EDEXCEL GCSE APPLICATIONS OF MATHEMATICS

MATHS



EXAM QUESTION PACK

UNIT 2 FOUNDATION TIER 5AM2F PAPERS

STEMUP

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Centre Number | | | | | |

Candidate Number | | | | |

Applications of Mathematics

Unit 2: Applications 2

For Approved Pilot Centres ONLY

Foundation Tier

Thursday 8 June 2017 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM2F/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 ▶

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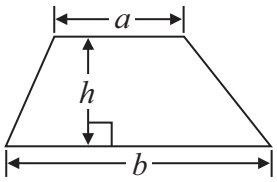
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GCSE Mathematics 2AM01

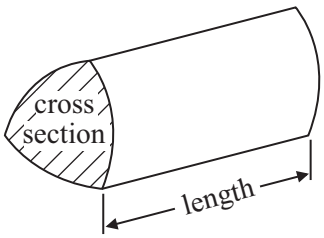
Formulae: Foundation Tier

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



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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Susan uses 1750 millilitres of water to make some soup.

(a) Write 1750 millilitres in litres.

..... litres

(1)

Keith measures the length of a piece of wood as 2500 mm.

(b) Write 2500 mm in metres.

..... metres

(1)

Jeff rides his bike for 200 minutes.

(c) Write 200 minutes in hours and minutes.

..... hours ..... minutes

(2)

Priti's car has a weight of 1.8 tonnes.

(d) How many kilograms are there in 1.8 tonnes?

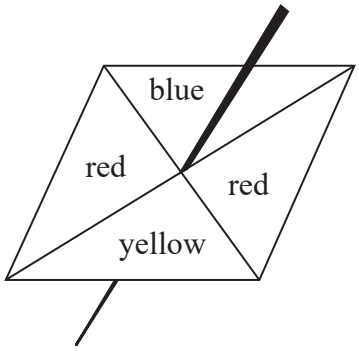
..... kilograms

(1)

(Total for Question 1 is 5 marks)

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2 Here is a fair 4-sided spinner for a game.



Jemima spins the spinner.

impossible	unlikely	evens	likely	certain

(a) Use a word from the box that best describes the chance of each of the following events.

(i) Jemima gets a blue.

.....

(ii) Jemima gets a red.

.....

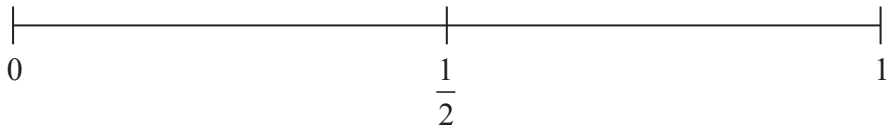
(2)

There are 8 coins in a bag.
There are

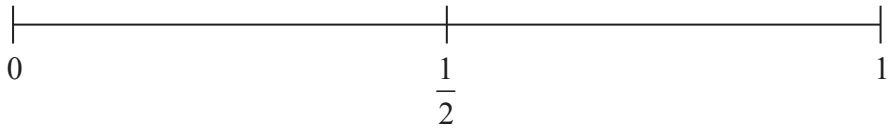
three 10p coins
four 5p coins
one 2p coin

Ravi takes at random a coin from the bag.

(b) (i) On the probability scale below, mark with a cross (×) the probability that Ravi will take a 50p coin.



(ii) On the probability scale below, mark with a cross (×) the probability that Ravi will take a 5p coin.



(2)

(Total for Question 2 is 4 marks)

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3 There are 6528 people at an airport.

(a) Write down the value of the **2** in the number 6528

.....

(1)

A suitcase has a weight of 19.54 kg.

(b) Write down the value of the **5** in the number 19.54

.....

(1)

On a plane, the maximum weight allowed for hand luggage is 7.5 kg.

Judy's hand luggage has a weight of 7765 g.
Judy's hand luggage is too heavy.

(c) By how much is her hand luggage too heavy?

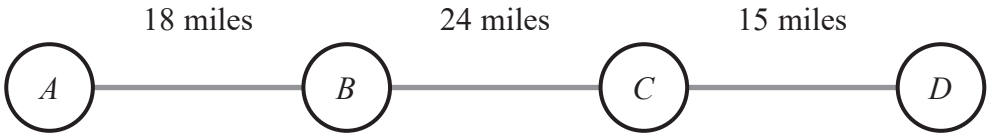
.....

(2)

(Total for Question 3 is 4 marks)

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4 The diagram shows four motorway service stations *A*, *B*, *C* and *D*.



The diagram also shows the distances between the service stations.

(a) Work out the distance from *A* to *D*.

..... miles

(2)

It is further from *A* to *C* than from *B* to *D*.

(b) How much further?

..... miles

(2)

There is a telephone every mile from *B* to *C*.

The first telephone is at *B*.
The last telephone is at *C*.

(c) Work out the number of telephones there are from *B* to *C*.

.....

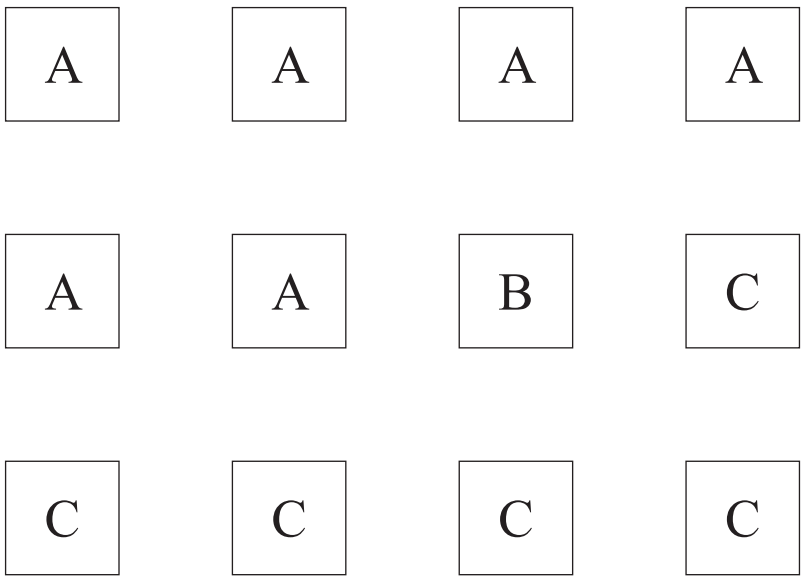
(2)

(Total for Question 4 is 6 marks)

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5 The diagram shows 12 cards.
There is a letter on each card.
The cards are used in a game.



Becca takes at random one of these cards.

(a) Which letter is **most** likely to be on the card she takes?

.....

(1)

(b) What is the probability that Becca takes a card with the letter B on it?

.....

(1)

(c) What is the probability that Becca takes a card with the letter A or the letter B on it?

.....

(2)

(Total for Question 5 is 4 marks)

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6 Gina buys watches from a company.

She uses this rule to work out the selling price of each watch.

selling price = multiply cost price by 2 and then add £5

Gina buys a watch that has a cost price of £12

(a) Work out the selling price of this watch.

£.....

(2)

A different watch has a selling price of £57

(b) Work out the cost price of this watch.

£.....

(3)

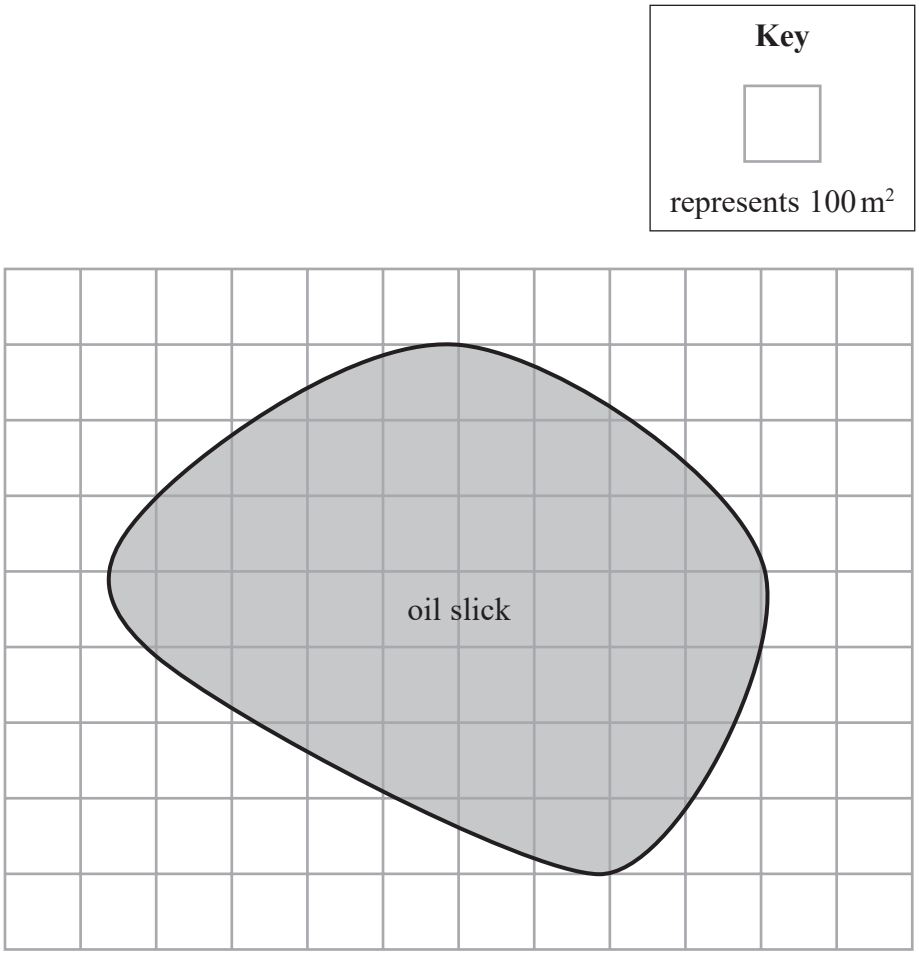
(Total for Question 6 is 5 marks)

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7 On this grid, every centimetre square represents 100 m^2.
An oil slick is shown shaded on the grid.



Find an estimate for the area of the oil slick.

.....

(Total for Question 7 is 4 marks)

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8 Here is Sunita's exam timetable for the first week of exams.
The timetable shows the subject of each exam and the length of time of the exam.

	Morning **Start time 09 15**	**Afternoon** **Start time 14 00**
Monday	Science 1 hour 10 minutes	Maths 1 hour 45 minutes
Tuesday		English 1 hour 30 minutes
Wednesday	History 2 hours	
Thursday	Maths 1 hour 45 minutes	
Friday		PE 1 hour

(a) What time will Sunita's science exam finish?

.....

(1)

On Friday, Sunita gets to school at 13 15

(b) How long does she have to wait to start her PE exam?
Give your answer in minutes.

..... minutes

(1)

The total length of Raj's exams in the first week is 530 minutes.

*(c) Who has the greater total length of time in exams in the first week, Raj or Sunita?
You must show all your working.

(4)

(Total for Question 8 is 6 marks)

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9 Brightwell School has a concert to raise money for charity.
All the profit from the concert will go to charity.

The school only has to pay
£1200 to use the hall for the concert
£480 for all the other things they need for the concert

The school sells 500 tickets for the concert.
The full price of a ticket is £7.50
The price of a student's ticket is £2.50

The school sells
380 of the tickets at the full price
the rest of the tickets at the student price

Work out how much money will go to charity.

£.....

(Total for Question 9 is 6 marks)

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10 The table shows the cost of posting some large letters.

Weight range	Cost
0 g – 100 g	96p
101 g – 250 g	£1.27
251 g – 500 g	£1.71
501 g – 750 g	£2.66

16 large letters each weigh 50 g.

(a) What is the total cost of posting these 16 letters?

£.....

(2)

Derek posts 8 large letters.
Each letter weighs 300 g.
Derek pays with a £20 note.

(b) How much change should Derek get?

£.....

(3)

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Fiona has some leaflets to post.

She can post them as 12 large letters that each weigh 200 g
or
she can post them as 6 large letters that each weigh 400 g.

*(c) Which is the cheaper way for Fiona to post the leaflets?
You must show your working.

(3)

(Total for Question 10 is 8 marks)

11 Amy bakes x cakes.
Barry bakes four times as many cakes as Amy.
Ceri bakes 12 more cakes than Amy.

They bake a total of T cakes.

(a) Find a formula, in terms of x, for the total number of cakes.
Give your formula in its simplest form.

.....

(3)

Amy bakes 6 cakes.

(b) Work out the total number of cakes Amy, Barry and Ceri bake.

.....

(2)

(Total for Question 11 is 5 marks)

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12 The diagram shows part of a roof.

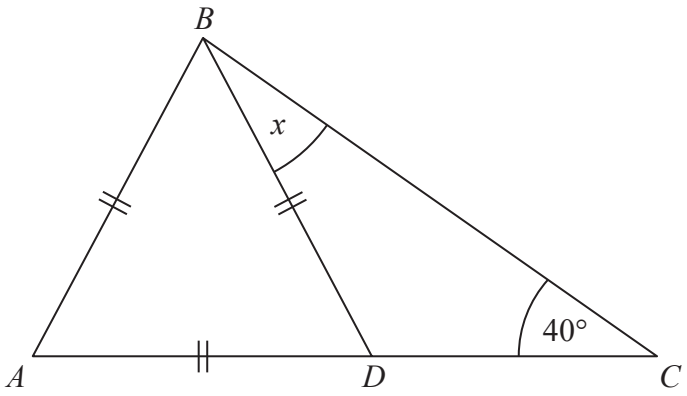


Diagram **NOT** accurately drawn

ABD is an equilateral triangle.
ADC is a straight line.

