Write down the weight shown on the scales.

..... kg

(1)

There is an extra charge to pay when the weight of a bag is more than 23 kg.

The weight of Grant's bag is 19.5 kg.
He does **not** want to pay the extra charge.

(b) How much more weight can he put in the bag?

..... kg

(1)

Nina has two bags.
The weight of each bag is 20 kg.
1 kg = 2.2 pounds.

(c) What is the total weight of Nina's bags in pounds?

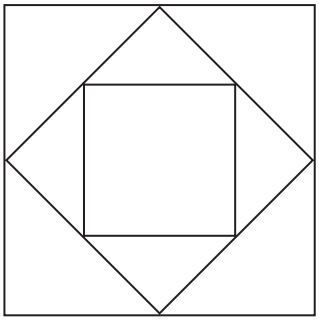
..... pounds

(3)

(Total for Question 4 is 5 marks)

STEMUP.CO.UK

5 Here is the logo for 'Diamond Designs'.



There are squares in the logo.

(a) Write down the size of an angle of a square.

..... °

(1)

(b) Write down the order of rotational symmetry of the logo.

.....

(1)

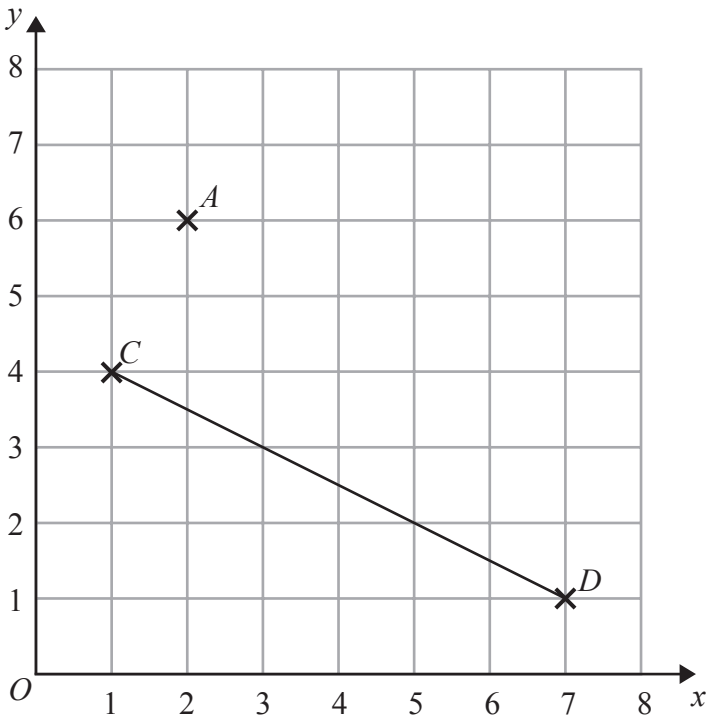
(c) Find two shapes in the logo that are congruent.

Put a letter C in each of the two shapes.

(1)

(Total for Question 5 is 3 marks)

6 Here is a plan of the site of a Roman villa.
The site has been marked out in squares.



There is an iron pot at A.

(a) Write down the coordinates of the point A.

.....

(1)

There is a gold coin at the point with coordinates (5, 7).

(b) On the grid, mark with a cross (×) the position of the gold coin.
Label this point G.

(1)

A pipe goes from the point C to the point D.

The midpoint of CD is M.
Mick wants to mark M with white tape.

(c) Find the coordinates of M.

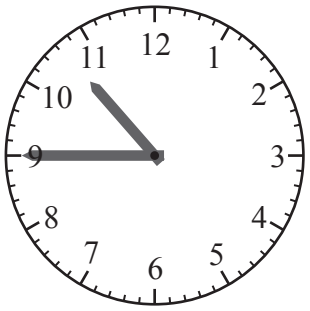
.....

(2)

(Total for Question 6 is 4 marks)

STEMUP.CO.UK

7



(a) What time is shown on this clock?

.....

(1)

(b) Write 7 20 pm using the 24-hour clock.

.....

(1)

Lessons end at Ashley's school at 3 45 pm.
A dance club starts 15 minutes after the end of lessons.

The dance club lasts $\frac{3}{4}$ of an hour.

Ashley goes to the dance club.
It then takes him 25 minutes to get home.

(c) Work out the time that Ashley gets home.

..... pm

(3)

(Total for Question 7 is 5 marks)

8 The table gives information about some televisions.

Make	Size (inches)	Smart TV	Built in DVD player	Cost (£)
Blunt	24	–	–	199
Blunt	40	–	–	342
Lichee	40	Yes	Yes	614
Para	26	Yes	–	248
Para	22	–	Yes	130
Para	50	–	–	480
Sonia	47	–	–	1170

(a) Write down the size of the smallest television.

..... inches

(1)

(b) Write down the make of the television that has Smart TV and a built in DVD player.

.....

(1)

The Smiths want to buy a new television.
The cost must be less than £700
The size must be greater than 40 inches.

(c) Write down the cost of the television the Smiths can buy.

£.....

(1)

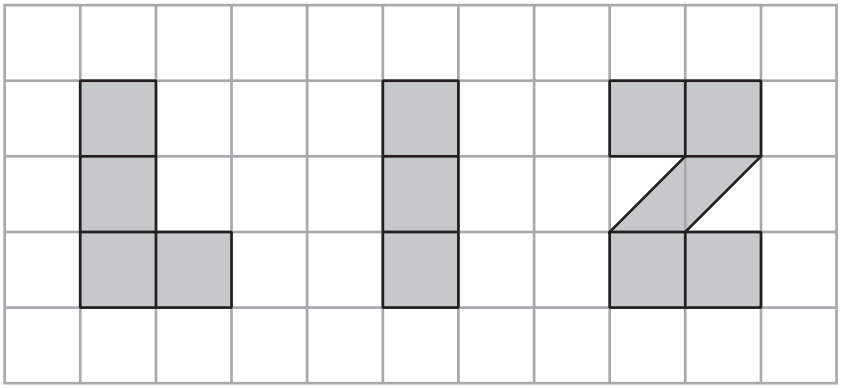
(Total for Question 8 is 3 marks)

STEMUP.CO.UK

***9** Alice makes enamel letters to sell.

Liz wants to buy the enamel letters that spell her name.

Here are the three letters drawn on a grid of centimetre squares.



Alice offers two deals for paying for letters.

Deal 1 – pay £5 for each square centimetre of each letter.

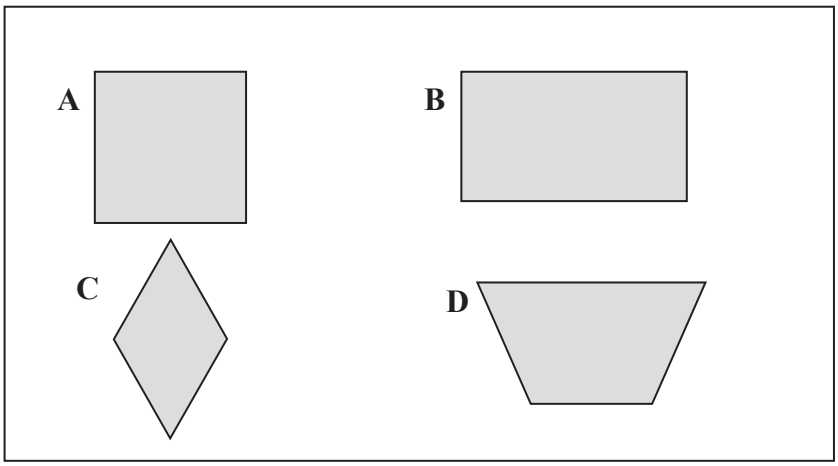
Deal 2 – pay £10, then pay £3.50 for each square centimetre of each letter.

Liz wants to pay the least amount of money.

Which deal should she choose?
You must show how you got your answer.

(Total for Question 9 is 5 marks)

10 Here is a diagram of part of a toy for sorting shapes.



Here are the names of some quadrilaterals.

trapezium square parallelogram rhombus kite rectangle

Write the name of the correct quadrilateral next to the letter of the shape.

A .....

B .....

C .....

D .....

(Total for Question 10 is 2 marks)

STEMUP.CO.UK

***11** Araminta works as a sales representative for a company.

She has to drive to shops to show the products the company makes.

The table gives information about how far she drives each day one week on company business.

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Miles	38	86	0	45	120

The company pays Araminta these expenses for each day she drives on company business.

40p for each mile
£7.50 for lunch on each day she drives

The company pays Araminta expenses of £150 for that week.

Has the company paid her enough money?
You must show how you got your answer.

(Total for Question 11 is 5 marks)

12 Robin is going to make a nest box for birds in his garden.



nest box

Here is a sketch of the front of the nest box.

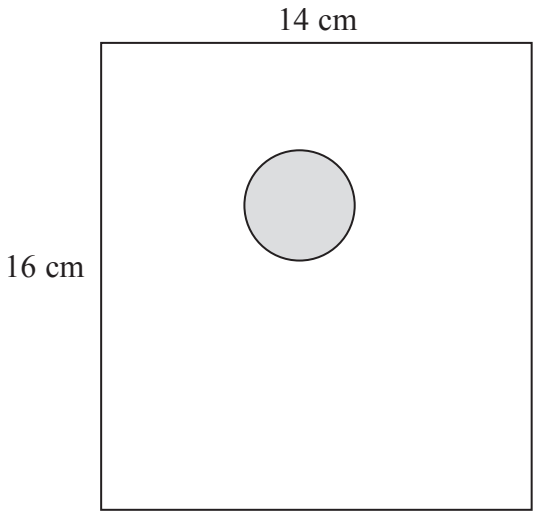


Diagram **NOT** accurately drawn

The front of the nest box is a piece of wood in the shape of a rectangle with a circular hole in it.

An accurate full size drawing of the rectangle is shown on the page opposite.

The diameter of the circular hole is 4 cm.
P is the centre of the circular hole.
M is the midpoint of the top edge of the piece of wood.

(a) Measure the distance *PM*.

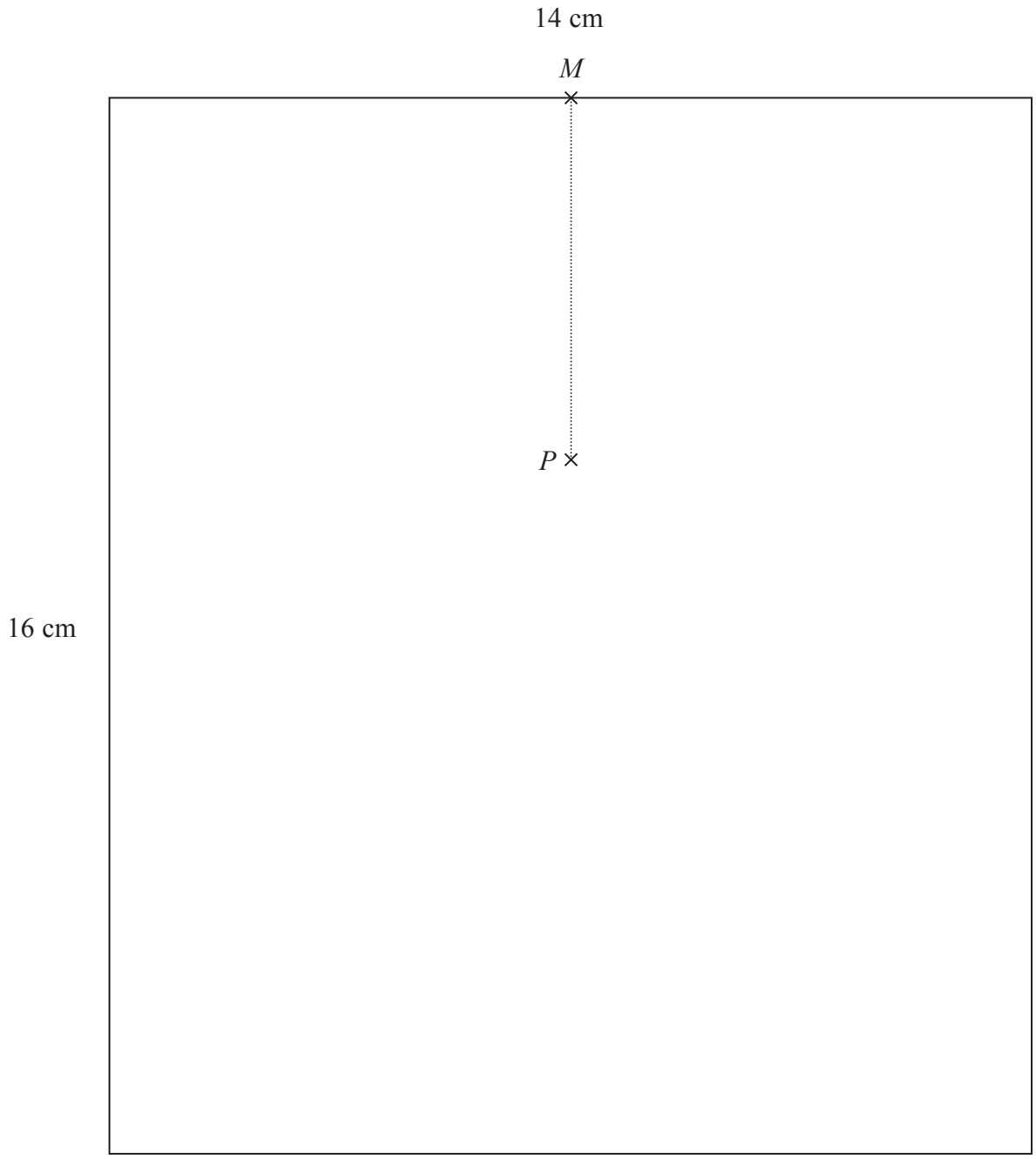
..... cm

(1)

(b) On the diagram opposite, draw a circle centre *P* with a diameter of 4 cm.

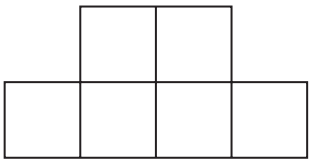
(2)

STEMUP.CO.UK



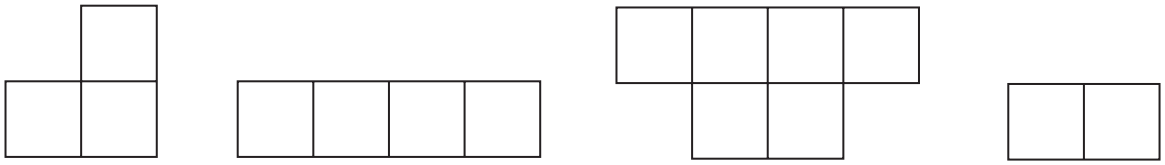
(Total for Question 12 is 3 marks)

13 Cassie is making shapes out of paper.



She folds this paper shape through 180° along its line of symmetry.

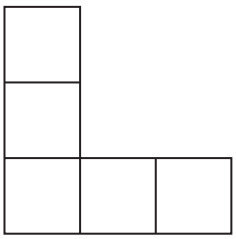
(a) Put a circle around the letter of the shape she could make.



A **B** **C** **D**

(1)

Cassie also has this shape made of paper.



She folds this paper shape through 180° along its line of symmetry.

(b) Draw the shape that she could make.

(2)

(Total for Question 13 is 3 marks)

STEMUP.CO.UK

14 The full price of a ticket for a football match is £24

Disabled people pay 50% of the full price.

(a) Work out 50% of £24

£ .....

(1)

There were 8768 people at the football match.

(b) Write 8768 correct to the nearest 100

.....

(1)

750 people at the match were senior citizens.
There were 3 times as many children at the match as senior citizens.

(c) Work out how many of the 8768 people were **not** children or senior citizens.

.....

(3)

(Total for Question 14 is 5 marks)

15 Here is a diagram of Gareth's lawn.

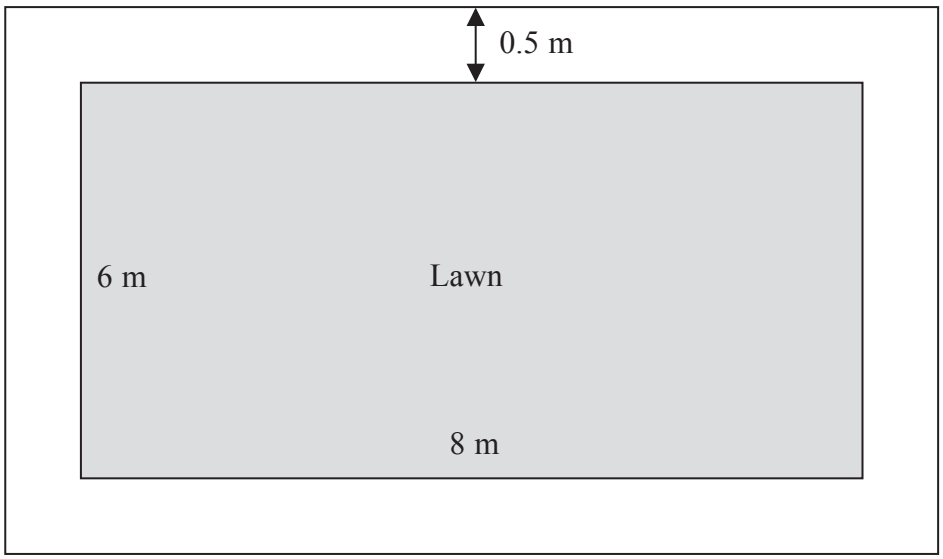


Diagram **NOT** accurately drawn

The lawn is in the shape of a rectangle.
The length of the lawn is 8 m.
The width of the lawn is 6 m.

There is a path all the way around the lawn.
The path is made from paving slabs.
Each paving slab is a square 0.5 m by 0.5 m.
The width of the path is 0.5 m.

Work out the number of paving slabs in the path.

.....

(Total for Question 15 is 3 marks)

STEMUP.CO.UK

16 Ben programs his computer to make music.

He programs his computer

to 'beep' every 2 seconds,
to 'thud' every 3 seconds.

The music lasts for 20 seconds.

At the start of the music a 'beep' and a 'thud' sound together.

(a) After how many seconds will a 'beep' and a 'thud' next sound together?

..... seconds

(1)

(b) How many times will there be a 'beep' in the 20 seconds?

.....

(1)

(c) After how many seconds will a 'beep' and a 'thud' sound together for the last time in the 20 seconds?

..... seconds

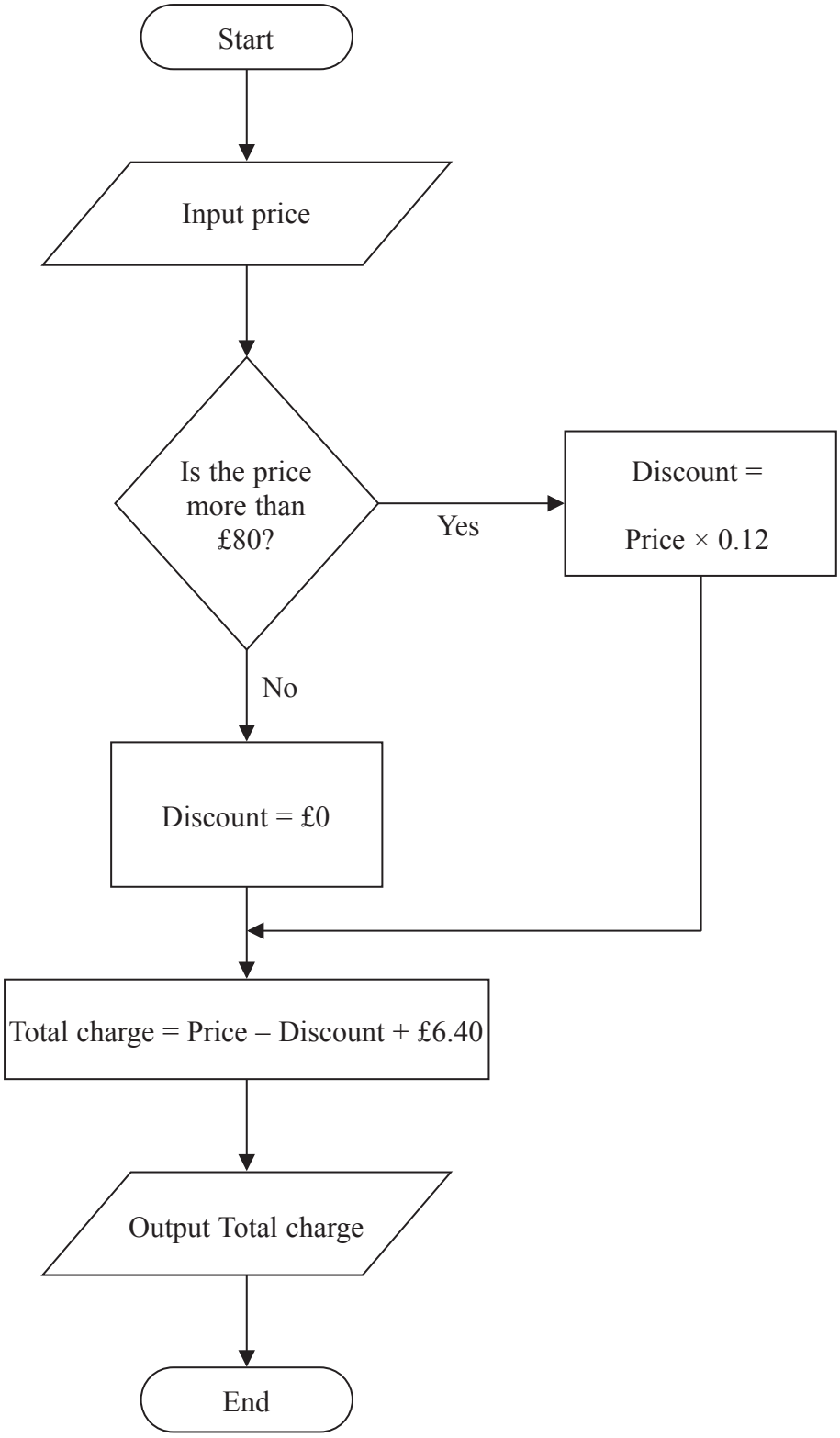
(2)

(Total for Question 16 is 4 marks)

17 Salma sells dresses online.

She gives a discount for dresses with a price of more than £80
She charges £6.40 for postage.

Salma uses this flow chart to work out the total charge to customers.



STEMUP.CO.UK

The price of a dress is £100

(a) Work out how much Salma will charge for the dress.

£.....

(2)

Soo Min paid £45.60

(b) What was the price of the dress?

£.....

(1)

Salma is going to change how she works out the total charge.

She is going to give a discount when the price of a dress is more than £70

(c) In the space below, show the part of the flow chart she needs to change **and** show the change she needs to make.

(2)

(Total for Question 17 is 5 marks)

18 The cost of living index has increased by 30% from the year 2004 to the year 2014

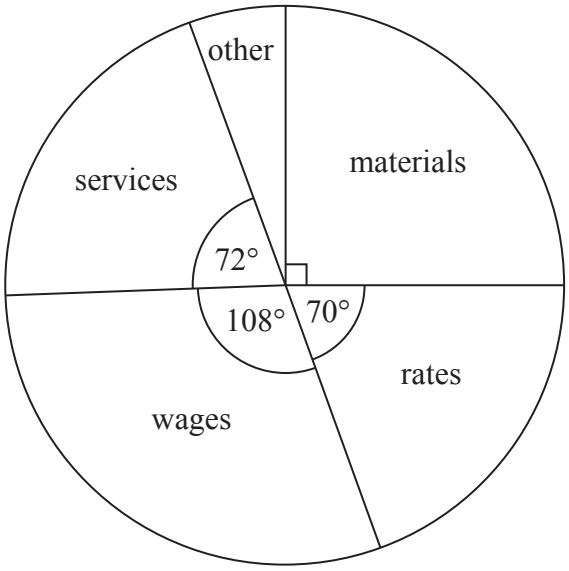
In 2004, Shola's wage was £340 a week.
In 2014, his wage was £450 a week.

Show that Shola's wage has increased by more than the increase in the cost of living index.

(Total for Question 18 is 3 marks)

STEMUP.CO.UK

19 The pie chart gives information about the running costs of a water company for one year.



(a) What did the water company spend most on?

.....

(1)

(b) What fraction of the total running costs did the water company spend on services?
Give your answer in its simplest form.

.....

(2)

The water company spent £18 million on materials.

(c) Work out the total amount it spent on running costs.

£ ..... million

(2)

(Total for Question 19 is 5 marks)

20 Scotland has an area of 30 000 square miles.

$\frac{1}{6}$ of the area is woodland.

$\frac{3}{4}$ of the area of woodland is covered with pine trees.

Work out the area of woodland covered with pine trees.

.....square miles

(Total for Question 20 is 3 marks)

STEMUP.CO.UK

21 Tyler has £x

Kayla has twice as much money as Tyler.

Lauren has £4 more than Kayla.

(a) Write an expression, in terms of x, for the total amount of money they have in pounds. Give your answer in its simplest form.

.....

(2)

Kayla has £12

(b) Work out the total amount of money they have.

£.....

(3)

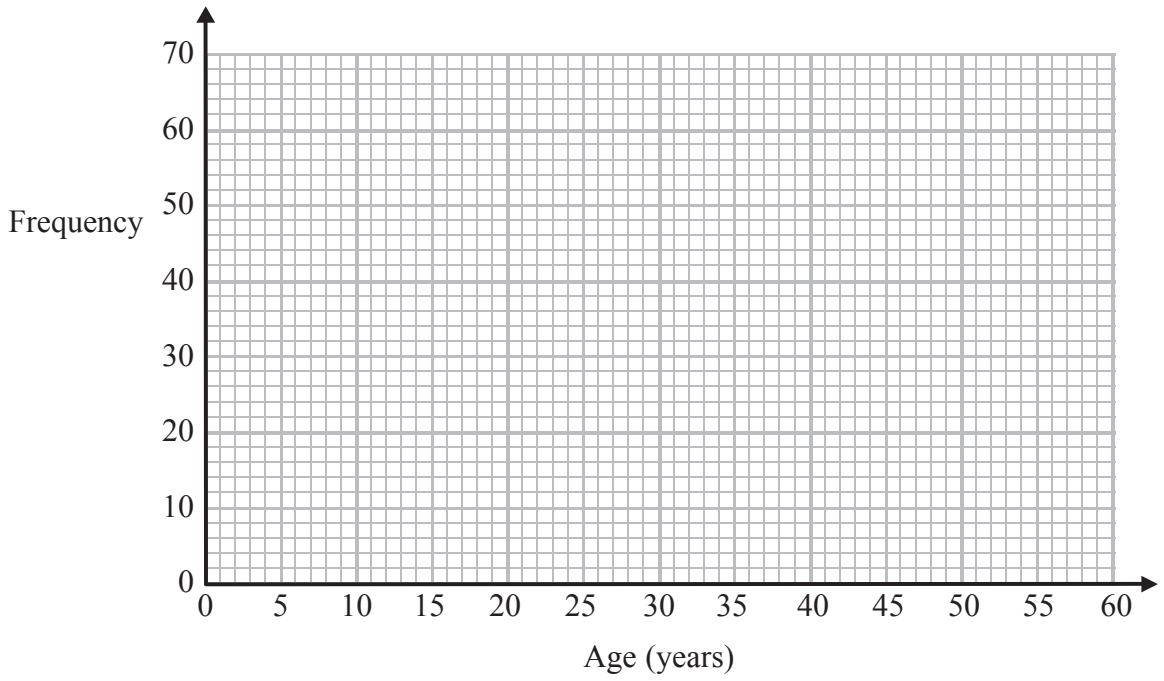
(Total for Question 21 is 5 marks)

22 The table gives information about 177 men in a town.

It shows their ages when they first got married.

Age (years)	Frequency
Under 20	0
20 – 24	19
25 – 29	60
30 – 34	52
35 – 39	27
40 – 44	12
45 – 49	5
50 – 54	2
Over 54	0

(a) Draw a frequency polygon to show this information.



(2)

(b) Find the class interval that contains the median.

.....

(1)

STEMUP.CO.UK

The table gives information about the ages of people in the town when they first got married.

	Years		Years
Age of youngest woman	18	Age of youngest man	20
Age of oldest woman	54	Age of oldest man	52

The median of the ages of the women when they first got married was 28.5 years.

*(c) Compare the distribution of the ages of the women when they first got married and the distribution of the ages of the men when they first got married.

.....

.....

.....

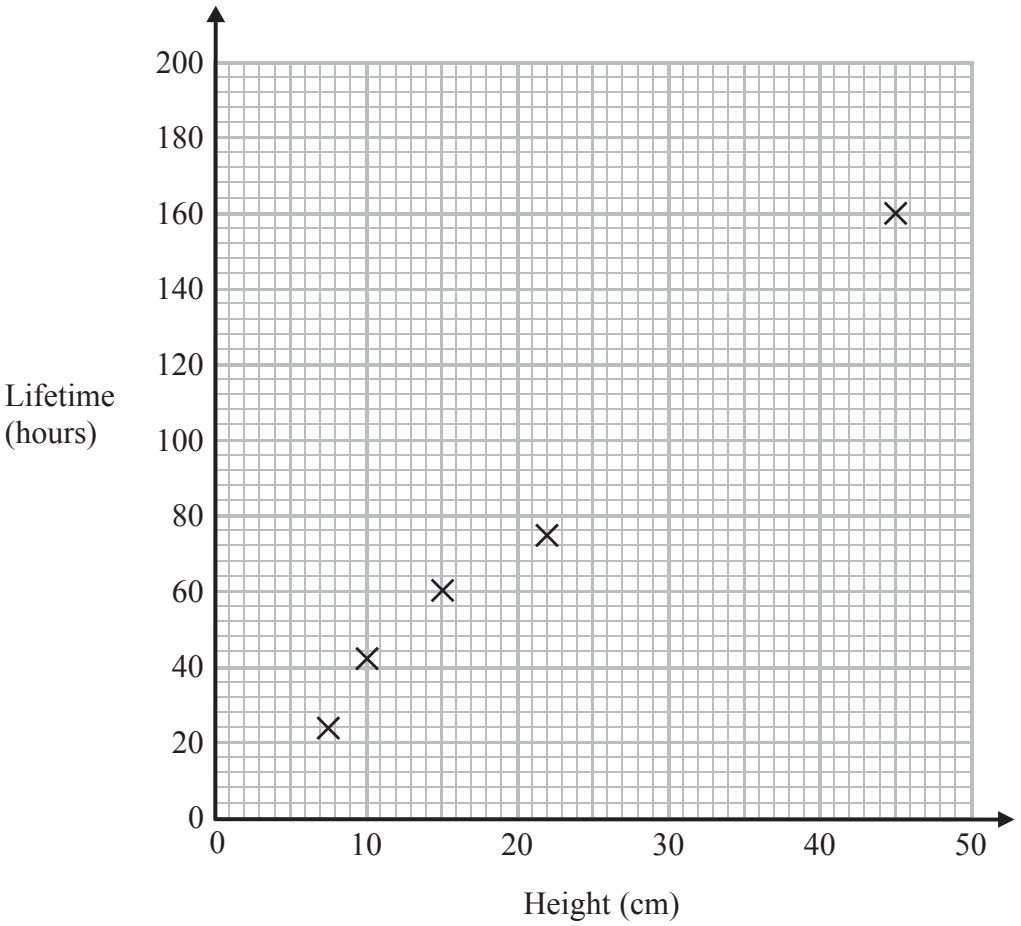
.....

(2)

(Total for Question 22 is 5 marks)

23 A company sells two types of candles, standard candles and super candles.

The scatter graph gives information about the lifetime (hours) of some standard candles of different heights (cm).



Sam burns a standard candle with a height of 30 cm.
It has a lifetime of 115 hours.

(a) Show this information on the scatter diagram.

(1)

(b) Draw a line of best fit on the diagram.

(1)

A standard candle has a height of 35 cm.

(c) Find an estimate for the lifetime of this candle.

..... hours

(1)

STEMUP.CO.UK

The lifetime of a super candle is 4 times the lifetime of a standard candle of the same height.

The lifetime of one of these super candles is 200 hours.

(d) Find an estimate for the height of this super candle.

..... cm

(2)

(Total for Question 23 is 5 marks)

24 Nimer sells security equipment to schools.

He is paid a basic wage.
He is also paid commission on his sales.

Nimer's boss uses this equation to work out Nimer's total pay.

$$y = 0.3x + 240$$

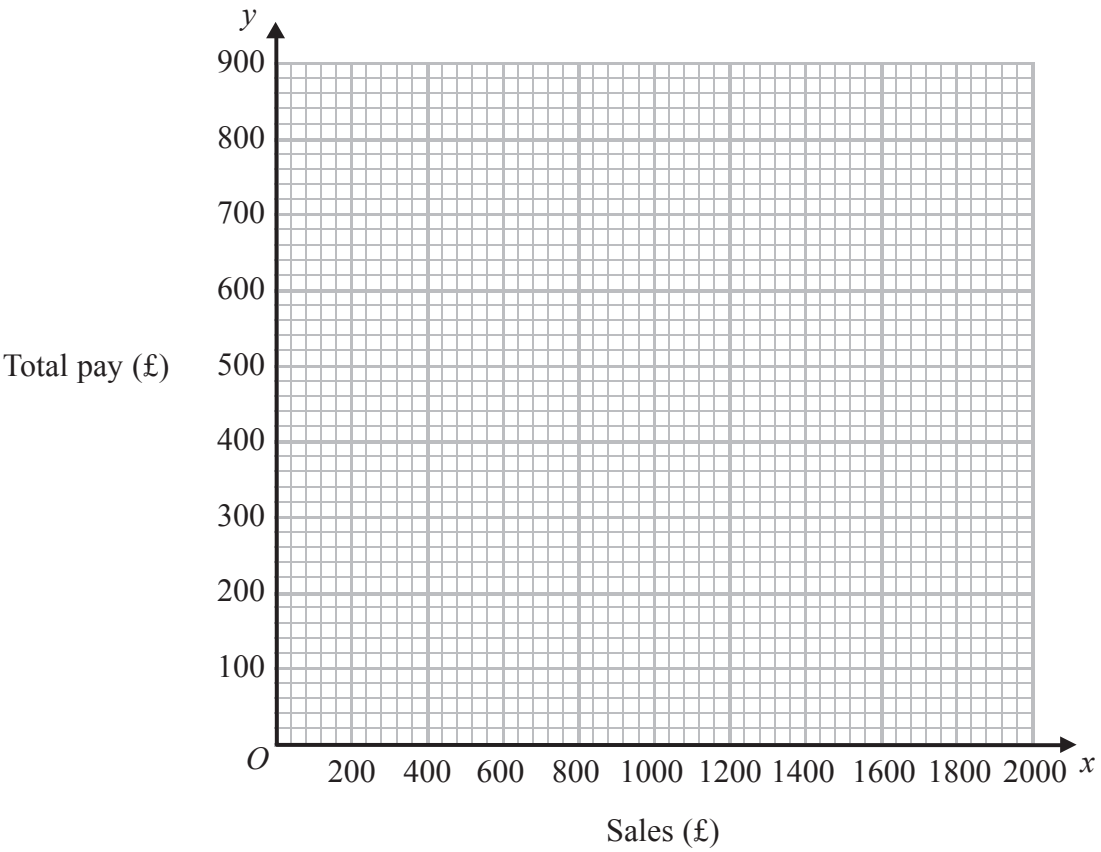
where £x is the sales
£y is the total pay

(a) Complete the table.

x	0	400	800	1200	1600
y		360		600	

(2)

(b) On the grid, draw a graph to show how Nimer's total pay depends on his sales.