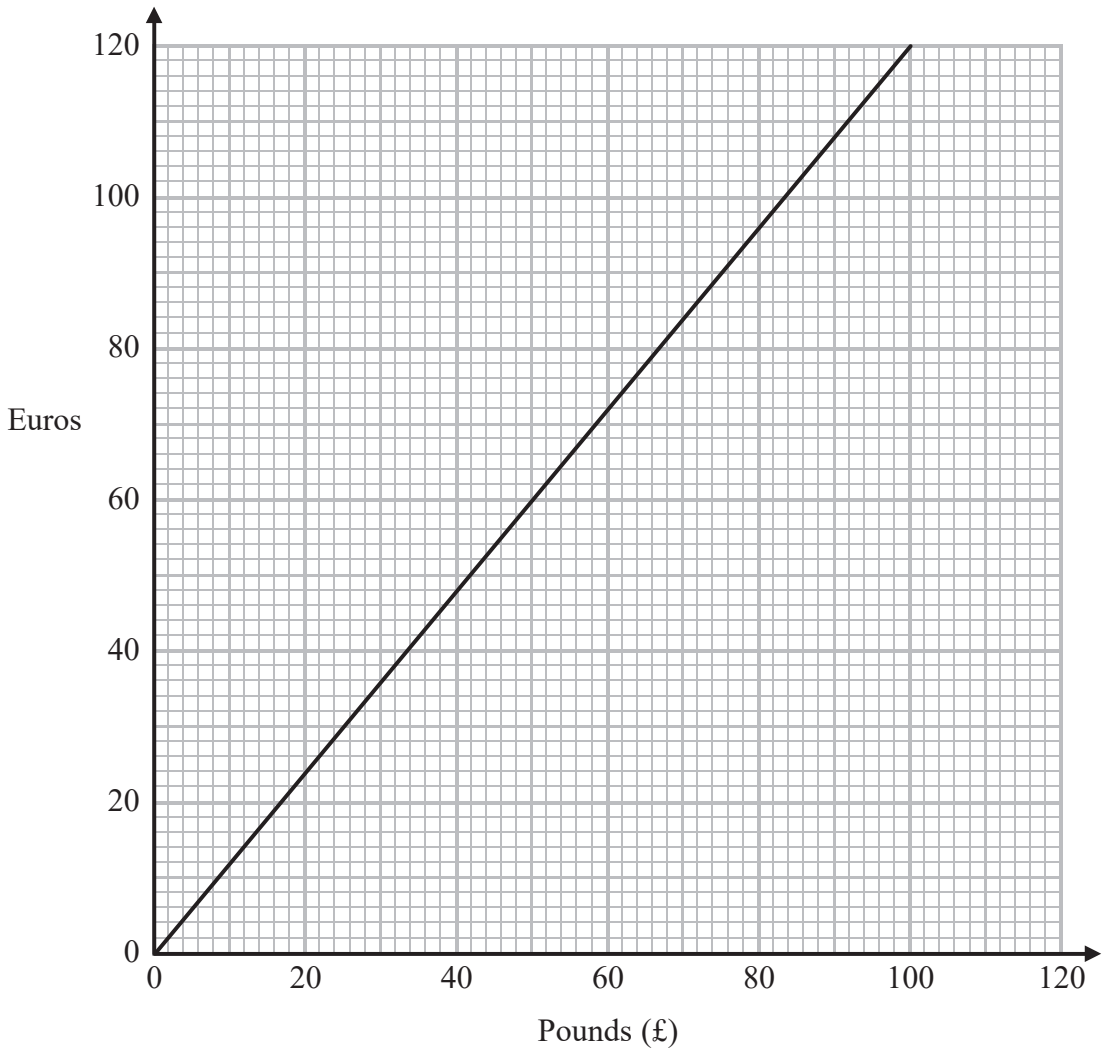
Work out the size of angle *x*.

.....°

(Total for Question 12 is 3 marks)

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13



This graph can be used to convert between pounds (£) and euros.

Jill changes £400 into euros.
She spends 420 euros.

How many euros does she have left?

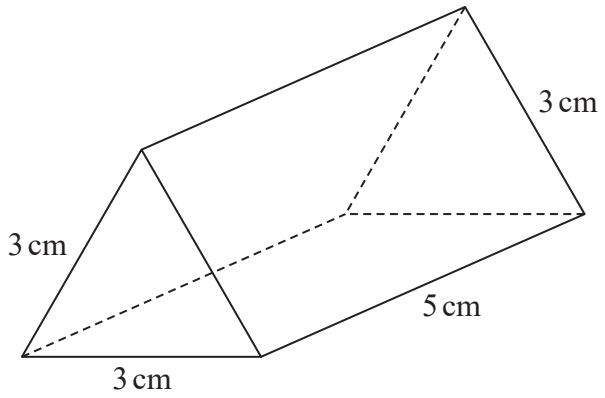
..... euros

(Total for Question 13 is 3 marks)

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14 The diagram shows a box for chocolates.
The box is in the shape of a triangular prism.

Diagram **NOT** accurately drawn



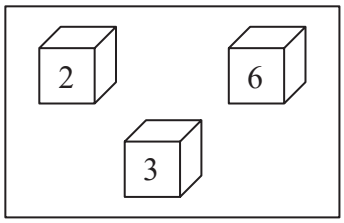
In the space below, draw an accurate net of this box.

(Total for Question 14 is 3 marks)

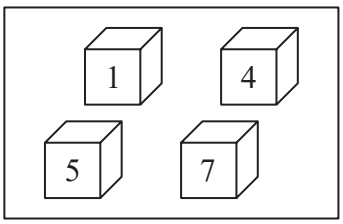
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15 There are some cubes in two boxes.
There is a number on each cube.

Box A



Box B



Erin takes at random one cube from Box A.
She then takes at random one cube from Box B.

(a) List all the pairs of numbers Erin can take.

.....

.....

.....

(2)

Steph plays a game with the cubes.

She takes at random a cube from each box.
She adds the two numbers on the cubes to get her score.

Steph wins the game if she gets a score of 10

(b) Work out the probability that she wins the game on her first attempt.

.....

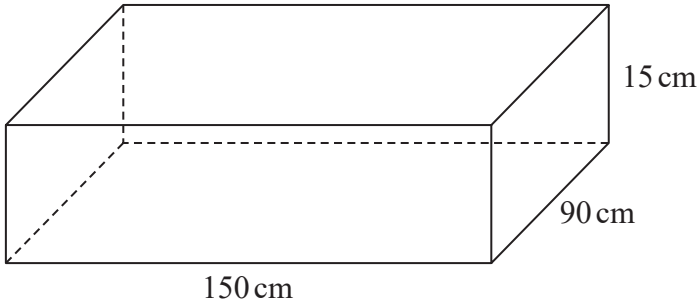
(3)

(Total for Question 15 is 5 marks)

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***16** The diagram shows a sandpit in the shape of a cuboid.

Diagram **NOT** accurately drawn



The sandpit is 150 cm by 90 cm by 15 cm.

The sandpit is empty.
Josie is going to put sand into the sandpit.

A bag of sand costs £3.99
There are 10 000 cm^3 of sand in a bag.

Josie has only £80 to spend on sand.

Show that Josie cannot buy enough sand to fill the sandpit completely.
You must show all your working.

(Total for Question 16 is 5 marks)

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17 Rashmi works at a home for dogs.

She has 4 types of dog food to feed the dogs.
She takes at random a tin of dog food.

The table below shows the probabilities that Rashmi will take a tin of lamb dog food or a tin of beef dog food or a tin of turkey dog food.

Dog Food	lamb	beef	chicken	turkey
Probability	0.35	0.25		0.30

(a) Work out the probability that Rashmi will take a tin of chicken dog food.

.....

(2)

(b) Work out the probability that Rashmi will take a tin of turkey dog food or a tin of lamb dog food.

.....

(2)

Rashmi has 400 tins of dog food.

(c) Work out the number of tins of lamb dog food she has.

.....

(2)

(Total for Question 17 is 6 marks)

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***18** Here are the ingredients to make 12 cupcakes.

For **12** cupcakes
200 g butter 200 g caster sugar 4 eggs 250 g flour

Mark is making cupcakes to sell at his school play.
Mark wants to make 1 cupcake for each adult and 2 cupcakes for each child.

There will be 152 adults and 80 children at the school play.

Mark can get these ingredients from the school kitchen.

5 kg butter
5 kg caster sugar
90 eggs
5 kg flour

Make a shopping list of any ingredients Mark still needs, showing the amount of each ingredient.
You must show all your working.

(Total for Question 18 is 5 marks)

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19 GasIn is an insurance company that insures central heating systems.

GasIn insures 350 000 central heating systems each year.
GasIn charges £55 to insure a central heating system for a year.

The probability that a central heating system will develop a fault is 0.18
The average claim for a central heating system fault is £273

How much profit is GasIn likely to make in a year?

£.....

(Total for Question 19 is 4 marks)

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***20** Abigail is 5 years older than Brenda.
Brenda is twice as old as Carly.

The total of their ages is less than 40

What is Abigail's greatest possible age?
Give your answer as a whole number of years.

(Total for Question 20 is 4 marks)

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21 The diagram shows a wire frame.
The frame is a rectangle and two diagonals.

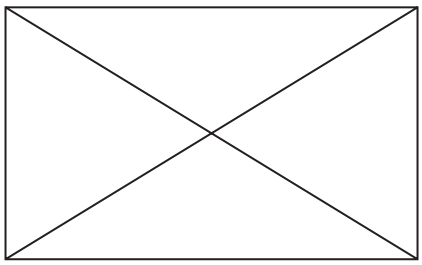


Diagram **NOT** accurately drawn

Work out the total length of the wire used to make the frame.
Give your answer correct to the nearest centimetre.

..... cm

(Total for Question 21 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

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Write your name here

Surname	Other names

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Centre Number | | | | | |

Candidate Number | | | | |

Applications of Mathematics

Unit 2: Applications 2

For Approved Pilot Centres ONLY

Foundation Tier

Friday 7 November 2014 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM2F/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

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- **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
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- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



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- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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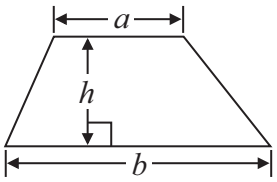
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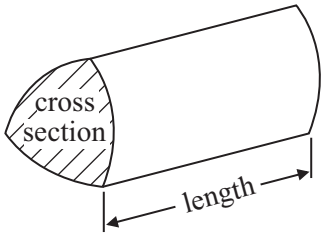
Formulae: Foundation Tier

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



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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 The distance from Manchester to Dubai is 5649 km.

(a) Write down the value of the **6** in the number 5649

.....

(1)

A plane leaves Manchester for Dubai at 1.15 pm.

(b) Write 1.15 pm as a 24-hour clock time.

.....

(1)

The Khalifa Tower in Dubai is the tallest tower in the world.
The Tower is 0.829 km tall.

(c) (i) What is the value of the **8** in 0.829?

.....

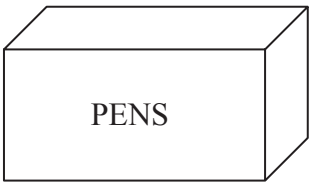
(ii) Change 0.829 km to metres.

..... m

(2)

(Total for Question 1 is 4 marks)

2 There are 30 pens in a box in a school office.



Mr Simms takes 23 of the pens.
A secretary puts 18 more pens into the box.

Miss Clarke also puts some pens into the box.
There are now 40 pens in the box.

(a) How many pens did Miss Clarke put into the box?

.....

(3)

The table shows the number of pens sold to students each day for two weeks.

	Mon	Tue	Wed	Thu	Fri
Week 1	12	11	15	10	8
Week 2	15	20	18	12	14

More pens were sold in Week 2 than in Week 1

(b) How many more pens?

.....

(3)

(Total for Question 2 is 6 marks)

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3 Gareth has some black pens, some red pens and some green pens.
He also has some yellow crayons, some orange crayons and some white crayons.

Gareth is going to choose one pen and one crayon.

Write down all the possible colour combinations Gareth can choose.

.....

.....

.....

.....

.....

(Total for Question 3 is 2 marks)

4 A pile of sand has a weight of 65 kg.
Some of the sand is put into a small sack.
The rest of the sand is put into a large sack.

The sand in the large sack weighs 15 kg more than the sand in the small sack.

What is the weight of the sand in the small sack?

..... kg

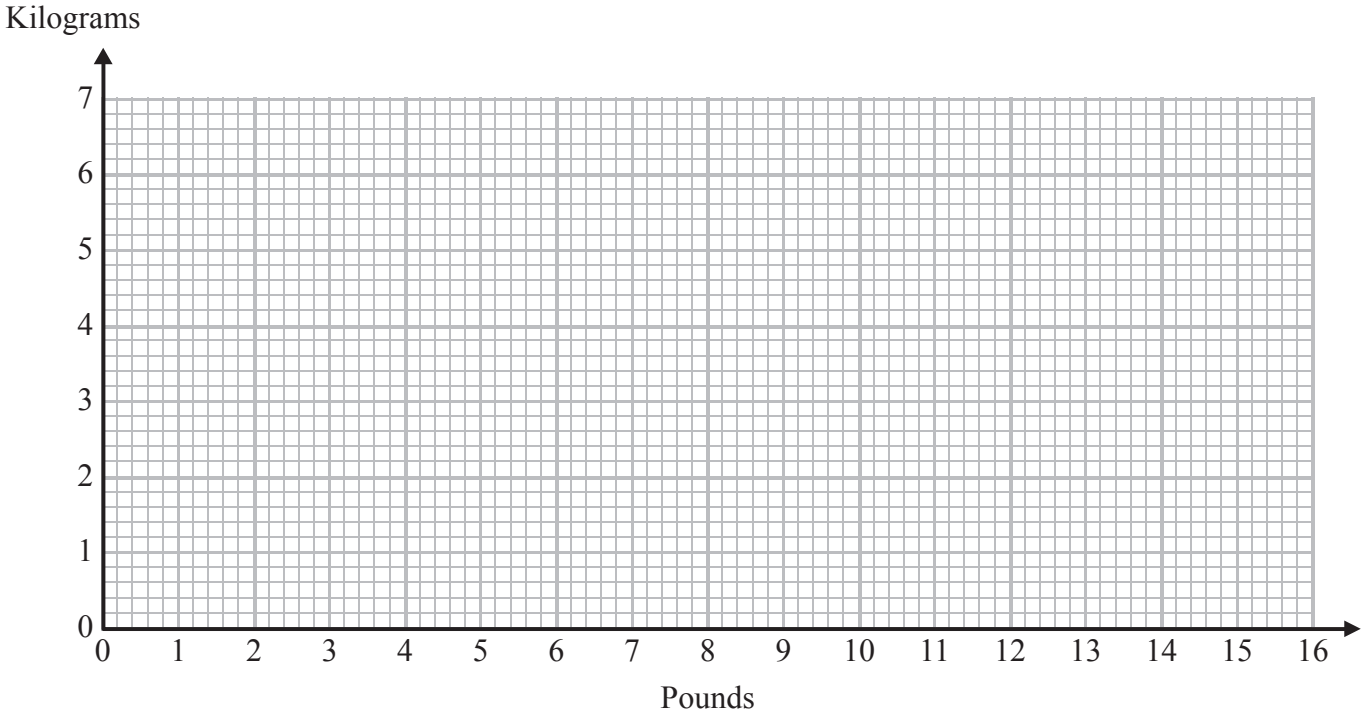
(Total for Question 4 is 2 marks)

5 Mary works in a maternity unit.
She weighs the babies.

The table shows some weights in both pounds and kilograms.

pounds	4.4	6.6	8.8	11	13.2	15.4
kilograms	2	3	4	5	6	7

(a) Use this table to draw a conversion graph to change between pounds and kilograms.