(2)

(Total for Question 24 is 4 marks)

STEMUP.CO.UK

***25** The diagram represents the floor of a village hall.

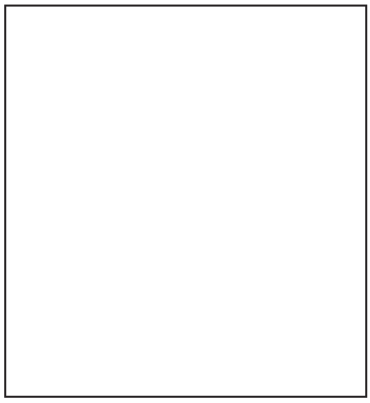


Diagram **NOT** accurately drawn

The floor is in the shape of a rectangle.
The width is 10 m.
The length is 15 m.

The floor is going to be waxed.

1 litre of wax will cover 20 m^2 of floor.
The wax is sold in pots of 2 litres.
The cost of a pot of wax is £32.40

All the wax has to be bought.
Work out the total cost of the pots of wax that have to be bought.
You must show how you got your answer.

(Total for Question 25 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

STEMUP.CO.UK

BLANK PAGE

edexcel

Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
Linked Pair Pilot in Mathematics
Application of Mathematics (2AM01)
Foundation Paper 1F

ALWAYS LEARNING
PEARSON
STEMUP.CO.UK

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2014
Publications Code UG037951
All the material in this publication is copyright
© Pearson Education Ltd 2014

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where QWC is being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

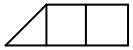
PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		25th May, pitch hire, 51.50	2	B2 for 25th May, pitch hire and 51.50 in correct cells. (B1 for 1 or 2 of these in correct cells)
	(b)		142, 90.50	2	B1 142 B1 90.5(0) ft
2			£1 + 10p	2	M1 for a list of coins with a total of 110p A1 cao
3	(a)		14	1	B1 cao
	(b)		11L	1	B1 cao
	(c)	14 + 12 + 7 + 4 = 37 12 + 8 + 7 + 3 = 30 30 + 37 OR 14 + 12 = 26 12 + 8 = 20 7 + 7 = 14 4 + 3 = 7 26 + 20 + 14 + 7	67	2	M1 14 + 12 + 7 + 4 (= 37) or 12 + 8 + 7 + 3 (= 30) A1 cao OR M1 for at least two of 14 + 12 (= 26) or 12 + 8 (= 20) or 7 + 7 (= 14) or 4 + 3 (= 7) A1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		25	1	B1 25 or 25.0
	(b)		3.5	1	B1 3.5 cao
	(c)	20 + 20 = 40 2.2 × 40 OR 2.2 × 20 = 44 44 + 44	88	3	M1 20 + 20 (= 40) M1 2.2 × '40' A1 cao OR M1 2.2 × 20 (= 44) M1 '44' + '44' A1 cao
5	(a)		90	1	B1 cao
	(b)		4	1	B1 cao
	(c)		Cs correctly placed	1	B1 for identifying two congruent shapes
6	(a)		(2, 6)	1	B1 cao
	(b)		× plotted at (5, 7)	1	B1cao
	(c)	*M* plotted at correct place OR $\frac{1+7}{2}, \frac{1+4}{2}$	(4, 2.5)	2	M1 midpoint identified correctly on diagram A1 (4, 2.5) OR M1 (1 + 7)/2 or (1 + 4)/2, can be implied by correct *x* coordinate or correct *y* coordinate A1 (4, 2.5)

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
7	(a)		10 45	1	B1 10 45 or quarter to eleven or 22 45. Allow variants with notation such as 10:45, 10.45
	(b)		19 20	1	B1 cao
	(c)	$\frac{3}{4}$ hour = 45 min 15 + 45 + 25 = 85 min 3 45 + 1 25 or 3:45 →4:00→4:45→5:10	5 10	3	B1 $\frac{3}{4}$ hour = 45 min M1 15 + 25 + '45' A1 5 10 Allow variants with notation such as 5.10, 5:10
8	(a)		22	1	B1 cao
	(b)		Lichee	1	B1 cao
	(c)		480	1	B1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*9		Deal 1 4 + 3 + 5 = 12 12 × 5 = 60 Deal 2 4 + 3 + 5 = 12 12 × 3.50 + 10 = 52 OR Deal 2 4 + 3 + 5 = 12 12 × 3.50 + 10 = 52 52 ÷ 12 = 4.33.... OR difference between deal 1 and deal 2 per cm^2 is £5 – £3.50 = £1.50 4 + 3 + 5 = 12 12 × £1.50 = £18	Deal 2 with reasons	5	M1 for adding the 3 areas (= 12) M1 for '12' × 5 M1 for '12' × 3.50 + 10 A1 (£)60 and (£)52 C1 (dep on at least M1) ft choice consistent with total costs OR M1 for adding the 3 areas (= 12) M1 for '12' × 3.50 + 10 M1 for '52' ÷ 12 A1 for (£)4.33.. C1(dep on at least M1) ft choice consistent with cost per cm^2 using deal 2 OR M1 for adding the 3 areas (= 12) M1 for 5 – 3.50 M1 12 × '1.50' A1 for (£)18 C1(dep on at least M1) ft choice consistent with cost of '£18' compared to £10

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10			A square B rectangle C rhombus or kite or parallelogram D trapezium	2	B2 all correct (B1 2 or 3 correct)
*11		38 + 86 + 0 + 45 + 120 = 289 289 × 40p = 11560p 4 × £7.50 = £30 115.60 + 30 OR 38 × 40p = 1520p 86 × 40p = 3440p 45 × 40p = 1800p 120 × 40p= 4800p Mon 15.20 + 7.50 = 22.70 Tues 34.40 + 7.50 = 41.90 Wed 00.00 Thurs 18.00 + 7.50 = 25.50 Fri 48.00 +7.50 = 55.50 22.70 + 41.90 + 25.50 +55.50	Yes and 145.60	5	M1 38 + 86 + (0) + 45 + 120 (= 289) M1 '289' × 40 (= 11560) M1 for 4 × 7.5(0) (= 30) A1 145.6(0) C1 (dep on at least M1) for decision ft candidate's answer OR M1 38 × 40 (= 1520) or 86 × 40 (= 3440) or 45 × 40 (= 1800) or 120 × 40 (= 4800) M1 '1520' + '3440' + '1800' + '4800' (= 11560) M1 for 4 × 7.5(0) (= 30) A1 145.6(0) C1 (dep on at least M1) for decision ft candidate's answer NB calculations can be in £ or pence

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		5.5	1	B1 for answer in range 5.3 to 5.7
	(b)			2	B2 for circle, centre *P* and radius 2 cm (B1 for circle, centre *P* or radius 2 cm)
13	(a)		A	1	B1 cao
	(b)			2	M1 line of symmetry identified A1 correct shape
14	(a)		12	1	B1 for 12(.00)
	(b)		8800	1	B1 cao
	(c)	3 × 750 = 2250 8768 – 2250 – 750	5768	3	M1 3 × 750 (= 2250) or 4 × 750 (= 3000) M1 8768 – '2250' – 750 or 8768 – '3000' A1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15		9 + 6 + 9 + 6 = 30 30 ÷ 0.5 OR 9 ÷ 0.5 = 18, 6 ÷ 0.5 = 12 18 + 12 +18 + 12 OR 8 ÷ 0.5 = 16, 6 ÷ 0.5 = 12 16 + 12 +16 + 12 + 4 OR 9 × 7 – 6 × 8 = 15 0.5 × 0.5 = 0.25 15 ÷ 0.25	60	3	M1 9 + 6 + 9 + 6 or 8 + 7 + 8 + 7 (= 30) M1 '30'÷ 0.5 A1 cao OR M1 9 ÷ 0.5 (= 18) and 6 ÷0.5(= 12) M1 '18' + '12' + '18' + '12' A1 cao OR M1 8 ÷ 0.5 (= 16) and 6 ÷ 0.5 (= 12) M1 '16' + '12' +'16' + '12' + 4 A1 cao OR M1 for 9 × 7 – 6 × 8 (= 15) M1 for '15' ÷ '0.5^2' A1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)		6	1	B1 cao
	(b)		11	1	B1 cao
	(c)	20 ÷ 6 = 3 OR 6, 12, 18, ...	18	2	M1 20 ÷ 6 A1 cao OR M1 6, 12, 18, ... or listing multiples of 2 and multiples of 3 or marking ‘beeps’ and ‘thuds’ on a time line A1 cao
17	(a)	100 × 0.12 = 12 100 – 12 + 6.40	94.40	2	M1 100 × 0.12 (=12) A1 94.4(0)
	(b)	45.60 – 6.40	39.20	1	B1 cao
	(c)		New decision box with 80 replaced by 70	2	B1 new decision box with correct shape B1 80 replaced by 70

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
18		$\frac{130}{100} \times 340 = 442$ OR $\frac{30}{100} \times 340 = 102$ 340 + 102 = 442 OR $\frac{30}{100} \times 340 = 102$ 450 – 102 = 348	£442 or 32.35% or 348	3	M1 for $\frac{100+30}{100}$ oe M1 for $\frac{130}{100} \times 340$ oe (= 442) A1 442 OR M1 $\frac{30}{100} \times 340$ (= 102) oe M1(dep) 340 + 102 (= 442) A1 442 OR M1 $\frac{30}{100} \times 340$ (= 102) oe M1 (dep) 450 – 102 (= 348) or 450 – 340 (= 110) A1 348 **or** 102 and 110 **Alternative method** M1 $\frac{450}{340}$ or $\frac{110}{340}$ M1 $\frac{450}{340} \times 100$ (= 132.35) or $\frac{110}{340} \times 100$ (= 32.35) A1 32(.35)

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		Wages	1	B1 cao
	(b)	$\frac{72}{360}$	$\frac{1}{5}$	2	B2 $\frac{1}{5}$ (B1 $\frac{72}{360}$ oe)
	(c)	18×4	72	2	M1 18 (million) × 4 or a complete method A1 72 (million) oe
20		$30\,000 \div 6 = 5000$ $5000 \div 4 \times 3 =$ OR $\frac{1}{6} \times \frac{3}{4} = \frac{1}{8}$ $30\,000 \div 8$	3750	3	M1 for $30\,000 \div 6$ (=5000) M1 for '5000' ÷ 4 × 3 oe A1 cao OR M1 $\frac{1}{6} \times \frac{3}{4}\left(= \frac{1}{8}\right)$ M1 for $30\,000 \div 8$ oe A1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)	$x + 2x + 2x + 4$	$5x + 4$	2	M1 for at least 2 terms out of x, $2x$, $2x$ +4 added A1 for $5x + 4$ SC B1 for answer of $2x + 4$ if M0 scored
	(b)	$x = 6$ $5x + 4 = 5 \times 6 + 4$ OR $6 + 12 + 12 + 4$	34	3	B1 $x = 6$ M1 ft on (a) for substituting 6 into their expression(s) A1 cao OR B1 for 6 M1 for $6 + 12 + 12 + 4$ A1 cao
22	(a)		Frequency polygon	2	B2 Complete polygon (ignore histograms and any lines below an age of 20 or above an age of 54), but only award B1 if there is a line joining the first to the last point. (B1 One vertical or horizontal plotting error **OR** incorrect but consistent error in placing the midpoints horizontally **OR** correct plotting but not joined or joined with a curve).
	(b)		30 - 34	1	B1 30 - 34
	*(c)		2 correct comments	2	C1ft on average the women are younger C1 the range of the women ages is larger
23	(a)		Correct point plotted	1	B1 cao
	(b)		LOBF drawn	1	B1 line of best fit drawn
	(c)		answer in range 120 – 140	1	B1 answer in range 120 – 140
	(d)	$200 \div 4 = 50$	answer in range 10 – 15	2	M1 $200 \div 4$ (= 50) A1 answer in range 10 – 15

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)	<table><tr><td>0</td><td>400</td><td>800</td><td>1200</td><td>1600</td></tr><tr><td>**240**</td><td>360</td><td>**480**</td><td>600</td><td>**720**</td></tr></table>	240, 480, 720	2	B2 All 3 correct values (B1 1 or 2 correct values)
	(b)		Correct straight line	2	M1 ft for plotting at least 3 of their points A1 correct line from $x = 0$ to $x = 1600$
*25		Area = $15 \times 10 = 150$ 150 ÷ 20 = 7.5 7.5 litres requires 4 pots. 4 × 32.40 OR Area = $15 \times 10 = 150$ 20 × 2 = 40 150 ÷ 40 = 3.75 3.75 pots used requires 4 pots bought 4 × 32.40 OR 1 litre covers a strip 2m wide and 10m long 15 ÷ 2 = 7.5 7.5 litres requires 4 pots. 4 × 32.40	£129.60	5	M1 for 15×10 (= 150) M1 for '150' ÷ 20 M1 for '7.5' ÷ 2 M1 for '4' × 32.40 C1 (dep on M1) £129.60 OR M1 for 15×10 (= 150) M1 for 20 × 2 (= 40) M1 for '150' ÷ '40' M1 for '4' × 32.40 C1 (dep on M1) £129.60 OR M1 for 2m by 10m M1 15 ÷ 2 (= 7.5) M1 for '7.5' ÷ 2 M1 for '4' × 32.40 C1 (dep on M1) £129.60

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5AM1F_01			
Question		**Modification**	**Notes**
Q1		15th May row removed. 8th May row adjusted to £40 and £76	Standard mark scheme
Q2		No pictures – just value of coins given in a row	Standard mark scheme
Q3		3 cm grid with an intermediate line Key put top left Boys - dotty shading. Girls - striped shading	Standard mark scheme
Q4		Just scale given and enlarged	Standard mark scheme
Q5		Diagram × 2	Standard mark scheme
Q6		2 cm grid Crosses changed to filled in circles Right axis labelled	Standard mark scheme
Q7		Diagram ×3	Standard mark scheme
Q8		Remove top two rows from table. Hyphens removed and the word ‘no’ inserted.	Standard mark scheme
Q9		2 cm grid. ‘square centimetre of each letter’ is removed from the text and replaced with ‘square used for each letter’	Standard mark scheme

PAPER: 5AM1F_01			
Question		**Modification**	**Notes**
Q10		Diagram × 2 Shapes labelled ‘shape A’ ‘shape B’ etc. Wording added to text ‘There are four shapes shown in the diagram’	Standard mark scheme
Q11		Table in vertical format	Standard mark scheme
Q12	 (a) (b)	2 Diagrams same page – Diagram (i) and Diagram (ii) Diagram (i) hole moved down ¼ cm. Diagram (ii) P moved down 1cm Text 4 cm changed to 5 cm. Removal of the word ‘nest’ throughout	 B1 for answer in range 6 to 7 B2 for circle, centre *P* and radius 2.5 cm (B1 for circle, centre *P* or radius 2.5 cm)
Q13		Diagrams: 2 cm squares. See screenshot below for changes.	Standard mark scheme
Q15		Diagram × 1 ½	Standard mark scheme
Q16		Information in Diagram Book	Standard mark scheme
Q17c		“In the space below, or on the diagram…”	Standard mark scheme
Q19		Pie chart: ×2	Standard mark scheme

PAPER: 5AM1F_01			
Question		**Modification**	**Notes**
Q19		Pie chart: ×2	Standard mark scheme
Q22		Table – some frequencies changed. 0, 20, 60, 55, 25, 10, 5, 2, 0 Graph – both axes 1 ½ cm for 5. Difficulty with accuracy for midpoints Q version *x* axis labelled only in 10's due to space constraints	Standard mark scheme
Q23		Scatter graph – *x* axis 3 cm for 10 with an intermediate line, *y* axis 3cm for 20 with an intermediate line	Standard mark scheme
Q24		*x* axis 1 ½ cm for 200, *y* axis 3cm for 100 with an intermediate line	Standard mark scheme
Q25		Diagram × 1 ½ size	Standard mark scheme

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Write your name here

Surname	Other names

Pearson Edexcel GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Applications of Mathematics

Unit 1: Applications 1

For Approved Pilot Centres ONLY

Foundation Tier

Wednesday 6 November 2013 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM1F/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P43601RA

©2013 Pearson Education Ltd.

6/5/5/5/5/2/

P 4 3 6 0 1 R A 0 1 2 8

PEARSON

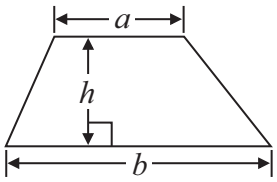
STEMUP.CO.UK

GCSE Mathematics 2AM01

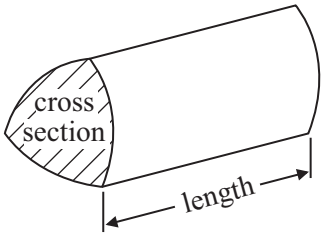
Formulae: Foundation Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section × length



STEMUP.CO.UK

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 (a) Write down a sensible **metric** unit for measuring

(i) the weight of a bag of potatoes,

.....

(ii) the distance from London to New York,

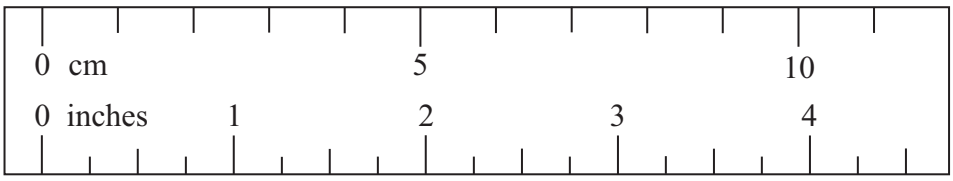
.....

(iii) the volume of water in a fish tank.

.....

(3)

Here is part of a ruler.



(b) Use the ruler to find an estimate for

(i) 4 inches in cm,

..... cm

(ii) 7 cm in inches.

..... inches

(2)

(Total for Question 1 is 5 marks)

2 Here is a sketch of the floor of a room.

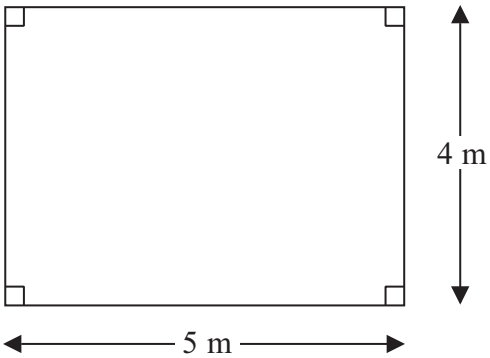


Diagram **NOT** accurately drawn

(a) Work out the perimeter of the floor.

..... m

(1)

(b) Work out the area of the floor.

..... m^2

(2)

Jemma wants to cover the floor with carpet tiles.
She needs 80 carpet tiles to cover the floor.

Carpet tiles are sold in boxes.
There are 12 carpet tiles in each box.

(c) How many boxes of carpet tiles does Jemma need to buy?

..... boxes

(2)

(Total for Question 2 is 5 marks)

STEMUP.CO.UK

3 The table gives information about the lengths of some rivers.

River	Length (in kilometres)
Amazon	6437
Mississippi	6275
Congo	4667
Rio Grande	1438

(a) Write the length of the Mississippi to the nearest hundred kilometres.

..... kilometres

(1)

(b) Write the length of the Amazon to the nearest thousand kilometres.

..... kilometres

(1)

*(c) A television newsreader says,

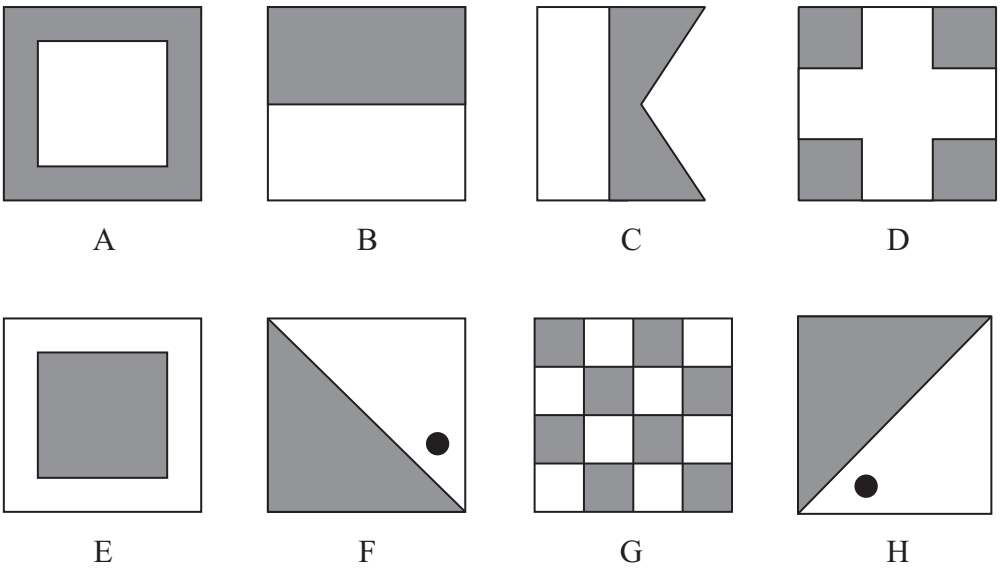
"The length of the Congo is more than three times the length of the Rio Grande".

Is he right?
You must show all your working.

(3)

(Total for Question 3 is 5 marks)

4 Here are some flags.



Two of these flags have exactly one line of symmetry.

(a) Write down the letters of these two flags.

..... and .....

(2)

(b) Write down the order of rotational symmetry of flag D.

.....

(1)

Two of these flags are congruent.

(c) Write down the letters of these two flags.

..... and .....

(1)

(Total for Question 4 is 4 marks)

STEMUP.CO.UK

5 Quadi buys sandwiches to sell in his shop.

The table gives information about the number of sandwiches he buys and the number of sandwiches he sells on Monday, on Tuesday and on Wednesday.

	Number of sandwiches he buys	Number of sandwiches he sells
Monday	20	15
Tuesday	18	10
Wednesday	15	12

Quadi does **not** sell all the sandwiches he buys on these 3 days.

Work out the total number of sandwiches he does **not** sell.

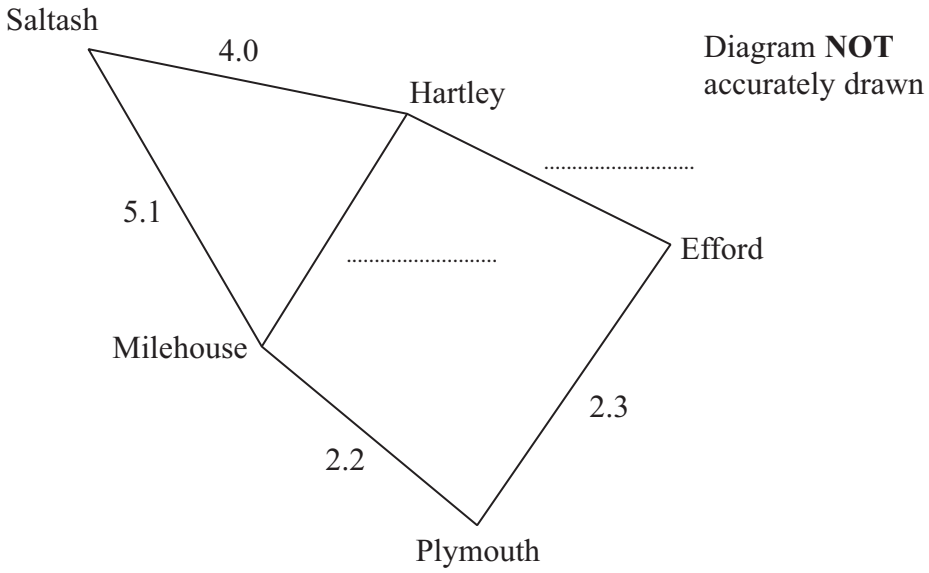
..... sandwiches

(Total for Question 5 is 3 marks)

6 The table shows the shortest distances by road, in miles, between five places.

Saltash				
4.0	Hartley			
	2.0	Efford		
5.1	1.6		Milehouse	
		2.3	2.2	Plymouth

The diagram shows some of the information in the table.



(a) Use the information in the table to complete the diagram.

(2)

STEMUP.CO.UK

David drives a school bus.
He starts his journey in Plymouth.
He collects children from Milehouse, Saltash and Hartley.
He finishes his journey in Plymouth.

David wants to drive the route with the shortest total distance.

(b) (i) Find the route with the shortest total distance.

.....

.....

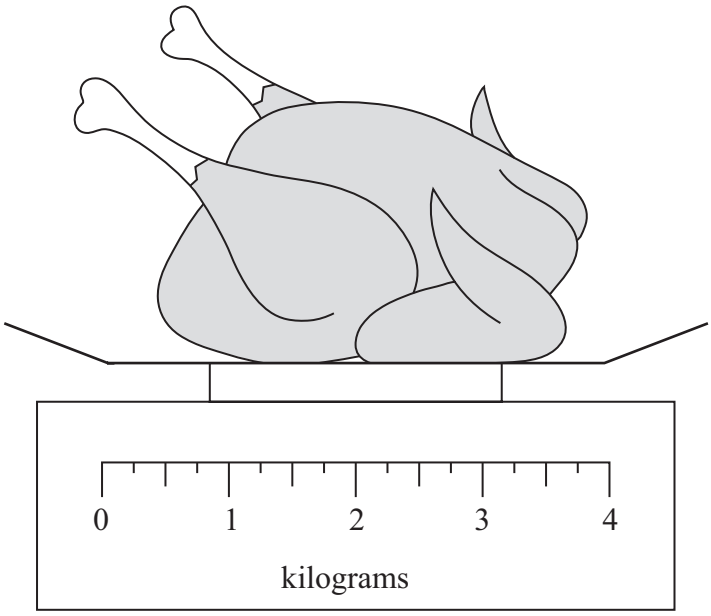
(ii) Work out the total distance of this route.

..... miles

(4)

(Total for Question 6 is 6 marks)

7 Here is a chicken on some scales.



The chicken weighs 2.5 kilograms.

(a) (i) On the scales mark, with an arrow (↑), a weight of 2.5 kilograms.

(ii) Change 2.5 kilograms to grams.

..... grams

(2)

Hafiz is going to cook the chicken.
The weight of the chicken is 2.5 kilograms.

The chicken has to be cooked for 20 minutes for each 0.5 kilograms of its weight.
He wants the chicken to finish cooking at 1 pm.

(b) At what time should Hafiz start cooking the chicken?

.....

(3)

(Total for Question 7 is 5 marks)

STEMUP.CO.UK

8 Fiona buys some stamps.

A first class stamp costs 46p.
A second class stamp costs 36p.

Fiona buys 3 first class stamps and 1 second class stamp.

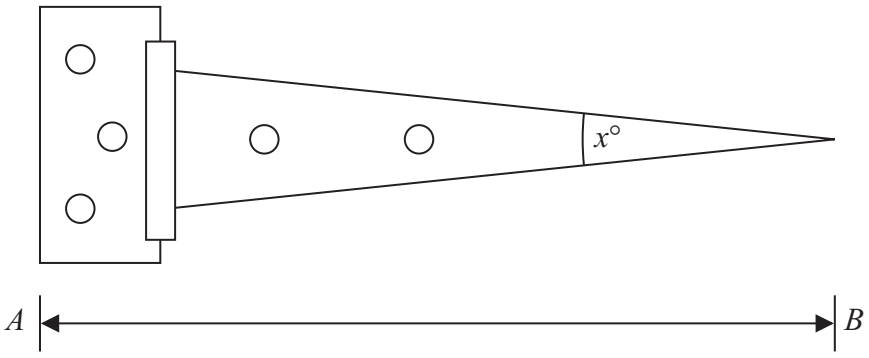
She pays with a £2 coin.

How much change should she get?

.....

(Total for Question 8 is 3 marks)

9 Here is a diagram of a hinge.



(a) Measure the length of the line AB.

..... cm

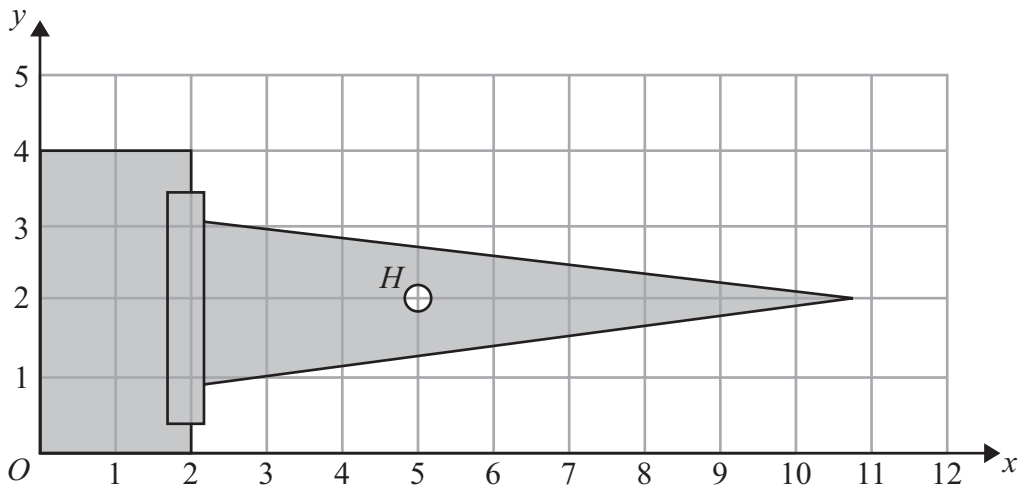
(1)

(b) Measure the size of the angle marked $x°$.

..... °

(1)

A machine drills holes into hinges.
The position of each hole is given as a coordinate.



On the grid, H is the centre of a hole.

(c) Write down the coordinates of the point H.

(..... , ...)

(1)

(Total for Question 9 is 3 marks)

STEMUP.CO.UK

10 The table gives information about some washing machines.

name	load type	maximum load (kg)	spin speed	amount of water used (gallons)
Tanishi	front	5	1600	15
Tomsat	top	5	1500	14.5
Zeedo	top	4.5	1475	14
Azer	top	4.8	1600	14
Frex	front	4.2	1750	12
Wasu	front	5	1500	12

(a) Write down the load type of the Tanishi washing machine.

.....

(1)

One of the washing machines has a maximum load of 4.8 kg.

(b) Write down the spin speed of this washing machine.

.....

(1)

One of the washing machines has the greatest maximum load **and** uses the least amount of water.

(c) Write down the name of this washing machine.

.....

(1)

A Zeedo washing machine costs £300 plus VAT at 20%.

(d) Work out 20% of £300

£.....

(2)

(Total for Question 10 is 5 marks)

STEMUP.CO.UK

11 Here are some temperatures.

5 °C –2 °C 0 °C –7 °C 9 °C

(a) Write down these temperatures in order.
Start with the lowest temperature.

.....

(1)

Some temperatures were recorded on 1st January in Birmingham.

At 9 am the temperature was –1 °C.
At 1 pm the temperature was 4 °C.

(b) Work out the increase in the temperature from 9 am to 1 pm.

..... °C

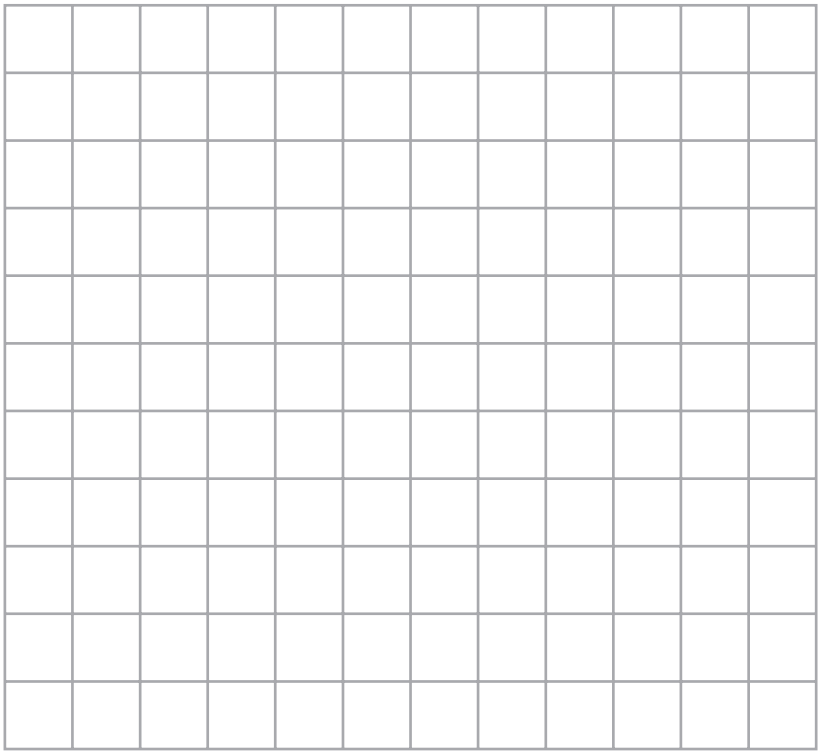
(1)

The table shows some information about the mean maximum temperature and the mean minimum temperature each quarter in Manchester.

temperature (°C)	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec
maximum	8	15	19	10
minimum	6	7	11	4

STEMUP.CO.UK

*(c) Show this information in a suitable chart or diagram.



(4)

(Total for Question 11 is 6 marks)

12 Gary recorded the number of eggs in each of 10 nests.

Here are his results.

1 1 2 2 2 2 3 3 3 4

(a) Write down the mode.

.....

(1)

(b) Work out the mean.

.....

(2)

(c) Which best describes the average numbers of eggs in these nests, the mode or the mean?
Give a reason for your answer.

.....

.....

(1)

(Total for Question 12 is 4 marks)

STEMUP.CO.UK

13 Here is a rectangle.

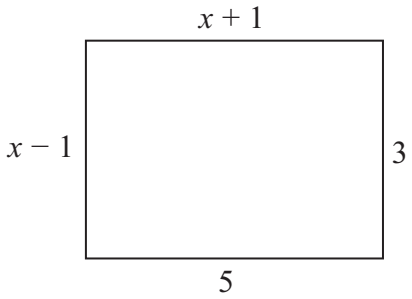


Diagram **NOT** accurately drawn

(a) Find the value of x.

.....

(1)

Here is a triangle.

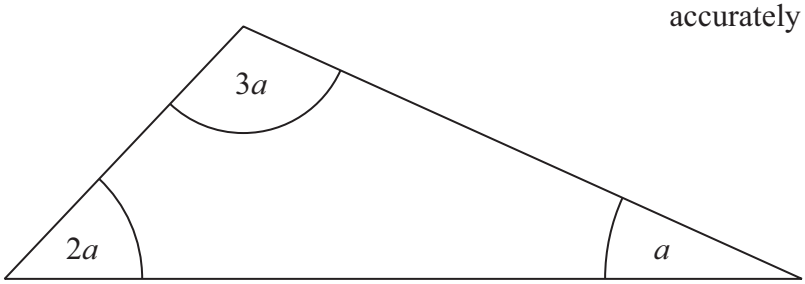


Diagram **NOT** accurately drawn

(b) Find the value of a.

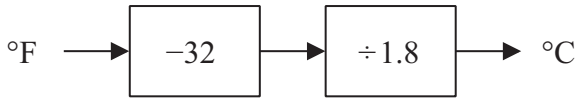
.....°

(2)

(Total for Question 13 is 3 marks)

STEMUP.CO.UK

14 You can use this number machine to change between °F and °C.



A clay pot is baked in an oven.
The temperature in the oven is 2192 °F.

(a) Change 2192 °F to °C.

.....°C
(2)

The temperature in an office must not be less than 16 °C.

(b) Change 16 °C to °F.

.....°F
(3)

(Total for Question 14 is 5 marks)

STEMUP.CO.UK

15

Prices	
tomatoes	£2.80 per kg
mushrooms	£3.60 per kg

Kumar buys some tomatoes and some mushrooms.
The total cost is £7.24

Kumar buys 1.75 kg of tomatoes.

Work out the weight of the mushrooms that he buys.

..... kg

(Total for Question 15 is 4 marks)

16 Kevin asked 50 students if they like football best or rugby best.

15 boys and 12 girls said they like football best.
10 girls said they like rugby best.

Use this information to complete the two-way table.

	football	**rugby**	**total**
boys			
girls			
total			

(Total for Question 16 is 3 marks)

STEMUP.CO.UK

17 Here is a knife.

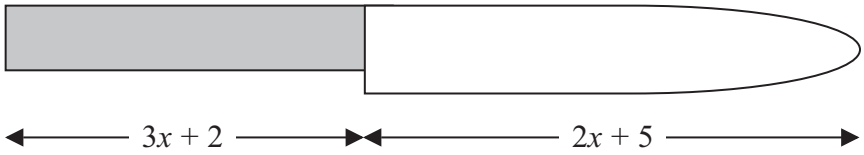


Diagram **NOT** accurately drawn

All measurements are in centimetres.

The length of the handle is $3x + 2$
The length of the blade is $2x + 5$

The total length of the knife is 19 cm.

(i) Show that $5x + 7 = 19$

(ii) Solve $5x + 7 = 19$

$x =$ .....

(Total for Question 17 is 4 marks)

18 Nails of length 35 millimetres are sold in three sizes of packets.

There are 20 nails in a small packet, costing £1.36
There are 50 nails in a medium packet, costing £3.30
There are 90 nails in a large packet, costing £6.03



*(a) Which size of packet is the best value for money?
You must show clearly how you got your answer.

(4)

STEMUP.CO.UK

Nails of different lengths are sold in mixed packets.

Here are the lengths, in millimetres, of the nails in a mixed packet.

20	35	49	30	45
40	50	25	39	30
30	37	47	55	28

(b) Draw an ordered stem and leaf diagram for this information.

(3)

(c) Find the median length.

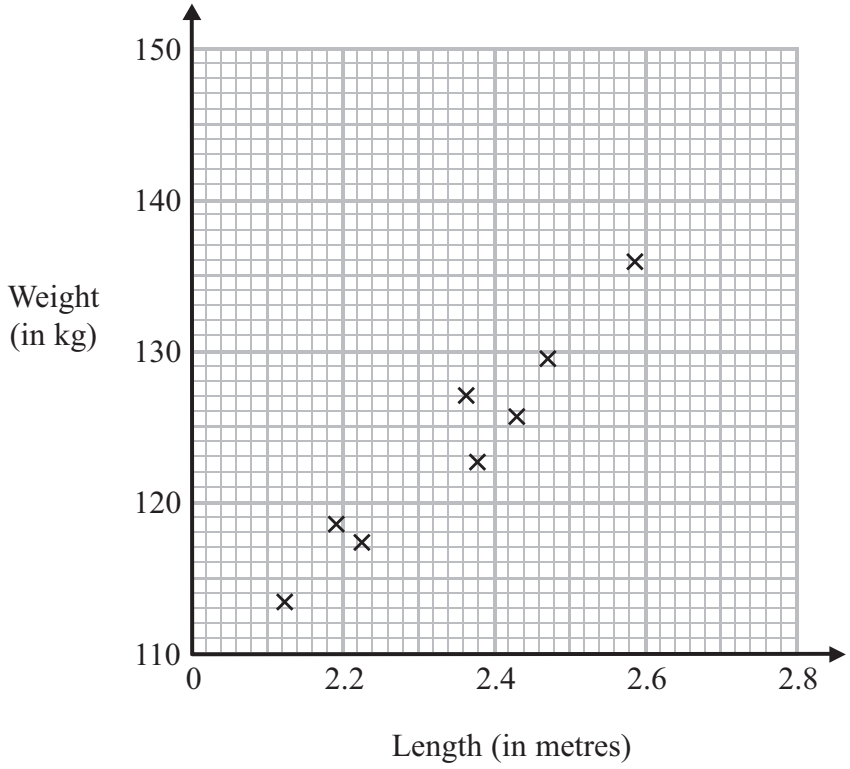
..... mm

(1)

(Total for Question 18 is 8 marks)

19 A scientist recorded the lengths and the weights of 8 dolphins.

The scatter graph shows information about these dolphins.



(a) Describe the relationship between the length and the weight of these dolphins.

.....

(1)

A dolphin has a length of 2.54 metres and a weight of 132 kg.

(b) Show this information on the scatter graph.

(1)

A dolphin has a length of 2.3 metres.

(c) Estimate the weight of this dolphin.

..... kg

(2)

(Total for Question 19 is 4 marks)

STEMUP.CO.UK

20 Kim works for a company.

She is paid 40p per mile for each mile she has to drive.

Here is the spreadsheet Kim uses to calculate how much she will be paid for the distances she drove last week.

	A	B	C	D
1	**day**	**distance (miles)**	**pounds per mile**	**amount paid (£)**
2	Monday	80	0.4	32.00
3	Tuesday		0.4	
4	Wednesday		0.4	
5	Thursday		0.4	
6	Friday		0.4	
7	**total**			

Write down the formula to go

(i) in cell D3

.....

(ii) in cell B7.

.....

(Total for Question 20 is 3 marks)

21 Gary wants to find out which subjects students like best at his school.

Design a suitable table for a data collection sheet he could use.

(Total for Question 21 is 3 marks)

***22** The diagram shows the plan of a floor.

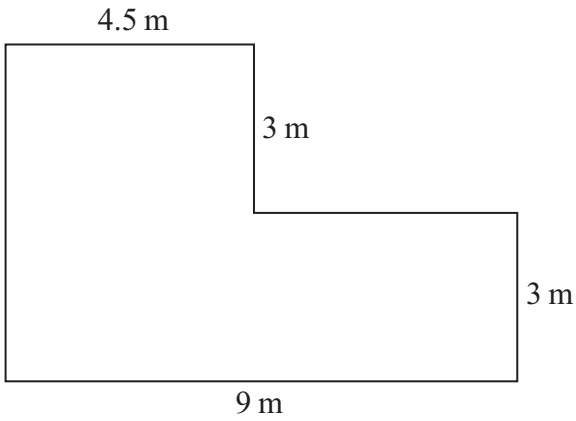


Diagram **NOT** accurately drawn

All the corners of the floor are right angles.

Jason wants to cover the floor completely with underlay.

Underlay is sold in rolls.
Each roll of underlay has a length of 5 m and a width of 1.5 m.
Each roll of underlay costs £59.99

Jason has £400 to spend.

Does Jason have enough money to buy the underlay he needs?

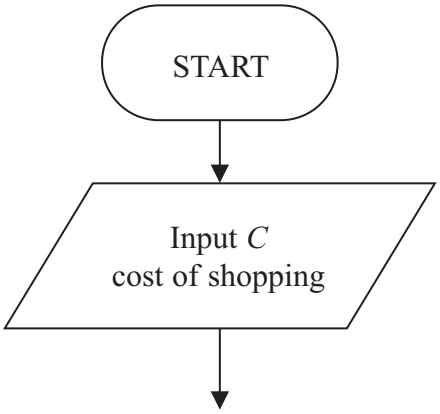
(Total for Question 22 is 4 marks)

STEMUP.CO.UK

23 At Pete's Store you get £8 off the cost of your shopping when the cost of your shopping comes to more than £100

You can use a flow chart to work out the amount a customer pays at Pete's Store.

Complete the flow chart.
You must include an output box.



(Total for Question 23 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

STEMUP.CO.UK

BLANK PAGE

edexcel

Mark Scheme (Results)

November 2013

Pearson Edexcel GCSE
Linked Pair Pilot in Mathematics
Application of Mathematics (2AM01)
Foundation Paper 1F

ALWAYS LEARNING
PEARSON
STEMUP.CO.UK

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2013
Publications Code UG037414
All the material in this publication is copyright
© Pearson Education Ltd 2013

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)(i)		kilogram	1	B1 for kilogram or kg or kilo
	(a)(ii)		kilometre	1	B1 for kilometre or km
	(a)(iii)		litre	1	B1 for litre, l, cm^3, m^3
	(b)(i)		10	2	B1 for 10 – 10.2
	(b)(ii)		2.75		B1 for 2.75 – 2.8 oe
2	(a)		18	1	B1 cao
	(b)		20	2	M1 for 5 × 4 A1 cao
	(c)	80 ÷ 12=6.66	7	2	M1 for 80 ÷ 12 or 7 × 12=84 A1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
3	(a)		6300	1	B1 cao
	(b)		6000	1	B1 cao
	*(c)	3 × 1438=4314 OR 4667 ÷ 3=1555.(6) OR 4667 ÷ 1438=3.2(4)	Yes+ reason	3	M1 for 3 × 1438 A1 for yes and 4314 C1 (dep on M1) for reason, e.g. 4700 > 4314 oe OR M1 for 4667 ÷ 3 A1 for yes and 1555(.6) C1 (dep on M1)for 1555(.6) >.1438 oe OR M1 for 4667 ÷ 1438 A1 for yes and 3.2(4) C1 (dep on M1) for 3.2(4) > 3 oe
4	(a)		B, C	2	B1 for B B1 for C
	(b)		4	1	B1 cao
	(c)		F, H	1	B1 cao
5		20 – 15 = 5 18 – 10 = 8 15 – 12 = 3 5 + 8 + 3 = 16 OR 20 + 18 + 15 = 53 15 + 10 + 12 = 37 53 – 37 = 16	16	3	M1 a correct method to work out all 3 daily differences M1 for adding 3 daily differences A1 cao OR M1 for total bought and for total sold M1 for total bought - total sold A1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		1.6, 2.0	2	B1 for (M-H=)1.6 B1 for (H-E=)2.0
	(b)(i)		P-M-S-H-M-P	4	M1 for a route that starts and finishes at P and goes through at least 2 of M, S and H A1 for P-M-S-H-M-P or P-M-H-S-M-P oe
	(ii)	2.2 + 5.1 + 4.0 + '1.6'+ 2.1	15.1		M1 for adding the distances of a route that starts and finishes at P and goes through M, S and H A1 for 15.1 or ft 13.5 + '1.6' (SC B1 for 15.6)
7	(a)(i)		2.5 marked with arrow	2	B1 for 2.5 marked with arrow
	(a)(ii)		2500		B1 cao
	(b)	2.5 × 40=100, 100 ÷ 60=1h 40min 1(pm) – 1h 40min	11.20(am)	3	M1 for a correct method to find the total cooking time M1 for a correct method to find the start time A1 cao
8		3 × 46 + 36 = 174 200 – 174 = 26p OR 200 – 46 – 46 – 46 – 36	26p	3	M1 for a correct method to find the total cost M1 for a correct method of subtracting their total from £2 A1 for 26p or £0.26 (accept £0.26p)
9	(a)		10.6	1	B1 for 10.4 – 10.8
	(b)		12	1	B1 for 10 – 14
	(c)		(5,2)	1	B1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		Front	1	B1 cao
	(b)		1600	1	B1 cao
	(c)		Wasu	1	B1 cao
	(d)		60	2	M1 for 20 ÷ 100 × 300 or 300 ÷ 5 or 30 + 30 oe A1 cao
11	(a)		$-7^{o}C, -2^{o}C, 0^{o}C, 5^{o}C, 9^{o}C$	1	B1 accept without ^{o}C
	(b)		5	1	B1 cao
	(c)		Chart or diagram to compare	4	B1 for suitable labels or key to differentiate maximum and minimum B1 for Jan-Mar, Apr-Jun, Jul-Sep and Oct-Dec clearly labelled B1 for accurately representing data, e.g. bars of correct height C1 for fully correct diagram or chart
12	(a)		2	1	B1 cao
	(b)	(1+1+2+2+2+2+3+3+3+4)÷10 = 23÷10	2.3	2	M1 for correct method to find mean A1 cao
	(c)		Average with reason	1	B1 for e.g. mean- uses all values or mode-gives a whole number of eggs oe

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)	$x + 1 = 5$	4	1	B1 cao
	(b)	$a + 2a + 3a = 180$	30	2	M1 for $a + 2a + 3a$ (=180) or 180÷6 A1 cao
14	(a)	(2192 – 32) (=2160)÷1.8	1200	2	M1 for (2192 – 32) ÷ 1.8 A1 cao
	(b)	16 × 1.8(=28.8)+32 OR 16 → × 1.8 → + 32	60.8	3	M1 for × 1.8 or + 32 M1 for 16 × 1.8 + 32 A1 cao OR M1 for a reverse number machine with × 1.8 or + 32 M1 for a reverse number machine with × 1.8 and + 32 A1 cao
15		1.75 × 2.8 = 4.9 7.24 − 4.9 = 2.34 2.34 ÷ 3.6	0.65	4	M1 for 1.75 × 2.8 (=4.9) M1 for 7.24 − ‘4.9’(=2.34) M1 for ‘2.34’ ÷ 3.6 A1 cao

<table>
<tr><th colspan="6">PAPER: 5AM1F_01</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>16</td><td>(a)</td><td><table><tr><td></td><td>f</td><td>r</td><td>tot</td></tr><tr><td>b</td><td>(15)</td><td>13</td><td>28</td></tr><tr><td>g</td><td>(12)</td><td>(10)</td><td>22</td></tr><tr><td>Tot</td><td>27</td><td>23</td><td>(50)</td></tr></table></td><td>Two-way table</td><td>3</td><td>B1 for correctly placing 3 out of 4 given numbers
M1 for completing at least 2 further numbers
A1 for a completely correct table</td></tr>
<tr><td>17</td><td>(i)

(ii)</td><td>$3x + 2 + 2x + 5 = 3x + 2x + 2 + 5$

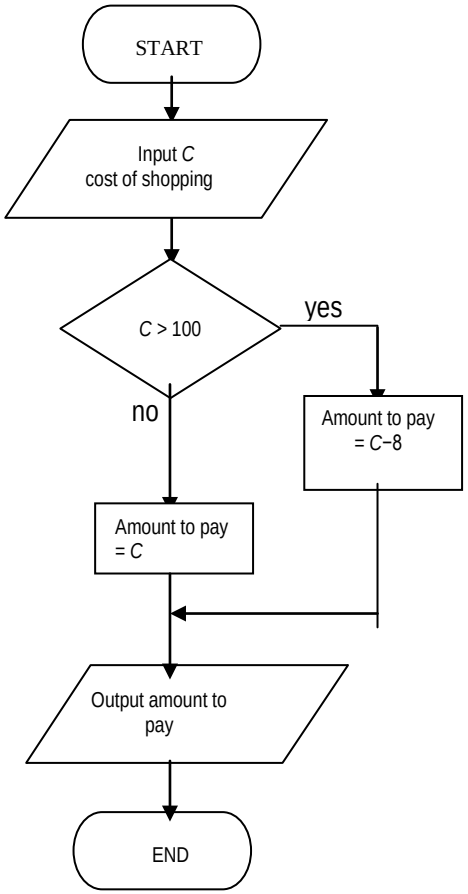
$5x + 7 = 19$
$x = (19 - 7) \div 5$</td><td>$5x+7 = 19$

2.4</td><td>4</td><td>M1 for $3x + 2 + 2x + 5$ or $3x + 2x$ and $2 + 5$
A1 for completing the algebra correctly

M1 for $5x + 7 - 7 = 19 - 7$ or $(19 - 7) \div 5$
A1 cao</td></tr>
<tr><td>18</td><td>*(a)</td><td>(I cost per nail)
$1.36 \div 20 = 0.068$, $3.30 \div 50 = 0.066$,
$6.03 \div 90 = 0.067$</td><td>Medium + reason</td><td>4</td><td>M1 for correct method to work out a unit cost for 2 boxes
M1 for correct method to work out a unit cost for all 3boxes
A1 for (£)0.068 and (£)0.066 and (£)0.067 oe
C1 for correct conclusion based on their figures (consistent units) (dep on at least one M1 scored)
OR</td></tr>
</table>

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
18 (cont)	*(a)	(II e.g. number of nails for £1) 20 ÷ 1.36=14.7, 50 ÷ 3.30=15.1, 90 ÷ 6.03=14.9 (III e.g. cost for 20 nails) 3.30÷50×20=1.32, 6.03÷90×20=1.34 (IV using multipliers) 50 ÷ 20 = 2.5 and 3.30 ÷ 1.36 = 2.42 90 ÷ 50 = 1.8 and 6.03 ÷ 3.30 = 1.82			M1 for correct method to work out the number of nails for £1oe from 2 boxes M1 for correct method to work out the number of nails for £1oe from all 3 boxes A1 for 14.7 and 15.1 and 14.9 C1 for correct conclusion based on their figures (consistent units) (dep on at least one M1 scored) OR M1 for correct method to work out the cost of 20 nails using the 50 nails cost oe M1 for correct method to work out the cost of 20 nails using the 50 nails cost and 20 nails using the 90 nail cost A1 for (£)1.36, (£)1.32, (£)1.34 oe C1 for correct conclusion based on their figures (dep on at least one M1 scored) (consistent units) OR M1 for correct method to compare multipliers for cost and number for 1 pair of boxes M1 for correct method to compare multipliers for cost and number for correct 2 pairs of boxes A1 for 2.5 and 2.42, 1.8 and 1.82 C1 for correct conclusion based on their figures (dep on at least one M1 scored) (consistent units)
	(b)	<table><tr><td>2</td><td>0 5 8</td></tr><tr><td>3</td><td>0 0 0 5 7 9</td></tr><tr><td>4</td><td>0 5 7 9</td></tr><tr><td>5</td><td>0 5</td></tr></table>	S&L diagram with key	3	M1 for correct stem and unordered leaves (condone two errors or omissions) A1 cao B1 for key, e.g. 2 | 0 means 20mm
	(c)		37	1	B1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		The greater the length the heavier the dolphin	1	B1 for the greater the length the heavier the dolphin oe or positive correlation
	(b)		(2.54, 132) plotted	1	B1 for correct point plotted ±1 sq
	(c)		120 – 125	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or an indication on the diagram from 2.3 on the height axis A1 for 120 – 125
20	(i)		=0.4*B3	3	B1 for (=)0.4*B3 oe e.g. (=)C3*B3
	(ii)		=SUM(B2:B6)		B1 for (=)SUM(B2:B6) oe, e.g. (=)B2+B3+B4+B5+B6 B1 for using correct spreadsheet notation; condone missing "=" throughout.
21		<table><tr><td>subject</td><td>tally</td><td>frequency</td></tr><tr><td></td><td></td><td></td></tr></table>	Data collection sheet	3	B1 for a data label for types of subjects with at least 3 subjects entered B1 for space next to data labels headed tally oe B1 for space next to tally column headed freq oe (ignore tallies/frequencies if entered)
22		400 ÷ 59.99=6.6(7) rolls 6 rolls cover 6 × 1.5 × 5=45m^2 Floor area 4.5 × 6 + 4.5 × 3=40.5m^2 (<45) 3 ÷ 1.5=2 (4.5 + 4.5 + 9 + 9)÷5=5.4 5.4→6rolls 6 × 59.99=£359.94 (< £400)	Yes with correct figures	4	M1 for correct method to find number of rolls for £400 M1 for correct method to work out coverage for found number of rolls. M1 for correct method to find area of floor C1 for yes with 40.5 and 45 OR M1 for an attempt to fit widths M1 for a correct method to find total number of rolls M1 for correct method to find total cost of rolls C1 for yes with (£)359.94

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
23			Correct flow chart	5	B1 for > 100 (allow in words) B1 for 'yes' (consistent) leading to $C - 8$ oe (allow in words) B1 for output box following 'no' or '$C-8$' B1 for end box (stop) B1 for fully correct (condone omission of END box and of 'Amount to pay = C' box) Or B1 for ≤ 100 B1 for 'no' (consistent) leading to $C - 8$ oe (allow in words) B1 for output box following 'no' or '$C-8$' B1 for end box (stop) B1 for fully correct (condone omission of END box and of 'Amount to pay = C' box)

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 5AM1F_01			
Question		**Modification**	**Notes**
1		Ruler enlarged by $1\frac{1}{2}$	Standard mark scheme
6		Shading removed from boxes in table replaced with cross eg. 	Standard mark scheme
7		Just scale given. Kilograms moved to top. Wording changed to "A chicken weighs 2.5kg. On the scale mark a weight of 2.5 kg."	Standard mark scheme
9	(a) (b) (c)	Line AB exactly 10.5cm long Angle *x* to be 20° 2cm grid	B1 for 10 – 11 B1 for 15 – 25 Standard mark scheme
10		Frex row removed from table	Standard mark scheme
11	(c)	2cm grid	Standard mark scheme

PAPER: 5AM1F_01			
Question		**Modification**	**Notes**
13	(a)	*x* changed to *y*	Standard mark scheme
	(c)	*a* changed to *x*	M1 for $x + 2x + 3x$ (=180) or 180÷6 A1 cao
16		Braille only-Roman numerals (i) to (ix) put into spaces in the table	Standard mark scheme
17	(i)	*x* changed to *y*	M1 for $3y + 2 + 2y + 5$ or $3y + 2y$ and $2 + 5$ A1 for completing the algebra correctly
	(ii)	*x* changed to *y*	M1 for $5y + 7 - 7 = 19 - 7$ or $(19 - 7) \div 5$ A1 cao
18	(a)	No boxes just information	Standard mark scheme
	(b)	Stem and leaf diagram given to be filled in	Standard mark scheme
19	(a)	2cm grid Crosses changed to circles	Standard mark scheme
	(b)	2.54 changed to 2.5, 132 changed to 130	B1 for correct point plotted ±2 sq







Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Write your name here

Surname	Other names

Edexcel GCSE

Centre Number	Candidate Number

Applications of Mathematics

Unit 1: Applications 1

For Approved Pilot Centres ONLY

Foundation Tier

Tuesday 11 June 2013 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM1F/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P42060A

©2013 Pearson Education Ltd.

6/7/8/4/

P 4 2 0 6 0 A 0 1 2 8

PEARSON

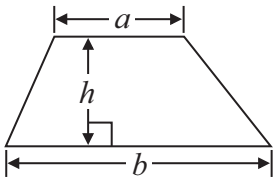
STEMUP.CO.UK

GCSE Mathematics 2AM01

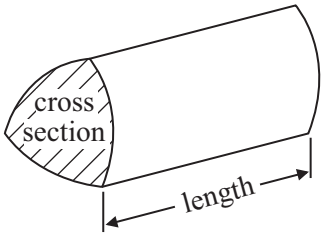
Formulae: Foundation Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section × length



STEMUP.CO.UK

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 34 608 people watched a cricket match.

(a) Write 34 608 to the nearest thousand.

.....

(1)

431 of these people were children.

(b) Write 431 to the nearest ten.

.....

(1)

(Total for Question 1 is 2 marks)

2 The table shows information about 7 freezers.

Make	Cost	Type	Dimensions (cm)			Volume (litres)
			Height	Width	Depth	
Coldpoint	£320	tall	151	61	69	172
Endisit	£290	under counter	86	60	62	84
Foggit	£210	tall	140	55	56	130
Milton	£140	under counter	85	55	56	65
Siele	£408	under counter	85	60	66	74
Trasko	£298	tall	146	56	62	166
Zeko	£144	under counter	84	55	62	69

(a) Which freezer costs the most money?

.....

(1)

Two freezers have a volume less than 70 litres.

(b) Which of these two freezers has the least height?

.....

(1)

Barry wants to buy the cheapest **tall** freezer with a width less than 60 cm.

(c) What is the depth of this freezer?

..... cm

(1)

(Total for Question 2 is 3 marks)

3 A baby weighs 3.2 kg.

(a) Change 3.2 kg into grams.

..... grams

(1)

A path has a length of 670 cm.

(b) Change 670 cm into metres.

..... metres

(1)

There are 1.5 litres of water in a jug.
Malik puts 200 m*l* of water into the jug.

(c) How much water is in the jug now?
Give your answer in litres.

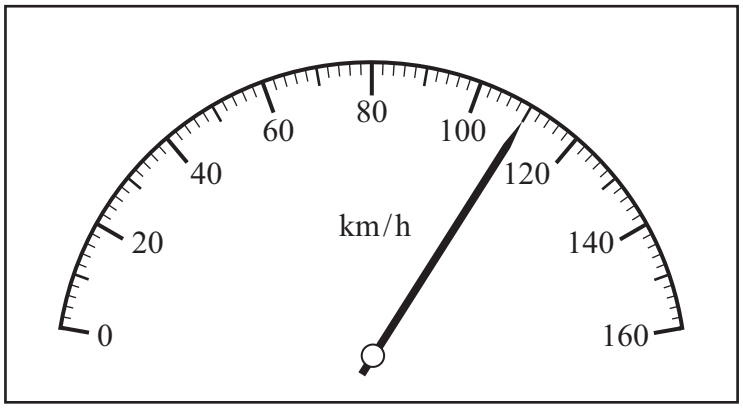
..... litres

(2)

(Total for Question 3 is 4 marks)

STEMUP.CO.UK

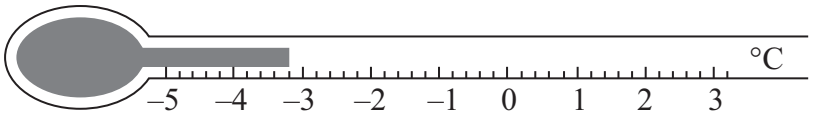
4 (a) What speed is shown on this speedometer?



..... km/h

(1)

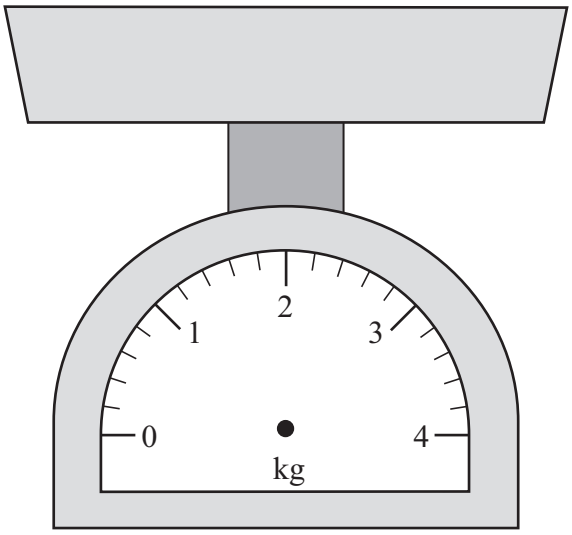
(b) What temperature is shown on this thermometer?



.....°C

(1)

(c) On the scales, draw an arrow to show a weight of 2.4 kg.



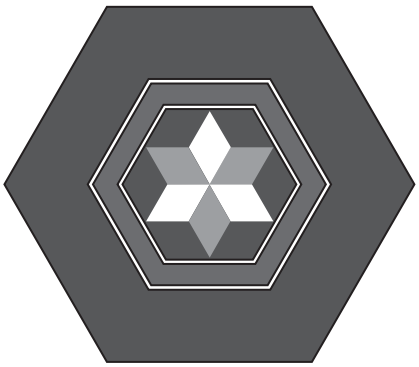
(1)

(Total for Question 4 is 3 marks)

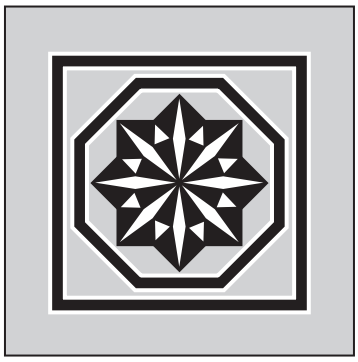
STEMUP.CO.UK

5 Cal makes wooden boxes.

Here are the tops of two different boxes.



Box A



Box B

(a) Write down the order of rotational symmetry of the top of box A.

.....

(1)

(b) How many lines of symmetry does the top of box B have?

.....

(1)

Cal is going to make a different box.
The top of this box will be in the shape of an isosceles triangle.

Cal wants the two small angles to be the same size.
He wants the third angle to be three times the size of each small angle.

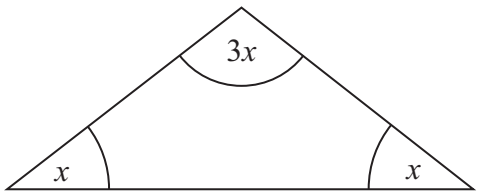


Diagram **NOT** accurately drawn

(c) Work out the size of each small angle.

.....°

(3)

(Total for Question 5 is 5 marks)

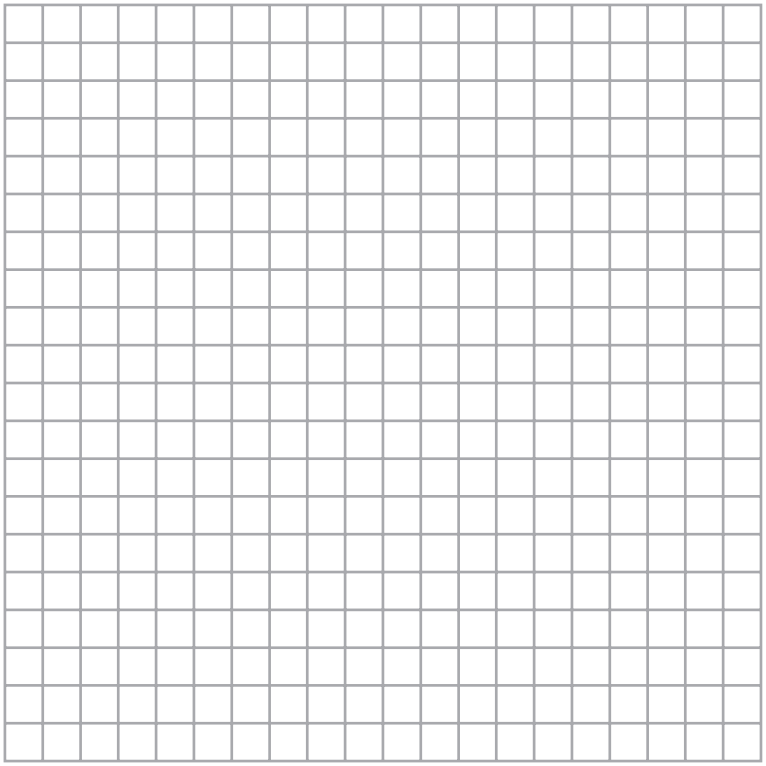
STEMUP.CO.UK

6 Paul records the number of each colour of car in the school car park on Monday.

The table shows this information.

Colour	blue	silver	black	red	green
Frequency	11	18	9	16	6

Show this information in a suitable graph or chart.



(Total for Question 6 is 3 marks)

7 Rachel goes to a theme park.
She counts the number of people in each of 10 boats on a water ride.

1 1 1 2 3 4 4 4 4 6

(a) Write down the mode.

.....

(1)

(b) Work out the range.

.....

(1)

(c) Work out the mean.

.....

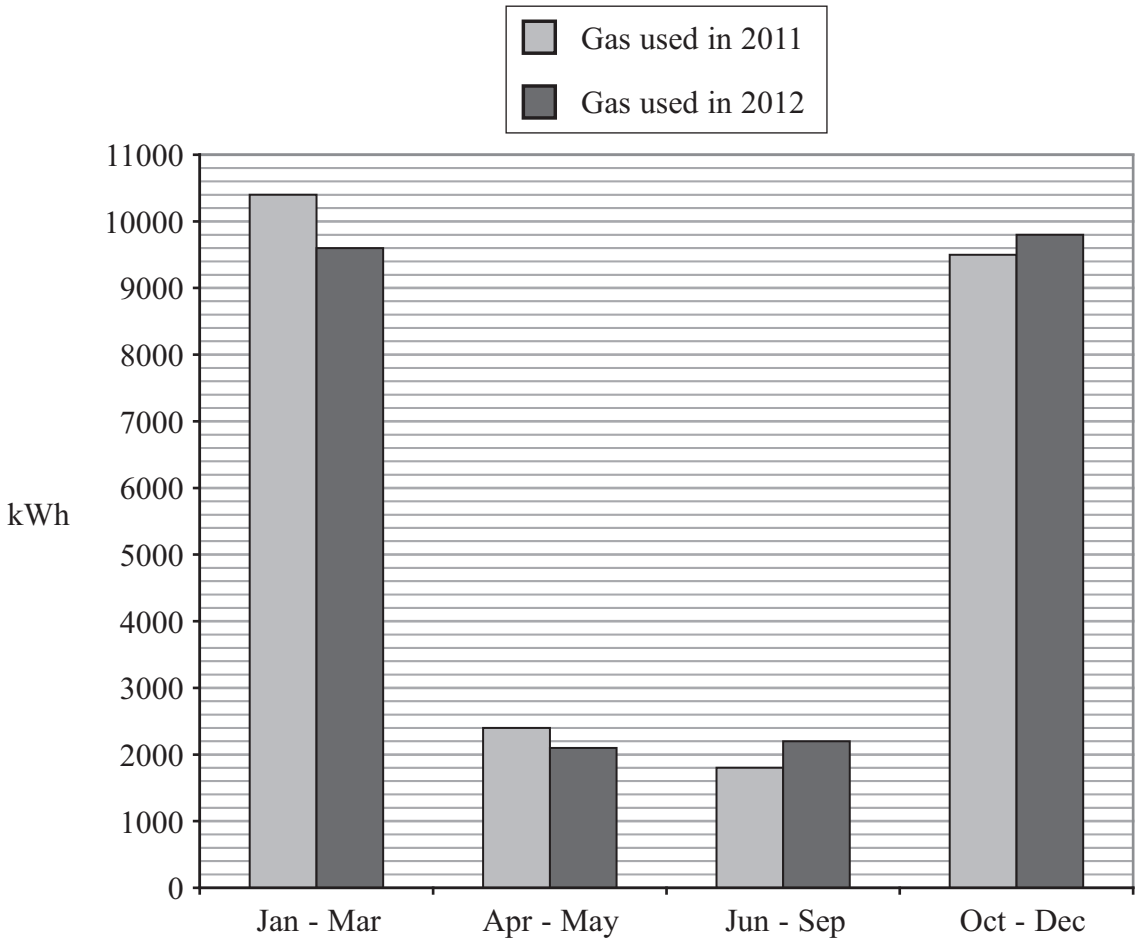
(2)

(Total for Question 7 is 4 marks)

STEMUP.CO.UK

8 Mr Bruce finds out how much gas his family used in 2011 and 2012

The graph shows this information.