(2)

(b) Change 10 pounds to kilograms.

..... kilograms

(1)

(c) Change 6.5 kilograms to pounds.

..... pounds

(1)

(Total for Question 5 is 4 marks)

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6 Sally makes a fair 8-sided spinner for a game.

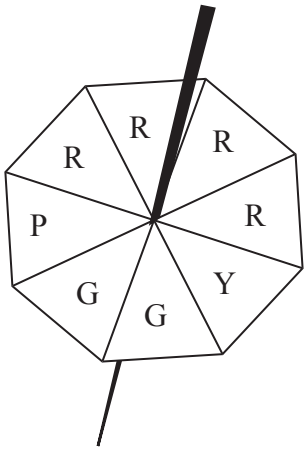


Diagram **NOT** accurately drawn

Sally is going to spin the spinner once.
The spinner will land on one of the letters shown in the diagram.

impossible	unlikely	evens	likely	certain

(a) From the list above, write down the word that best describes the likelihood

(i) that the spinner will land on the letter Y

.....

(ii) that the spinner will land on the letter R

.....

(iii) that the spinner will land on the letter T

.....

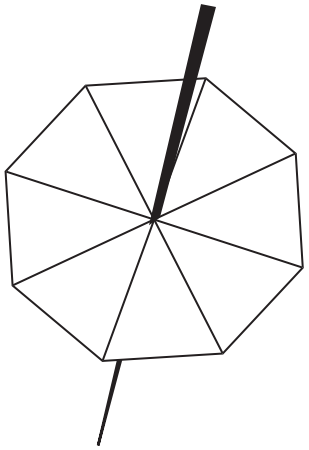
(3)

Sally makes a different fair 8-sided spinner.
The letters A, B, C and D will be on the spinner.

The probability that the spinner will land on A is twice the probability that the spinner will land on B.

The probability that the spinner will land on C is the same as the probability that the spinner will land on D.

(b) Use this information to complete the spinner.



(2)

(Total for Question 6 is 5 marks)

7 The table shows the cost of posting some large letters.

Weight range	Cost
0 – 100 g	90p
101 g – 250 g	£1.20
251 g – 500 g	£1.65
501 g – 750 g	£2.30

18 large letters each weigh 50 g.

(a) What is the total cost of posting these 18 letters?

£ .....

(2)

Derek posts 9 large letters.
Each letter weighs 300 g.
Derek pays with a £20 note.

(b) How much change should Derek get?

£ .....

(3)

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Fiona has some leaflets to post.

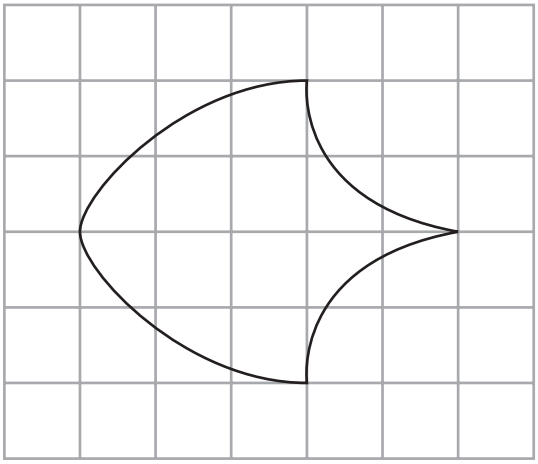
She can post them as 16 large letters that each weigh 200 g
or
she can post them as 8 large letters that each weigh 400 g.

*(c) Which is the cheaper way Fiona can post the leaflets?
You must show your working.

(3)

(Total for Question 7 is 8 marks)

8 The diagram shows a logo drawn on a centimetre grid.



(a) Estimate the area of the logo.

..... cm^2

(2)

You can use this formula to calculate the cost, C pounds, of using the logo on a poster.

$$C = 3B$$

$B = 20$

(b) Work out the cost.

£ .....

(1)

(Total for Question 8 is 3 marks)

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9 A teacher is organising a party for all the Y11 students.
240 students are going to the party.

Here are the costs for the party.

Hire of room	£980
Decorations	£120
DJ	£580
Meal	£8 per student or teacher

There will be 30 teachers at the party.
Each teacher will pay £20

The students will pay the rest of the total cost.
The teachers need to work out how much each student will have to pay.

Work out how much each student will have to pay.

£ .....

(Total for Question 9 is 6 marks)

10 Barry works for a restaurant in Spain.
He is paid to get people to go to the restaurant.

This rule is used to work out Barry's total pay, in euros (€).

Total pay = number of people who go to the restaurant $\times$ 1.20 + 50

One evening Barry gets 48 people to go to the restaurant.

(a) Work out his total pay.

€ .....

(2)

A different evening Barry's total pay was €94.40

(b) Work out how many people he got to go to the restaurant that evening.

.....

(3)

(Total for Question 10 is 5 marks)

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11 A bucket holds 2 gallons of water when it is full.

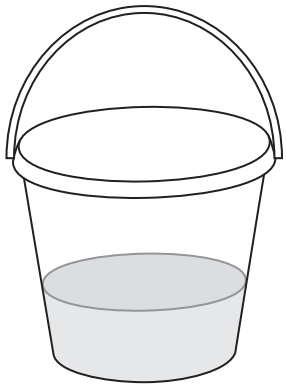


Diagram **NOT** accurately drawn

There are 3 litres of water in the bucket.

How many more litres of water are needed to fill the bucket completely?

Use 4.5 litres = 1 gallon

..... litres

(Total for Question 11 is 3 marks)

12 Nia buys x boxes of eggs.
There are 6 eggs in each box.

Nia buys a total of t eggs.

Write a formula for t in terms of x.

.....

(Total for Question 12 is 2 marks)

13 Sameena and Molly both work in a cafe.

The table shows the times they each start work and finish work on Monday.

	Start	Finish
Sameena	8.15 am	1.10 pm
Molly	11.50 am	4.10 pm

*(a) Who works longer?

(4)

It took Sameena 40 minutes to get from home to the cafe on Monday.

(b) What time did she leave to get to work at 8.15 am?

.....

(2)

David also works in the cafe.

Last week he worked $32\frac{1}{4}$ hours.

His total pay was £357.33

(c) Work out how much David was paid for each hour he worked.

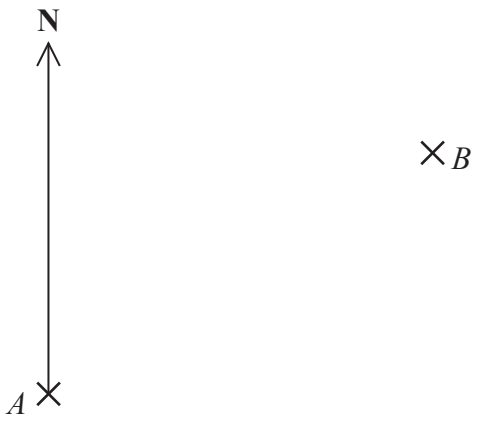
£ .....

(2)

(Total for Question 13 is 8 marks)

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14 The diagram shows the positions of two trees, A and B.



Scale: 1 cm represents 50 m.

(a) Find the bearing of B from A.

.....°

(1)

Tree C is 200 m from A on a bearing of 120°

(b) On the diagram, mark C with a cross (×).

Label the cross C.

(2)

(Total for Question 14 is 3 marks)

15 A chocolate box is in the shape of a cuboid.

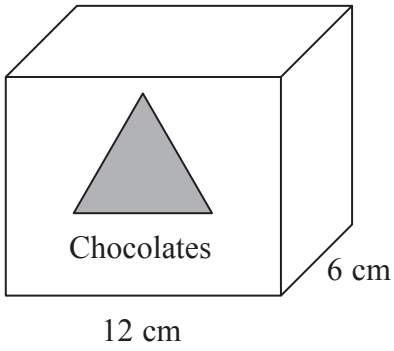


Diagram **NOT** accurately drawn

The box has a volume of 576 cm^3

(a) Work out the height of the box.

..... cm

(2)

The triangle on the front of the box is an equilateral triangle of side 6 cm.

(b) Draw accurately an equilateral triangle of side 6 cm.

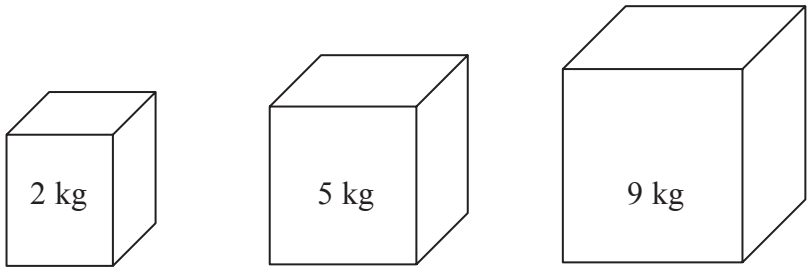
(2)

(Total for Question 15 is 4 marks)

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***16** Soap powder is sold in three sizes of box.

Diagram **NOT** accurately drawn



£1.90 £4.35 £8.45

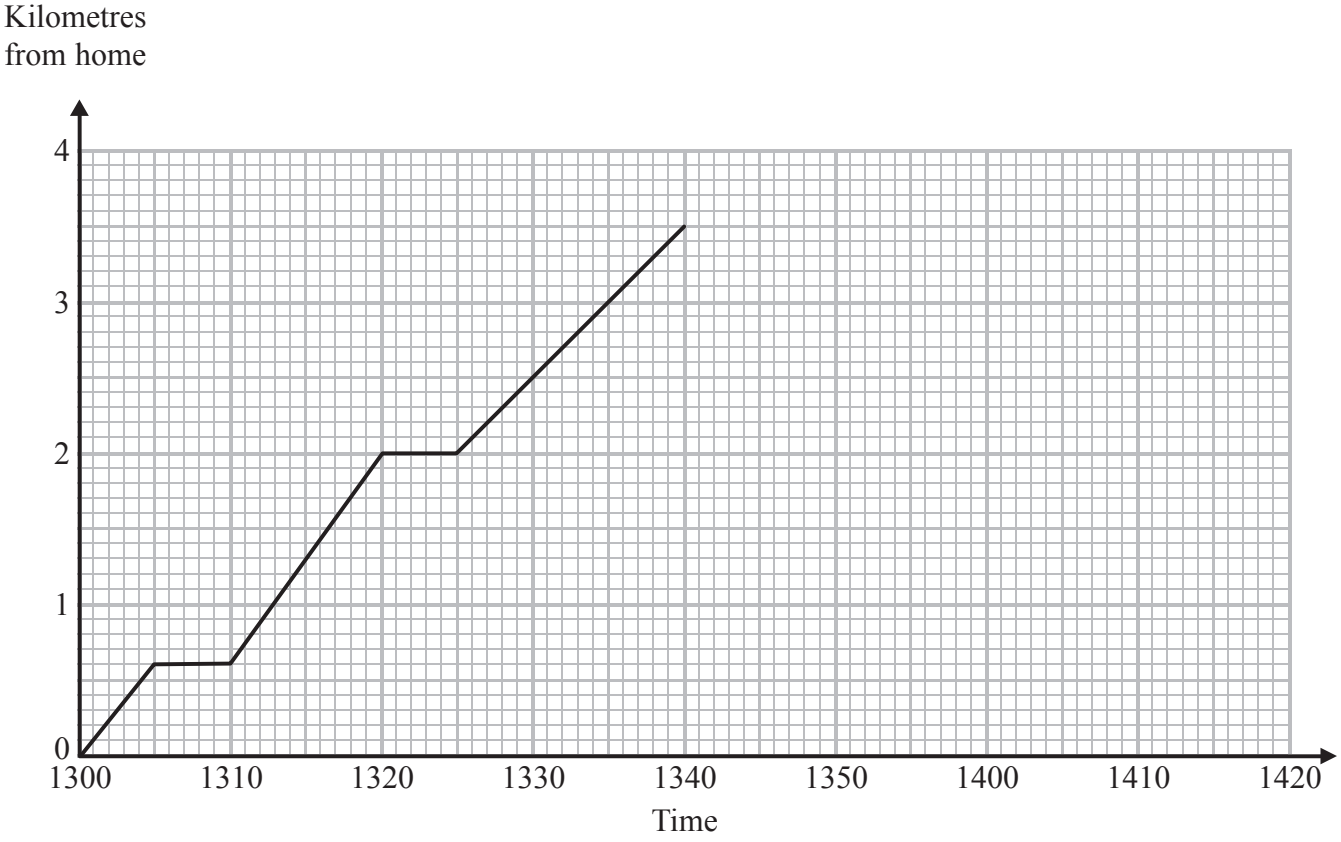
A 2 kg box costs £1.90
A 5 kg box costs £4.35
A 9 kg box costs £8.45

Which size of box is the best value for money?
Explain your answer.
You must show all your working.

(Total for Question 16 is 4 marks)

17 Asif delivers parcels on his bike.
He starts from his home.

Here is a travel graph for the first 40 minutes of Asif's journey.



(a) What time did Asif start his journey?

.....

(1)

Asif stops to deliver each parcel.

(b) How many minutes long was his first stop?

..... minutes

(1)

(c) What is the distance between the first stop and the second stop shown on the travel graph?

..... km

(2)

At 1340, Asif stops for 10 minutes to deliver his last parcel.
He then cycles back home at a steady speed.
Asif gets home at 1415

(d) Complete the travel graph.

(2)

(Total for Question 17 is 6 marks)

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18 A small photograph has a length of 6 cm and a width of 5 cm.
The small photograph is enlarged to make a large photograph.

The large photograph has a length of 21 cm.

Diagram **NOT** accurately drawn



Small photograph



Large photograph

The two photographs are similar rectangles.

Work out the perimeter of the large photograph.