(a) How much gas did the Bruce family use in Jan - Mar 2012?

..... kWh

(1)

The Bruce family used less gas in 2012 than they used in 2011

(b) How much less gas?

..... kWh

(3)

(Total for Question 8 is 4 marks)

9 Mr Shah has a shop.

Here is the price list for the salad items in his shop.

Price list

Lettuce	78p each
Cucumber	69p each
Red pepper	75p each
Spring onions	64p per bunch
Tomatoes	£1.84 per kg

Mrs Brown buys one lettuce and one bunch of spring onions.
She pays with a £5 note.

(a) How much change should she get?

£.....

(3)

Jack buys $2\frac{1}{2}$ kg of tomatoes.

(b) Work out the total cost of the tomatoes.

£.....

(2)

Bella wants to buy as many red peppers as possible.
She only has £5

(c) Work out the greatest number of red peppers she can buy.

.....

(2)

STEMUP.CO.UK

Mr Shah uses a spreadsheet to record the cost of 1 kg of bananas in his shop.
He also uses the spreadsheet to record the number of kilograms of bananas he sells.

The spreadsheet shows this information for 4 weeks.

	A	B	C	D
1		cost of 1 kg of bananas in pence	number of kg of bananas sold	
2	week 1	63	53	
3	week 2	67	72	
4	week 3	65	84	
5	week 4	68	69	
6				

Mr Shah also wants the spreadsheet to show

in cell C6, the total number of kilograms of bananas he sold in the 4 weeks
in cell D2, the total cost of all the bananas he sold in week 1

(d) Write down,

(i) a formula for cell C6

C6 .....

(ii) a formula for cell D2

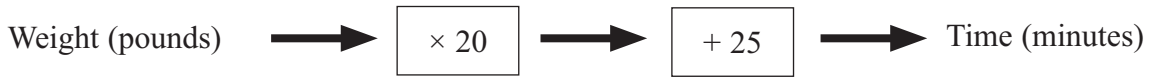
D2 .....

(3)

(Total for Question 9 is 10 marks)

10 Liam works out the time it will take to cook a chicken.

He uses this number machine.



Liam's chicken has a weight of 3 pounds.

(a) Work out the time it will take to cook this chicken.

..... minutes

(2)

It takes 125 minutes to cook a different chicken.

(b) Work out the weight of this chicken.

..... pounds

(3)

(Total for Question 10 is 5 marks)

11 Angie has a bank account.

The table shows the money Angie puts into her account and the money she takes out of her account from 1 to 14 April.

Date	Money into account	Money out of account	Reason
2 April		£45.60	Food
2 April		£195.00	Rent
3 April		£60.00	Cash
4 April		£23.90	Shoes
7 April	£240		Wages
9 April		£27.99	Books
10 April		£45.00	Night out
12 April		£50.00	Cash
13 April	£35		Birthday present
13 April		£15.80	Lunch out
14 April	£240		Wages

On 1 April Angie has £430 in her bank account.

Work out how much money Angie has in her bank account at the end of 14 April.

£.....

(Total for Question 11 is 3 marks)

12 Lesley goes to the theatre to see a play.

The play starts at 15 00
The play will finish after 140 minutes.

(a) What time will the play finish?

.....

(3)

Lesley goes by train to the theatre.
The normal price of a train ticket is £29.76

Lesley has a railcard.

She gets $\frac{1}{3}$ off the price of her train ticket.

(b) How much does Lesley pay for her train ticket?

£.....

(3)

The theatre had 450 tickets to sell.
300 of these tickets have been sold.

(c) What fraction of the tickets have been sold?
Give your fraction in its simplest form.

.....

(2)

(Total for Question 12 is 8 marks)

STEMUP.CO.UK

13 Alan's wages are £240 each week.

He wants to save some money to buy a television.
The television costs £216

Alan is going to save 10% of his wages each week.

How many weeks will it take Alan to save enough money to buy the television?

.....

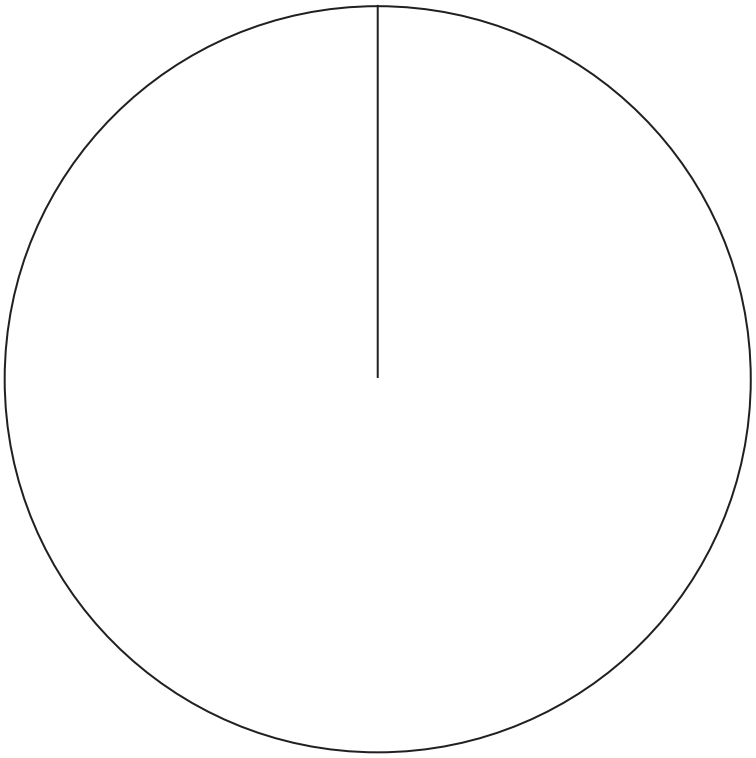
(Total for Question 13 is 4 marks)

14 Jez carried out a survey on the type of food people bought from a snack bar.

The table gives information about his results.

Type of food	Frequency
Burger	28
Hot dog	50
Pizza	42

Draw an accurate pie chart to show this information.



(Total for Question 14 is 3 marks)

STEMUP.CO.UK

15 David wants to do a survey to find out how the students in his class travelled to school one morning.

Design a suitable table for a data collection sheet he could use.

(Total for Question 15 is 3 marks)

*16 Lynn is planning a Christmas party for her badminton club.

Here are her costs.

Food	£176
Drink	£103
Hire of room	£36 per hour

Lynn wants to hire the room for 4 hours.

There will be 28 people at the party.
Lynn will charge these people £15 each.

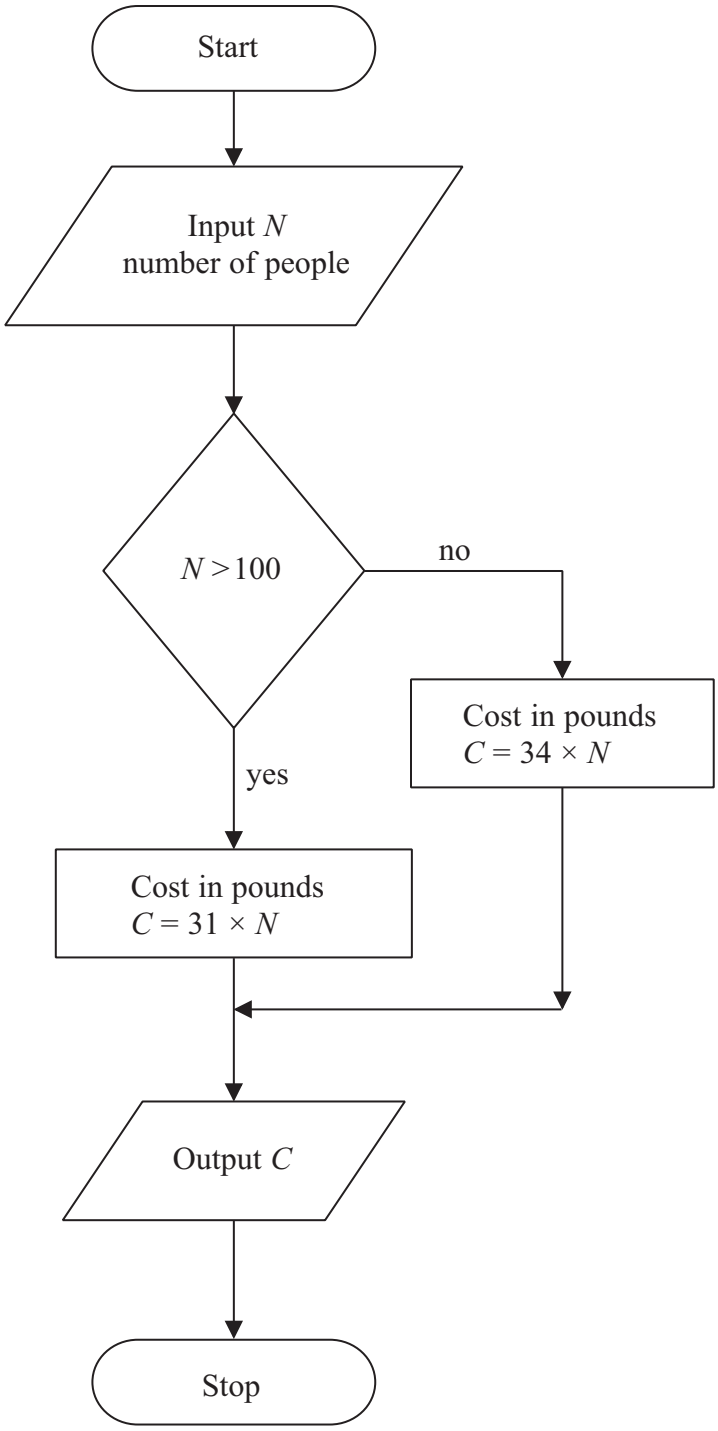
Will Lynn get enough money to pay all her costs?
You must show your working.

(Total for Question 16 is 4 marks)

STEMUP.CO.UK

17 Mr Hughes is the manager of a hotel.

He uses this flowchart to work out the total cost of meals for a group of people.



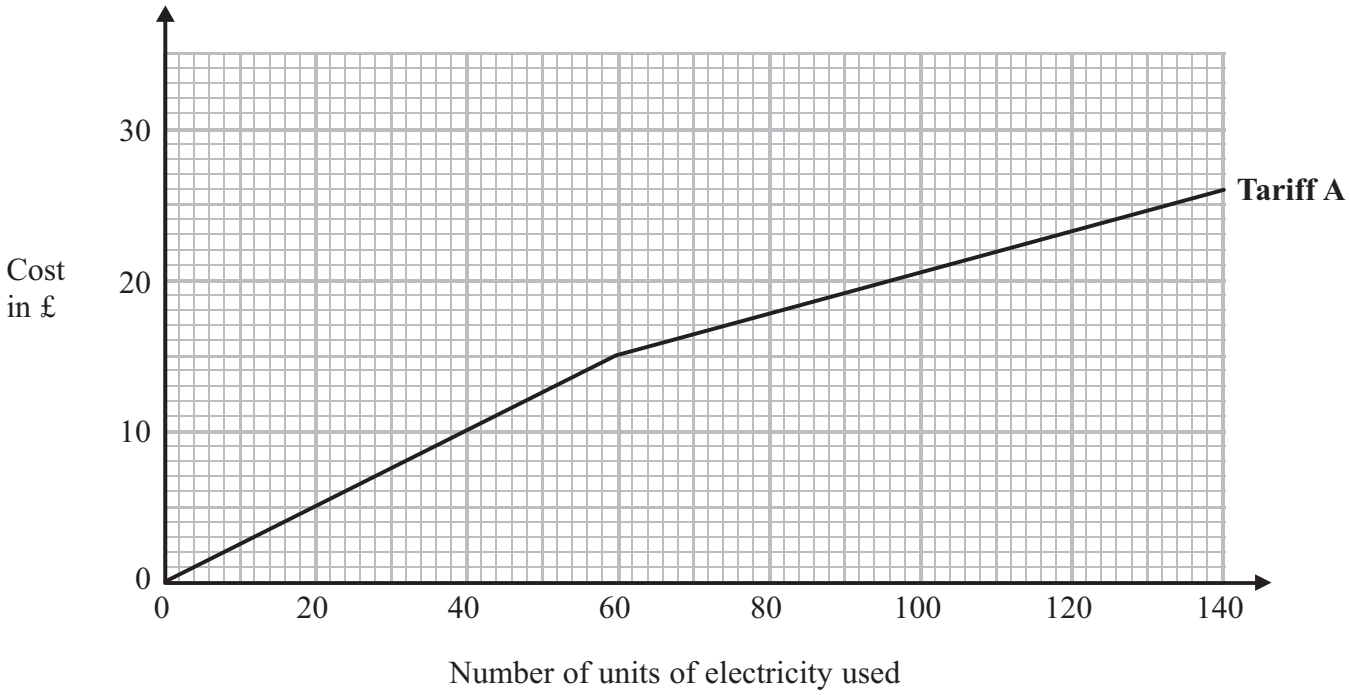
Use the flowchart to work out the total cost of meals for a group of 85 people.

£.....

(Total for Question 17 is 2 marks)

18 Kalinda pays on Tariff A for the number of units of electricity she uses.

Kalinda can use this graph to find out how much she pays each month.



In January, Kalinda used 110 units of electricity.

(a) How much does Kalinda pay for her electricity in January?

£.....

(1)

(b) How much does Kalinda pay for each unit of electricity she uses up to a total of 60 units?

..... p

(2)

STEMUP.CO.UK

Kalinda could change to Tariff B.
Here is the monthly charge for Tariff B.

20p per unit of electricity used

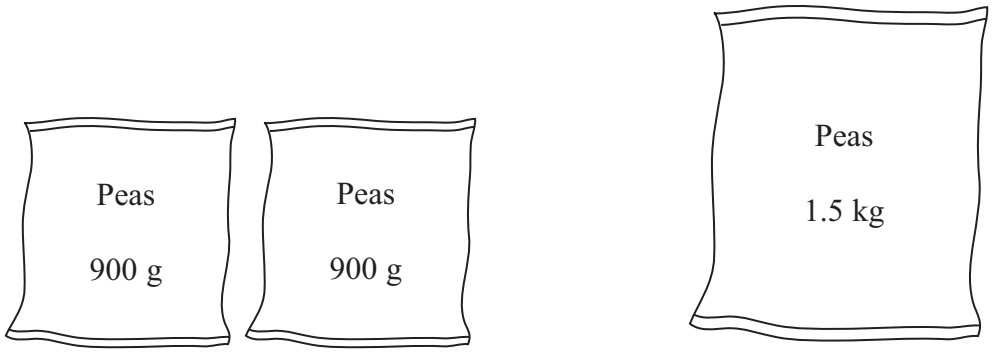
On average, Kalinda uses 90 units of electricity each month.
Kalinda wants to pay the least amount of money for the units of electricity she uses.

*(c) Should Kalinda change to Tariff B?
You must show all your working.

(3)

(Total for Question 18 is 6 marks)

***19** Jemma wants to buy some peas.



Peas 900 g 2 bags for £3

Peas 1.5 kg £2.88 per bag

Two 900 g bags of peas cost a total of £3

One 1.5 kg bag of peas costs £2.88

Work out the best value for money, two 900 g bags or one 1.5 kg bag.
You must show all your working.

(Total for Question 19 is 4 marks)

STEMUP.CO.UK

20 Richard is going to cover a bathroom wall with tiles.

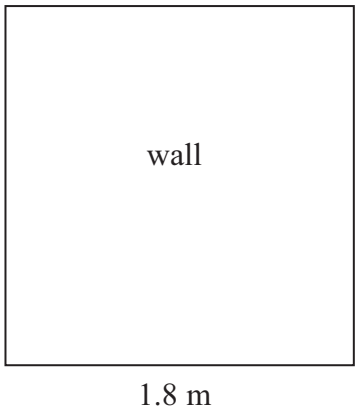
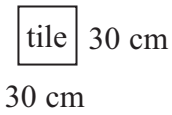


Diagram **NOT** accurately drawn



The wall is in the shape of a rectangle.
The wall is 1.8 m long and 2.4 m high.

The tiles are squares with sides of 30 cm.

There are 14 tiles in a box.

How many boxes of tiles does Richard need?
You must show all your working.

.....

(Total for Question 20 is 5 marks)

21 Becky, Chris and Dan are playing a game with marbles.

Becky has some marbles.
Chris has three times as many marbles as Becky.
Dan has four marbles more than Chris.

They have a total of 158 marbles.

Work out how many marbles Becky has.
You must show all your working.

.....

(Total for Question 21 is 4 marks)

STEMUP.CO.UK

22 Sal asked 60 adults if they liked Chinese food best or Italian food best or Thai food best.

29 of the adults were women.
6 of the women liked Thai food best.
10 of the men liked Chinese food best.
8 of the 13 adults who liked Italian food best were women.

Work out the number of men who liked Thai food best.

.....

(Total for Question 22 is 4 marks)

23 Graham is going to carry out a survey on holidays.
He wants to find out how often people go on holiday.

Design a question that Graham could use in his questionnaire.

(Total for Question 23 is 2 marks)

STEMUP.CO.UK

24 Malcolm's salary is £28 000
His salary is increased by £700

(a) Work out the percentage increase in Malcolm's salary.

.....%

(2)

Malcolm puts £3000 into a savings account for 3 years.

The account pays compound interest of

4% per annum in the first year
4.6% per annum in the second year
4.6% per annum in the third year

(b) Work out how much money will be in Malcolm's account at the end of the third year.

£.....

(3)

(Total for Question 24 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

STEMUP.CO.UK

BLANK PAGE

edexcel

Mark Scheme (Results)

Summer 2013

GCSE Mathematics Linked Pair Pilot
Application of Mathematics (2AM01)
Foundation (Calculator) Paper 1F

ALWAYS LEARNING

PEARSON

STEMUP.CO.UK

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2013
Publications Code UG037070
All the material in this publication is copyright
© Pearson Education Ltd 2013

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		35 000	1	B1 cao
	(b)		430	1	B1 cao
2	(a)		Siele	1	B1 cao
	(b)		Zeko	1	B1 cao
	(c)		56	1	B1 cao
3			3200	1	B1 cao
	(b)		6.7	1	B1 for 6.7 or 6.70 (accept 6m 70cm provided units are clear)
	(c)		1.7	2	M1 for 1.5 × 1000 (=1500) **or** 200 ÷ 1000 (=0.2) **or** 1700 A1 for 1.7 or 1.70
4	(a)		110	1	B1 cao
	(b)		–3.2	1	B1 cao
	(c)		arrow drawn at 2.4	1	B1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		3	1	B1 cao
	(b)		4	1	B1 cao
	(c)		36	3	M1 for $3x + x + x = 180$ M1 for correct method to solve '$3x + x + x = 180$' A1 for 36
6			Chart or graph	3	B1 for each colour clearly labelled either on the bars or along the horizontal axis B1 for correct column heights of all the bars either from the frequency axis or correct number of squares if the frequency axis is not scaled C1 for a fully correct graph or chart including labels
7	(a)		4	1	B1 cao
	(b)		5	1	B1 cao
	(c)	(1+1+1+2+3+4+4+4+4+6)÷10	3	2	M1 for (1+1+1 +2+3+4+4+4+4+6)÷10 **or** 30÷10 A1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		9600	1	B1 cao
	(b)	10400+2400+1800+9500 (=24100) 9600+2100+2200+9800 (=23700)	400	3	M1 for at least 2 of 10400, 2400, 1800, 9500 or at least 2 of 9600, 2100, 2200, 9800 M1(dep) for '10400'+'2400'+'1800'+'9500'(=24100) **and** '9600'+'2100'+'2200'+'9800'(=23700) A1 for 400 **Or** M1 for 10400 – 9600 (=800) **or** 2400 – 2100 (=300) **or** 2200 – 1800 (=400) **or** 980 0– 9500 (=300) M1 for '800' + '300' – '400' – '300' oe A1 for 400

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	78 + 64 (142) 5 – 1.42	3.58	3	M1 for 78 + 64 (=142) **or** 0.78 + 0.64 (=1.42) M1 for 500 – '142'(=358) **or** 5 – '1.42' **(=**3.58) A1 for 3.58 **or** M1 for 5 – 0.78 (=4.22) or 5 – 0.64 (=4.36) M1 for '4.22' – 0.64 or '4.36' – 0.78 A1 for 3.58
	(b)		£4.60	2	M1 for 1.84 × 2.5 oe **or** 1.84 + 1.84 + 1.84÷2 A1 for 4.60 (must be correct money notation)
	(c)		6	2	M1 for 5 ÷ 0.75 **or** 500 ÷ 75 **or** 6.66666 or repeated addition of 75 (at least 3 additions) **or** repeated subtraction of 75 from 500 (at least 3 subtraction) A1 cao
	(d) (i)		= C2 + C3 + C4 + C5	3	B1 for (=) C2 + C3 + C4 + C5 or (=)SUM(C2:C5) or clear intention to add correct cells
	(ii)		= B2 * C2		B1 for (=) B2*C2 or (=) B2*C2/100 or clear intention to multiply correct cells. C1 for correct spreadsheet notation for both. Condone missing = sign. NB: do not accept '×' in place of '*'

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)	3×20 + 25	85	2	M1 for 3 × 20 + 25 A1 for 85 or 1 hour 25
	(b)	125 – 25 (=100) 100÷20	5	3	M1 for subtraction of 25 or division by 20 M1(dep) for subtraction of 25 and then division by 20 A1 cao **or** M1 for 125 – '85' (=40) M1 for '40'÷20 + 3 A1 cao
11		430 + 240 + 240 + 35 (=945) 45.6+195+60+23.9+27.99+45+50 +15.8(=463.29) '945'–'463.29'	481.71	3	M1 for clear attempt to add together either all amounts spent or all amounts put into account **or** for sight of a start of running total using at least first four transactions (may be in table) M1 for '945'–'463.29' **or** attempt at running total for all amounts shown A1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)	140 ÷ 60 (=2.333…) or 15 00 + 60 = 16 00 16 00 + 60 = 17 00 17 00 + 20	17 20	3	M1 for an understanding that there are 60 minutes in an hour M1 for 140 – 120 (=20) or 20 minutes seen as part of a method A1 17 20 or 5:20 pm oe SC B2 for answer of 5 20 given
	(b)	29.76 ÷ 3 (=9.92) 29.76 – '9.92'	19.84	3	M1 for 29.76 ÷ 3 (=9.92) M1(dep) for 29.76 – '9.92' or 2×'9.92' or 29.76 × 0.33($\dot{3}$) A1 cao **or** M1 for $1 - \frac{1}{3}$ (= $\frac{2}{3}$) or 1 – 0.33 = 0.67 or 0.$\dot{6}$ M1 for 29.76 × 2 ÷ 3 or 29.76 × 0.67 or 29.67 × 0.$\dot{6}$ A1 cao
	(c)	$\frac{300}{450}$	$\frac{2}{3}$	2	M1 for $\frac{300}{450}$ oe A1 cao

<table>
<tr><th colspan="5">PAPER: 5AM1F_01</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>13</td><td></td><td>0.1×240(=24)
216 ÷ ‘24’</td><td>9 weeks</td><td>4</td><td>M1 for 0.1×240 oe e.g. 240 ÷ 10
A1 for 24
M1 for 216 ÷ ‘24’
A1 for 9</td></tr>
<tr><td>14</td><td></td><td>360÷120=3</td><td>Angles of 84^{o}, 150^{o}, 126^{o} drawn and labelled</td><td>3</td><td>M1 for 360 ÷ 120 or 3 seen or one angle correct in pie chart (±2^{o}), ignore all labels, or one correct angle in the table
A1 for any two angles correct in pie chart (±2^{o}), ignore all labels
A1 for fully correct and labelled pie chart, all angles ±2^{o}</td></tr>
<tr><td>15</td><td></td><td></td><td><table><tr><td>Types of transport</td><td>Tally</td><td>Frequency</td></tr><tr><td></td><td></td><td></td></tr></table></td><td>3</td><td>B3 for a completely correct data collection sheet, including 3 columns with headings: type or travel (oe or at least 3 modes of transport listed), tally, frequency
(B2 for partially correct data collection sheet)
(B1 for one column correctly labelled)

NB Award no marks for graphs or questionnaires</td></tr>
</table>

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16		36 × 4 (=144) 176 + 103 + '144' (=423) 15 × 28 = 420 Or '423' ÷ 28 = 15.107….	No with correct working	4	M1 for 36 × 4 (=144) M1 for 176 + 103 + '144' (=423) M1 for 28 × 15 C1 (dep on at least M2 awarded) for 420 **and** 423 and 'No she won't have enough' **Or** M1 for 36 × 4 (=144) M1 for 176 + 103 + '144' (=423) M1 for 423 ÷ 28 C1 (dep on at least M2 awarded) for 15.10 **or** 15.11 **or** 15.107… and 'No she won't have enough'
17		85 × 34	2890	2	M1 for 85 × 34 A1 cao

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)		22	1	B1 cao
	(b)	15 ÷ 60	25p	2	M1 for 15 ÷ 60 oe or clear attempt to find gradient A1 for £0.25 or 25p
	(c)	0.2 × 90 (=18) From graph 90 units costs £19	Yes as cost will be lower	3	M1 for Tariff B price for 90 units 20 × 90 (=1800) **or** 0.2 × 90(=18) OR Tariff A price per unit unit $\frac{1900}{90}$ **or** $\frac{19}{90}$ B1 for reading from Tariff A graph at 90 units **or** £19 C1 for £18 and £19 with 'yes' or 21.(1…)p with 'yes' **Or** M1 for drawing the correct line (for Tariff B) through the origin with gradient 0.2 B1 for reading from Tariff A graph at 90 units **or** £19 C1 for £18 and £19 with 'yes'

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*19		1.5 × 1000 =1500 1500 ÷ 2.88 = 520.83… 2 × 900 ÷ 3 = 600 or equivalent working in kg OR 1.5 × 1000 =1500 2.88 ÷1500 = 0.00192 3 ÷ (2 × 900) =0.00166… or equivalent working in kg OR 2 × 900 ÷ 100 = 18 300 ÷18 = 16.66.. 1500 ÷ 100 = 15 288 ÷15 = 19.2..	Two 900g bags	4	**Grams per penny** M1 for 1.5 × 1000 (=1500) or 900÷1000 (=0.9) M1 for '1500' ÷ 2.88 (= 520.83.) or 1.5÷ 2.88 (= 0.52083..) M1 for 2 × 900 ÷ 3 (=600) or 2×0.9 ÷ 3(=1.66.) C1 for Two 900g bags with a statement and 600 (or 0.6) and '520(.833..) (or 0.5208…) OR **Pence per gram** M1 for 1.5 × 1000 (=1500) or 900÷1000 (=0.9) M1 for 2.88 ÷'1500' (= 0.00192) or 2.88÷1.5 (=1.92) M1 for 3 ÷ (2 × 900) (=0.00166…) or 3 ÷ (2 ×0.9) (=1.66…) C1 for Two 900g bags with a statement and 0.00192 (or 1.92) and 0.00166… (or 1.66..) OR **Working with the same weight of peas** M1 for 2 × 900 ÷ 100 (= 18) or 1500 ÷ 100 (= 15) Or 5 × 2 × 900 (= 9000) or 1.5 × 6 (= 9000) M1 for 300 ÷18 (= 16.66..) or 5 × £3 (= £15) M1 for 288 ÷15 (= 19.2..) or 6 × £2.88 (= £ 17.28) C1 for Two 900g bags with a statement and 19.2 and 16.66… or £15 and £17.28

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20		2.4÷0.3 = 8 or 1.8÷0.3 = 6 8 × 6 =48 48 ÷14 = 3.42… **Or** 2.4×1.8 = 4.32 0.3×0.3 = 0.09 4.32 ÷ 0.09 = 48 48 ÷ 14 = 3.42…	4	5	B1 for correct conversion of units M1 for correct attempt to find how many rows of tiles using their units consistently. M1 for complete correct method to find the number of tiles needed. M1 for number of tiles ÷ 14 and round up A1 cao for 4 packs of tiles supported by correct working **Or** B1 for correct conversion of units M1 for correct method for area of wall and area of tile using their units consistently. M1 for complete correct method to find the number of tiles needed. M1 for number of tiles ÷ 14 and round up A1 cao for 4 packs of tiles supported by correct working

<table>
<tr><th colspan="5">PAPER: 5AM1F_01</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>21</td><td></td><td>$x + 3x + 3x + 4 = 158$
$7x + 4 = 158$
$7x = 154$</td><td>22</td><td>4</td><td>M1 for $3x$ or $3x + 4$ seen
M1 (dep) for forming equation x + ‘$3x$’ + ‘$3x$+4’ = 158
M1 for intention to isolate x term(s) in their equation if of the form $ax + b=158$
A1 22 cao dep on at least M1 awarded

OR
M1 for a correct trial with $x \geq 1$ to evaluate x, $3x$ and $3x + 4$ (algebraic expressions may not be seen)
M1 for 3 values that sum to 158
M1 for intention to add $22 + 3\times22 + 3\times22 + 4$ (=158)
A1 for 22 cao dep on at least M1 awarded</td></tr>
<tr><td>22</td><td></td><td>60 – 29 = 31
13 – 8 = 5
31 – 10 – 5

OR
29 – 6 – 8 = 15
15 + 10 = 25
60 – 13 – 25 = 22
22 – 6

OR
<table><tr><td></td><td>C</td><td>It</td><td>T</td><td></td></tr><tr><td>W</td><td>15</td><td>8</td><td>6</td><td>29</td></tr><tr><td>M</td><td>10</td><td>5</td><td>16</td><td>31</td></tr><tr><td></td><td>25</td><td>13</td><td>22</td><td>60</td></tr></table></td><td>16</td><td>4</td><td>M1 for calculation of total Men 60 – 29 (=31 Men)
M1 for calculation for Men who like Italian 13 – 8 (= 5 Men like Italian)
M1 for calculation for Men who liked Thai ‘31’ – 10 – ‘5’
A1 for 16

OR
M1 for a 2-way table or diagram with clear labelling showing at least 3 pieces of the given information correctly placed
M1 for correct method for one calculated entry in diagram:
Men 60-29 (=31)
or Women and Chinese 29- 8 - 6 (=15)
or Men and Italian 13- 8 (=5)
M1 for 3 correct entries for Men or 2 correct entries for Thai that with correct arithmetic would lead to 16 (Men and Thai)
A1 for 16</td></tr>
</table>

PAPER: 5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
23			Suitable question with response boxes	2	B1 for a question about number of holidays within a time frame OR question about frequency of holidays with time frame(s) in response boxes. B1 for at least 3 correctly labelled non-overlapping response boxes (need not be exhaustive) OR 3 or more exhaustive response boxes which may overlap. [Do not accept inequalities in response boxes] NB Frequency tables or data collection sheets score B0
24	(a)	$\frac{700}{28000}\times 100$	2.5	2	M1 for $\frac{700}{28000}\times 100$ oe A1 cao
	(b)		3413.64	3	M1 for 3000×0.04oe (=120) M1 for $(3000 + \text{'}120\text{'}) \times 1.046^2$ oe A1 cao **or** M2 for $3000 \times 1.04 \times 1.046^2$ **or** 3000×1.13788064 (M1 for 3000×1.04 or 3000×1.046) A1 cao SC: B2 for 3413.6419….

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG037070 Summer 2013

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rewarding Learning

Write your name here

Surname	Other names

Edexcel GCSE

Centre Number	Candidate Number

Applications of Mathematics

Unit 1: Applications 1

For Approved Pilot Centres ONLY

Foundation Tier

Tuesday 6 November 2012 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM1F/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P40680A

©2012 Pearson Education Ltd.

6/6/7/5/4/

P 4 0 6 8 0 A 0 1 2 8

PEARSON

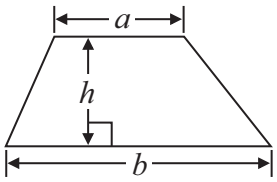
STEMUP.CO.UK

GCSE Mathematics 2AM01

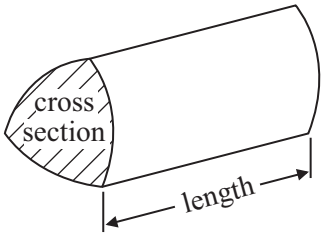
Formulae: Foundation Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section × length



STEMUP.CO.UK

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Last week 7453 people watched United play.

In a report in the local newspaper 7453 is rounded to the nearest thousand.

(a) Write 7453 to the nearest thousand.

.....

(1)

At the football match 3459 programmes were sold.

The programme sellers rounded this to the nearest hundred in their report to United's manager.

(b) Round 3459 to the nearest hundred.

.....

(1)

At the football match United had possession of the ball for 0.65 of the game.

(c) Change 0.65 into a percentage.

..... %

(1)

(Total for Question 1 is 3 marks)

2 Ellen buys items from car boot sales.
She then sells these items on an internet auction site.

The table shows some information about the items Ellen bought and sold one week.

Item	Bought	Sold	Profit or loss
DVD	£5	£7.50	£2.50 profit
Doll	£8	£12	£ .....
Jigsaw	£2	£	£1.50 profit
Chair	£	£20	£5 loss
Train set	£	£35	£20 profit

(a) Complete the table.

(4)

(b) Work out Ellen's total profit.

£ .....

(3)

(Total for Question 2 is 7 marks)

STEMUP.CO.UK

3 Here is a list of all the pets a vet saw one morning.

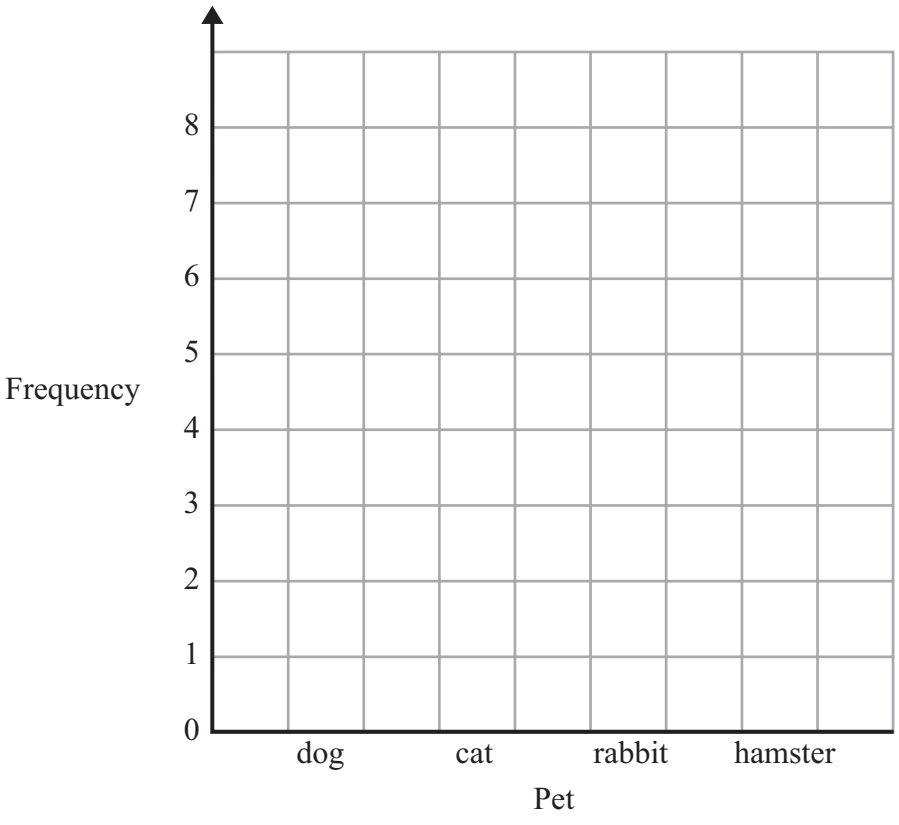
dog	cat	rabbit	hamster	dog
cat	dog	cat	dog	cat
hamster	dog	cat	rabbit	dog
dog	cat	hamster	cat	dog

(a) Complete the frequency table.

Pet	Tally	Frequency
dog		
cat		
rabbit		
hamster		

(2)

(b) On the grid, draw a bar chart to show this information.



(2)

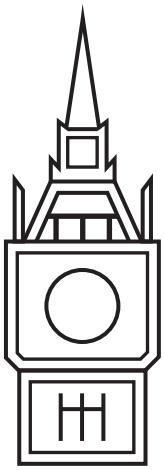
(c) What is the mode?

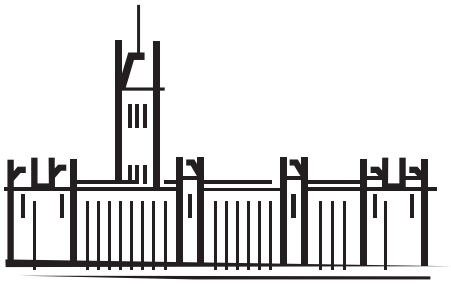
.....

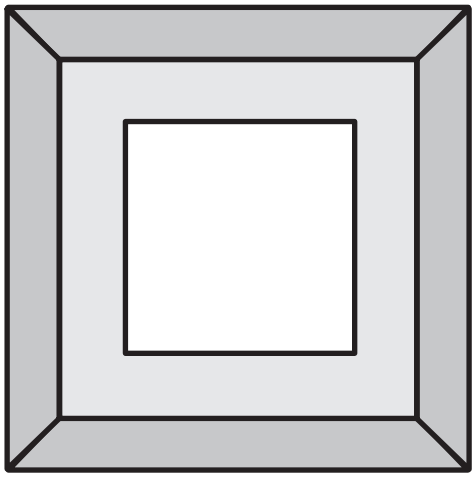
(1)

(Total for Question 3 is 5 marks)

4 Here are some drawings.







Mark in any lines of symmetry on these drawings.

(Total for Question 4 is 3 marks)

STEMUP.CO.UK

5 A door has a width of 90 cm.

(a) Change 90 cm to an equivalent imperial length.

.....

(2)

A jug holds 3.5 pints of water.

(b) Change 3.5 pints to an equivalent metric measure.

.....

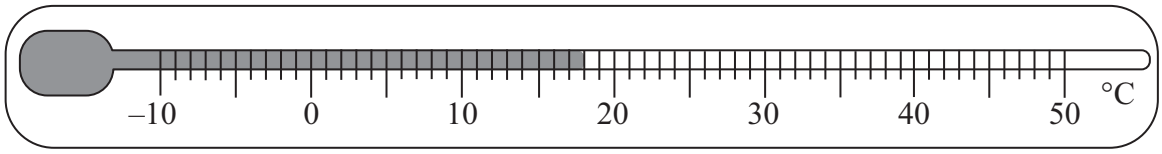
(2)

(Total for Question 5 is 4 marks)

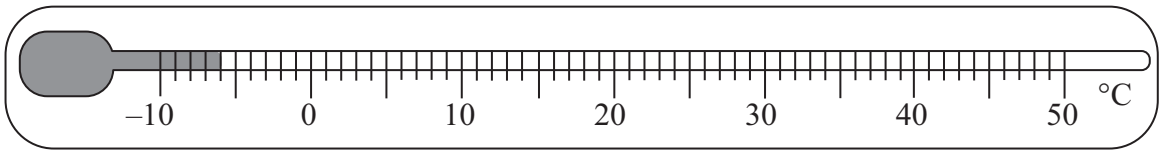
6 Simone has a thermometer in her greenhouse.

Here are the highest and lowest temperatures that she recorded one day last year.

Highest temperature



Lowest temperature



(a) Write down the highest temperature Simone recorded.

..... °C

(1)

(b) Write down the lowest temperature Simone recorded.

..... °C

(1)

(c) Work out the difference between the highest and the lowest temperatures.

..... °C

(1)

At 8 am the temperature in the greenhouse was halfway between the highest temperature and the lowest temperature.

(d) What was the temperature at 8 am?

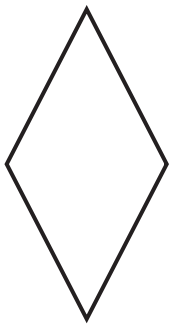
..... °C

(2)

(Total for Question 6 is 5 marks)

STEMUP.CO.UK

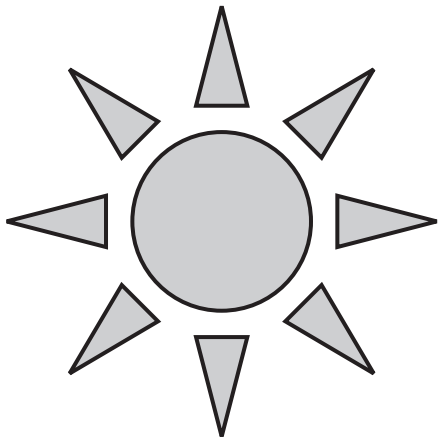
7 Here are some shapes that are used in wallpaper design.



A



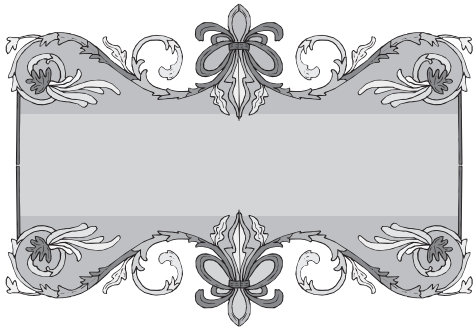
B



C



D



E

Some of these shapes have rotational symmetry.

(a) Write down the letters of the shapes that have rotational symmetry.

.....

(2)

(b) In the table write down the order of rotational symmetry for the shapes you have chosen in part (a).

Shape	A	B	C	D	E
Order of rotational symmetry					

(2)

(Total for Question 7 is 4 marks)

8 Michael works at a garden centre.

Michael uses this table to help people choose plants.

The ticks (✓) in the table show when there will be flowers on the plants.

Plant	Month									
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**
Quince			✓	✓	✓					
Daphne		✓	✓							
Forsythia			✓	✓						
Jasmine	✓	✓	✓							
Lilac				✓	✓	✓				
Potentilla						✓	✓	✓	✓	✓

(a) In which months do Forsythia have flowers?

.....

(1)

(b) Which plants have flowers on them in June?

.....

(1)

(c) In which month do most plants have flowers?

.....

(1)

Michael wants a plant that only has flowers in February and March.

(d) Which plant should he choose?

.....

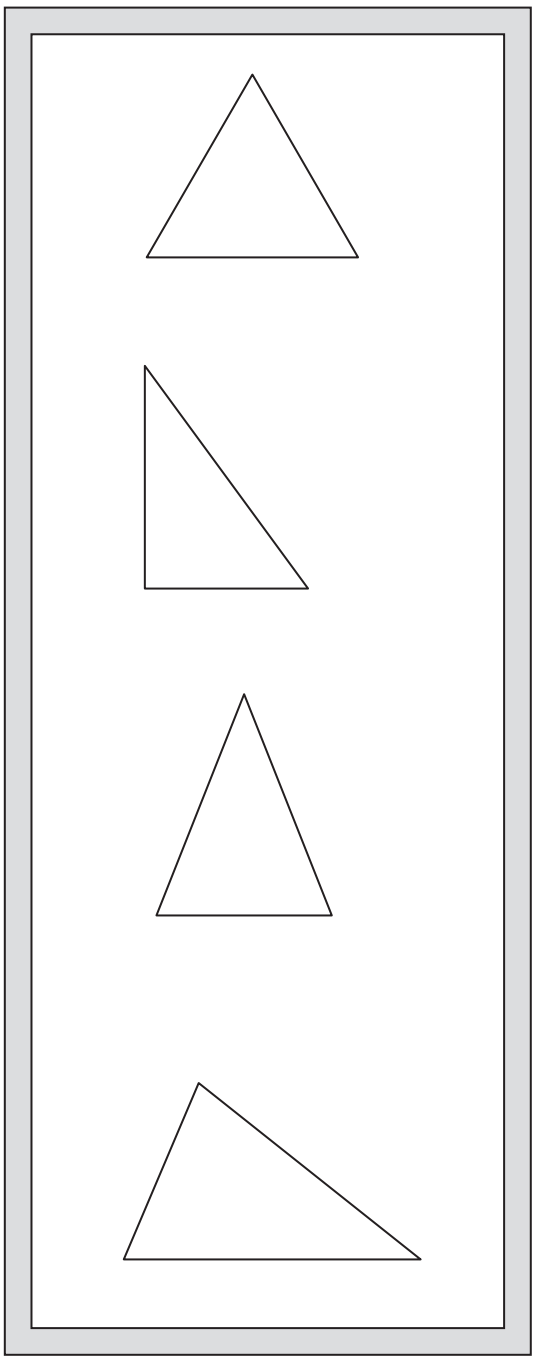
(1)

(Total for Question 8 is 4 marks)

STEMUP.CO.UK

9 Here is a child's posting toy.
Triangles have to be fitted into the spaces in the toy.

Draw an arrow from each triangle to its name.



Right-angled triangle

Isosceles triangle

Scalene triangle

Equilateral triangle

(Total for Question 9 is 3 marks)

*10 The table shows the numbers of hours that Dave and Joan each watched TV every day last week.

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Dave	3	4	1	3	5	8	7
Joan	2	3	4	2	3	4	8

Show this information in a suitable chart or diagram.

STEMUP.CO.UK

(Total for Question 10 is 4 marks)

11 Julie goes to Jim's Cafe.

Jim's Cafe

Drinks		Food	
Cola	95p	Single burger	£0.75
Lemonade	85p	Double burger	£1.35
Milk	75p	Chicken pieces (3)	£0.80
Tea	85p	Chicken pieces (6)	£1.40
Coffee	90p	Fries (small)	£0.60
		Fries (large)	£1.05

Meal Deals

(all burgers and chicken meals served with any drink and small fries)

Single burger meal	£1.90
Double burger meal	£2.60
Chicken pieces (3) meal	£1.95
Chicken pieces (6) meal	£2.65

Upgrade to large fries only **20p extra**

She buys a single burger and a tea.

Julie pays with a £5 note.

(a) How much change should she get?

£ .....

(3)

STEMUP.CO.UK

Romeo goes to Jim's Cafe.
He wants a drink, fries and either a burger or chicken pieces.

Romeo only has £2.15

*(b) Show all the possible combinations of food and drink he could buy.
You must show all your working.

(5)

(Total for Question 11 is 8 marks)

12 The diagram shows part of a frame for a roof.
PQ is a straight line.

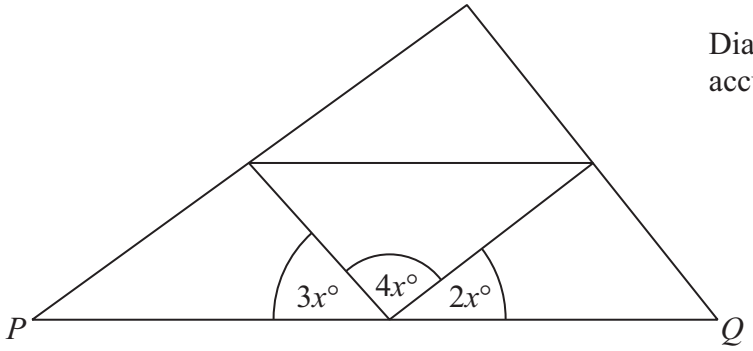


Diagram **NOT** accurately drawn

(a) Find the value of x.

.....

(3)

The diagram shows the end view of the roof of a shed.

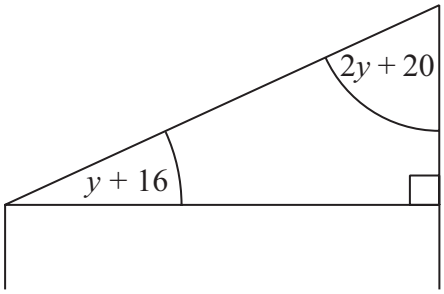


Diagram **NOT** accurately drawn

(b) Find the size of the smallest angle.

.....°

(3)

(Total for Question 12 is 6 marks)

STEMUP.CO.UK

13 Terry and June go on holiday to Norway.

Terry changes £375 into Kroner (Kr).

The exchange rate is £1 = 9.02 Kr.

(a) Work out how many Kroner (Kr) Terry gets for £375

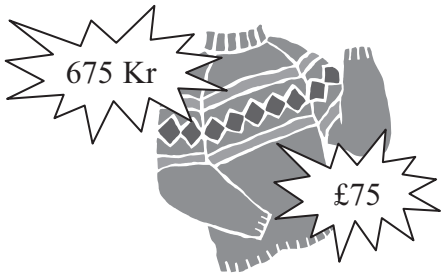
..... Kr

(2)

In Norway June sees a jumper costing 675 Kr.

In London the same type of jumper costs £75

The exchange rate is £1 = 9.02 Kr.



(b) Work out the difference between the cost of the jumper in Norway and the cost of the jumper in London.

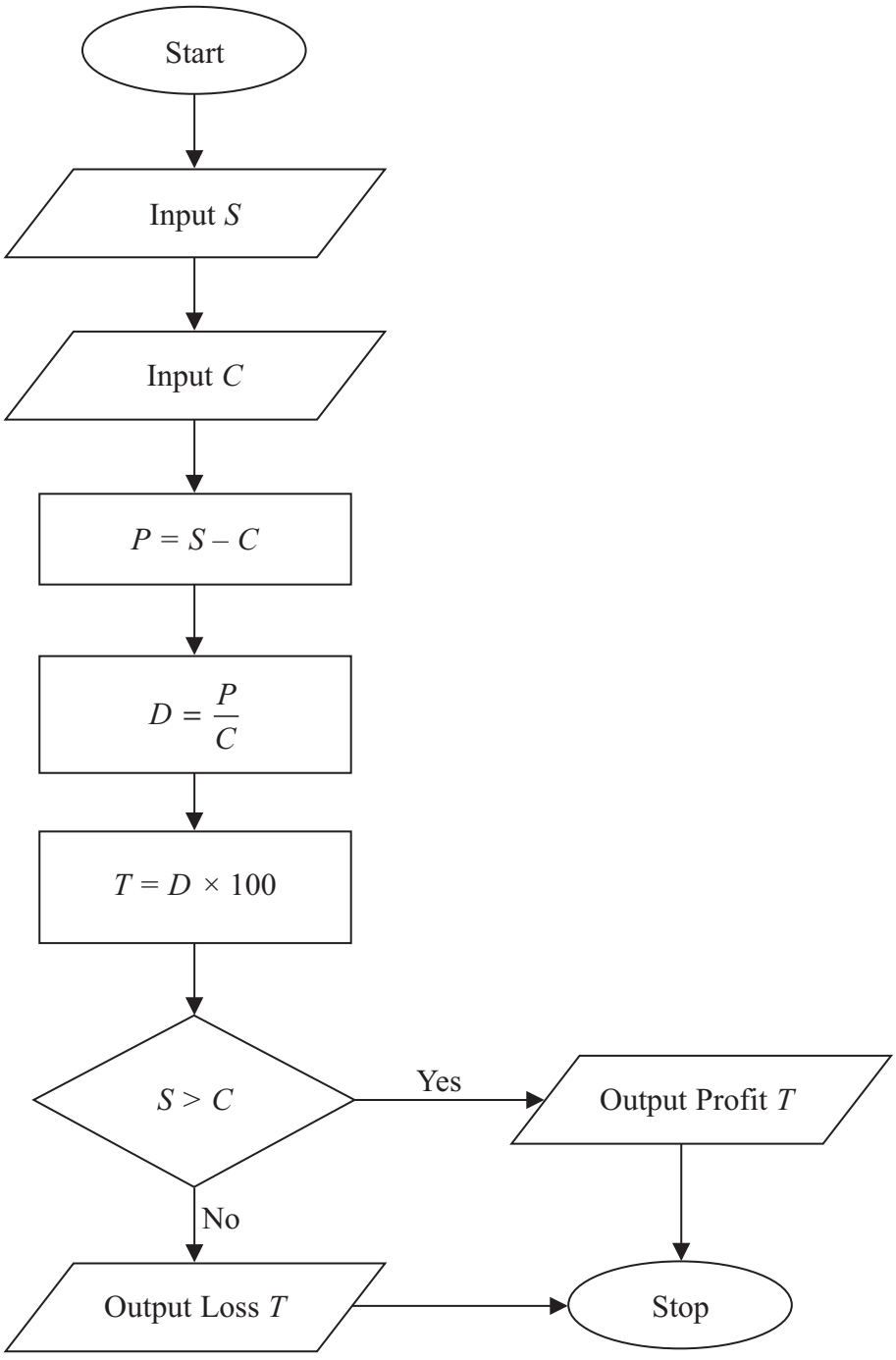
.....

(3)

(Total for Question 13 is 5 marks)

14 Katie owns a clothes shop.

She uses this flowchart to work out the percentage profit or percentage loss when she sells clothes.



STEMUP.CO.UK

Use the flowchart to work out the values of P, D and T when

$S = 65$ and $C = 50$

$P =$ .....

$D =$ .....

$T =$ .....

(Total for Question 14 is 3 marks)

15 Here is a picture in the shape of a rectangle.



Diagram **NOT** accurately drawn

The length of the picture is 5 cm more than the width of the picture.
The perimeter of the picture is 58 cm.

Jophal wants to buy glass to cover the whole of the picture.

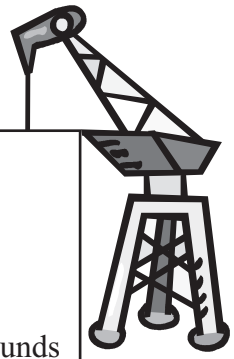
What is the area of the glass that Jophal needs to buy?

..... cm^2

(Total for Question 15 is 4 marks)

***16** Jed has an old crane in his factory.

The crane has a Safe lifting limit of $7\frac{1}{2}$ hundredweight.



This crane has a
Safe lifting limit of

$7\frac{1}{2}$ hundredweight

1 hundredweight = 112 pounds

Jed wants to buy a new crane.

He knows two companies that sell cranes.

Euro-Crane Company

This crane has a
Safe lifting limit of

400 Kg

Ameri-Crane Company

This crane has a
Safe lifting limit of

830 pounds

Jed is going to choose the crane that has at least the Safe lifting limit as the old crane.

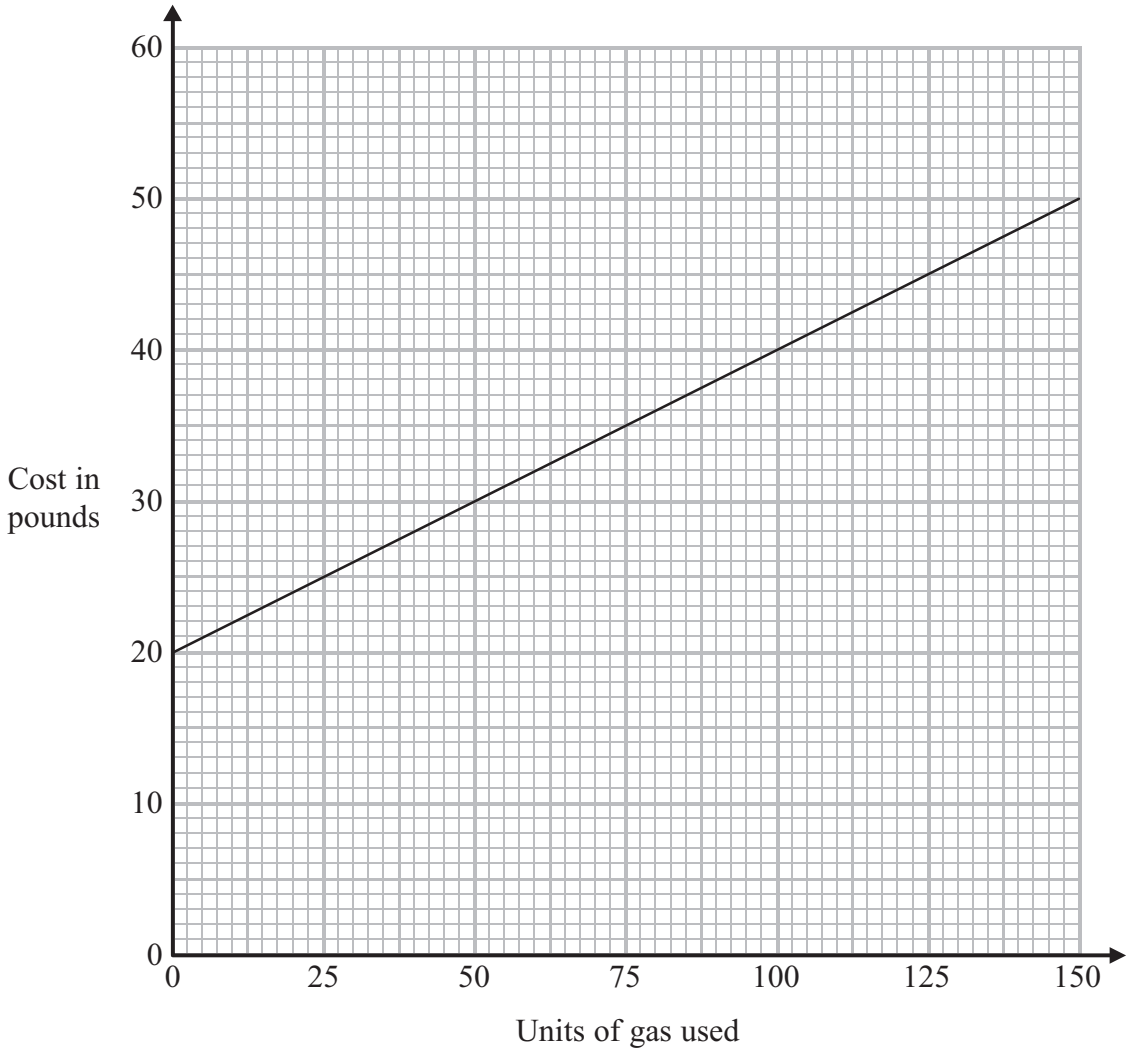
Jed knows that 1 hundredweight = 112 pounds.

Which crane Company should Jed buy the crane from?

(Total for Question 16 is 4 marks)

17 Simon has gas central heating.
He buys his gas from the Seagas company.

Simon draws this graph to show how much the company charges him for gas each month.



(a) Find the cost of using 75 units of gas.

£ .....

(1)

(b) (i) Find the gradient of the straight line graph.

.....

(ii) What is the cost of each unit of gas?

.....

(3)

STEMUP.CO.UK

Simon wants to compare the cost of two other gas companies with what he pays to Seagas.
Here are their monthly charges.

Sandygas 50p per unit of gas used.

Gas&Air £30 monthly fee.
The first 25 units are free and each extra unit of gas costs 10p.

Simon uses between 75 and 100 units of gas each month.

*(c) Which company gives Simon the best deal, Seagas, Sandygas or Gas&Air?
You must show your working and explain your answer.

(4)

(Total for Question 17 is 8 marks)

18 Pat carried out a survey of 100 people who bought tea in her shop.

A total of 40 people bought tea in the 200 g size.

A total of 70 people bought tea bags.
5 of these people bought tea bags in the 50 g size.
37 of these people bought tea bags in the 100 g size.

Nobody bought Loose tea in the 50 g size.
10 people bought Loose tea in the 100 g size.
7 people bought Loose tea in the 200 g size.

2 people bought instant tea in the 50 g size.

Complete the two-way table.

Size	Tea bags	Loose tea	Instant tea	Total
50 g				
100 g				
200 g				
Total				100

(Total for Question 18 is 5 marks)

STEMUP.CO.UK

***19** The diagram shows part of the design of a stained glass window.

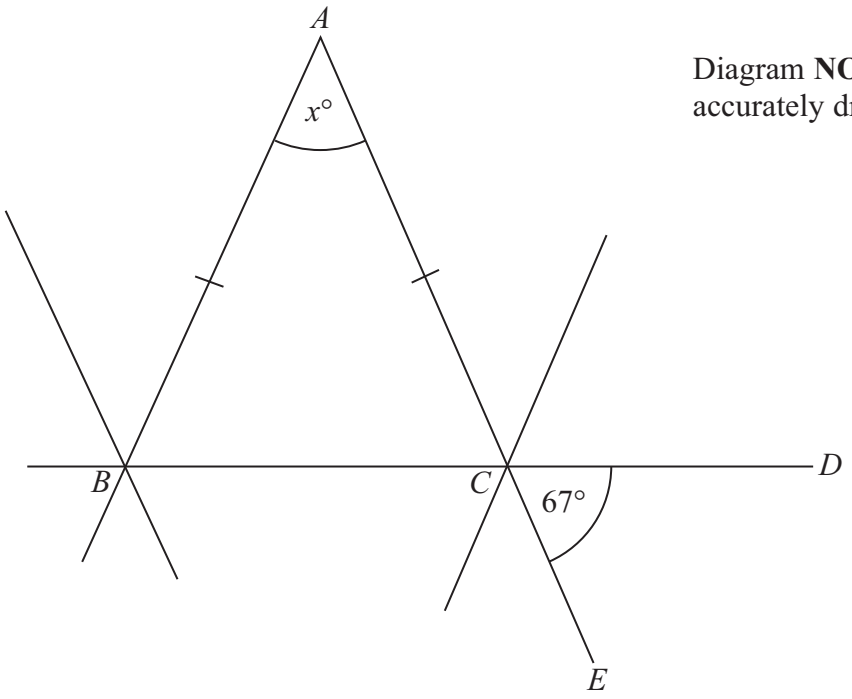


Diagram **NOT** accurately drawn

ABC is an isosceles triangle.
BCD and *ACE* are straight lines.
Angle *DCE* = 67°.

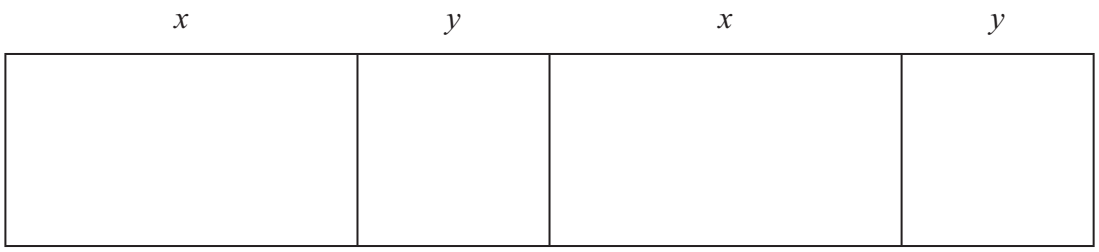
Work out the size of the angle marked $x°$.
Give reasons for your answer.

(Total for Question 19 is 4 marks)

20 Bob owns a shop that sells wallpaper.

Bob sets up a spreadsheet to work out the number of rolls of wallpaper needed for rooms of different sizes.
He ignores the doors and the windows in his calculations.

The diagram shows the four walls of a room.



The length of each long wall is x metres.
The length of each short wall is y metres.

To work out the number of rolls of wallpaper needed Bob has to divide the total wall length by 2

	A	B	C	D
1	**Length x**	**Length y**	**Total wall length**	**Rolls of wallpaper**
2	5	3		
3				

(a) Write in the formulae that need to go into C2 and D2

C2 Total wall length .....

D2 Rolls of wallpaper .....

(4)

(b) Work out the number of rolls of wallpaper needed.

.....

(1)

(Total for Question 20 is 5 marks)

STEMUP.CO.UK

21 Ali takes his car to a garage.

The car has a 5000 mile service.
It also has an MOT test.

(a) Work out Ali's total bill.

Costs	
5000 mile service	£79 plus VAT at 20%
10 000 mile service	£99 plus VAT at 20%
MOT test	£39 plus VAT at 20%

£ .....

(3)

Ali bought his car for £20 000

The car depreciated by 20% the first year.
The car depreciated by 10% the second year.

(b) Work out the value of the car at the end of the second year.

£ .....

(3)

(Total for Question 21 is 6 marks)

TOTAL FOR PAPER IS 100 MARKS

STEMUP.CO.UK

BLANK PAGE

edexcel

Mark Scheme (Results)

November 2012

GCSE Mathematics Linked Pair Pilot
Application of Mathematics (2AM01)
Foundation (Calculator) Paper 1F

ALWAYS LEARNING
PEARSON
STEMUP.CO.UK

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2012
Publications Code UG033646
All the material in this publication is copyright
© Pearson Education Ltd 2012

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		7000	1	B1 for 7000 accept 7 thousand
	(b)		3500	1	B1 for 3500 accept 35 hundred or 3 thousand 500 oe
	(c)		65	1	B1 for 65
2	(a)		4 profit	4	B1 cao
			3.50		B1 cao
			25		B1 cao
			15		B1 cao
	(b)	2.50 + 4 + 1.50 + 20 = 28 28 – 5 = **OR** 5 + 8 + 2 + 25 + 15 = 55 7.50 + 12 + 3.50 + 20 + 35 = 78 78 – 55 =	23	3	M1 ft for attempt to add all profits M1 ft for attempt to subtract losses A1 cao **OR** M1 ft for attempt to sum all the cost and sale prices M1 ft for attempt to subtract cost and sale prices A1 cao
3	(a)	Dog ~~lll~~ lll 8 Cat ~~lll~~ ll 7 Rabbit ll 2 Hamster lll 3	Correct frequencies	2	B2 for all frequencies correct (B1 for 2 tallies or 2 frequencies correct)
	(b)		Correct bars	2	B2 ft for all bar heights correct with or without gaps (B1 ft for 2 bar heights correct)
	(c)		Dog	1	B1 ft

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			correct lines drawn	3	B1 for vertical line of symmetry on Big Ben B1 for no line of symmetry on Houses of Parliament B1 for 4 lines of symmetry on Millennium Arch
5	(a)		3 feet	2	B1 for feet or ft or inches or in B1 (dep) for 3, accept answer in range 2.8 – 3.2, with feet or 36, accept answer in range 35 – 37, with inches
	(b)		2 litres	2	B1 for litres or *l* or millilitres or m*l* B1 (dep) for 2, accept answer in range 1.8 – 2.2, with litres or 2000, accept answer in range 1800 – 2200, with millilitres
6	(a)		18	1	B1 cao
	(b)		–6	1	B1 cao
	(c)	18 – –6 = –6 – 18 Counting on or counting back	24	1	B1 for 24 or –24 or ft from (a) and (b) provided (b) negative
	(d)	(18 + –6) ÷ 2 = or (a) – (c) ÷ 2 or (b) + (c) ÷ 2	6	2	M1 ft for '18' – '24' ÷ 2 or '–6' + '24' ÷ 2 or ('18' + '–6') ÷ 2 A1 cao

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
7	(a)		A, C, E	2	B2 for all 3 correct (–1 each error or omission) (B1 for one correct and no incorrect)
	(b)		<table><tr><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr><tr><td>2</td><td></td><td>8</td><td></td><td>2</td></tr></table>	2	B2 for 2 in A, 8 in C and 2 in E (–1 each answer in B and D) (B1 for one or two correct in A, C and E and no answer given in B or D) **Note** Ignore any reference to order 0 or 1 in B and D
8	(a)		March & April	1	B1 cao
	(b)		Lilac & Potentilla	1	B1 cao
	(c)		March	1	B1 cao
	(d)		Daphne	1	B1 cao
9			Correct arrows drawn	3	B3 for 4 correct arrows B2 for 2 correct arrows B1 for 1 correct answer NB arrows may go to scalene from each triangle and all equilateral triangles are isosceles

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*10			Appropriate correct graph drawn	4	C1 for key or suitable labels to identify Dave and Joan C1 for days of the week labelled M1 for diagram or chart (combined or separate) set up for comparison, e.g. dual bar chart, back to back bar charts or stem and leaf diagram, vertical stick graphs, pie charts etc. A1 for fully correct diagram(s) or chart(s) to include time 'axis' correctly scaled and labelled
11	(a)	5 – (0.75 + 0.85) 5 – 1.60	3.40	3	M1 for adding 75 + 85 or 160 or 0.75 + 0.85 or 1.60 M1 for 5 – 1.60 or 500 – 160 or 5 – 0.75 – 0.85 or 500 – 75 – 85 A1 for 3.40 cao (SC B1 for answer of 2.25 if M0 scored)
	*(b)	Single burger meal deal £1.90 Chicken (3) meal deal £1.95 Single burger, fries & milk £2.10 Chicken pieces (3), fries & milk £2.15 Single burger meal deal with large fries £2.10 Chicken (3) meal deal with large fries £2.15	Correct combinations	5	M1 for attempt to find total for drink, fries and either burger or chicken pieces with prices seen C1 for a correct total for drink, fries and either burger or chicken pieces B1 for identifying single burger meal deal and chicken (3) meal deal C2 for all 4 combinations with a total of 2.15 or less (C1 for 2 combinations with a total of 2.15 or less)

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)	$2x + 3x + 4x = 180^o$ $9x = 180$ $x = 180 \div 9$	20	3	M1 for $3x + 4x + 2x$ or $9x$ M1 for $180 \div 9$ or for 60, 80 and 40 A1 for 20 cao
	(b)	$2y + 20 + y + 16 + 90 = 180$ $3y + 36 = 90$ $3y = 54$ $y = 54 \div 3 = 18$ $18 + 16 =$	34	3	M1 for attempt to form an equation in y with sight of $2y + 20$, $y + 16$, 90 and 180 or with sight of $2y + 20$, $y + 16$ and 90 M1 for attempt to isolate y in equation or sight of $y = 18$ A1 for 34 cao
13	(a)	375×9.02	3382.50	2	M1 for 375×9.02 A1 for 3382.5(0) (SC B1 for answer of 3382 or 3383 if M0 scored)
	(b)	$675 \div 9.02 = 74.83$ £75 – 74.83 **OR** $75 \times 9.02 = 676.50$ $676.50 – 675 = 1.50$ $1.50 \div 9.02 = 0.166…$	£0.17 or 17p or 1.50 Kr	3	M1 for $675 \div 9.02$ (= 74.83...) M1(dep) for 75 – '74.83' A1 for £0.17 or 17p **OR** M1 for 75×9.02 (= 676.5) M1(dep) for '676.5' – 675 A1 for 1.5(0) Kr **OR** M1 for 75×9.02 (= 676.5) M1(dep) for '676.5' – 675 = 1.5 and '1.5' $\div$ 9.02 A1 for £0.17 or 17p