..... cm

(Total for Question 18 is 3 marks)

19 Bill has some models of meerkats.
He has models of meerkat children and models of meerkat adults.

Bill has twice as many models of meerkat children as models of meerkat adults.
He has a total of 30 models.

Each model meerkat child has a value of £2.80
Bill's models have a total value of £98.00

Each model meerkat adult has the same value.

Work out the value of a model of a meerkat adult.



meerkat

£ .....

(Total for Question 19 is 4 marks)

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***20** Here are the ingredients to make 12 cupcakes.

For **12** cupcakes
200 g butter 200 g caster sugar 4 eggs 240 g flour

Martin is making cupcakes to sell at his school play.
Martin wants to make 1 cupcake for each adult and 2 cupcakes for each child.

There will be 90 children and 120 adults at the school play.

Martin can get these ingredients from the school kitchen.

5 kg butter
5 kg caster sugar
90 eggs
5 kg flour

Make a shopping list of any ingredients Martin still needs, showing the amount of each ingredient.
You must show all your working.

(Total for Question 20 is 5 marks)

21 The students in a class are asked how they got to school on Monday.
12 students used the bus, 7 students travelled by car and 8 students walked.

A student is chosen at random from the class.

(a) Write down the probability that this student travelled by car.

.....

(2)

There are 18 boys in a different class.
A student is chosen at random from this class.
The probability that this student is a girl is 0.4

(b) Work out the total number of students in this class.

.....

(3)

(Total for Question 21 is 5 marks)

22 The diagram shows a wire frame.
The diagram is a rectangle and two diagonals.

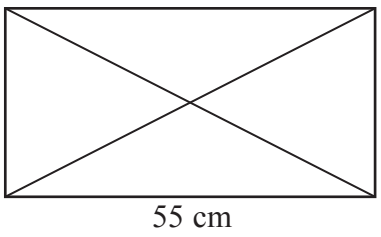


Diagram **NOT** accurately drawn

Work out the total length of wire used to make the frame.

..... cm

(Total for Question 22 is 5 marks)

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***23** Here is a diagram of part of a wooden roof.

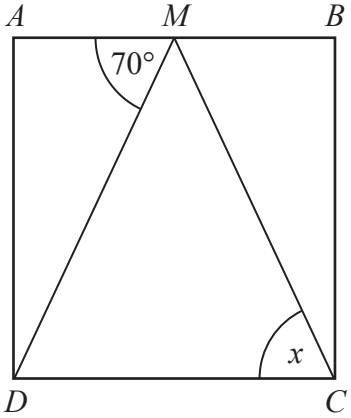


Diagram **NOT** accurately drawn

ABCD is a rectangle.
M is the midpoint of *AB*.
Angle *AMD* is 70°

Work out the size of the angle marked *x*.
You must give reasons for your answer.

(Total for Question 23 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

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Mark Scheme (Results)

November 2014

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

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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: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		600	1	B1
	(b)		1315	1	B1
	(c)(i)		$\frac{8}{10}$	2	B1 Accept 800 m, oe
	(ii)		829		B1 cao
2	(a)		15	3	M1 for 30-23+18 or 30-5 (=25) or 23-18 (=5) M1 for 40 – "25" or 40-30+5 oe A1 cao
	(b)		23	3	M1 for 12+11+15+10+8 (=56) or 15+20+18+12+14 (=79) M1 for "79"-"56" A1 cao Or M1 for 15-12,20-11,18-15,12-10,14-8 oe M1 for 15-12+20-11+18-15+12-10+14-8 A1 cao
3		by,bo,bw ry,ro,rw gy,go,gw		2	B2 for all 9 correct combinations (no errors, ignore repeats) (B1 for at least 4 correct combinations (ignore repeats))

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			25	2	M1 for (65-15)÷2, $2x \pm 15 = 65$ oe, at least three pairs of numbers a, b where $a + 15 = b$ OR $a + b = 65$ A1 cao
5	(a)			2	B2 conversion graph (line) drawn between 4.4 pounds and 15.4 pounds (B1 for plotting at least 2 points from the table)
	(b)		4.4 – 4.6	1	B1 for 4.4 – 4.6 or ft graph (dep on single straight line)
	(c)		14.2 – 14.4	1	B1 for 14.2 – 14.4 or ft graph (dep on single straight line)
6	(a)(i)		unlikely	3	B1 cao
	(ii)		evens		B1 cao
	(iii)		impossible		B1 cao
	(b)		A,A,A,A,B,B,C,D	2	M1 for the same number of Cs and Ds OR twice as many As as Bs. A1 cao

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
7	(a)		16.20	2	M1 for 18×90 oe or 16.2 A1 for 16.20
	(b)		5.15	3	M1 for 9 × £1.65 (=14.85) M1 for 20 – "14.85" A1 cao SC B1 for an answer of 11.90 or 9.20 oe
	*(c)		8 packages cheaper	3	M1 for 16×1.20 (=19.2(0)) or 8×1.65 (=13.2(0)) A1 for £19.2(0) and £13.2(0) C1 (dep on at least M1) statement that it is cheaper to send 8 packages (oe on ft) OR M1 2×1.20 (=2.40) or 1.65÷2 (=0.825) A1 for "2.40" with 1.65 or for "0.825" with 1.20 C1 (dep on at least M1) statement that it is cheaper to send 8 packages (oe on ft)
8	(a)		10 – 13	2	M1 for evidence of counting squares or an answer in the range 9 – 14 A1 answer in the range 10 – 13
	(b)		60	1	B1 cao

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9			13.50	6	M1 Overhead costs: 980+120+580 (=1680) M1 meal costs: 8 × [30 or 240 or 270] (=240 or 1920 or 2160) M1 teacher income: 30 × 20 (=600) or 30 × 12 (=360 without meal) M1 balance: overhead costs + meal costs – teacher income oe (=3240 or 1320 without meal) M1 balance ÷ 240 A1 cao for 13.5(0)
10	(a)		107.60	2	M1 for substitution eg 48×1.2+50 A1 cao for 107.6(0)
	(b)		37	3	M1 for 94.4-50 (=44.4) M1 for (94.4-50)÷1.2 A1 cao OR M1 $1.2x+50=94.4$ oe M1 attempt to rearrange both sides eg $1.2x = 94.4 – 50$ or division through by 1.2 A1 cao

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11			6	3	M1 for 2×4.5 (=9) M1 for "9"-3 A1 cao OR M1 for 3÷4.5 (=0.666..) M1 for (2 – "0.6666…") × 4.5. A1 cao OR M1 for 4.5 – 3 (=1.5) M1 for 1.5 + 4.5 A1 cao
12			$t = 6x$	2	B2 for $t = 6x$ oe (B1 for t = [linear expression in x] or for $6x$ oe)

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Sameena	4	M1 for a method to find Sameena time: eg 45 min+4 h+10 min (= 4h 55min) (= 295mins) M1 for a method to find Molly time: eg 10 min+4h+10 min (= 4h 20min) (= 260mins) A1 for two correct time periods C1 (dep on M1) ft for a correct statement with consistent units OR M1 for a method to find Sameena alone time: eg 8.15 to 11.50 = 45 min + 2h + 50min (= 3h 35min) (= 215mins) M1 for a method to find Molly alone time: eg 1.10 to 4.10 (= 3h) (= 180mins) A1 for two correct time periods C1 (dep on M1) ft for a correct statement with consistent units
	(b)		7.35	2	M1 attempts to work backwards from 8.15am eg 8.15 – 40 min A1 for 7.35 (am)
	(c)		11.08	2	M1 for 357.33 ÷ 32.25 oe A1 cao
14	(a)		58	1	B1 angle ±2°
	(b)		Correct position	2	B2 for the point C 4cm ± 2mm AND 120 ± 2° (B1 for the point C 4cm ± 2mm OR 120 ± 2°)

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)		8	2	M1 576 ÷ (12×6) oe A1 cao
	(b)		drawn triangle	2	B2 for triangle drawn accurately (B1 for at least one 60° angle or one line of length 6cm ± 2mm)
*16			5 kg	4	M1 for one of 1.90÷2 (=0.95), 4.35÷5 (=0.87); 8.45÷9 (=0.93(888..)) M1 for all of 1.90÷2 (=0.95), 4.35÷5 (=0.87); 8.45÷9 (=0.93(888..)) A1 for all 3 answers correct C1 (dep on M1) for a comparison of their answers leading to a correct deduction (ft). OR M1 for one of 2÷1.90 (=1.05(26..)), 5÷4.35 (=1.14(9..)), 9÷8.45 (=1.06(5…)) M1 for all of 2÷1.90 (=1.05(26..)), 5÷4.35 (=1.14(9..)), 9÷8.45 (=1.06(5…)) A1 for all 3 answers correct C1 (dep on at least M1) for a statement comparing of their three values leading to a correct deduction (ft). OR M1 price of 2 comparable quantities e.g 1.90 × 5 ÷ 2 (=4.75) M1 price of 3 comparable quantities A1 for all 3 answers correct C1 (dep on M1) for a comparison of their answers leading to a correct deduction (ft).

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17	(a)		1300	1	B1 oe
	(b)		5	1	B1 cao
	(c)		1.4	2	M1 0.6 to 2 or 2 – 0.6 oe A1 cao
	(d)		Graph complete	2	B1 horiz. line from 1340 to 1350 B1 horiz line starting at 1340 and line of negative gradient joining graph (ft) to (1415,0)
18			77	3	M1 for 21÷6 (=3.5) for sf length or 21÷6 × 5 (=17.5) M1 for 3×"3.5" + 3×"3.5" + 21 + 21 or 17.5+17.5+21+21 oe A1 cao OR M1 for 21÷6 (=3.5) for sf length M1 for (6+5+6+5)×"3.5" or 22×3.5 oe A1 cao
19			4.20	4	M1 for 30 ÷ (2 + 1) (=10) M1 for "10" × 2 × 2.8 (=56) oe M1 for (98 – "56") ÷ "10" A1 cao 4.2(0) OR algebraic approach M1 for (eg) $c=2a$ and $c+a=30$ M1 for (eg) 2.8 $c+wa=98$ M1 for (w =) (98 – "56") ÷ "10" A1 cao 4.2(0) [SC B2 for 3.5(0) as final answer]

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*20			Needed: 10 eggs 1 kg flour	5	M1 number of cupcakes is 90×2 + 120 (=300) M1 scaling “300”÷12 (=25) M1 needed 200 × “25” or 4 × “25” or 240 × “25” or 5000 or 100 or 6000 A1 5000 (g) and 100 (eggs) and 6000 (g) C1 (dep on at least M1) correct statement of which items are needed with quantities and units OR M1 number of cupcakes is 90×2 + 120 (=300) M1 scaling “300”÷12 (=25) M1 no. cupcakes 5 ÷ “25” or 90 ÷ “25” A1 0.2, 3.6, 0.2 C1 (dep on at least M1) correct statement of which items are needed with quantities and units. OR M1 number of cupcakes is 90×2 + 120 (=300) M1 200 ÷ 12(=16.6..), 4 ÷ 12(= 0.33..), 240 ÷ 12 (=20) M1 “300” × “16.6” and “300” × “0.33” and “300” × “20” A1 5000 (g) and 100 (eggs) and 6000 (g) C1 (dep on at least M1) correct statement of which items are needed with quantities and units

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		$\frac{7}{27}$	2	M1 for $\frac{7}{12+7+8}$ A1 for $\frac{7}{27}$ oe
	(b)		30	3	M1 for 1 – 0.4 (=0.6) M1 for 18 ÷ 6 × 10 or 18÷ "0.6" A1 cao
22			326	5	M1 for $55^2 + 40^2$ M1 for $\sqrt{3025+1600}$ or $\sqrt{4625}$ A1 for 68(.00735…) M1 for 40 + 40 + 55 + 55 + "68" + "68" OR 2 × ("68" + 55 + 40) A1 for 326 or better
*23			70°	3	M1 for *MDC* = 70° or for 90 – (180 – 90 – 70) A1 cao C1 for Alternate angles are equal and Base angles of an isosceles triangle are equal. OR M1 for *MCB* = 20° or for 180 – (90 + 70) A1 cao C1 for Angles in a triangle add up to 180^o and angles of a rectangle are 90°

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: 5AM2F_01			
Question		**Modification**	**Notes**
Q02		Picture removed	
Q05		Vertical axis 3 cm for 1 with an intermediate line Horizontal axis 1½ for 1	
Q06		Size x 2 Central stick removed Blob at centre of spinners	
Q08		1st line 'centimetre' removed Wording added in paper and diagram: 'Each square on the grid represents a one centimetre square'	
Q11		Picture removed	
Q14		Angle at A made exactly 60° N line increased to 10 cm Scale given on both paper and diagram AB joined with a dotted line	

PAPER: 5AM2F_01			
Question		**Modification**	**Notes**
Q14	(b)	'with a cross (x)' removed	
Q15		Model provided. Diagram also provided for MLP	
15	(b)	Base line drawn in 6 cm long	
Q16		Pictures removed – just information given	
Q17		Beginning of graph changed (1300, 0) (1305, 0.5) (1310, 0.5) (1320, 2) – rest of graph line remains. Vertical axis 1½ cm for 0.5 Horizontal axis 1½ cm for 5 minutes	
Q18		5 cm moved to left side. 6 cm and 21 cm moved to top. Headings put above the diagrams.	
Q19		Picture removed	

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Write your name here

Surname	Other names

Pearson Edexcel GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Applications of Mathematics

Unit 2: Applications 2

For Approved Pilot Centres ONLY

Foundation Tier

Friday 13 June 2014 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM2F/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 ▶

P44578A

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5/6/1/1/c2/

P 4 4 5 7 8 A 0 1 2 8

PEARSON

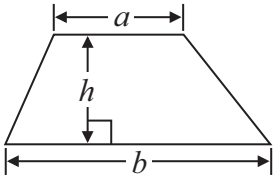
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GCSE Mathematics 2AM01

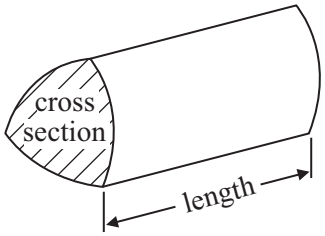
Formulae: Foundation Tier

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



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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 David takes $2\frac{1}{2}$ hours to drive from Leeds to Manchester.

(a) How many minutes are there in $2\frac{1}{2}$ hours?

..... minutes
(2)

Amir is 1.8 metres tall.