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14		$S - C = 15$ $D = 15/50 = 0.3$ $T = 0.3 \times 100$	P = 15 D = 0.3 T = 30	3	B1 for 15 B1 for 0.3 or $\frac{15}{50}$ oe or ft from '15' B1 for 30 or ft from '0.3'
15		$x + x + 5 + x + x + 5 = 58$ $4x + 10 = 58$ $4x = 48$ $x = 12$ so L = 17 w = 12 Area = 17×12 **OR** $2(x + x + 5) = 58$ $4x + 10 = 58$ $4x = 48$ $x = 12$ so L = 17 width = 12 Area = 17×12 **OR** Trial and Improvement method to find width and length with sight of 12 and/ or 17 Area = 12×17	204	4	M1 for attempt to set up the equation $x + x + 5 + x + x + 5 = 58$ or $4x + 10 = 58$ M1 for attempt to isolate terms in x and number terms or for dividing by coefficient of x M1 for multiplying their length and width A1 for 204 **OR** M1 for attempt to set up the equation $2(x + x + 5) = 58$ M1 for attempt to isolate terms in x and number terms or for dividing by coefficient of x M1 for multiplying their length and width A1 for 204 **OR** Trial and improvement scores 2 marks for sight of 12 and or 17 M1 for 12×17 A1 for 204

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16		**Cwts to lbs** 7.5 × 112 = 840 lbs **Kg to lbs** 400 × 2.2 = 880 lbs **Cwts to Kg** 7.5 × 112 ÷ 2.2 = 381.81 **lbs to Kg** 830 ÷ 2.2 = 377.2727… **Lbs to cwts** 830 ÷ 112 = 7.4107… **Kg to cwts** 400 × 2.2 ÷ 112 = 7.857	Correct comparison	4	**Cwts and Kg to lbs** M1 for 7.5 × 112 or 400 × 2.2 M1 for 7.5 × 112 and 400 × 2.2 A1 for 7½ cwts = 840 (lbs) and 400 kg = 880 (lbs) C1 (dep on at least M1) for conclusion ft from working seen **Cwts and lbs to Kg** M1 for 7.5 × 112 ÷ 2.2 or 830 ÷ 2.2 M1 for 7.5 × 112 ÷ 2.2 and 830 ÷ 2.2 A1 for 7½ cwts = 381.8(18..)(kg) and 830 lbs = 377.2(72..)(kg) C1 (dep on at least M1) for conclusion ft from working seen **Lbs and Kg to cwts** M1 for 830 ÷ 112 or 400 × 2.2 ÷ 112 M1 for 830 ÷ 112 and 400 × 2.2 ÷ 112 A1 for 830 lbs = 7.4(107..)(cwt) and 400 kg = 7.8(571..)(cwt) C1 (dep on at least M1) for conclusion ft from working seen

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17	(a)		35	1	B1 cao
	(b)(i)	30 ÷ 150	0.2	3	M1 for right angled triangle drawn or diff y ÷ diff x A1 for 0.2 oe, eg $\frac{30}{150}$
	(ii)		20p		B1 for 20p or £0.20 or ft their (b)(i)
	*(c)	75 units Gas&Air = £35 Seagas = £35 Sandygas = £37.50 100 units Gas&Air = £37.50 Seagas = £40 Sandygas = £50 **OR** Gas&Air (75) = £35 (100) = £37.50 Seagas (75) = £35 (100) = £40 Sandygas (75) = £37.50 (100) = £50	Gas&Air with comparisons	4	M1 for attempt to calculate 75 units and 100 units for at least one company A1 for (Seagas =) 35 and 40 OR (Sandygas =) 37.5(0) and 50 OR (Gas&Air =) 35 and 37.5(0) oe A1 for (Seagas =) 35 and 40 AND (Sandygas =) 37.5(0) and 50 AND (Gas&Air =) 35 and 37.5(0) oe C1 (dep on M1) for Gas&Air or ft their calculations **OR** M1 for attempt to calculate 75 units or 100 units for at least two companies A1 for two of (75 units) 35, 35, 37.5(0) or for two of (100 units) 37.5(0), 40, 50 A1 for all of (Seagas =) 35 and 40, (Sandygas =) 37.5(0) and 50, (Gas&Air =) 35 and 37.5(0) oe C1 (dep on M1) for Gas&Air or ft their calculations **OR** M1 for straight line drawn through (0, 0) or (75, 37.5) or for line with gradient 0.5 OR for straight line drawn through (75, 35) or (100, 37.5) or for line with gradient 0.1 A1 for straight line through (75, 37.5) and (100, 50) A1 for straight line through (75, 35) and (100, 37.5) C1 (dep on M1) for Gas&Air or ft 'straight lines' for Sandygas and Gas&Air [NB tolerance ±2mm square]

5AM1F_01

Question		Working	Answer	Mark	Notes
18		**Initial information** |	Bags	Pkt	Inst	Tot | | 50	**5**	**0**	**2**	| | 100	**37**	**10**		| | 200		**7**		**40** | | Tot	**70**			**100** | **Calculations** |	Bags	Pkt	Inst	Tot | | 50	5	0	2	**7** | | 100	37	10	**6**	**53** | | 200	**28**	7	**5**	40 | | Tot	70	**17**	**13**	100 |	Table completed correctly	5	**Initial information** B2 for all 8 pieces of information correctly placed (B1 for 3 pieces of information correctly placed) **Calculations** B3 for all 7 items correct (B2 for 4, 5 or 6 items correct) (B1 for 2 or 3 items correct)

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*19		Angle *ACB* = 67º *x* = 180 – (67 + 67)	46° with reasons	4	B1 for angle *ACB* = 67º, could be marked on the diagram M1 for 180 – (‘67’ + ‘67’) A1 for *x* = 46° C1 for vertically opposite angles (or vertically opposite angles) **and** base angles of an isosceles triangle are equal **OR** B1 for angle *ACB* = 67º, could be marked on the diagram M1 for 180 – (‘67’ + ‘67’) A1 for *x* = 46° C1 for “angles on a straight line add up to 180º **and** base angles of an isosceles triangle are equal
20	(a)		= 2*A2 + 2*B2 = C2/2	4	B1 for doubling the length and the width either singly or together e.g. 2*(*x* + *y*) or 2**x* and 2**w* or 2*(A2+B2) or 2*A2 or 2*B2 or 2*SUM(A2:B2) B1 for adding the lengths either before or after doubling, e.g. A2 + B2 B1 for attempt to divide their spreadsheet formula by 2 or their cell C by 2, eg C2/2 B1 (dep on two formulas) for correct spreadsheet formula notation (condone missing =)
	(b)		8	1	B1 for 8 or ft their formulas

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)	(79 + 39) × 1.2 118 × 1.2 **OR** 79 × 1.2 + 39 × 1.2 94.80 + 46.80 **OR** $\frac{20}{100}$ × (79 + 39) = 23.60 118 + 23.60 **OR** $\frac{20}{100}$ × 79 = 15.80 $\frac{20}{100}$ × 39 = 7.80 15.80 + 7.80 + 118	141.60	3	M1 for 79 × 1.2 or 39 × 1.2 oe M1 for 79 × 1.2 + 39 × 1.2 oe A1 for 141.6(0) **OR** M1 for $\frac{20}{100}$ × 79 (= 15.8) and $\frac{20}{100}$ × 39 (= 7.8) M1 for $\frac{20}{100}$ × 79 + 79 + $\frac{20}{100}$ × 39 + 39 A1 for 141.6(0) **OR** M1 for $\frac{20}{100}$ × (79 + 39) (= 23.6) oe M1 for $\frac{20}{100}$ × (79 + 39) + 79 + 39 oe A1 for 141.6(0)
	(b)	20 000 × 0.8 = 16 000 16 000 × 0.9 = 14 400 **OR** $\frac{20}{100}$ × 20 000 = 4000 20 000 – 4000 = 16 000 10% × 16 000 = 1600 16 000 – 1600 =	14 400	3	M1 for 20 000 × 0.8 oe or 16 000 seen M1 for '16 000' × 0.9 oe A1 for 14 400 **OR** M1 for 20 000 – 0.2 × 20 000 oe or 16 000 seen M1 for '16 000' – 0.1 × '16 000' oe A1 for 14 400

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG033646 November 2012

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rewarding Learning

STEMUP.CO.UK

Write your name here

Surname	Other names

Edexcel GCSE

Centre Number	Candidate Number

Applications of Mathematics

Unit 1: Applications 1

For Approved Pilot Centres ONLY

Foundation Tier

Monday 11 June 2012 – Afternoon
Time: 1 hour 45 minutes

Paper Reference
5AM1F/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P40654A

©2012 Pearson Education Ltd.

6/6/7/3/

P 4 0 6 5 4 A 0 1 2 8

PEARSON

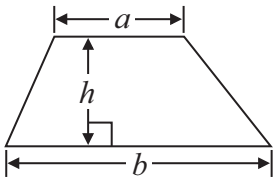
STEMUP.CO.UK

GCSE Mathematics 2AM01

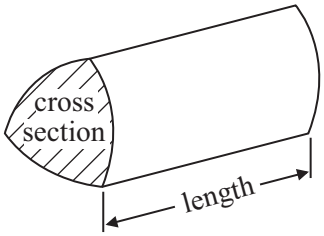
Formulae: Foundation Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section × length



STEMUP.CO.UK

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Lucy has one pound twenty two pence.
Mary has three pounds eight pence.

Work out the total amount of money Lucy and Mary have.

£.....

(Total for Question 1 is 3 marks)

2 Emma buys online three tickets for a theatre show.
Each ticket costs £40

Emma also has to pay a booking fee.
The booking fee is 10% of the price of the tickets.

Work out the total amount Emma has to pay.

£.....

(Total for Question 2 is 3 marks)

3 On Sunday, Ewa completely fills the petrol tank of her car.

On Monday, the petrol tank is $\frac{4}{5}$ full.

(a) What fraction of the full petrol tank has Ewa used?

.....

(1)

Ewa buys 50 litres of petrol.
The petrol costs 141.4p per litre.

(b) Work out the total cost of the petrol.

£.....

(3)

(Total for Question 3 is 4 marks)

STEMUP.CO.UK

4 A school bus takes students between 3 different schools.

There are 14 students on the bus when it leaves school A.
The bus goes from school A to school B.
At school B, 7 students get off the bus and 5 students get on the bus.

The bus then goes from school B to school C.
At school C, 10 students get off the bus and 6 students get on the bus.

How many students are now on the bus?

.....

(Total for Question 4 is 3 marks)

5 Haseem and Alesha are drawing tiles.

Haseem says,

'My tile is a quadrilateral with all four angles of equal size.
My tile also has four sides equal in length.'

(a) (i) What special type of quadrilateral has Haseem drawn?

.....

Alesha says,

'My tile is a quadrilateral with four sides of equal length.
My tile has two different pairs of angles of equal size.'

(ii) What special type of quadrilateral has Alesha drawn?

.....

(2)

Here is an accurate drawing of a tile.



(b) (i) On the tile, draw all the lines of symmetry.

(ii) Measure the width of the tile.

..... cm

(4)

(Total for Question 5 is 6 marks)

STEMUP.CO.UK

6 Jim works in a cafe.
He sells coffee.
A cup of coffee costs £1.50

On Wednesday the number of cups of coffee Jim sells is c.
He sold these cups of coffee for a total of £75

(a) Write down an equation to represent this information.

.....

(2)

(b) Work out how many cups of coffee Jim sold on Wednesday.

.....

(2)

(Total for Question 6 is 4 marks)

*7 The table shows some information about the average temperatures in London and in Malaga each month from January to June.
The temperatures are in °C.

	Jan	Feb	Mar	Apr	May	Jun
London	2	5	9	14	16	20
Malaga	10	14	18	23	28	34

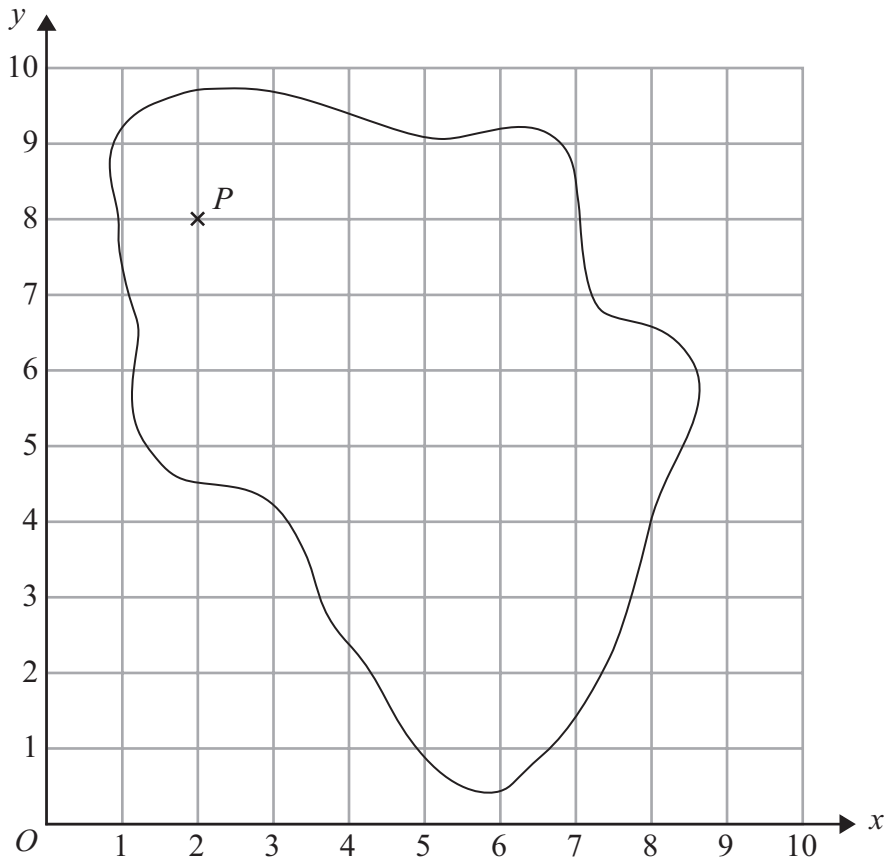
Show this information in a suitable chart or diagram.

STEMUP.CO.UK

(Total for Question 7 is 4 marks)

8 Fiona is a pupil at a primary school.
Fiona is using a simple grid to design a map of an island.

The grid is shown below.



The cross at P shows a palm tree on the island.

(a) Write down the coordinates of the palm tree.

(..... , ...)

(1)

Fiona is going to show a coconut tree at the point (6, 2).

(b) Mark with a cross (X) the position of the coconut tree.
Label this point C.

(1)

Fiona wants to show the position of some treasure.
She is going to show the position of the treasure exactly halfway between the two trees.

(c) Work out the coordinates of the position of the treasure.

(..... , ...)

(2)

(Total for Question 8 is 4 marks)

STEMUP.CO.UK

9 Caitlin is planning a school disco.

She wants to find out the types of music people like.

Design a suitable table for a data collection sheet she could use to collect this information.

(Total for Question 9 is 3 marks)

10 A club sells metal badges and cloth badges.

The metal badge is an equilateral triangle.
The length of each side is 2 cm.

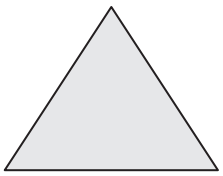


Diagram **NOT** accurately drawn

The cloth badge is mathematically similar to the metal badge.

(a) What is the size of each angle of the cloth badge?

..... °

(1)

The length of a side of the cloth badge is 3 times the length of a side of the metal badge.

(b) Work out the length of each side of the cloth badge.

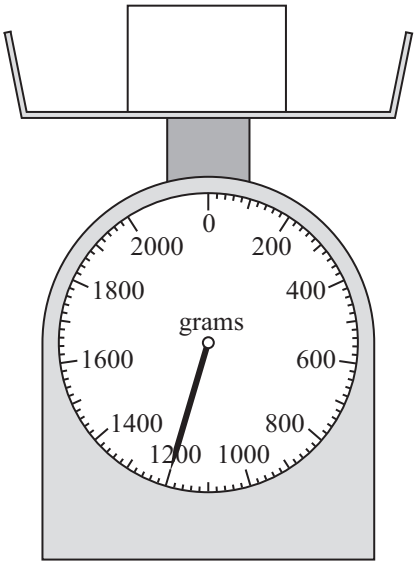
..... cm

(2)

(Total for Question 10 is 3 marks)

STEMUP.CO.UK

11 Here is a parcel on some scales.



(a) (i) Write down the weight, in grams, shown on the scales.

.....g

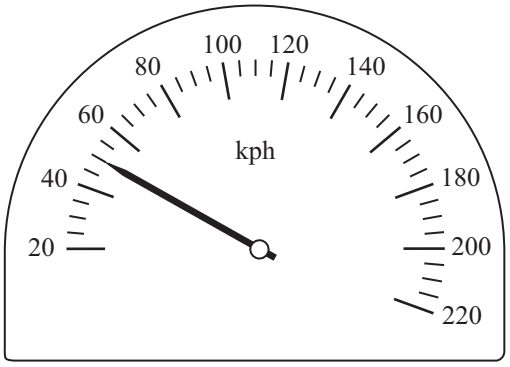
Colin wants to know the weight of the parcel in kilograms.

(ii) Change the weight of the parcel into kilograms.

.....kg

(2)

Colin drives to the post office to post his parcel.
This scale shows the speed of Colin's car.



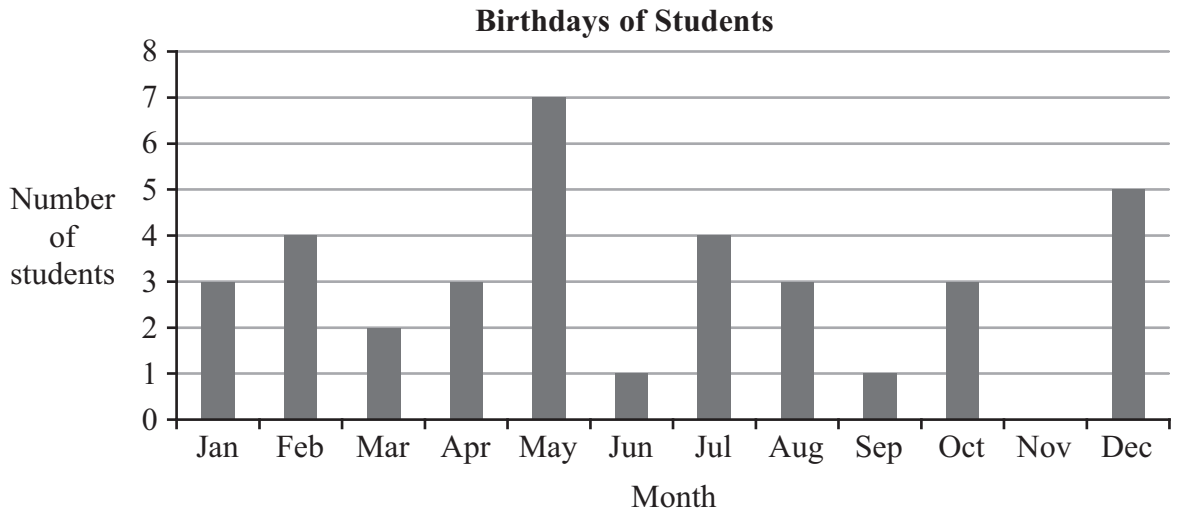
(b) Write down the speed shown on this scale.

..... kph

(1)

(Total for Question 11 is 3 marks)

12 Mr Whittle put this bar chart on his classroom wall.
The bar chart shows some information about the month in which the students in his class have their birthday.



(a) Write down the month in which most of the students have a birthday.

.....

(1)

(b) Work out the number of students in Mr Whittle's class.

.....

(2)

(Total for Question 12 is 3 marks)

STEMUP.CO.UK

13 Rick is making a window in the shape of a circle.
The glass in each sector of the circle will be a different colour.

The diagram shows the sizes of the angles in some of the sectors of the circle.
AOB is a diameter of the circle.

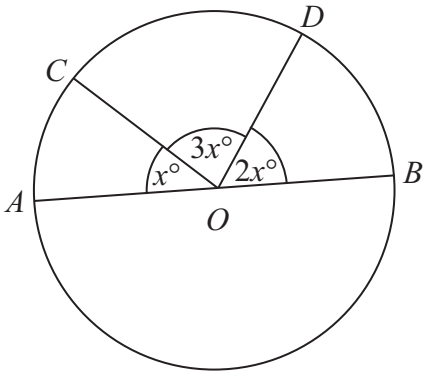


Diagram **NOT** accurately drawn

(a) Work out the value of x.

.....

(3)

(b) Write down the mathematical name for the line OC.

.....

(1)

(c) Write down the mathematical name for the part of the circle AC.

.....

(1)

(Total for Question 13 is 5 marks)

14 This table shows some information about four computers.

Computer	Price (£)	Weight (kg)	RAM (Gb)	Storage Capacity (Gb)
Ace 38	600	2.8	4	320
Ace 40	475	2.6	3	250
Ace 45	613	2.7	4	320
Ace 50	624	2.7	4	500

(a) Which is the heaviest computer?

.....

(1)

(b) Which computers have the same storage capacity?

.....

(1)

(c) How much RAM does the Ace 40 have?

..... Gb

(1)

The Ace 40 is the cheapest computer.

(d) From the information in the table, give a reason why.

.....

.....

(1)

(Total for Question 14 is 4 marks)

STEMUP.CO.UK

15 Jill has a cafe.
Jill asks 100 people the type of coffee they buy most often.

The two-way table gives some information about Jill's results.

	Americano	Latte	Cappuccino	Total
Small	3	5	7	
Medium	23		21	65
Large		7		
Total	35			100

Complete the two-way table for Jill.

(Total for Question 15 is 3 marks)

16 Philip works in a shoe shop.
Here are the sizes of 15 pairs of shoes Philip sold.

3 3 4 4 4 4 4 5 6 6 6 7 7 8 9

(a) (i) Write down the mode.

.....

(ii) Write down the median.

.....

(2)

Philip has to order some more shoes to sell.
He wants to use an average shoe size to help him decide the shoe size to order.

(b) Which average should he use?
Give a reason for your answer.

.....

.....

.....

(1)

(Total for Question 16 is 3 marks)

***17** Amy is on holiday in Spain.
In Spain a watch costs €14
In England the same type of watch costs £12

The exchange rate is £1 = €1.20

In which country is the watch better value?
You must show all your working.

(Total for Question 17 is 3 marks)

STEMUP.CO.UK

18 Sui Lin buys items needed for winter sports.
She then sells these items.

Sui Lin sets up a spreadsheet as shown below.
Here is an extract of the spreadsheet.

	A	B	C	D
1	**Item**	**Buys (£)**	**Sells (£)**	**Profit or Loss (£)**
2	Skis	50	55	
3	Snowboard	200	180	
4	Shovel	45	55	
5	Poles	10	8	
6	Bindings			
7	**Total**			

Sui Lin buys bindings for £90
She sells the bindings for £102

(a) Put this information in the spreadsheet.

(2)

(b) Write down the formulas to go into each of the cells D2 and B7

D2 .....

B7 .....

(3)

(Total for Question 18 is 5 marks)

***19** Josie and Rose both play the guitar in a band.
The band plays for 120 minutes.

Josie plays her guitar for 70% of this time.

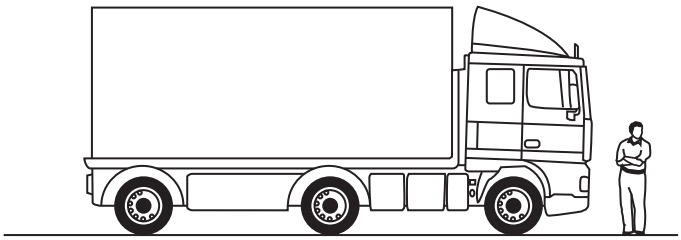
Rose plays her guitar for $\frac{4}{5}$ of this time.

Who plays the guitar for the longest time?

(Total for Question 19 is 3 marks)

STEMUP.CO.UK

20



The picture shows a lorry driver standing next to his lorry.
The lorry driver and the lorry are drawn to the same scale.

The lorry driver wants to drive the lorry into a car park.
The entrance to the car park is 2.1 metres high.

Can the lorry driver safely drive the lorry into the car park?
You must clearly show how you got your answer.

(Total for Question 20 is 3 marks)

21 An internet bookshop uses this advert.

> **Each day every 3rd customer gets a mystery prize.**
>
> **Each day every 20th customer gets free postage and packaging.**

On Tuesday the internet bookshop had 150 customers.

(a) How many of the 150 customers got a mystery prize?

.....

(2)

(b) How many of the 150 customers got free postage and packaging?

.....

(2)

(c) How many of the 150 customers got both a mystery prize **and** free postage and packaging?

.....

(2)

(Total for Question 21 is 6 marks)

STEMUP.CO.UK

***22** Alan, Ben and Clara are playing a game with cards.

Alan has p cards.
Ben has twice as many cards as Alan.
Clara has 3 cards less than Ben.

They have a total of 17 cards.

Work out how many cards each person has.

(Total for Question 22 is 5 marks)

***23** Here are three oil cans.



Diagrams **NOT** accurately drawn

A **B** **C**

Given that 8 pints = 1 gallon,
put the cans in order of capacity.

(Total for Question 23 is 4 marks)

STEMUP.CO.UK

24 The diagram shows the top of Justin's birthday cake.

The cake is in the shape of a cross.
Each edge of the cross has a length of 4 cm.
All the corners are right angles.

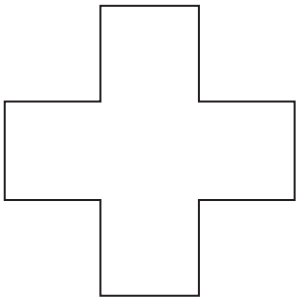


Diagram **NOT** accurately drawn

Justin covers all of the top of the cake with chocolate.

(a) Work out the area Justin covers with chocolate.

..... cm^2

(3)

Justin is going to put a ribbon around the edge of the cake.

(b) Work out the length of ribbon Justin needs.

..... cm

(2)

(Total for Question 24 is 5 marks)

25 Anna is making crumble.

She makes the crumble from flour, sugar and butter.
Anna needs twice as much butter as sugar.
She needs one and a half times as much flour as butter.

Anna is going to make 900 g of crumble.

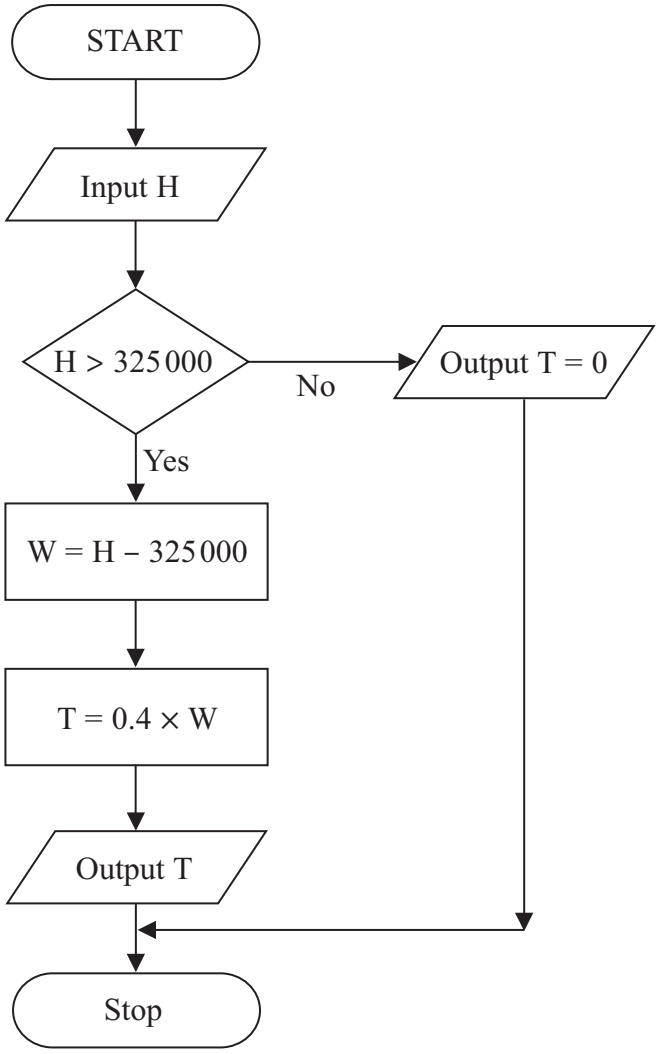
Calculate the amount of sugar Anna needs.

.....g

(Total for Question 25 is 4 marks)

STEMUP.CO.UK

26 Here is a flowchart to calculate tax on inheritance.



An inheritance, £H, is £100 000

(a) Use the flowchart to calculate the tax, £T.

T = ...

(1)

An inheritance is £400 000

(b) Calculate the tax.

T = ...

(3)

(Total for Question 26 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

STEMUP.CO.UK

BLANK PAGE

edexcel

Mark Scheme (Results)

Summer 2012

GCSE Mathematics Linked Pair Pilot
Application of Mathematics (2AM01)
Foundation (Calculator) Paper 1F

ALWAYS LEARNING

PEARSON

STEMUP.CO.UK

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:

http://www.edexcel.com/Aboutus/contact-us/

Summer 2012

All the material in this publication is copyright
© Pearson Education Ltd 2012

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1		1.22 + 3.08	4.30	3	B1 for 1.22 or 3.08 M1 for 1.22+'3.08' A1 cao
2		3 × 40=120 10% is 12	132	3	M1 for 3×40 or 120 seen M1 for 0.1 × '120' oe or 12 A1 cao **OR** M1 for 0.1 × 40 oe or 4 seen M1 for 3×'4' or 12 A1 cao **OR** M1 for 1.1 × 40 oe or 44 seen M1 for 3×'44' A1 cao
3	(a)		$\frac{1}{5}$	1	B1 for $\frac{1}{5}$ oe or 20% or 0.2
	(b)	50×141.4	70.70	3	M1 for 50 × 141.4 A1 for digits 7070 A1 for 70.7(0)
4		14–7+5–10+6 OR 14–2–4	8	3	M1 for 14–7+5 or 12 M1 for '12'–10+6 A1 cao **OR** M1 for –7+5 or –10+6 M1 for 12+' –2'+' –4' A1 cao

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)(i)		square	2	B1 cao
	(ii)		rhombus		B1 for rhombus accept square
	(b)(i)		4 lines drawn	4	B2 for exactly 4 correct lines drawn (B1 for 1 correct line drawn)
	(ii)		5.1		B2 for 5.0–5.4 (B1 for 50–54)
6	(a)		75 = 1.5c	2	M1 for1.5*c* or 75=… A1 for 75 = 1.5*c* oe
	(b)	$\frac{75}{1.5}$	50	2	M1 for $\frac{'75'}{'1.5'}$ oe or 75÷1.5 or 1.5×50 A1 cao
*7			diagram or chart	4	B1 for a key or suitable label to identify London and Malaga B1 for 5 or 6 months correctly labelled B1 for diagram(s) or chart(s) set up for comparisons, eg dual bar chart, back to back stem and leaf diagram, pie charts etc C1for fully correct diagram or chart to include temperature ‘axis’ correctly scaled and labelled

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		(2,8)	1	B1 cao
	(b)		point plotted at (6, 2)	1	B1 for point plotted at (6, 2)
	(c)		(4, 5)	2	M1 for indication of midpoint for their point C A1 cao **OR** M1 for $(\frac{'2'+6}{2}, \frac{'8'+2}{2})$ A1 cao SC B1 for (5, 4) or (7, 2)
9			type / tally / freq.	3	B3 for data collection sheet with three aspects aspect 1: column/row labelled types (of music) or list of at least three types of music aspect 2: column/row labelled tally aspect 3: column/row labelled frequency or total oe (B2 for two aspects B1 for one aspect)
10	(a)		60	1	B1 cao
	(b)		6	2	M1 for 3×2 or 2+2+2 A1 for 6

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)(i)		1200	2	B1 cao
	(ii)		1.2		B1 for 1.2 or ft '1200' ÷ 1000
	(b)		50	1	B1 cao
12	(a)		May	1	B1 cao
	(b)	3+4+2+3+7+1+4+3+1+3+5	36	2	M1 for 3+4+2+3+7+1+4+3+1+3+5 condone one error or omission A1 cao
13	(a)	$x + 3x + 2x = 180$ 180 ÷ 6	30	3	M1 for $3x + 2x + x$ or $6x$ or 180 seen M1 for 180÷6 or 30, 60 and 90 A1 cao
	(b)		radius	1	B1 cao
	(c)		arc	1	B1cao
14	(a)		Ace 38	1	B1 for (Ace) 38
	(b)		Ace 38 and Ace 45	1	B1 for both (Ace) 38 and (Ace) 45
	(c)		3	1	B1 cao
	(d)		reason	1	B1 for correct reason, eg least RAM, low/less storage, only 250Gb

5AM1F_01

Question		Working	Answer	Mark	Notes
15		<table><tr><td></td><td>A</td><td>L</td><td>C</td><td>tot</td></tr><tr><td>S</td><td></td><td></td><td></td><td>15</td></tr><tr><td>M</td><td></td><td>21</td><td></td><td></td></tr><tr><td>L</td><td>9</td><td></td><td>4</td><td>20</td></tr><tr><td>tot</td><td></td><td>33</td><td>32</td><td></td></tr></table>	15 21 9, 4, 20 33, 32	3	B3 for all 7 correct (B2 for 5 or 6 correct B1 for 3 or 4 correct)
16	(a)(i)		4	2	B1 cao
	(ii)		5		B1 cao
	(b)		mode and reason	1	B1 for mode or (size) 4 with reason, eg most popular size, sells more of these etc
*17		12×1.2=14.40 OR 14÷1.2=11.66666	Spain better value	3	M1 for 12×1.2 or 14÷1.2 A1 for 14.4(0) and (£)11.67 or (£)11.66 C1 (dep on M1) for correct conclusion based on their figures, eg Spain better value or Spain costs less
18	(a)		(Bindings) 90 102	2	B2 for (£)90 and (£)102 (B1 for one correct entry)
	(b)		= C2–B2 = B2+B3+B4+B5+B6	3	B1 for (=)C2–B2 oe B1 for (=)B2+B3+B4+B5+B6 or (=)SUM(B2:B6) oe or intention to add correct cells is clear B1 for using correct spread sheet notation in both cases condone missing =

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*19		70÷100×120=84 4÷5×120=96 so Rose longer **OR** 70÷100=0.7 4÷5=0.8 Rose longer **OR** 70% 4÷5×100=80% Rose longer **OR** 70% = 7/10 4/5 = 8/10 Rose longer	Rose plays longer	3	M1 for 70÷100×120 (=84) or 4÷5×120 (=96) M1 for 70÷100×120 (=84) and 4÷5×120 (=96) C1 for Rose (plays) longer oe with 84 and 96 **OR** M1 for 70÷100 (=0.7) or 4÷5 (=0.8) M1 for 70÷100 (=0.7) and 4÷5 (=0.8) C1 for Rose (plays) longer oe with 0.7 and 0.8 **OR** M2 for 4÷5×100 (=80%) C1 for Rose (plays) longer oe with 80% **OR** M1 for 70/100 or 80/100 oe M1 for 70/100 and 80/100 oe C1 for Rose (plays) longer oe with 7/10 and 8/10
20		2×1.8=3.6	no with supporting work	3	M2 for height of lorry 3 – 4 (metres) oe (M1 for man's height seen as 1.5–2 (metres) oe or for 2×man's height) C1 (dep on M1) for no with supporting work

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)	150÷3 **OR** 3,6,9,12,15,(…)	50	2	M1 for 150÷3 or at least the first 5 multiples of 3 which may come from addition or subtraction A1 cao
	(b)		7	2	M1 for 150÷20 or 7.5 seen or multiples of 20 up to 140 or up to 160 or subtracting 20s down to 10 or −10 A1 cao
	(c)	3×20 = 60 150 ÷ 60 **OR** 20,40,<u>60</u>,80,100,<u>120</u>,140 3, 6, …, <u>60</u>, …, <u>120</u>, …	2	2	M1 for 20×3 or 60 seen or 150÷60 oe A1 cao **OR** M1 for listing 20 times table with 60 or 120 identified or listing 3 times table with 60 or 120 or 180 identified A1 cao (SC B1 for 2.5)
*22		$p + 2p + 2p - 3 = 17$ $5p - 3 = 17$ $5p = 20$ $p = 4$, so 4, 8, 5	4, 8, 5	5	M1 for $2p$ or $2p-3$ seen M1 for p +'$2p$' + '$2p - 3$' M1 for p +'$2p$' + '$2p - 3$' = 17 A1 for 4 or 8 or 5 C1 for Alan 4,Ben 8 and Clara 5 oe **OR** M1 for choosing a value for p M1 for attempting a trial M1 for attempting at least 2 trials with totals A1 for 4 or 8 or 5 C1 for Alan 4,Ben 8 and Clara 5 oe

5AM1F_01

Question		Working	Answer	Mark	Notes
*23		<table><tr><th></th><th>A</th><th>B</th><th>C</th></tr><tr><td>l</td><td>38</td><td>40.5−40.95</td><td>38.8−40</td></tr><tr><td>g</td><td>8.35−8.44</td><td>9</td><td>8.75</td></tr><tr><td>p</td><td>66.5−68.4</td><td>72</td><td>70</td></tr></table>	A,C,B	4	(litres) M1 for 9×4.5 (=40.5) or 70÷1.75 (=40) M1 for 9×4.5 (=40.5) and 70÷1.75 (=40) A1 for 40.5−40.95 and 38.8−40 **OR** (galls) M1 for 38÷4.5 (=8.4 or better) or 70÷8 (=8.75) M1 for 38÷4.5 (=8.4 or better) and 70÷8 (=8.75) A1 for 8.35−8.44 and 8.75 **OR** (pints) M1 for 38×1.75 (=66.5) or 9×8 (=72) M1 for 38×1.75 (=66.5) and 9×8 (=72) A1 for 66.5−68.4 and 72 C1 (dep on M1) for correct order identified with quantities, ie A,C,B or B,C,A or ft for correct order from their quantities
24	(a)	4×4=16 16×5=80 **OR** 12×12=144 4×4=16 16×4=64 144–64=80	80	3	M1 for attempt to calculate area of small square, ie 4×4 or 16 seen M1 for 5 × ‘area of small square’ A1 cao (SC B1 for 64) **OR** (subtraction) M1 for attempt to calculate area of large square, ie 12×12 or 144 seen M1 for ‘area of large square’–4 ×’ area of small square’ A1cao
	(b)		48	2	M1 for 12× 4 oe A1 for 48 or greater than 48 if an overlap is indicated

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
25		f:b:s = 3:2:1 900 ÷ 6 **OR** $s+2s+3s=900$ $6s = 900$ $s = 900 \div 6$ **OR** eg 150, 100, 50 (=300) 300, 200, 100 (=600) 450, 300, 150 (=900)	150	4	M1 for b:s = 2:1 oe or $b = 2s$ or $f = 3s$ or $f = 1.5b$ oe M1 for f:b:s = 3:2:1 or $b = 2s$ and $f = 3s$ oe M1 for 900 ÷ '6' or s + b + f (= 900) A1 cao **OR** M1 for s,2s,3s oe used in algebraic method condone one error M1for reducing '$s + 2s + 3s$' to the form $as = 900$ M1 for 900 ÷ '6' A1 cao **OR** M1 for trial and improvement method using butter = 2×sugar or flour = 1.5×butter oe M1 for an attempt to use butter = 2×sugar and flour = 1.5×butter oe for one trial, eg 150, 100, 50 M1 for an attempt to use butter = 2×sugar and flour = 1.5×butter oe for another trial A1 cao
26	(a)		0	1	B1 for (£)0
	(b)		£30 000	3	M1 for 400 000–325 000 or 75 000 seen M1 (dep) for 0.4×'(400 000–325 000)' A1for (£) 30 000

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com
Order Code UG031606 Summer 2012

For more information on Edexcel qualifications, please visit
www.edexcel.com/quals

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rewarding Learning

STEMUP.CO.UK

Write your name here

Surname	Other names

Edexcel GCSE

Centre Number	Candidate Number

Applications of Mathematics

Unit 1: Applications 1

For Approved Pilot Centres ONLY

Foundation Tier

Wednesday 9 November 2011 – Afternoon
Time: 1 hour 45 minutes

Paper Reference
5AM1F/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P40606A

©2011 Edexcel Limited.

6/6/6

P 4 0 6 0 6 A 0 1 2 8

edexcel
advancing learning, changing lives

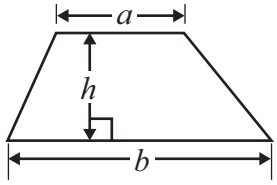
STEMUP.CO.UK

GCSE Mathematics 2AM01

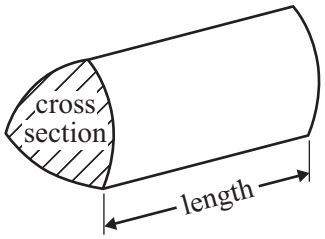
Formulae: Foundation Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross section × length



STEMUP.CO.UK

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Mount Everest is the highest mountain in the world.
The height, in metres, of Mount Everest is 8851 metres.

(a) Write the height of Mount Everest to the nearest hundred metres.

..... metres
(1)

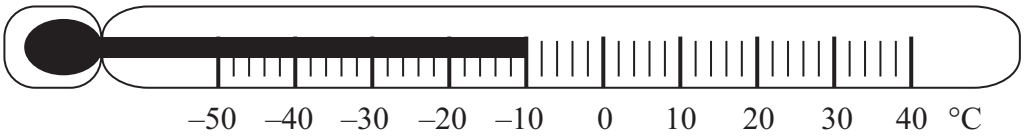
The height, in feet, of Mount Everest is 29 035 feet.

(b) Write the height of Mount Everest to the nearest thousand feet.

..... feet
(1)

(Total for Question 1 is 2 marks)

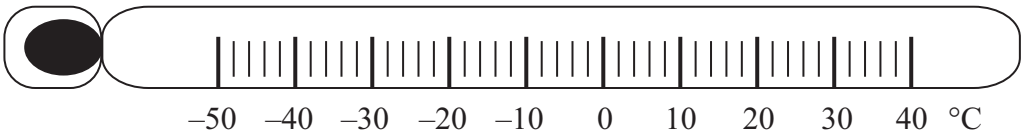
2 (a) What temperature is shown on this thermometer?



..... °C

(1)

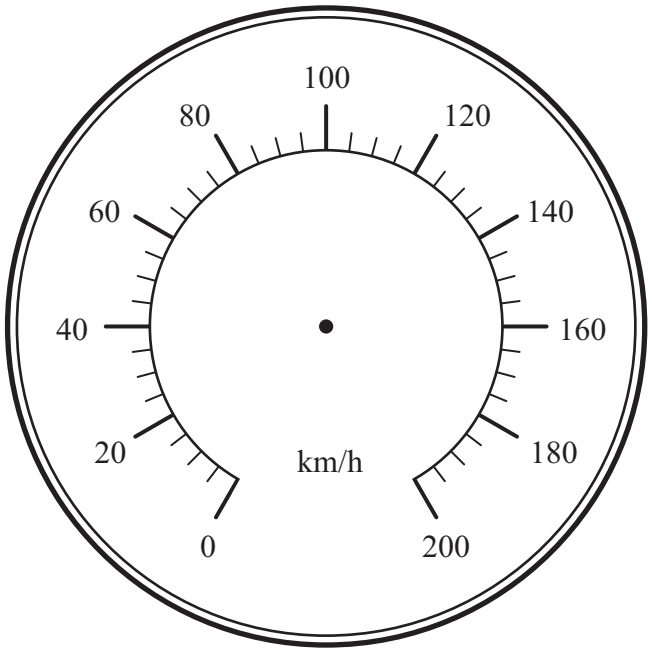
(b) On the thermometer below, draw an arrow (↓) to show a temperature of 24°C.



(1)

This is a picture of a speedometer.

(c) Draw an arrow to show a speed of 75 km/h.



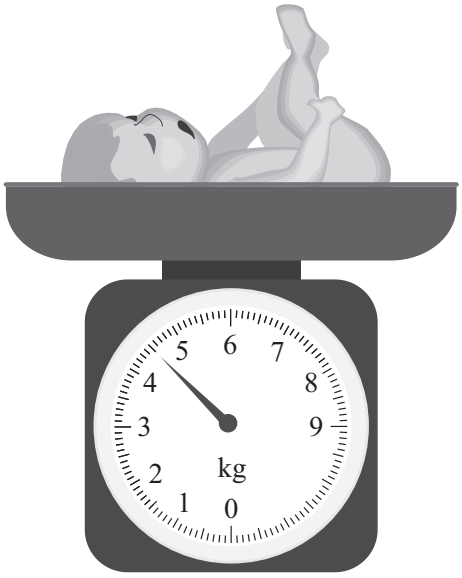
(1)

(Total for Question 2 is 3 marks)

STEMUP.CO.UK

3 Angela's baby weighed 4.5 kg at birth.
At three months old, the baby weighed 7.35 kg.

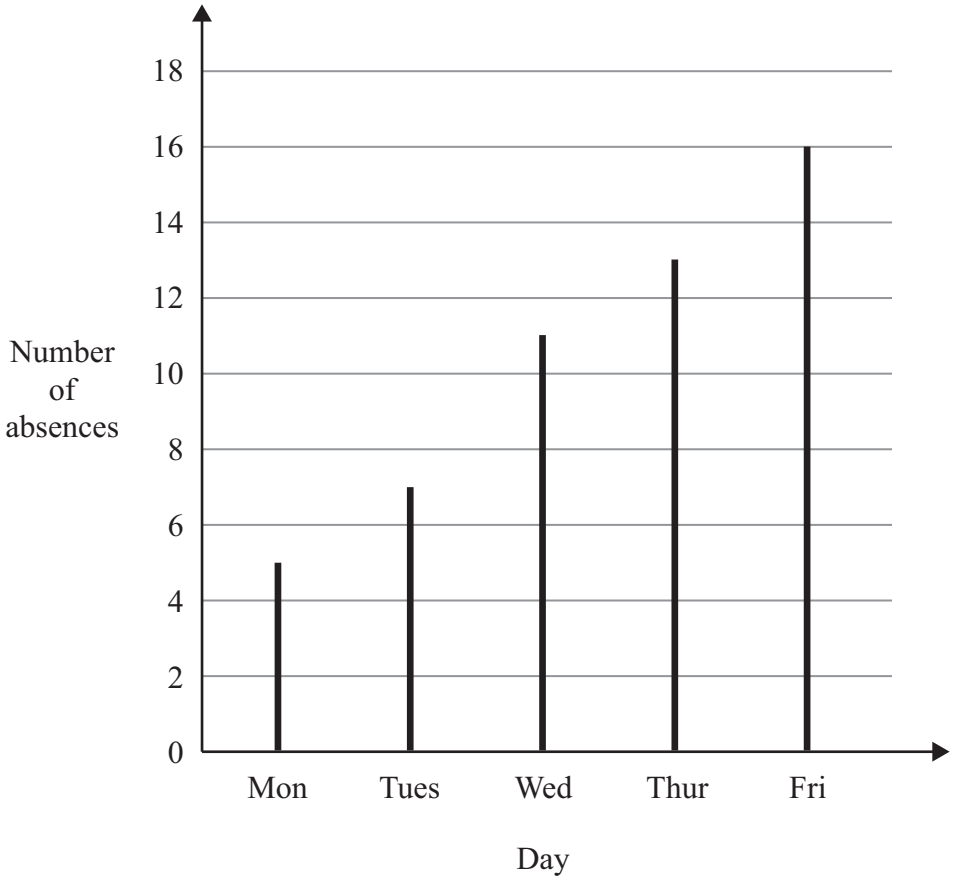
Work out the increase in the baby's weight in grams.



..... grams

(Total for Question 3 is 3 marks)

4 The graph gives information about the number of absences each day in a school for one week.



(a) Write down the number of absences on Monday.

.....

(1)

On one day there were 13 absences.

(b) Which day?

.....

(1)

(c) Work out the total number of absences that week.

.....

(2)

STEMUP.CO.UK

(d) Describe the change in the number of absences from Monday to Friday.

.....

.....

(1)

(Total for Question 4 is 5 marks)

5 Debra bought a new fridge.
The fridge cost £200

Debra paid £50 when she bought the fridge.
She paid the rest of the money in 12 equal monthly payments.

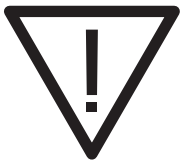
Work out how much Debra paid each month.

£ .....

(Total for Question 5 is 4 marks)

6 Here are some symbols found on packaging.

(a) Write down the number of lines of symmetry of each symbol.

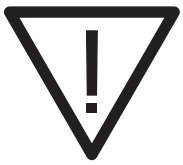




....

(2)

(b) (i) Put a tick (✔) under the symbol that has rotational symmetry.





....

(ii) Write down the order of rotational symmetry of this symbol.

.....

(2)

(Total for Question 6 is 4 marks)

STEMUP.CO.UK

7 Priyesh has 12 square paving stones.
He will use all the stones to make a patio that is a rectangle.

(a) Draw a diagram to show how Priyesh can use these stones to make a patio that is a rectangle.

(2)

(b) The diagram shows a pond with a path around it.

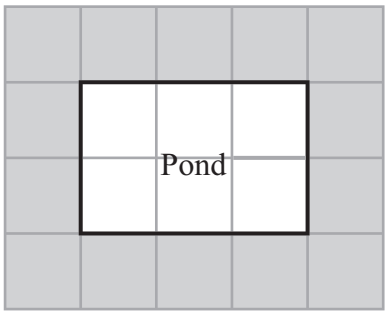


Diagram **NOT** accurately drawn

(i) Work out the perimeter of the pond.

..... m

(ii) Work out the area of the path.

.....

(3)

(Total for Question 7 is 5 marks)

*8 The table shows how much protein, fat, fibre and salt women and men need each day.

	Women	Men
Protein	45 g	55 g
Fat	70 g	95 g
Fibre	25 g	25 g
Salt	5 g	5 g

Show this information in a suitable chart or diagram.

STEMUP.CO.UK

(Total for Question 8 is 4 marks)

*9 The table shows the numbers of passengers, in millions, using five airports in 2005 and 2006.

	Number of passengers (millions)	
	2005	2006
Belfast	4.9	4.8
Bristol	5.5	5.2
Glasgow	9.2	8.8
Heathrow	66.5	67.7
Manchester	21.7	22.1

In which year were there more passengers in total using these airports?

(Total for Question 9 is 3 marks)

STEMUP.CO.UK

10 The table shows the distances, in kilometres, between some towns and cities in France.

Bordeaux					
879	Calais				
761	574	Dijon			
433	419	476	Le Mans		
582	294	312	204	Paris	
349	534	416	88	237	Tours

(a) Write down the distance between Bordeaux and Le Mans.

..... km

(1)

(b) Write down the name of the nearest town or city to Le Mans.

.....

(1)

Fiona is on holiday in France.
She drives from Calais to Paris.
She then drives from Paris to Dijon.

(c) Work out the total distance Fiona drives.

..... km

(2)

(Total for Question 10 is 4 marks)

11 This table shows the opening times of a swimming pool.

Opening Times	
Monday to Friday	7 am to 9.30 pm
Saturday and Sunday	8.30 am to 5.30 pm
Last entry to swimming pool 30 minutes before closing	

George wants to go for a swim on Wednesday evening.
It takes him 15 minutes to get from his home to the swimming pool.

(a) What is the latest time he can leave home?

.....

(2)

This table shows the ticket prices for the swimming pool.

Prices	
Adult, 17 – 59 years	£3.30
Senior Citizen, 60 years or older	Free
Junior, 5 – 16 years	£2.50
Infant, 4 years and younger	Free

STEMUP.CO.UK

On Saturday, George pays for himself, his wife, his father and his two children to go swimming.

George is 40 years old.
His wife is 37 years old.
His father is 67 years old.
George's two children are 4 years old and 9 years old.

George pays with a £20 note.

(b) How much change should George get?

£ .....

(3)

Gwen and Patrick both work at the swimming pool.

Gwen works from 6 pm to 9.30 pm from Monday to Friday each week.
She earns £6.80 per hour.

Patrick works on Saturdays and Sundays.
He works from 8.30 am to 12.30 pm and from 1.30 pm to 5.30 pm.
He earns £7.50 per hour.

*(c) Who earns the most money each week?
You must show clearly how you got your answer.

(5)

(Total for Question 11 is 10 marks)

12 Rob buys a packet of pepper seeds.

The table shows the months when Rob can plant his pepper seeds.
It also shows the months when Rob can pick the peppers.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Plant	✓	✓	✓	✓								
Pick						✓	✓	✓	✓	✓		

(a) Write down the latest month Rob should plant his pepper seeds.

.....

(1)

(b) For how many months can Rob pick the peppers?

.....

(1)

(c) The packet of pepper seeds costs £1.99
Rob also buys some plant pots and some compost for the pepper seeds.

The bill shows the total cost of growing the peppers.

(i) Complete the bill.

Greenfingers Garden Centre			
Description	**Number**	**Cost of each item**	**Total**
Packet of seeds	1	£1.99	£1.99
Small plant pots	6	75p	£ .....
Large plant pots	2	£	£6.98
Bag of compost	1	£5.95	£ .....
		Total	£ .....

STEMUP.CO.UK

Rob got 28 peppers from his plants.
In a shop, one pepper costs 65p.

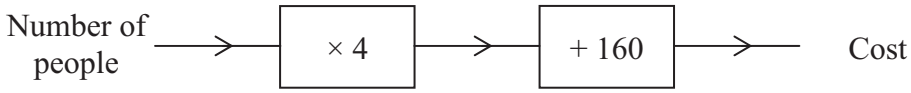
(ii) Was it cheaper for Rob to grow the 28 peppers or to buy 28 peppers from the shop?
You must show clearly how you got your answer.

(6)

(Total for Question 12 is 8 marks)

13 Nathalie is organising a conference for a number of people.
She is going to use the Grange Hotel.

Nathalie uses this number machine to work out the cost in pounds.



There will be 30 people at the conference.

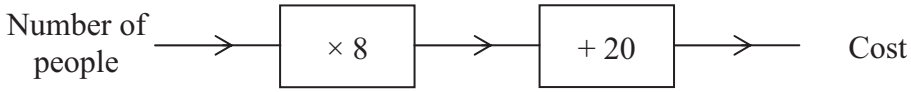
(a) Work out the cost.

£ .....

(2)

Nathalie is also organising a conference at the Bellevue Hotel.

She uses this number machine to work out the cost in pounds.



The cost is £356

(b) Work out the number of people at this conference.

.....

(3)

STEMUP.CO.UK

Nathalie is organising another conference.
The costs at the Grange Hotel and the Bellevue Hotel are the same for this conference.

(c) How many people will be at this conference?

.....

(4)

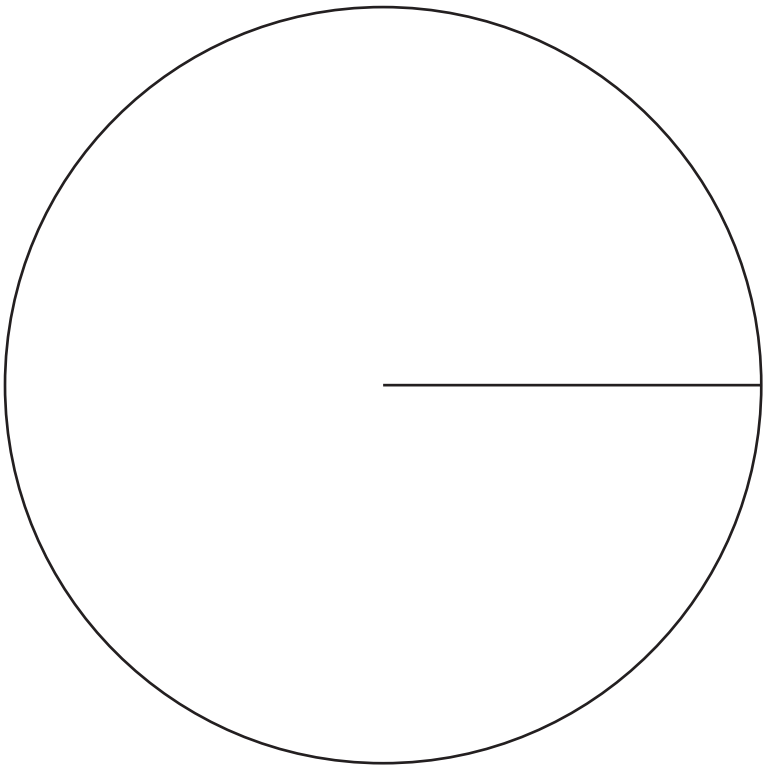
(Total for Question 13 is 9 marks)

14 Marcus asked 40 people if they will vote in a local election.

The table shows his results.

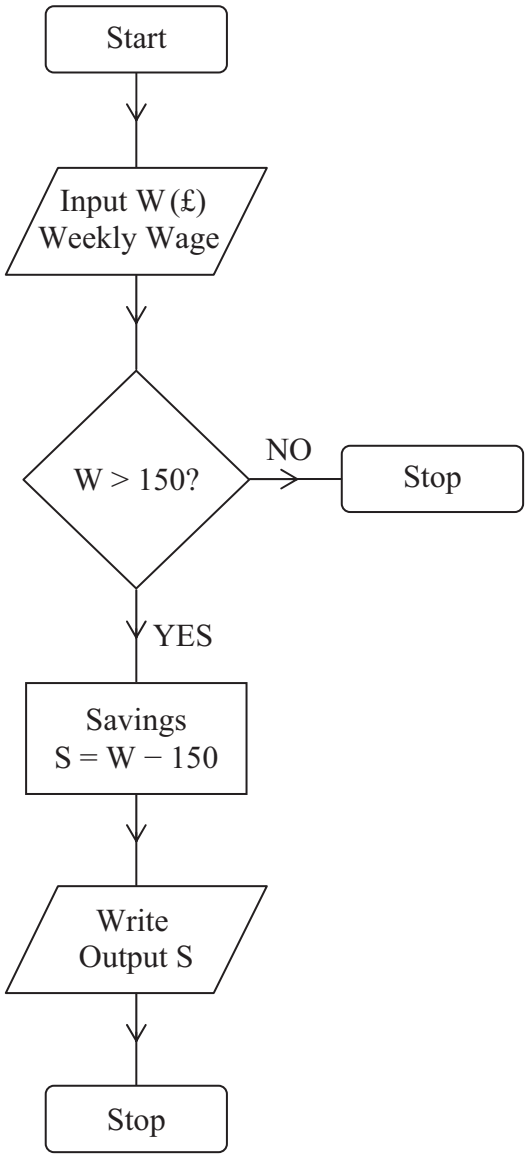
Response	Frequency	
Yes	25	
No	11	
Don't know	4	

Draw an accurate pie chart to show this information.



(Total for Question 14 is 4 marks)

15 Samina uses this flow chart to work out how much money she can save each week.



One week Samina's wage was £187.50

(i) Write down the Input W.

£ .....

(ii) Work out the Output S.

£ .....

(Total for Question 15 is 2 marks)

16 The table shows some information about the average adult spending in 2008 as a percentage of average **total** adult spending in 2008.

Item	Percentage
food	11%
housing	11%
leisure	13%
clothes	5%
transport	14%
household goods	8%
other items	.....

(a) Complete the table to show the percentage spending on other items.

(2)

In May 2008, Katie spent a total of £425
She spent £48.45 of the £425 on food.

*(b) Compare the percentage that Katie spent on food with the average adult spending on food.

(3)

(Total for Question 16 is 5 marks)

STEMUP.CO.UK

17 Here is some information about the 20 people at a party.

Name	Gender	Age in years
Ray	male	72
Peter	male	75
Simon	male	48
Alison	female	47
Shan	female	45
Steven	male	49
Daniel	male	17
Amelia	female	14
Jenny	female	67
Hylton	male	69

Name	Gender	Age in years
Mark	male	48
Tracy	female	46
James	male	13
Wendy	female	58
John	male	58
Derek	male	57
Daniela	female	48
Steve	male	58
Ann	female	56
Peter	male	51

(a) Complete the two-way table.

	less than 18 years	18 – 64 years	65 years and older	Total
Male				
Female				
Total				

(3)

(b) What proportion of the 20 people at the party are male **and** 65 years or older?

.....

(2)

(Total for Question 17 is 5 marks)

18 (a)

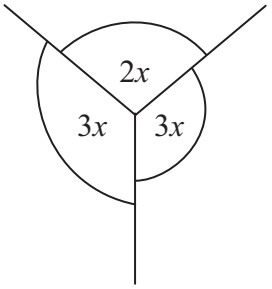


Diagram **NOT** accurately drawn

Find the value of x.

.....°

(2)

(b)

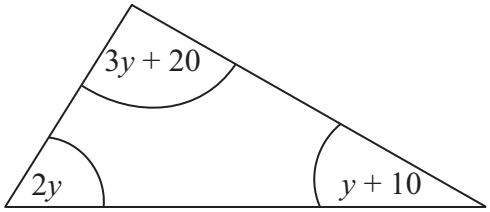


Diagram **NOT** accurately drawn

(i) Find an expression, in terms of y, for the sum of the three angles in the triangle. Simplify your expression.

.....

(ii) Find y.

$y =$ .....°

(4)

(Total for Question 18 is 6 marks)

STEMUP.CO.UK

19 Last week, Imran's pay was £208
This week his pay is 5% more than last week.

Work out Imran's pay this week.

£ .....

(Total for Question 19 is 3 marks)

20 Here is a list of ingredients for making a Cheese Soufflé.

Cheese Soufflé
3 eggs
1 oz butter
$\frac{1}{2}$ oz flour
$\frac{1}{4}$ pint milk
3 oz grated cheese

Imperial Units		Metric Units
1 oz	=	28 g
1 pint	=	568 m*l*

(a) Complete the list of ingredients using metric units.

Cheese Soufflé
3 ..... eggs
..... g butter
..... g flour
..... m*l* milk
..... g grated cheese

(2)

Jemma wants to make 12 Cheese Soufflés.

(b) Work out how much milk she will need.
Give your answer in litres.

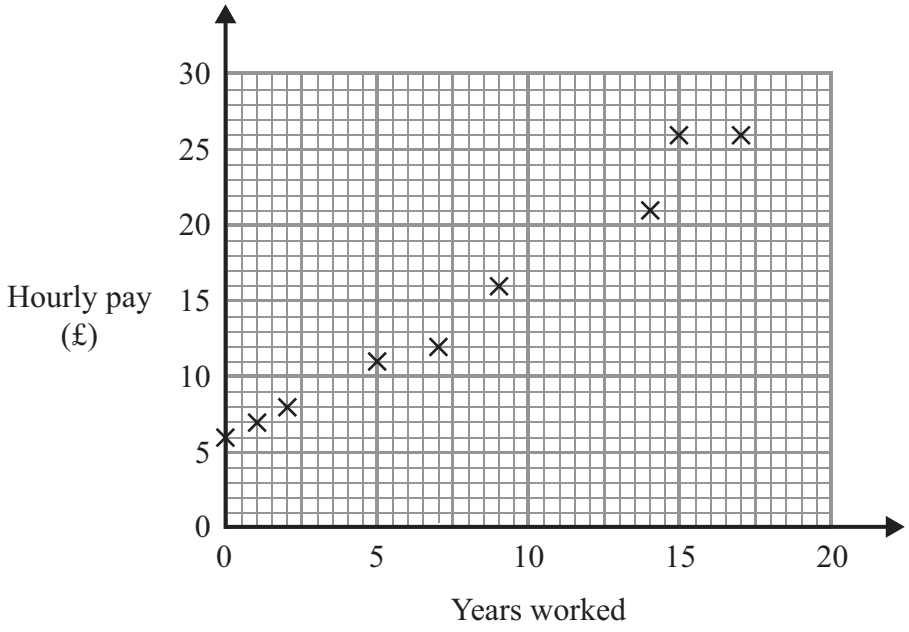
..... litres

(2)

(Total for Question 20 is 4 marks)

STEMUP.CO.UK

21 The scatter graph shows some information about 9 people who work for a company.
It shows the number of years each person has worked.
It also shows each person's hourly pay in pounds.



Sara has worked for the company for 10 years.
Her hourly pay is £19

(a) Show this information on the graph.

(1)

(b) Draw a line of best fit on the graph.

(1)

(c) Describe the relationship this scatter graph shows.

.....

.....

(1)

(Total for Question 21 is 3 marks)

22 James is going to cover a rectangular floor with flooring.
The floor has a length of 6 m.
It has a width of 4.5 m.

Flooring is sold in packs.
One pack of flooring covers an area of 1.44 m^2.
Each pack costs £12.87

James buys the least number of packs so that he has enough flooring to cover the floor.

Work out how much money James pays for the flooring.

£ .....

(Total for Question 22 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

STEMUP.CO.UK

edexcel

Mark Scheme (Results)

November 2011

Applications of Mathematics (GCSE)
Unit 1: 5AM1F_01 (Foundation)

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:
http://www.edexcel.com/Aboutus/contact-us/

November 2011
All the material in this publication is copyright
© Edexcel Ltd 2011

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		8900	1	B1 for 8900 (accept in words)
	(b)		29 000	1	B1 for 29000 (accept in words)
2	(a)		−10	1	B1cao
	(b)		24° indicated	1	B1 for 24° marked (±1°) (accept any clear indication)
	(c)		75 km/h indicated	1	B1 for 75 km/h marked (±2.5 km/h) (accept any clear indication)
3		7.35 – 4.5 2.85 × 1000	2850	3	M1 for 7.35 – 4.5 or 2.85 seen or digits 285 M1 for "2.85" × 1000 A1 ft OR M1 for 4.5 × 1000 or 7.35 × 1000 or 4500 or 7350 M1 for "7350" − "4500" A1 ft
4	(a)		5	1	B1cao
	(b)		Thursday	1	B1 for Thursday (accept incorrect spelling)
	(c)		52	2	M1 for attempt to add frequencies (condone 1 incorrect) A1 ft
	(d)	5+7+11+13+16	increases	1	B1 for description of change, eg the absences increase, goes up (accept change of 11)

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5		200 − 50 150 ÷ 12	12.50	4	M1 for 200 – 50 or 150 seen M1 for "200 − 50" ÷ 12 A1 for 12.5(0) B1 for correct money notation
6	(a)		1, 0, 1	2	B2 for all 3 correct answers (B1 for 1 or 2 correct answers)
	(b)(i)		correct symbol ticked	2	B1 for tick under second symbol
	(ii)		3		B1 for 3 (SC B1 for (ii) if the first or third symbol is ticked in (i) and order 1 given in (ii))
7	(a)		correct arrangement shown	2	B2 twelve stones shown in a rectangle (ok if pond in the middle) or a rectangle with correctly labelled sides (B1 for rectangle drawn or 12 stones used)
	(b)(i) (ii)		10 14m²	3	B1cao B1 for 14 B1 for m²
*8			diagram or chart	4	B1 for suitable labels or key to differentiate women and men B1 for Protein, Fat, Fibre and Salt clearly labelled B1 for accurately representing the data – bars of correct height C1 (dep on B2) for fully correct diagram or chart

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*9		4.9 + 5.5 + 9.2 + 66.5 + 21.7 4.8 + 5.2 + 8.8 + 67.7 + 22.1 − 0.1 + − 0.3 + − 0.4 + 1.2 + 0.4	2006	3	M1 for 4.9 + 5.5 + 9.2 + 66.5 + 21.7 or 4.8 + 5.2 + 8.8 + 67.7 + 22.1 A1 for 107.8 and 108.6 C1 (dep on M1) for correct conclusion that more passengers used the airports in 2006 and a clear comparison of the figures to reach the conclusion. OR M1 for attempt to find the differences each year and total A1 for 0.8 or − 0.8 C1 (dep on M1) for correct conclusion that more passengers used the airports in 2006 and a clear comparison of the figures to reach the conclusion.
10	(a)		433	1	B1 cao
	(b)		Tours	1	B1 cao
	(c)	294 + 312	606	2	M1 for 294+312 or one of 294 and 312 seen in the addition of only two distances A1 cao

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		8.45pm	2	M1 for attempt to subtract 15 or 30 minutes from 9 30 or 9 15 seen or 9 00 seen A1 for 8 45 (pm)
	(b)	2 × £3.30 + £2.50 £20 − £9.10	10.90	3	M1 for 2 × 3.30 + 2.50 M1 (dep) for 20 − "9.10" A1 cao OR M1 for 20 – 3.30 or 20 – 2.50 M1 for 20 – 3.30 – 3.30 – 2.50 oe A1 cao
	(c)	9 30 to 6 00 = 3.5 hours 3.5 × 5 = 17.5 hours per week 17.5 × 6.8 = £119 8 30 to 12 30 = 4 hours 1 30 to 5 30 = 4 hours 8 × 2 = 16 hours per weekend 16 × 7.50 = £120	Patrick	5	M1 3.5 or 8 or 4 M1 3.5 × 5 or 17.5 or 16 or 8 × 2 M1 "17.5 × 6.8 or "16" × 7.5 or 119 or 120 A1 119 and 120 C1 (dep on M1) correct based on their answers

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		April	1	B1 cao
	(b)		5	1	B1 cao
	(c)(i)		4.50 3.49 5.95 19.42	6	B1 cao for each of the first three entries. B1 ft for total
	(ii)	28 × 65	Cheaper to buy		M1 for 28 × 65 A1 ft for £18.20 and correct conclusion Or M1 "19.42"÷28 or digits 69 seen A1 ft £0.69 and correct conclusion
13	(a)	30 × 4 + 160	280	2	M1 for 30 × 4 or 120 seen A1 cao
	(b)	356 – 20 336 ÷ 8	42	3	M1 for subtraction of 20 M1(dep) for divide by 8 A1 cao OR M1 for 8 × "n" + 20 = 356 M1 for attempt to subtract 20 from each side or divide each side by 8 A1 cao
	(c)	*4n + 160 = 8n + 20* *8n – 4n = 160 – 20* *4n = 140* *n = 140 ÷ 4*	35	4	M1 for 4n + 160 or 8n + 20 seen M1 for 4n + 160 = 8n + 20 M1 for clear correct method to isolate terms in n isolate number terms on opposite sides of a four term equation eg. 8n – 4n = 160 – 20 A1 cao

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14		360 ÷ 40 = 9 25 × 9 = 225 11 × 9 = 99 4 × 9 = 36	angles of 255°, 99°, 36°	4	M1 for 360 ÷ 40 A2 for all 3 sectors correct (A1 for 1 sector or value correct) B1 for correct labelling
15	(i) (ii)		187.50 37.50	2	B1 for W = 187.5(0) B1 for S = 37.5(0)
16	(a) (b)	11 + 11 + 13 + 5 +14 + 8 = 62 100 − "62" $\frac{48.45}{425}\times 100$ Or $\frac{11}{100}\times 425 = 46.75$	38 Katie spends more	2 3	M1 for adding the percentages or 62 seen A1 cao M1 for $\frac{48.45}{425}\times 100$ A1 for 11.4 C1 (dep on M1) for conclusion ft from comparison of two percentages OR M1 for $\frac{11}{100}\times 425$ or for 10% = 42.5(0), 1% = 4.25, 42.5(0) + 4.25 A1 for 46.75 C1 (dep on M1) for correct ft from comparison of "46.75" and 48.45

5AM1F_01

Question		Working	Answer	Mark	Notes
17	(a)		<table><tr><th></th><th>under 18 years</th><th>18 – 64 years</th><th>65 years and over</th><th>Total</th></tr><tr><td>Male</td><td>2</td><td>7</td><td>3</td><td>12</td></tr><tr><td>Female</td><td>1</td><td>6</td><td>1</td><td>8</td></tr><tr><td>Total</td><td>3</td><td>13</td><td>4</td><td>20</td></tr></table>	3	B3 cao (B2 for 6 - 11 correct entries in figures or tallies) B1 for2 - 5 correct entries in figures or tallies) (If B0 scored, allow SC B1 for correct totals for their table)
	(b)	$\frac{3}{20}\times 100$	15%	2	M1 for "3" from table A1 for 15% or $\frac{"3"}{"20"}$ or ft from table (accept ratio) 0.15

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)	$2x + 3x + 3x = 360$ $8x = 360$	45	2	M1 for $2x + 3x + 3x = 360$ or $360 \div 8$ ie complete method A1 cao.
	(b)(i)	$3y + 20 + 2y + y + 10$	$6y + 30$	4	M1 for $3y + 20 + 2y + y + 10$ A1 for $6y + 30$ (=180)
	(ii)	$6y + 30 = 180$ $y = (180 - 30) \div 6$	25		M1 for "$6y + 30$" = 180 or correct sequence of operations using "$6y + 30$" and 180 A1 ft on an equation of the form $ay + b = 180$ T&I B2 for 25, B0 otherwise
19		$\frac{5}{100} \times 208$ $208 + 10.40$ 1.05×208	218.40	3	M1 for 0.05×280 or 10.4(0) M1(dep) for 208 + "10.40" A1 for 218.40 OR M2 for 1.05×208 oe A1 for 218.40
20	(a)		28g butter 14g flour 142m*l* milk 84g cheese	2	M1 for use of 1 ounce = 28g or 1 pint= 568m*l* (may be implied by at least 2 correct quantities) A1 cao
	(b)	12×142	1.704	2	M1 for $12 \times$ "142" or sight of figures 1704 A1 ft (accept 1.7, 1.70)

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		Point plotted	1	B1 for plotting (10, 19) tol ±1 sq
	(b)		Line of best fit	1	B1 for a straight line passing between (1, 4) and (1, 8) and between (17, 24) and (17, 28)
	(c)		Relationship described	1	B1 for 'as the number of years they have done their job increases, so does their (hourly) pay' oe Or B1 'positive correlation' oe
22		6 × 4.5 27 ÷ 1.44 19 × £12.87	£244.53	4	M1 for 6 × 4.5 M1 for "6 × 4.5" ÷ 1.44 M1 for "19" × £12.87 A1 cao

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

For more information on Edexcel qualifications, please visit
www.edexcel.com/quals

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rewarding Learning

STEMUP.CO.UK

Write your name here

Surname	Other names

Edexcel GCSE

Centre Number	Candidate Number

Applications of Mathematics

Unit 1: Applications 1

For Approved Pilot Centres ONLY

Foundation Tier

Monday 6 June 2011 – Afternoon
Time: 1 hour 45 minutes

Paper Reference
5AM1F/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
  – *you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

P38951A

©2011 Edexcel Limited.