(b) Change 1.8 metres into centimetres.

..... centimetres
(1)

Sarah uses 2200 grams of flour to make some bread.

(c) Change 2200 grams into kilograms.

..... kilograms
(1)

Keith goes on a 5 mile bike ride.

(d) How many kilometres is the bike ride?

..... kilometres
(1)

(Total for Question 1 is 5 marks)

2 Here are the prices of tickets for a concert.

Concert	
adult ticket	£10.95
child ticket	£5.50
family ticket (2 adults and 2 children)	£25

Tom buys an adult ticket and a child ticket.

(a) Work out the total cost.

£ .....

(1)

Mr and Mrs Smith take their 2 children to the concert.
It is cheaper to buy 1 family ticket than to buy 4 separate tickets.

*(b) How much cheaper?
You must show how you got your answer.

(3)

(Total for Question 2 is 4 marks)

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3 27 560 people went to a football match.

(a) Write down the value of the **5** in the number 27 560

.....

(1)

12.4 million people watched the football match on TV.

(b) Write 12.4 million in figures.

.....

(1)

The referee has a height of 1.75 metres.

(c) Write down the value of the 7 in 1.75

.....

(1)

The football match ended at 17 05

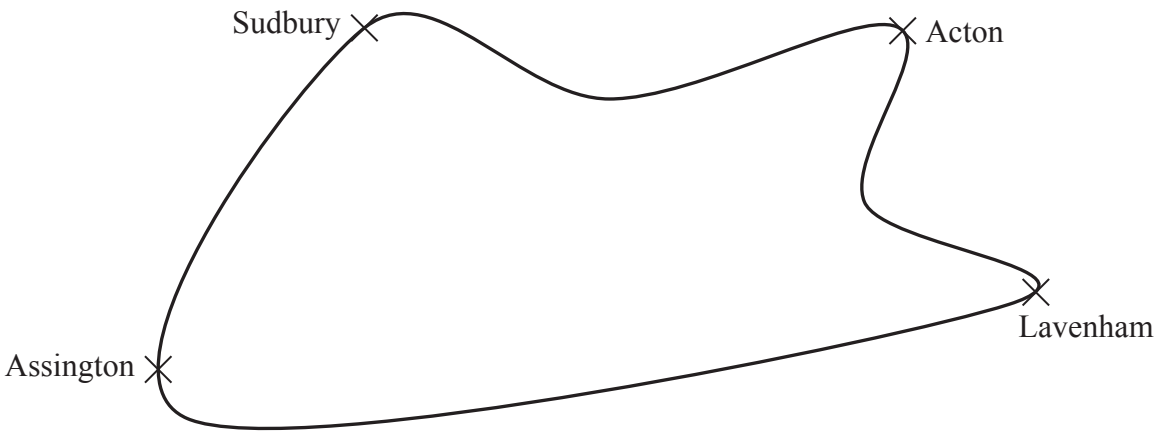
(d) Write **17 05** as a time using the 12 hour clock.

.....

(1)

(Total for Question 3 is 4 marks)

4 The diagram shows the position of four places on a bus route.
The bus only stops at these places.



The table shows the number of people getting on the bus and getting off the bus in Acton, Lavenham and Assington.

Place	Number getting off	Number getting on
Acton	10	25
Lavenham	15	17
Assington	5	12

There are 20 people on the bus when it leaves Sudbury.

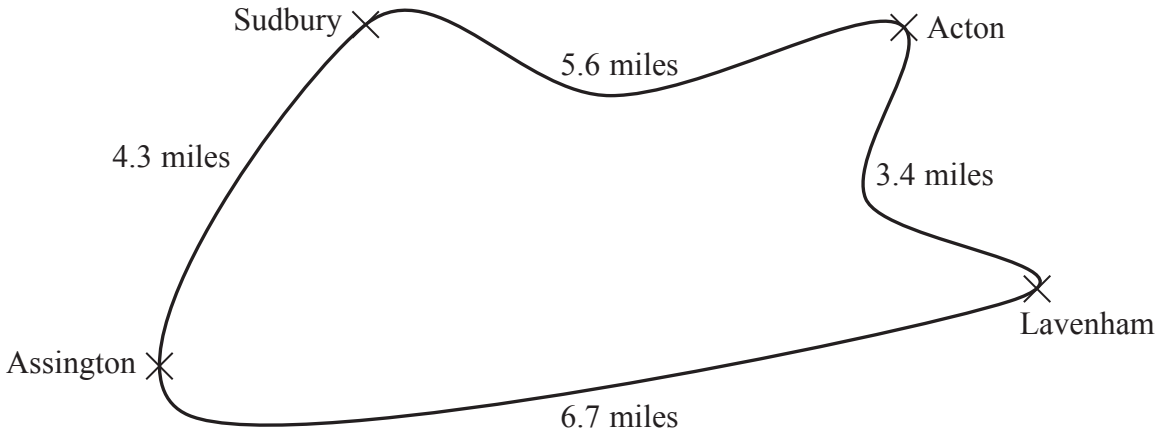
(a) Work out the number of people on the bus when it gets back to Sudbury.

.....

(3)

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(b) The diagram now shows the distance between the places along the bus route.



Work out the total distance the bus travels on its journey from Sudbury until it gets back to Sudbury.

..... miles

(2)

It is further from Assington to Lavenham and then to Acton, than from Assington to Sudbury and then to Acton.

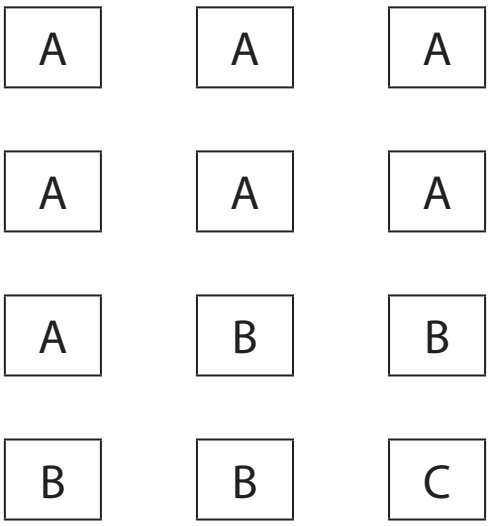
(c) How much further?

..... miles

(2)

(Total for Question 4 is 7 marks)

5 The diagram shows twelve cards.
There is a letter on each card.
The cards are used in a game.



Rachel takes at random one of these cards.

(a) Which letter is **most** likely to be on the card she takes?

.....

(1)

(b) What is the probability that Rachel takes a card with the letter C on it?

.....

(1)

(c) What is the probability that Rachel takes a card with the letter B or the letter C on it?

.....

(2)

(Total for Question 5 is 4 marks)

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6 Tea bags are packed in boxes.
There are 80 tea bags in each box.
Susan uses 5 tea bags each day.

How many boxes of tea bags does Susan need for 365 days?

..... boxes

(Total for Question 6 is 4 marks)

7 Thelma has breakfast in a cafe.

She must choose one item from each list for breakfast.

List 1	List 2	List 3
Bacon Sausage	Egg Mushrooms	Fried bread Toast

Write down all the possible combinations that Thelma can choose for breakfast.

.....

.....

.....

.....

(Total for Question 7 is 2 marks)

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8 Gary is a cook.

He uses this word formula to change between temperatures in degrees Fahrenheit and temperatures in degrees Celsius.

Temperature in degrees Celsius = Temperature in degrees Fahrenheit ÷ 2

A recipe says use an oven temperature of 400 degrees Fahrenheit.

(a) Use Gary's formula to change 400 degrees Fahrenheit to degrees Celsius.

..... °C

(1)

A different recipe says to use an oven temperature of 160 degrees Celsius.

(b) Use Gary's formula to change 160 degrees Celsius to degrees Fahrenheit.

..... °F

(2)

Naomi is a weather girl.

She uses this formula to change temperatures from degrees Fahrenheit (F) to degrees Celsius (C).

$$C = \frac{5(F - 32)}{9}$$

One day the temperature was 59 degrees Fahrenheit.

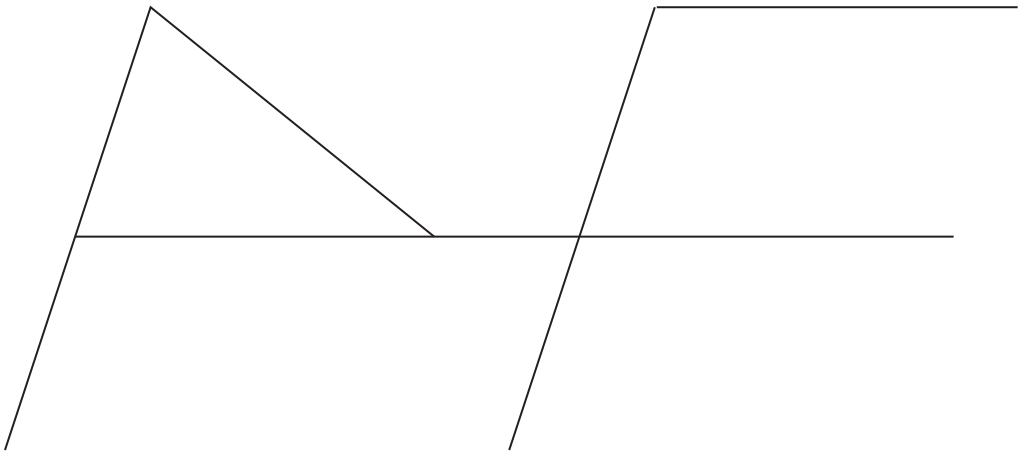
(c) Use Naomi's formula to change 59 degrees Fahrenheit to degrees Celsius.

..... °C

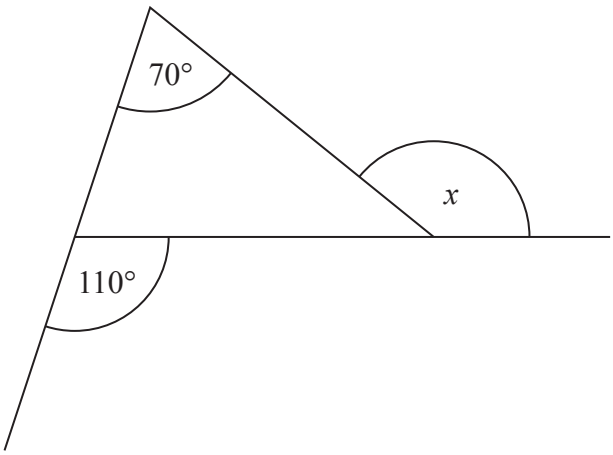
(2)

(Total for Question 8 is 5 marks)

9 Here is the logo for the Perfect Fotos art gallery.



Here is part of the logo.

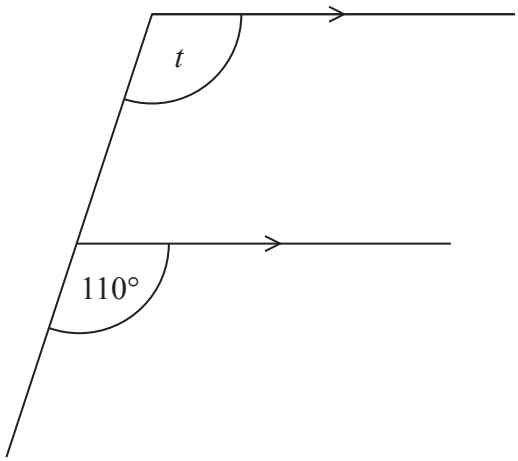


*(a) Find the size of the angle marked x.
Give reasons for your answer.

(3)

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Here is the other part of the logo.



(b) (i) Write down the size of the angle marked t.

.....°

(ii) Give a reason for your answer.

.....

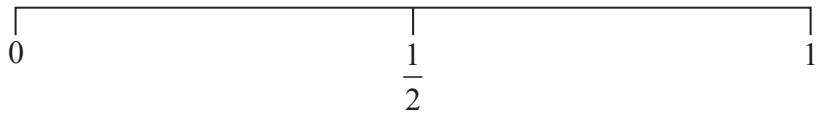
.....

(2)

(Total for Question 9 is 5 marks)

10 (a) Sabrina throws a fair coin.

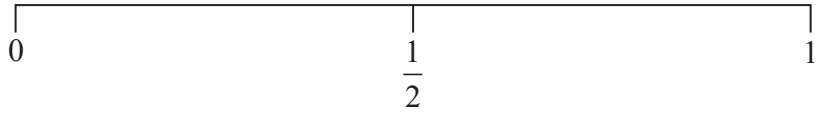
On the probability scale, mark with a cross (×) the probability that the coin will land on tails.



(1)

(b) Suresh throws an ordinary 6-sided dice.

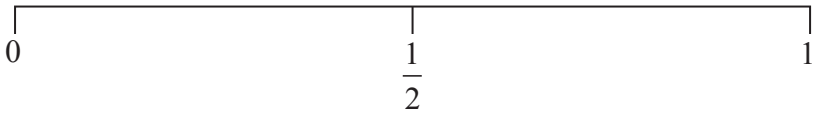
On the probability scale, mark with a cross (×) the probability that he will throw a 7



(1)

(c) There are three yellow sweets and one blue sweet in a bag.
Graham takes at random a sweet from the bag.

On the probability scale, mark with a cross (×) the probability that he will take a blue sweet.

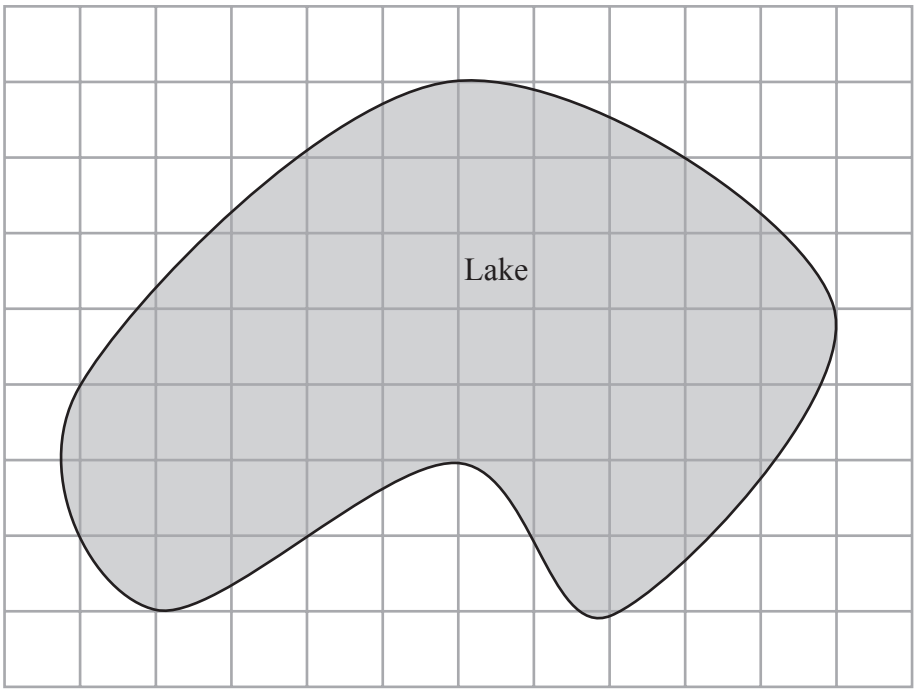


(1)

(Total for Question 10 is 3 marks)

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11 Here is part of a map drawn on a grid of centimetre squares.
The map shows a lake.