6/6/6/6/6/6

P 3 8 9 5 1 A 0 1 2 4

edexcel
advancing learning, changing lives

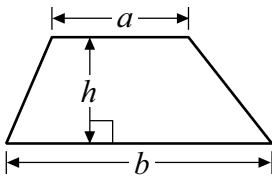
STEMUP.CO.UK

GCSE Mathematics 2AM01

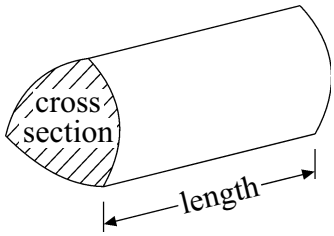
Formulae: Foundation Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium = $\frac{1}{2}(a+b)h$



Volume of prism = area of cross section × length



STEMUP.CO.UK

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Here is the menu in Sam's cafe.

Sam's Cafe	
cup of tea	£1.20
cup of coffee	£1.40
breakfast: Sausage, eggs, bacon	£4.10
special: Sausage, eggs, bacon and toast	£4.50

(a) Work out the total cost of 4 breakfasts.

£ .....

(2)

Sameena buys some cups of coffee.
She only has £10

(b) Work out the greatest number of cups of coffee she can buy.

.....

(2)

A child's meal costs $\frac{7}{10}$ of the cost of the special.

(c) Work out the cost of a child's meal.

£ .....

(2)

(Total for Question 1 is 6 marks)

2 This table is in a gardening book.
It shows some information about four plants.

Plant	Colour	Flowering period	Where to grow
Alyssum	white, pink, purple	June – September	full sun
Begonia	pink, red, white	June – September	full sun, partial shade, or shade
Convolvulus	red	July – September	full sun or partial shade
Dahlia	pink, red, white	July – September	full sun or partial shade

(a) Which plant grows in full sun only?

.....

(1)

(b) Write down the colours of a Begonia.

.....

(1)

A plant is pink.
It grows in full sun or in partial shade only.

(c) Write down the name of this plant.

.....

(1)

(d) How many weeks is the flowering period of a Convolvulus?

..... weeks

(1)

(Total for Question 2 is 4 marks)

STEMUP.CO.UK

3 Julie delivers parcels.
She starts at town A.
She delivers parcels to each of five towns, A, B, C, D and E.
She finishes at town E.

Information about the travelling distances between the 5 towns is shown in the diagram.

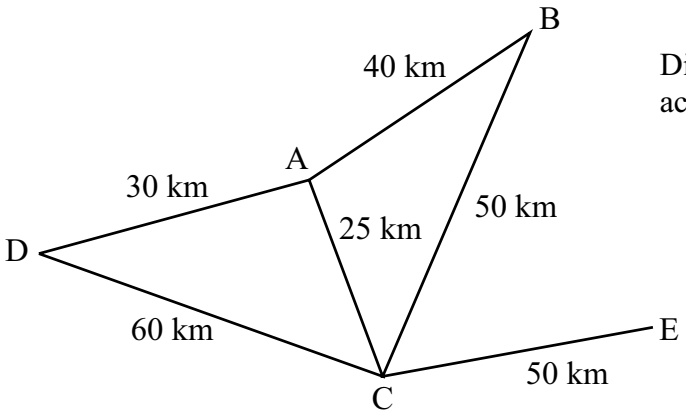


Diagram **NOT** accurately drawn

(a) (i) Work out a route Julie can take.

.....

(ii) Work out the total distance of this route.

..... km
(4)

It takes Julie 6 hours to make 5 deliveries.

(b) Work out the average time, in minutes, she takes to make **one** delivery.

..... minutes
(2)

(Total for Question 3 is 6 marks)

4 On 1st June, Brian has £312 in his bank account.
On 5th June he puts £120 into his bank account.
On 10th June he puts £25 into his bank account.

This is how much Brian spends from his bank account from 1st June to 15th June.

Supermarket	£42.40
Mobile phone bill	£21.05
Grocery shop	£24.30
Electricity bill	£64.20
Online book purchase	£18.32
Council tax	£144.50
Clothes	£84.20
Supermarket	£51.35

On 16th June, Brian wants to know how much money there is in his bank account.

(a) Work out how much money there is in his bank account.

£ .....

(4)

Brian wants to go on holiday.
He is going to take out a loan of £500 to help pay for the holiday.

Brian will have to pay back the £500 plus 20% interest over 12 months.
He will pay back the same amount of money each month.

(b) How much money will he pay back each month?

£ .....

(4)

(Total for Question 4 is 8 marks)

STEMUP.CO.UK

5 John works out the number of boxes of orange juice he will need for a party.

He uses this number machine.



There will be 40 people at the party.

(a) Work out the number of boxes of orange juice John needs.

.....

(2)

For a different party John needs 9 boxes of orange juice.



(b) Work out the number of people at the party.

.....

(3)

(Total for Question 5 is 5 marks)

***6** A car dealer owns two garages.
He records the number of cars sold each week by his two garages.
The table below shows this information.

Week	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Cars sold: Garage A	28	30	46	20	43	34	28	24
Cars sold: Garage B	20	24	32	36	40	36	30	28

Show this information in a suitable chart or diagram.

(Total for Question 6 is 4 marks)

7

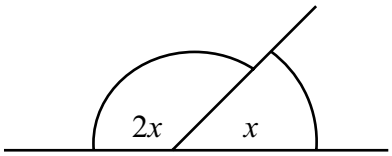


Diagram **NOT** accurately drawn

Find the value of x.

.....°

(Total for Question 7 is 2 marks)

STEMUP.CO.UK

8 The manager of a clothes shop keeps a list of the sizes of the dresses sold one morning.

10 10
12 12
14 14 14 14 14 14
16 16 16 16
18 18 18
20 20 20

(a) Work out the mean.

.....

(2)

(b) Work out the median.

.....

(2)

(c) Write down the mode.

.....

(1)

The dress sizes are in even numbers only.

(d) Which of these averages would be of most use to the manager?
Give a reason for your answer.

.....

.....

.....

(1)

(Total for Question 8 is 6 marks)

9 The table below shows the monthly payments per person for an insurance policy.
The payments depend on the age of the person.

Age in years	Monthly payment per person	
	premium rate	standard rate
0 – 16	£7.20	£6.12
17 – 19	£12.60	£10.71
20 – 39	£17.00	£14.45
40 – 59	£23.40	£19.89
60 – 74	£41.40	£35.19
75 and over	£84.80	£72.08

Becky is aged 17
She pays for her insurance at the premium rate.

(a) (i) Write down Becky's monthly payment.

£ .....

(ii) Work out the total amount of money Becky will pay in the first year.

£ .....

(3)

Shams pays at the standard rate.
He pays £19.89 each month.
If he was 1 year older, he would pay £35.19 per month.

(b) How old is Shams?

..... years

(1)

STEMUP.CO.UK

(c) By what percentage is the premium rate reduced to get the standard rate?

..... %

(3)

(Total for Question 9 is 7 marks)

10 Jason works in a school library.
He wants to record the types of book pupils borrow during one day.

Design a suitable data collection sheet he could use.

(Total for Question 10 is 3 marks)

11 There are 69 people in a gym club.

There are

38 boys
12 girls under 16 years old
27 boys 16 years old or over.

	under 16 years old	**16 years old or over**	**total**
boys		27	38
girls	12		
total			69

(a) Complete the two-way table.

(2)

(b) How many of the girls are 16 years old or over?

.....

(1)

(c) What fraction of the total number of people are 16 years old or over?
Give your fraction in its simplest form.

.....

(2)

(Total for Question 11 is 5 marks)

STEMUP.CO.UK

12 A machine makes 36 trophies every hour.

The machine makes trophies for $8\frac{1}{2}$ hours each day, on 5 days of the week.

The trophies are packed into boxes.
Each box holds 8 trophies.

How many boxes are needed for all the trophies made each week?

.....

(Total for Question 12 is 4 marks)

13 25 kg of olives are used to make 5.5 litres of olive oil.
Mark has 30 kg of olives.

(a) Work out how much olive oil he can make.

..... litres
(2)

Mark uses the olives to make olive oil.
He sells 300 m*l* of olive oil for £2.70
He sells all the olive oil.

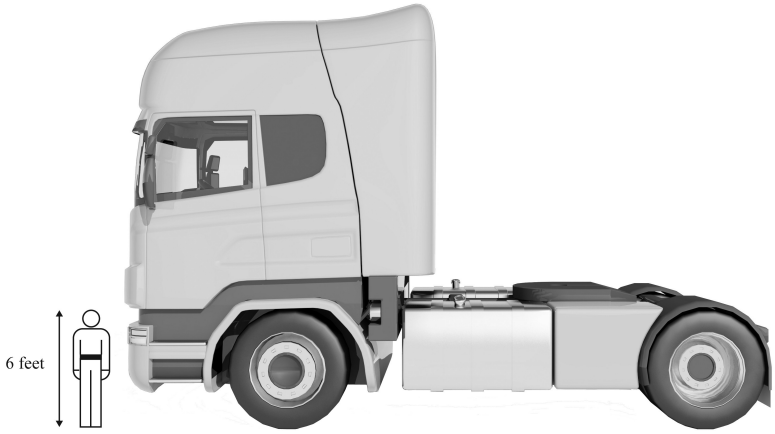
(b) Work out how much money Mark gets.

£ .....
(3)

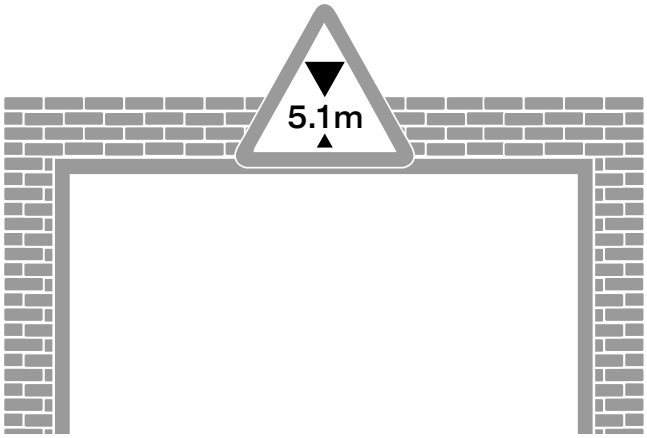
(Total for Question 13 is 5 marks)

STEMUP.CO.UK

***14** The picture shows a man standing next to a lorry
The man is 6 feet tall.



The man wants to drive his lorry under the bridge.
The bridge has a height of 5.1 m.



Can he drive his lorry under the bridge?
You must show clearly how you get your answer.

(Total for Question 14 is 4 marks)

15 Joe uses a spreadsheet to record details of the wages paid to four workers.
One week he will enter their wages in columns A, B, C and D in the spreadsheet.

	A	B	C	D	E	F
1	Ali	Ben	Charlie	Dave	total wage	mean wage
2						

Joe also wants the spreadsheet to record

in cell E2 the total wage of these 4 workers
in cell F2 the mean wage of these 4 workers

Write down,

(i) a formula for cell E2,

E2 .....

(ii) a formula for cell F2.

F2 .....

(Total for Question 15 is 3 marks)

STEMUP.CO.UK

***16** Rachel asks two companies for a price of the furniture they sell.

Flemings of Paris says the price is €9500
Dougies of New York say the price is $13 330

The exchange rates are

£1 = €1.08

£1 = $1.55

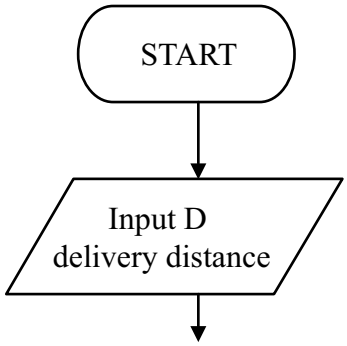
Which company has the lower price?

(Total for Question 16 is 4 marks)

17 A shop sells carpets.
There is a delivery charge for delivering carpets to customers' homes.
For up to 5 miles the delivery charge is £20
For more than 5 miles the delivery charge is £30

A flowchart is used to work out the delivery charge.

Complete the flowchart.



(Total for Question 17 is 5 marks)

STEMUP.CO.UK

***18** These two photographs are similar rectangles.

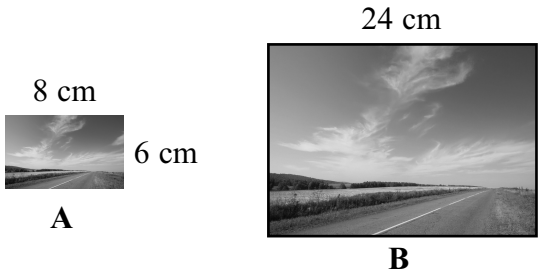


Diagram **NOT** accurately drawn

Photograph **A** has a length of 8 cm and a width of 6 cm.
Photograph **B** has a length of 24 cm.

The two photographs are similar rectangles.

Work out the width of photograph B.

(Total for Question 18 is 4 marks)

19 Martin's house has a meter to measure the amount of water he uses.
Martin pays on Tariff A for the number of water units he uses.

The graph opposite can be used to find out how much he pays.

(a) (i) Find the gradient of this line.

.....

Martin reduces the amount of water he uses by 15 units.

(ii) How much money does he save?

£ .....

(4)

Instead of Tariff A, Martin could pay for his water on Tariff B.

The table shows how much Martin would pay for his water on Tariff B.

Number of water units used	0	20	40	60	80	100
Cost in £	12	18	24	30	36	42

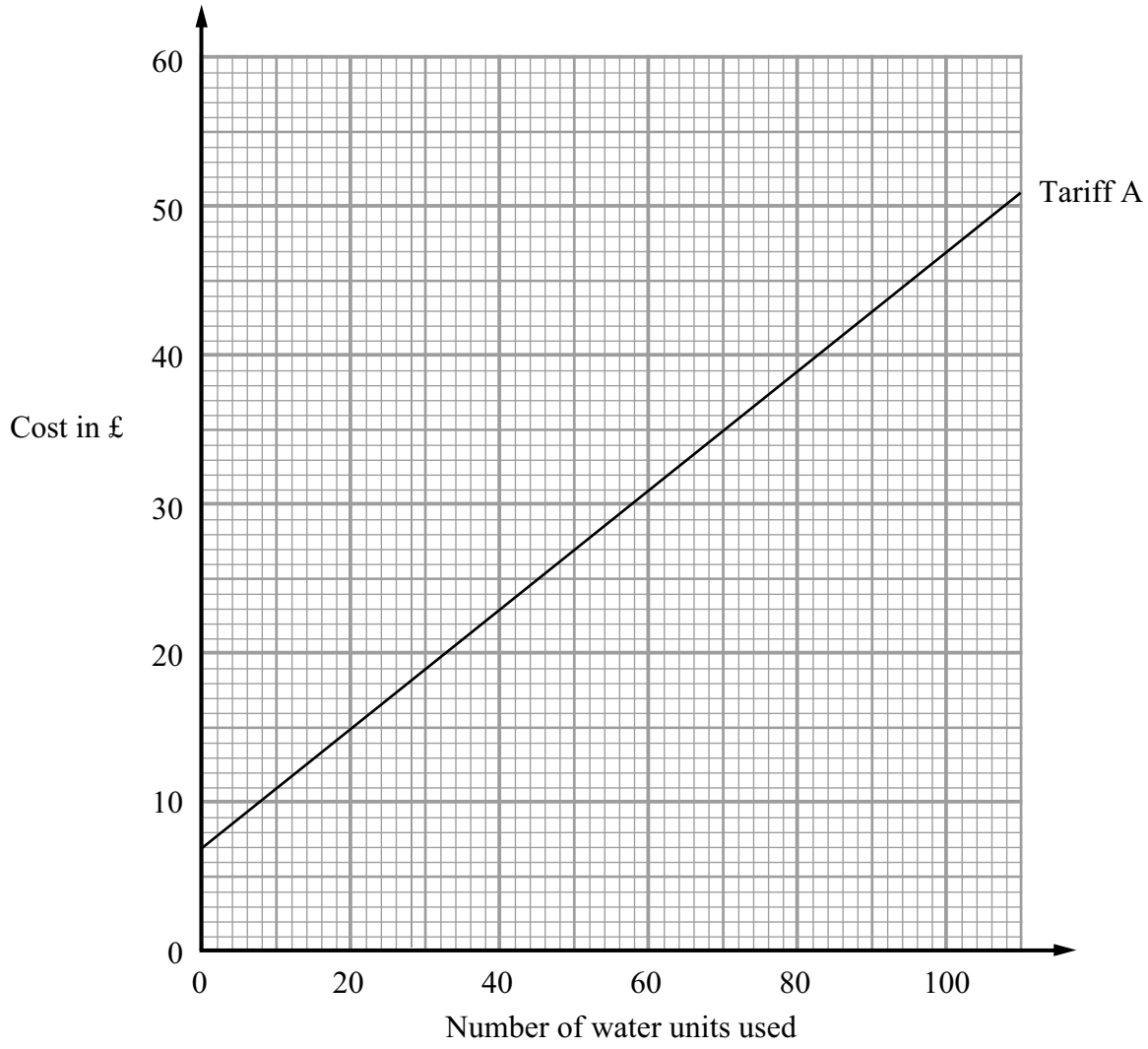
(b) (i) On the grid opposite, draw a line for Tariff B

(ii) Write down the number of water units used when the cost of Tariff A is the same as the cost of Tariff B.

..... units

(3)

STEMUP.CO.UK



(Total for Question 19 is 7 marks)

20 Derek wants to make a patio using paving stones.

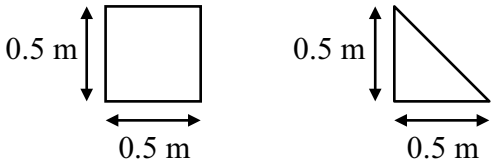


Diagram **NOT** accurately drawn

He will use square paving stones and triangular paving stones as shown in the diagram above.

The patio will be in the shape of an octagon as shown below.

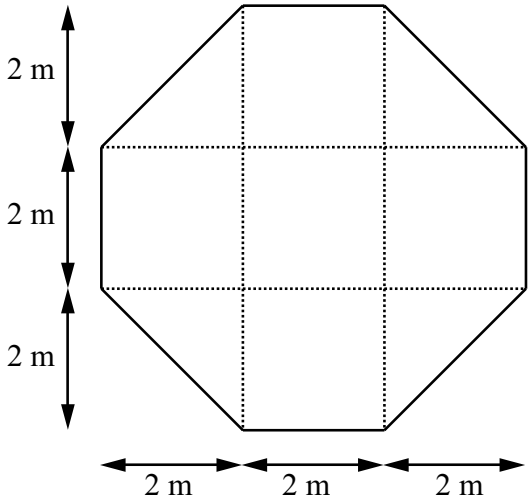


Diagram **NOT** accurately drawn

(a) Work out the number of each type of paving stone Derek needs.

square paving stones .....

triangular paving stones .....

(4)

STEMUP.CO.UK

Derek needs to paint his patio with sealant.
He needs 1 litre of sealant for every 5.6 m^2 of patio.

(b) Work out how many litres of sealant Derek needs.

..... litres

(4)

(Total for Question 20 is 8 marks)

TOTAL FOR PAPER IS 100 MARKS

STEMUP.CO.UK

BLANK PAGE

edexcel

Mark Scheme (Results)

June 2011

Applications of Mathematics (GCSE)
Unit 1: 5AM1F_01 (Foundation)

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:
http://www.edexcel.com/Aboutus/contact-us/

June 2011
Publications Code UG027294
All the material in this publication is copyright
© Edexcel Ltd 2011

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)	4 × 4.10	16.40	2	M1 for 4 × 4.10 or 16.4 A1 cao
	(b)	10 ÷ 1.4 = 7.142857143..	7	2	M1 for 10 ÷ 1.4 or 7.1(42857…) or 7 lots of 1.4 A1 cao
	(c)	4.5(0) × 7 ÷ 10	3.15	2	M1 4.5(0) × 7 ÷ 10 or a complete percentage method A1 cao
2	(a)		Alyssum	1	B1 cao
	(b)		Pink, red, white	1	B1 cao (in any order)
	(c)		Dahlia	1	B1 cao
	(d)	3 months = 4 × 3 = 12 or 30 + 31 + 31 = 92; 92 ÷ 7 = 13.14..	12 or 13	1	B1 for 12 or 13 or 13.1 or 13 weeks, 1 day, etc.
3	(a)		route distance	4	M1 for a route beginning at A and visiting at least 3 other towns or a complete route not beginning at A but visiting every town A1 for a complete route starting at A and finishing at E M1 for an attempt to sum the lengths on their route A1 ft the correct total distance for their route.
	(b)	6 × 60 = 360 360 ÷ 5 =	72	2	M1 for 6 × 60 ÷ 5 A1 cao SC B1 1.2 seen.

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)	Balance = £312 + £145 = £457 Sum of items = £450.32 Final balance = £6.68	6.68	4	M1 adding the items (=450.32) M1 312+120+25 M1 "312+120+25"-"450.32" A1 cao
	(b)	500 × 1.2 (oe) = 600 600 ÷ 12 =	50	4	M2 for 500 × 1.2 (=600) (oe) (M1 for 500 × 0.2 (=100) (oe) M1 for 600 ÷ 12 or 100 ÷ 12 or 1.2 ÷ 12 or 500÷12 A1 cao SC: B2 for an answer of 8.33 or 8.34
5	(a)	40 ÷ 4 + 3 = 10 + 3 =	13	2	M1 for 40 ÷ 4 + 3 A1 cao
	(b)	9 – 3 × 4 = 6 × 4 =	24	3	M1 for subtraction of 3 or times 4 M1 (dep) for subtraction of 3 and times 4 A1 cao NB: the above could be shown as part of an equation.
6			Chart or table	4	B1 for suitable labels or key to differentiate the two garages B1 for each week clearly labelled B1 for accurately representing the data (allow 1 plotting error) C1 for a fully correct diagram or chart including labels
7		$3x=180$ $x=180\div3$	60	2	M1 $2x+x=180$ or $180\div 3$ or equivalent calculation A1 cao

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)	306 ÷ 20	15.3	2	M1 for sum ÷ 20 A1 cao
	(b)	ordering the mid value	15	2	M1 for attempt to identify midpoint or 14,16 A1 for 15
	(c)		14	1	B1 cao
	(d)		Explanation	1	B1 explanation: eg (c) or 14 or mode because only one which is a true size, or one which shop is most interested in (greatest sales), or dress sizes even numbers only
9	(a)(i)		12.60	3	B1 cao
	(ii)	£12.60 × 12	151.20		M1 for "(i)" × 12 A1 ft
	(b)		59	1	B1 cao
	(c)	$\frac{1.08}{7.20} \times 100$	15%	3	M1 for $\frac{1.08}{7.20}$ oe M1 for $\frac{1.08}{7.20} \times 100$ A1 cao Or M1 $\frac{6.12}{7.20}$ M1 100-$\frac{6.12}{7.20}$ x 100 A1 cao

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10			Data collection sheet	3	B3 for a completely correct data collection sheet, including 3 columns with headings: type, tally, frequency (B2 for partially correct data collection sheet) (B1 for one column correctly labelled)
11	(a)		**11** (27) (38) (12) **19** **31** **23** **46** (69)	2	B2 for all correct (B1 for 2, 3 or 4 correct)
	(b)		19	1	B1 ft for "19"
	(c)	$\frac{46}{69}$	$\frac{2}{3}$	2	M1 for "46" / 69 A1 ft
12		36 × 8.5 × 5 = 1530 1530 ÷ 8 = 191.25 or could plan for 191, 191, 191 then 192	191 or 192	4	M2 36x8.5x5 (M1 for the product of any two of these terms) M1 (dep on at least M1 achieved) ÷8 A1 cao SC B1 36÷ 8 oe
13	(a)	5.5 × 30 ÷ 25	6.6	2	M1 for 5.5 ×30 ÷25 or a complete ratio method A1 cao
	(b)	6.6 = 6600 m*l* 2.70 × 6600 ÷ 300	£59.40	3	M1 for a correct and relevant conversion of *l* to ml or ml to *l* M1 2.70 × "22" ("22" may be seen as $\frac{"6.6"x1000}{300}$ oe) A1 cao

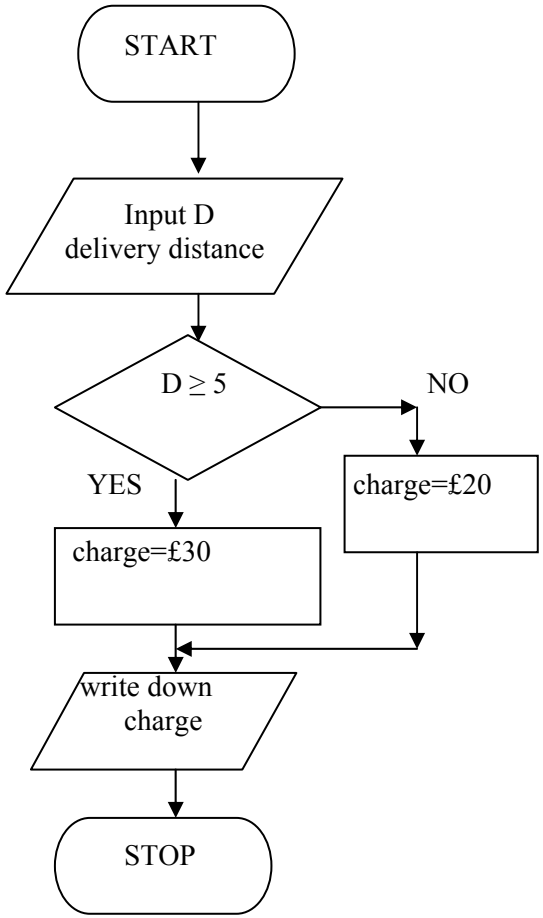
5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14		6 × 3.5 = 21 feet 21 × 30cm = 630 cm 630 cm = 6.3 m OR 6×30 = 180 cm = 1.8m 1.8×3.5 = 6.3m OR 6ft = 2m; 2 × 3.5=7m	5.1 < "6.3" No: will not fit under the bridge	4	M1 for between 3 & 4 men will be same height as lorry M1 for imperial/metric conversion eg 1 foot ≈ 30 cm, or 6ft converted to 2 m. A1 for lorry height given as 5.4 – 8 m or 18ft - 24ft C1 (dep on a previous M1)for comparison and conclusion drawn from their answers
15	(i) (ii)		E2 total: A2+B2+C2+D2 F2 mean: E2/4	3	B1 for =A2+B2+C2+D2, =SUM(A2:D2) B1 for =E2/4, =(A2+B2+C2+D2)/4, =AVERAGE(A2:D2) B1 for using correct spreadsheet notation; condone missing "=" throughout. NB: do not accept "÷" in place of "/": this would be counted as incorrect notation.
16		€9500÷1.08=£8796.296.. $13330÷1.55=£8600 OR €9500÷1.08×1.55=$13634 OR $13330÷1.55×1.08=€9288	Dougies/New York is cheaper	4	M1 for €9500÷1.08 (=£8796.296..) M1 for $13330÷1.55 (=£8600) A1 for 8796.29(6..)or 8796.30 and 8600 OR M2 for 9500÷1.08×1.55 A1 for 13634 OR M2 for $13330÷1.55×1.08 A1 for 9288 C1 (dep on M1 being scored) for conclusion that Dougies/New York is cheaper, and a clear comparison of correct figures as justification for the conclusion.

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17		Decision box with > 5 NO leading to "charge £20" YES leading to "charge £30" Write down & stop. **OR** Decision box with ≤ 5 NO leading to "charge £30" YES leading to "charge £20" Write down & stop.	Completed flow chart	5	B1 with > 5 (allow in words) B1 for NO leading to "charge £20" accept C for charge B1 for YES leading to "charge £30" accept C for charge [NB: -B1 for missing "charge" or other statement with the amount] B1 end box (stop) B1 for correctly shaped boxes **OR** B1 with ≤ 5 (allow in words) B1 for NO leading to "charge £30" accept C for charge B1 for YES leading to "charge £20" accept C for charge [NB: -B1 for missing "charge" or other statement with the amount] B1 end box (stop) B1 for correctly shaped boxes NB: do not penalise if the YES or NO are put in a box.
18		(24 ÷ 8) × 6 = 18 cm	18 cm	4	M2 for (24÷8) ×6 (M1 for 24÷8, 8÷6, 6÷8, 8÷24 or a ratio eg ?:6=24:8 etc) A1 cao C1 (indep) for units: cm

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)(i)	Find the gradient eg by drawing a triangle against the graph, find *y*/*x*	0.3-0.5	4	M1 method to find gradient eg 16/40, 8/20, triangle drawn. A1 0.3-0.5 SC: B1 for a negative gradient within the range.
	(ii)	pick two points 15 units apart, and read off values associated with these, finding the difference	4 - 8		M1 eg 15×"0.4"=6; read off values from graph 15 apart ±1 mm A1 6 ± 2
	(b)(i)	plot points from given table, and read off solution from intersection OR	46 - 54	3	B1 plot at least 4 points ±1mm B1 draw line from 0 units to at least 100 units (within overlay) B1ft 46-54 from single intersection point of two straight line segments.
	(ii)	find equations of both lines and equation to calculate intersection point			

5AM1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)	4 sq paving stones per $1m^2$ Large squares: 16 stones each = 5×16=80 Each large triangle: 4 small triangle & 6 sqs 4 lg triangles: 16 triangle stones & 24 square stones Total stones: square 104, triangle 16	104 square stones 16 triangular stones OR 80 square stones 64 triangular stones	4	M1 divides the shape into triangles and squares of any size (by diagram or calculation) M1 divides the shape into triangles and squares of the correct size (by diagram or calculation) A1 gives the number of square stones as 104 or 80 A1 gives the number of triangular stones as 16 or 64 SC: for one answer correct award B2 if at most M1 awarded.
	(b)	Area of squares: 5×4=20 area of triangles: 4×2=8 Total area: 28 "28" ÷5.6 = OR Area of square = 0.5×0.5=0.25 Area of triangle = 0.5×0.5×0.5=0.125 Total area = "104" × 0.25 + "16" × 0.125 = 26 + 2 =28 "28" ÷5.6 =	5	4	M1 for square 5×2×2 (=20) or triangles 4×2×2÷2 (=8) or finding the area of an appropriate shape as part of a general method. M1 for "20" + "8" (=28) or for any appropriate whole method. M1 for "28" ÷5.6 A1 cao OR M1 for 0.5×0.5(=0.25) or 0.5×0.5×0.5 (=0.125) M1 for "104" × 0.25 + "16" × 0.125 (= 53.25) (=26+2) M1 for "28" ÷ 5.6 A1 ft

Question 16 flowchart:



Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG027294 June 2011

For more information on Edexcel qualifications, please visit
www.edexcel.com/quals

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rewarding Learning

STEMUP.CO.UK