Key

represents 100 m^2

Find an estimate for the area of the lake.
Give your answer in m^2.

..... m^2

(Total for Question 11 is 3 marks)

***12** Dave has 3 tins of green paint.
Dave has used some of the paint from each tin.



There was 1 litre of paint in each tin.
Now

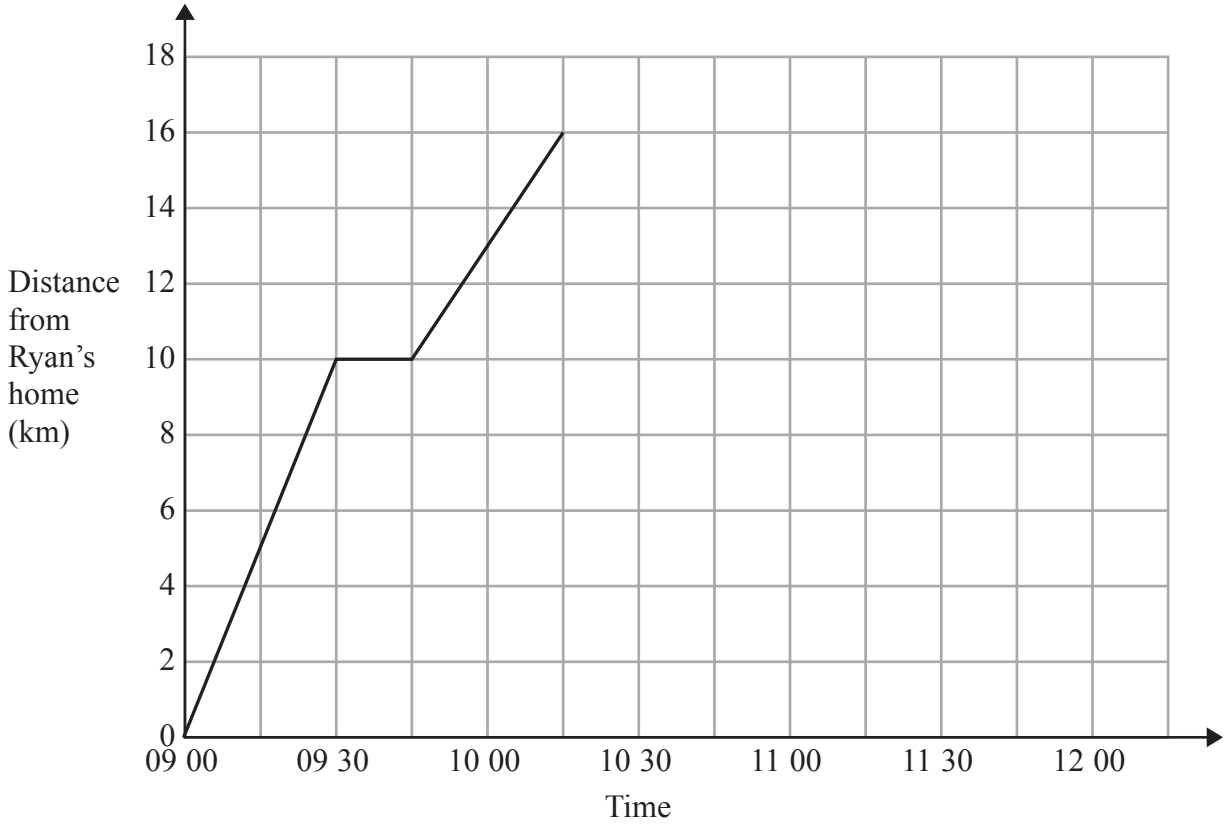
one tin is half full of paint,
one tin has 0.4 litres of paint in it,

one tin is $\frac{3}{4}$ full of paint.

Dave needs a total of $1\frac{4}{5}$ litres of paint.
Does Dave have enough paint?

(Total for Question 12 is 4 marks)

13 Here is a travel graph of Ryan's cycle journey from his home to the shops.



Ryan stopped at some roadworks at 09 30

(a) How far is Ryan from his home at 09 30?

..... km

(1)

The shops are 16 km from Ryan's home.

(b) What time did Ryan get to the shops?

.....

(1)

Ryan was at the shops for 30 minutes.
He then cycled back home without stopping.
He got home at 12 00

(c) Complete the travel graph.

(2)

(d) What was Ryan's average speed on his way home?

..... kilometres per hour

(2)

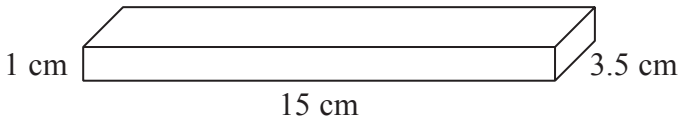
(Total for Question 13 is 6 marks)

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14 Terri makes chocolate bars.

Each chocolate bar is a cuboid.

Diagram **NOT** accurately drawn



Four faces of the chocolate bar are of length 15 cm.

(a) Work out the total surface area of these four faces.

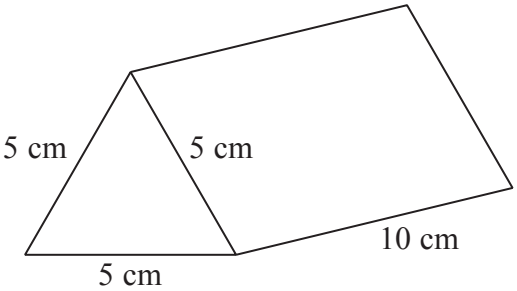
..... cm^2

(3)

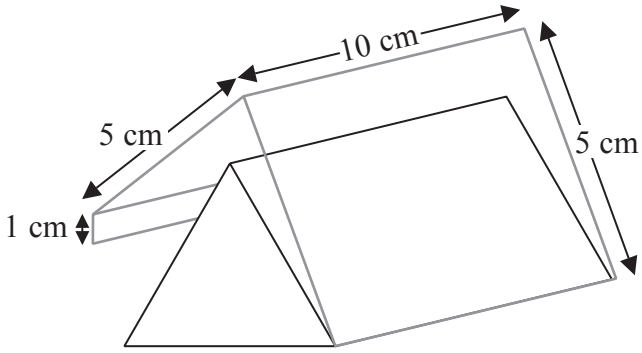
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A different chocolate bar is in the shape of a triangular prism.

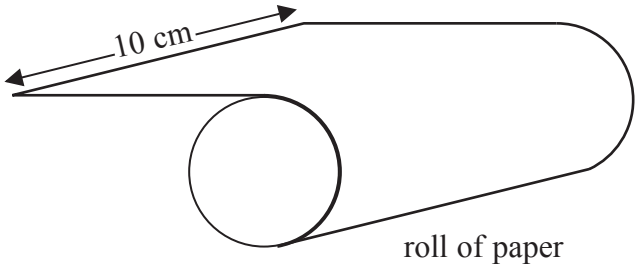
Diagram **NOT** accurately drawn



chocolate bar



wrapper



roll of paper

A paper wrapper covers the three rectangular faces of the chocolate bar.
The paper on each wrapper overlaps by 1 cm.

The paper for each wrapper is cut from a roll of paper 500 m long and 10 cm wide.

(b) Work out the greatest number of wrappers that can be cut from one roll of paper.

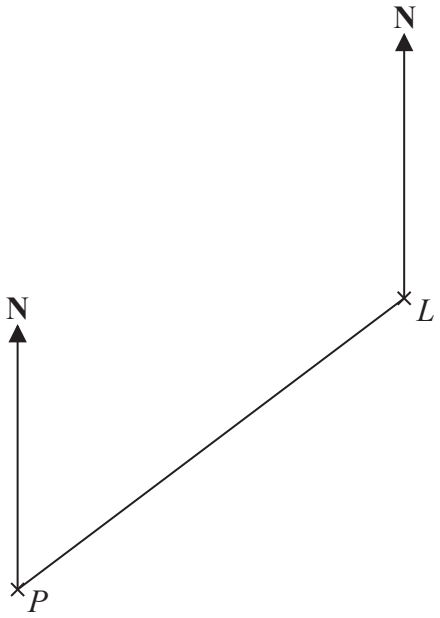
.....

(4)

(Total for Question 14 is 7 marks)

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15 The diagram shows the position of port P and lighthouse L.
Ben sails his boat from the port to the lighthouse.



Scale 1 cm represents 5 km

(a) (i) Measure and write down the bearing of lighthouse L from port P.

..... °

(ii) Work out the distance from port P to lighthouse L.

..... km

(3)

Ben then sails from lighthouse L on a bearing of 140°.
He sails for 2 hours at a speed of 17.5 km/h to port Q.

(b) Mark port Q with a cross (×).
Label it Q.

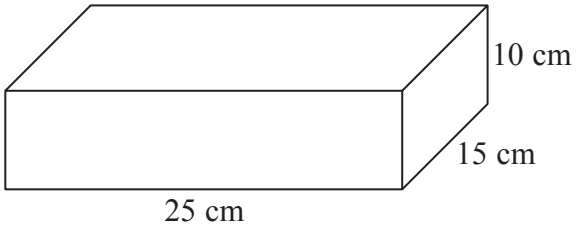
(4)

(Total for Question 15 is 7 marks)

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16 Bob has a box of toy bricks.
Each toy brick is a cube with side 2.5 cm.

Diagram **NOT** accurately drawn



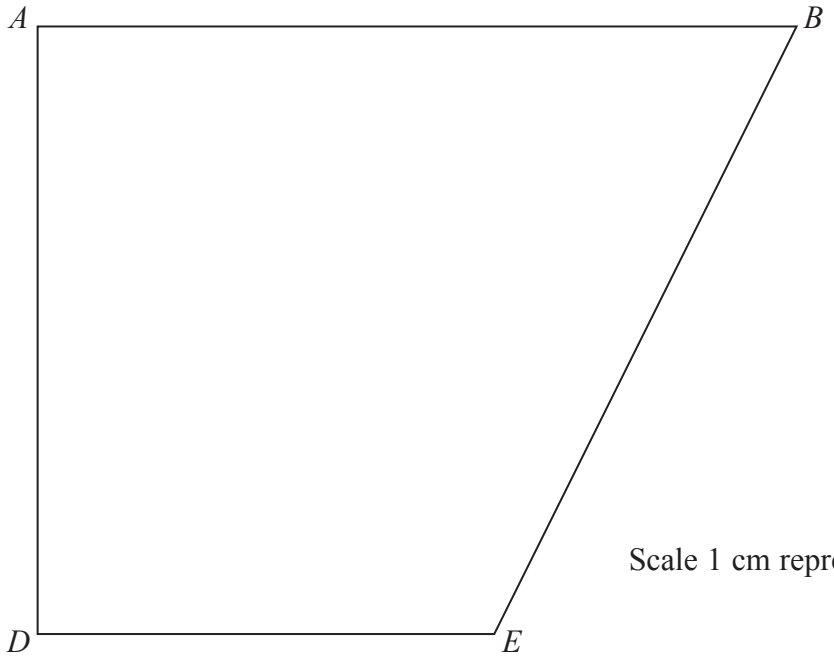
The box is completely full of toy bricks.

How many toy bricks are there in the box?

..... toy bricks

(Total for Question 16 is 3 marks)

17 Here is an accurate scale drawing of Zena's garden.



Scale 1 cm represents 10 m

Zena is going to plant a tree in the garden.

She will plant the tree

nearer to AB than to BE,

more than 50 m from AD,

and less than 60 m from E.

On the diagram, show accurately by shading, the region where Zena will plant the tree.

(Total for Question 17 is 4 marks)

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***18** Mario sells coffee in three different sizes of cup.



Small Medium Large

Which size cup of coffee is the best value for money?

(Total for Question 18 is 4 marks)

19 Here is a list of ingredients for making fruit buns.

Fruit buns

Flour	300 g
Butter	150 g
Sugar	150 g
Mixed fruit	100 g
Eggs	1

Makes 12 fruit buns

Rosie has

3 kg of flour
900 g of butter
1 kg of sugar
800 g of mixed fruit
12 eggs

What is the greatest number of fruit buns Rosie can make?
You must show your working.

.....

(Total for Question 19 is 4 marks)

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***20** Rashmi is 3 years older than Narinder.
Bhavinda is twice as old as Rashmi.

The total of their ages is less than 50

What is Rashmi's greatest possible age?
Give your answer as a whole number of years.

(Total for Question 20 is 4 marks)

21 Gavin does his shopping in Roots supermarket.
He gets 4 points on his Roots store card for every £1 he spends.

Gavin has spent a total of £660 in Roots supermarket.
He wants to use all the points he has got when he buys a pair of sunglasses.

The sunglasses cost £99
Gavin gets 20p off the cost of the sunglasses for every 10 points on his store card.

Gavin buys the sunglasses.
He uses all the points he has got on his store card.
He pays the rest of the cost in money.

How much of the £99 does he pay in money?

£ .....

(Total for Question 21 is 5 marks)

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22 There is only one winning ticket in a raffle.

80 raffle tickets are sold.
The winning ticket will be chosen at random.

Helen buys three raffle tickets.

(a) Work out the probability that Helen will **not** win the raffle.

.....

(1)

Jonty also buys some of the raffle tickets.
The probability that Jonty will win the raffle is 0.05

(b) How many raffle tickets does Jonty buy?

.....

(2)

(Total for Question 22 is 3 marks)

23 An insurance company insured 10 000 small boats last year.
A total of 150 insurance claims were made on these small boats last year.
The company paid an average amount of £1200 on each insurance claim.

The company does **not** want to make a loss when it insures small boats.

What is the least amount of money the company should charge to insure each small boat?

£ .....

(Total for Question 23 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

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Mark Scheme (Results)

Summer 2014

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

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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 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: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		150	2	M1 for $2\frac{1}{2} \times 60$ or 60 + 60 + 30 oe A1 cao
	(b)		180	1	B1 cao
	(c)		2.2	1	B1 cao
	(d)		8	1	B1 cao
2	(a)	10.95 + 5.50 =	16.45	1	B1 cao
	*(b)	2 × 10.95 + 2 × 5.50 = 21.90 + 11 = 32.90 32.90 – 25 = £7.90	£7.90 with explanation	3	M1 for 2 × 10.95 + 2 × 5.50 (= 32.90) M1 for using £25 in a subtraction or a comparison from their separate ticket total C1 for £7.90 with evidence of 32.90 from correct working
3	(a)		500	1	B1 for 500 (accept in words or digits or a combination as long as the meaning is clear)
	(b)		12 400 000	1	B1 cao
	(c)		7 tenths or $\frac{7}{10}$ or 70 cm	1	B1 for 7 tenths or $\frac{7}{10}$ or 70 cm (do not accept ‘tenths’ or 0.7)
	(d)		5 05 pm	1	B1 for 5 05 pm or five past five pm

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)	20 – 10 + 25 – 15 + 17 – 5 +12 OR 20 + (25 + 17 + 12) – (10 + 15 + 5)	44	3	M1 for a correct addition or subtraction that starts with 20 people or a method to work out the net gain in passengers for one stop M1 for a complete method A1 cao OR M1 for 25 + 17 + 12 or 10 + 15 + 5 M1 for a complete method A1 cao
	(b)		20	2	M1 for 5.6 + 3.4 + 6.7 + 4.3 A1 cao
	(c)	4.3 + 5.6 = 9.9 6.7 + 3.4 = 10.1 10.1 – 9.9	0.2	2	M1 for 4.3 + 5.6 (= 9.9) and 6.7 + 3.4 (= 10.1) A1 cao
5	(a)		A	1	B1 cao
	(b)		$\frac{1}{12}$	1	B1 cao
	(c)		$\frac{5}{12}$	2	B2 oe (B1 for $\frac{x}{12}$ where $x < 12$ or $\frac{5}{y}$ where $y > 5$ or $\frac{4}{12} + \frac{1}{12}$)

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6			23	4	M1 for 5 × 365 M1 for "5 × 365" ÷ 80 A1 for 22.8(125) B1 ft for rounding up their answer to the next whole number OR M1 for 80 ÷ 5 (= 16) M1 for 365 ÷ "16" A1 for = 22.8(125) B1 ft for rounding up their answer to the next whole number
7		BEF, BET, BMF, BMT SEF, SET, SMF, SMT	8 correct combinations	2	B2 for all 8 combinations with no incorrect combinations -- ignore any repeats (B1 for at least 4 correct combinations -- ignore any incorrect combinations and any repeats)
8	(a)		200	1	B1 cao
	(b)		320	2	M1 for 160 × 2 A1 cao
	(c)		15	2	M1 for $\frac{5(59-32)}{9}$ A1 cao

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	*(a)(i)		140°	3	M1 for 180 – 110 (= 70) A1 for 140 C1 for <u>exterior angle</u> of a triangle is <u>equal</u> to the sum of the <u>interior opposite angles</u> **and** <u>angles</u> in a <u>straight line</u> add to <u>180</u> OR M1 for 180 – 110 (= 70) and 180 – (“70” + 70) A1 for 140 C1 for <u>angles</u> in a <u>straight line</u> add to <u>180</u> **and** <u>angles</u> in a <u>triangle</u> add to <u>180</u>
	(b)		110 Corresponding angles are equal	2	B1 for 110 B1 for <u>corresponding angles</u> are equal
10	(a)		× at $\frac{1}{2}$	1	B1 for cross at $\frac{1}{2}$
	(b)		× at 0	1	B1 for cross at 0
	(c)		× near $\frac{1}{4}$	1	B1 for cross near $\frac{1}{4}$
11			4700	3	M1 for attempting to count the squares or for sight of a number in the range 40 to 54 M1 (dep) for multiplying any number of squares by 100 A1 for an answer in the range 4500 to 4900

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*12		$\frac{1}{2}$ = 0.5 $\frac{3}{4}$ = 0.75 0.5 + 0.4 + 0.75 = 1.65 1.65 is smaller than 1.8 OR 0.4 = $\frac{4}{10}$ $\frac{1}{2}+\frac{2}{5}+\frac{3}{4}=\frac{33}{20}$ $1\frac{4}{5}=\frac{36}{20}$	No with reasons	4	M1 for changing fractions to decimals (at least one correct) M1 for "0.5" + 0.4 + "0.75" (= 1.65) A1 for 1.65 C1 ft (dep on M1) for a correct decision with a comparison made of "1.65" and 1.8 OR M1 for changing decimal to fraction M1 for $\frac{1}{2}+\frac{2}{5}+\frac{3}{4}$ (= $\frac{33}{20}$) A1 for $\frac{33}{20}$ oe C1 ft (dep on M1) for a correct decision with a comparison made of "$\frac{33}{20}$" and $\frac{36}{20}$
13	(a)		10	1	B1 cao
	(b)		10 15	1	B1 oe
	(c)		Travel graph	2	M1 for horizontal line joining (10 15, 16) to (10 45, 16) or for joining their (10 45, 16) to (12 00, 0) [Note: A single line from (10 15, 16) to (12 00, 0) gets M0] A1 cao
	(d)	16 ÷ 1.25	12.8	2	M1 for 16 ÷ "1.25" oe A1 cao

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		135	3	M1 for 2 × 15 × 1 or 2 × 15 × 3.5 or 3.5 + 3.5 + 1 + 1 M1 for 2 × 15 × 1 + 2 × 15 × 3.5 with no other areas or 15 × (3.5 + 3.5 + 1 + 1) A1 cao
	(b)		3125	4	M1 for 500 × 100 (= 50 000) M1 for 5 + 5 + 5 + 1 (= 16) M1 for '50 000' ÷ '16' A1 cao
15	(a)(i)		053	3	B1 within 2º tolerance
	(ii)	6.4 × 5	32		M1 for 6.4 × 5 (with '6.4' given within 2 mm tolerance) A1 31 to 33
	(b)		*Q* marked	4	M1 for 17.5 × 2 (= 35) M1for "35" ÷ 5 A1 for *LQ* = 7 cm within 2 mm tolerance B1 for correct bearing of 140º within 2º tolerance

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16		25 ÷ 2.5 = 10 15 ÷ 2.5 = 6 10 ÷ 2.5 = 4 10 × 6 × 4 = OR 25 × 15 × 10 = 3750 2.5 × 2.5 × 2.5 = 15.625 3750 ÷ 15.625 =	240	3	M1 for 25 ÷ 2.5 (= 10) or 15 ÷ 2.5 (= 6) or 10 ÷ 2.5 (= 4) M1 (dep) for "10" × "6" × "4" A1 cao OR M1 for 25 × 15 × 10 (= 3750) or 2.5 × 2.5 × 2.5 (= 15.625) M1 (dep) for "3750" ÷ "15.625" A1 cao
17			Region shaded	4	B1 for bisector of angle *ABE* B1 for line drawn parallel to *AD* and 5 cm from *AD* B1 for arc of circle drawn centre *E* with radius 6 cm B1 ft for shading a region to the right of their vertical line **and** above their angle bisector **and** below their arc
*18		225 ÷ 175 = 1.28(57....) 275 ÷ 250 = 1.10 375 ÷ 300 = 1.25 175 ÷ 225 = 0.7(77...) 250 ÷ 275 = 0.9(09...) 300 ÷ 375= 0.8	Medium with reasons	4	M1 for a method that results in at least two values that can be used to compare two cups M1 for a complete method that results in values that can be used to compare the three cups A1 for all correct values that are used for a comparison C1 ft (dep on M2) for comparison of their values with a correct conclusion

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
19		Flour: 300 ÷ 12 = 25 3000 ÷ 25 = 120 Butter 150 ÷ 12 = 12.5 900 ÷ 12.5 = 72 Sugar 150 ÷ 12 = 12.5 1000 ÷ 12.5 = 80 Fruit 100 ÷ 12 = 8.333 800 ÷ 8.333 = 96 Eggs 1÷ 12 = 0.0833... 12 ÷ 0.0833... = 144 Flour: 3000 ÷ 300 = 10 12 × 10 = 120 Butter 900 ÷ 150 = 6 12 × 6 = 72 Sugar 1000 ÷ 150 = 6.67 12 × 6.67 = 80 Fruit 800 ÷ 100 = 8 12 × 8 = 96 Eggs 12 ÷ 1 = 12 12 × 12 = 144	72	4	M1 for a correct method to either find the amount of one ingredient required for one bun, e.g. 300 ÷ 12 (= 25 g), 150 ÷ 12 (= 12.5 g), etc. or for a correct method to find the number of groups of 12 buns that are possible with the amount of one ingredient available, e.g. 3000 ÷ 300 (= 10), 900 ÷ 150 (= 6), etc. M1 (dep) for a correct method for considering all ingredients in this way M1 for a fully complete and correct method leading to the number of buns that can be made from each ingredient. A1 for 72 cao

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*20			13	4	M1 for a correct algebraic representation showing a correct relationship between at least two ages, eg (Narinder =) x, (Rashmi =) $x + 3$ Note: $x + 3$ or $2(x + 3)$ can imply Narinder = x. M1 (dep on M1) for deriving an algebraic inequality (or equality) correct from their three algebraic expressions eg. $x + x + 3 + 2(x + 3) < (\text{or} =) 50$ M1 (dep on M2) for a complete and correct method to simplify their inequality (or equality) to e.g. $4x < 41$ ($4x = 41$) C1 (dep on previous M1) for $x < 10.25$ ($x = 10.25$) and a statement identifying Rashmi as 13 years of age, cao OR M1 for one correct trial showing total of ages under 50 M1 for one correct trial showing total of ages over 50 M1 for identifying 10, 13 and 26 as their ages with a sum of 49 years. C1 (dep on previous M1) for fully correct arithmetic and a statement identifying Rashmi as 13 years of age, cao
21			46.20	5	M1 for 660 × 4 (= 2640) M1 for "number of points" ÷ 10 (= 264) M1 for "264" × 20p (= £52.80) M1 (dep on M2) for £99 – "£52.80" A1 for 46.2(0) OR M1 for £99 ÷ 20p (= 495) M1 for "495" × 10 (= 4950) points needed M1 for 660 ×4 (= 2640) M1 (dep on M2) for ("4950 – 2640") ÷ 10 × £0.20 A1 for 46.2(0)

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)	$1 - \frac{3}{80} =$	$\frac{77}{80}$	1	B1 $\frac{77}{80}$ oe
	(b)	$0.05 \times 80 =$	4	2	M1 for 0.05×80 or $\frac{4}{80}$ A1 for 4 oe (e.g. 4 out of 80)
23			18	3	M1 for total claimed is 150×1200 (= £180 000) M1 for "180 000" ÷ 10 000 A1 cao OR M1 for writing probability of a claim as $\frac{150}{10000}$ M1 for "$\frac{150}{10000}$" × 1200 A1 cao OR M1 for 10 000 ÷ 150 = 66.66 ...) M1 for 1200 ÷ "66.66 ..." A1 cao

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: 5AM2F_01			
Question		**Modification**	**Notes**
Q4		Join places with straight lines	Standard mark scheme
Q9		Top diagram is removed Wording changed: "Perfect Fotos' art gallery has a logo" Diagram kept for part (a) 'It shows part of the logo' Diagram kept for part (b) *t* changed to *y*.	Standard mark scheme
Q10		Probability scales made longer	Standard mark scheme
Q11		2 cm grid. 'centimetre' removed from text Wording inserted "Each square on the grid represents 100 m^2	Standard mark scheme
Q12		Just cross sections of paint tins given	Standard mark scheme
Q13		2 cm grid. Right axis is labelled	Standard mark scheme

PAPER: 5AM2F_01			
Question		**Modification**	**Notes**
Q14	(a)	Model supplied as well as diagram	Standard mark scheme
	(b)	3 models supplied as well as diagrams Wording changed	Standard mark scheme
Q15		*N* lines extended to 10 cm. *PL* = 9.5 cm Angle *NPL* = 55 degrees	
	(a)i		B1 for answer in range 50 to 60
	ii		M1 for 9.5 × 5 (with ‘9.5 given within 5 mm tolerance) A1 45 to 50
	(b)		M1 for 17.5 × 2 (= 35) M1for “35” ÷ 5 A1 for *LQ* = 7 cm within 5 mm tolerance B1 for correct bearing of 140º within 5º tolerance
Q16		Model supplied as well as diagram	Standard mark scheme
Q18		Diagrams removed – information given instead	Standard mark scheme

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Pearson Edexcel GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Applications of Mathematics

Unit 2: Applications 2

For Approved Pilot Centres ONLY

Foundation Tier

Friday 8 November 2013 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM2F/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 ▶

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6/5/5/1/5/5/

P 4 3 6 0 3 A 0 1 3 2

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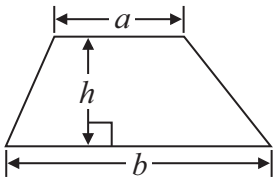
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GCSE Mathematics 2AM01

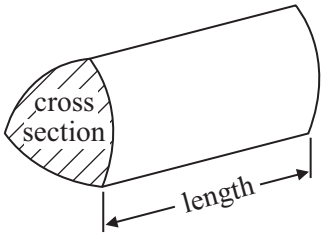
Formulae: Foundation Tier

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



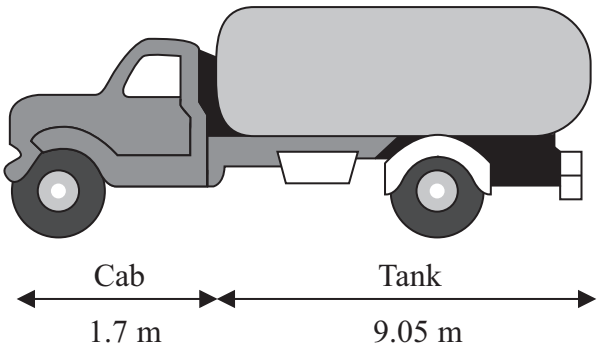
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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 The picture shows an oil tanker.



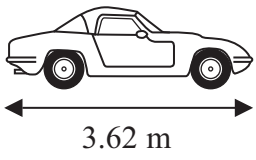
The cab is 1.7 m long.
The tank is 9.05 m long.

(a) Work out 1.7 + 9.05

.....

(1)

This picture shows a car.



The tank of the oil tanker is longer than the car.

(b) Work out 9.05 – 3.62

.....

(1)

(Total for Question 1 is 2 marks)

2 50 chocolate biscuits completely fill a biscuit tin.

There are 48 biscuits in the biscuit tin.
27 of these biscuits are eaten.
12 biscuits are put into the tin.

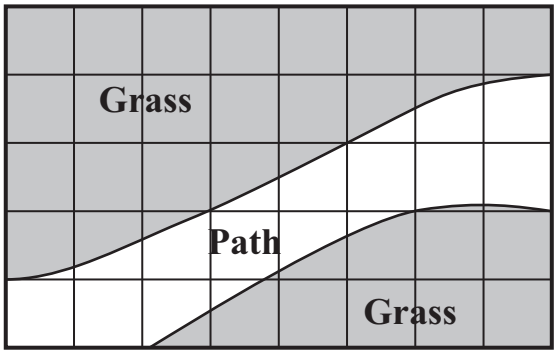
How many more biscuits are needed to fill the tin completely?

.....

(Total for Question 2 is 3 marks)

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3 Mrs Barlow has drawn a plan of her garden.



Each square on the plan represents $1m^2$.

Estimate the area of the path.

..... m^2

(Total for Question 3 is 2 marks)

4 Queen Victoria was queen for 23 226 days.

(a) Write down the value of the **3** in the number 23 226

.....

(1)

Queen Victoria was 1.48 m tall.

(b) Write down the value of the **8** in the number 1.48

.....

(1)

(Total for Question 4 is 2 marks)

5 Oliver wants to save some money.
His mother gives him an empty money box.

His mother puts 80p into his money box every Wednesday, Saturday and Sunday.
His father puts £2.50 into his money box every Tuesday and Thursday.
His auntie puts £1.20 into his money box every Friday.

At the end of 4 weeks, Oliver counts the money in his money box.

How much money is in his money box?

£ .....

(Total for Question 5 is 4 marks)

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6 Susan weighs 11 stone 12 pounds.
1 stone = 14 pounds.

(a) How much, in pounds, does Susan weigh?

..... pounds
(2)

Susan has a cat.
Susan and her cat have a total weight of 12 stone 9 pounds.

(b) Work out the weight of her cat in pounds.

..... pounds
(2)

(Total for Question 6 is 4 marks)

---

7 A carton of milk is 18.5 centimetres tall.

(a) Change 18.5 centimetres to millimetres.

..... millimetres
(1)

A bag of potatoes weighs 2000 grams.

(b) Change 2000 grams to kilograms.

..... kilograms
(1)

(Total for Question 7 is 2 marks)

---

8 Bridling School has a concert to raise money for charity.
All the profit from the concert goes to charity.

The school only has to pay
£1300 to use the hall for the concert,
£580 for all the things they need for the concert.

The school sells 600 tickets for the concert.
The full price of a ticket is £6.50
The price of a student's ticket is £2.50

The school sells
480 of the tickets at the full price,
the rest of the tickets at the student price.

Work out how much money goes to charity.

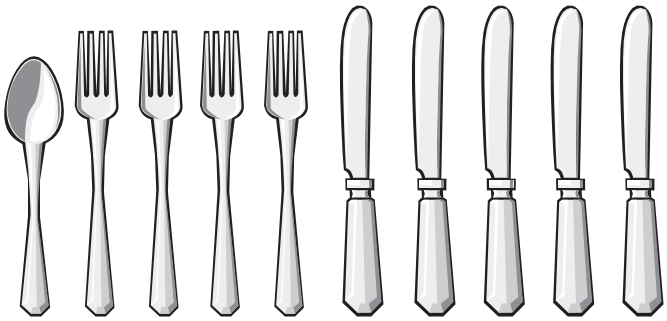
£ .....

(Total for Question 8 is 6 marks)

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9 There are only knives, forks and spoons in a cutlery box.

The knives, forks and spoons are shown below.



Muriel takes at random an item of cutlery from the box.

impossible	unlikely	evens	likely	certain

(a) Use a word from the list above that best describes the chance of each of the following events.

(i) Muriel takes a spoon.

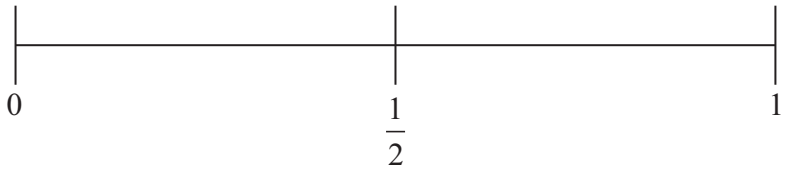
.....

(ii) Muriel takes a knife.

.....

(2)

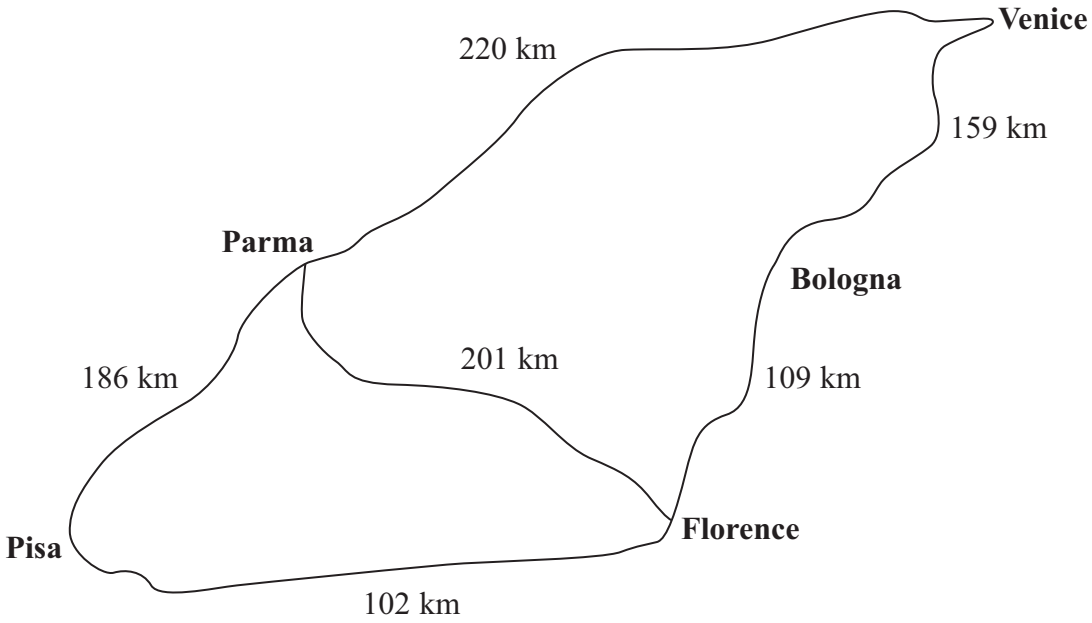
(b) On the probability scale below, mark with a cross (×) the probability that Muriel takes a fork.



(1)

(Total for Question 9 is 3 marks)

10 Here is a map showing some towns in Italy.
It shows the distance by road between the towns.



The Jones family are on holiday in Italy.

On Monday, they drive from Venice to Bologna.
They then drive to Florence.

(a) How far do the Jones family drive from Venice to Florence?

..... km

(1)

On Tuesday, Mrs Jones wants to go from Florence to Pisa and then to Parma.
Mrs Jones knows it will be further than driving directly from Florence to Parma.

(b) How much further?

..... km

(2)

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On Wednesday, the Jones family drive from Parma to Venice.
They stop every 50 km.

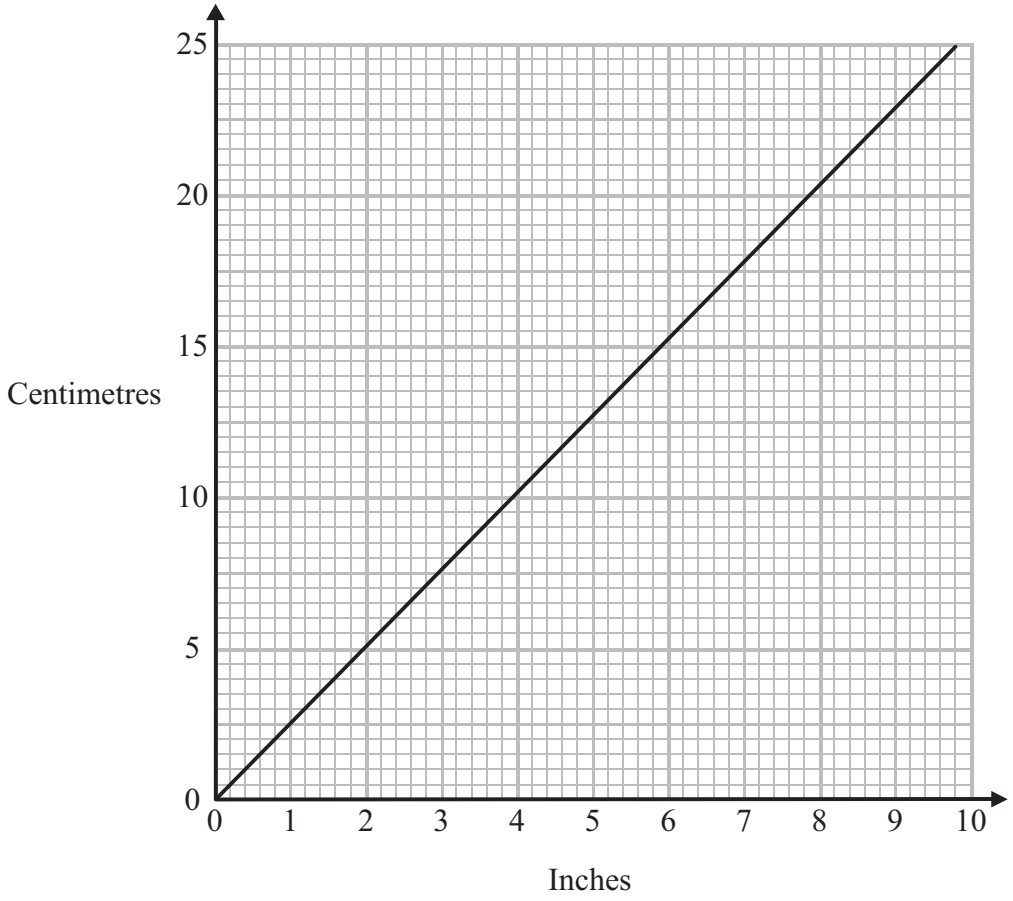
(c) How many times do they stop?

.....

(2)

(Total for Question 10 is 5 marks)

11 Joe works in a DIY shop.
He uses this conversion graph to change between inches and centimetres.



(a) Change 4 inches to centimetres.

..... cm
(1)

(b) Change 16 cm to inches.

..... inches
(1)

(c) Change 60 cm to inches.

..... inches
(3)

(Total for Question 11 is 5 marks)

12 Here is Sinita's exam timetable for the first week of exams.
The timetable shows each exam subject and the length of time of the exam.

	Morning Start time 09 30	**Afternoon Start time 13 30**
Monday	Science 40 minutes	Maths 1 hour 30 minutes
Tuesday		English 1 hour 45 minutes
Wednesday	History 2 hours	
Thursday	Maths 1 hour 30 minutes	
Friday		PE 1 hour

(a) What time will Sinita's science exam finish?

.....

(1)

On Friday, Sinita gets to school at 12 53

(b) How long does she have to wait to start her PE exam?

..... minutes

(1)

Rajesh has 500 minutes of exams in the first week.

*(c) Who has most time in exams in the first week, Rajesh or Sinita?

You must show all your working.

(4)

(Total for Question 12 is 6 marks)

13 Here is a diagram showing the position of the desks in a classroom.

Row A	A1	A2	A3	A4	A5	A6
Row B	B1	B2	B3	B4	B5	B6
Row C	C1	C2	C3	C4	C5	C6
Row D	D1	D2	D3	D4	D5	D6

There are 24 desks in the classroom.
On each desk there is the letter of the row and a number.

Before the lesson each student takes at random a card.
Each card has the letter of the row and the number of the desk the student must sit at.

Graham is the first student to take a card.

(a) Write down the probability that Graham will sit at desk A1.

.....

(1)

(b) Write down the probability that Graham will sit in row D.

.....

(1)

(c) Write down the probability that Graham will sit at a desk with an odd number in row B.

.....

(1)

(Total for Question 13 is 3 marks)

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14 Anne owns a taxi company.

Anne uses this formula to work out the total cost, in pounds, of each taxi journey.

total cost = £1.50 × number of miles + £1.20

Bob goes 2 miles in one of Anne's taxis.

(a) Work out the total cost.

£ .....

(2)

John also owns a taxi company.

John uses this formula to work out the total cost, in pounds, of each taxi journey.

total cost = £1.80 × number of miles + 50p

Sharita used one of John's taxis for a journey.
The total cost was £9.50

(b) How many miles was Sharita's journey?

..... miles

(3)

(Total for Question 14 is 5 marks)

15 Stuart is making a child's toy.

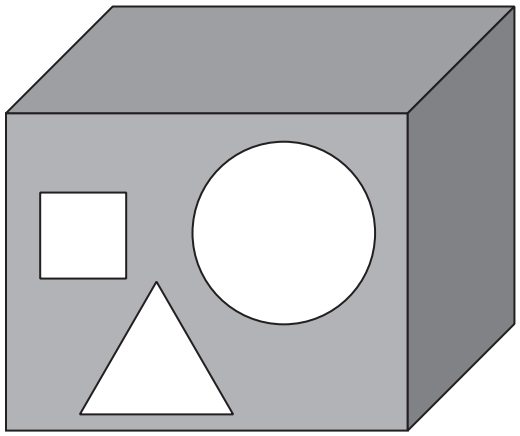


Diagram **NOT** accurately drawn

The toy has three holes in it, a square, a circle and an equilateral triangle.

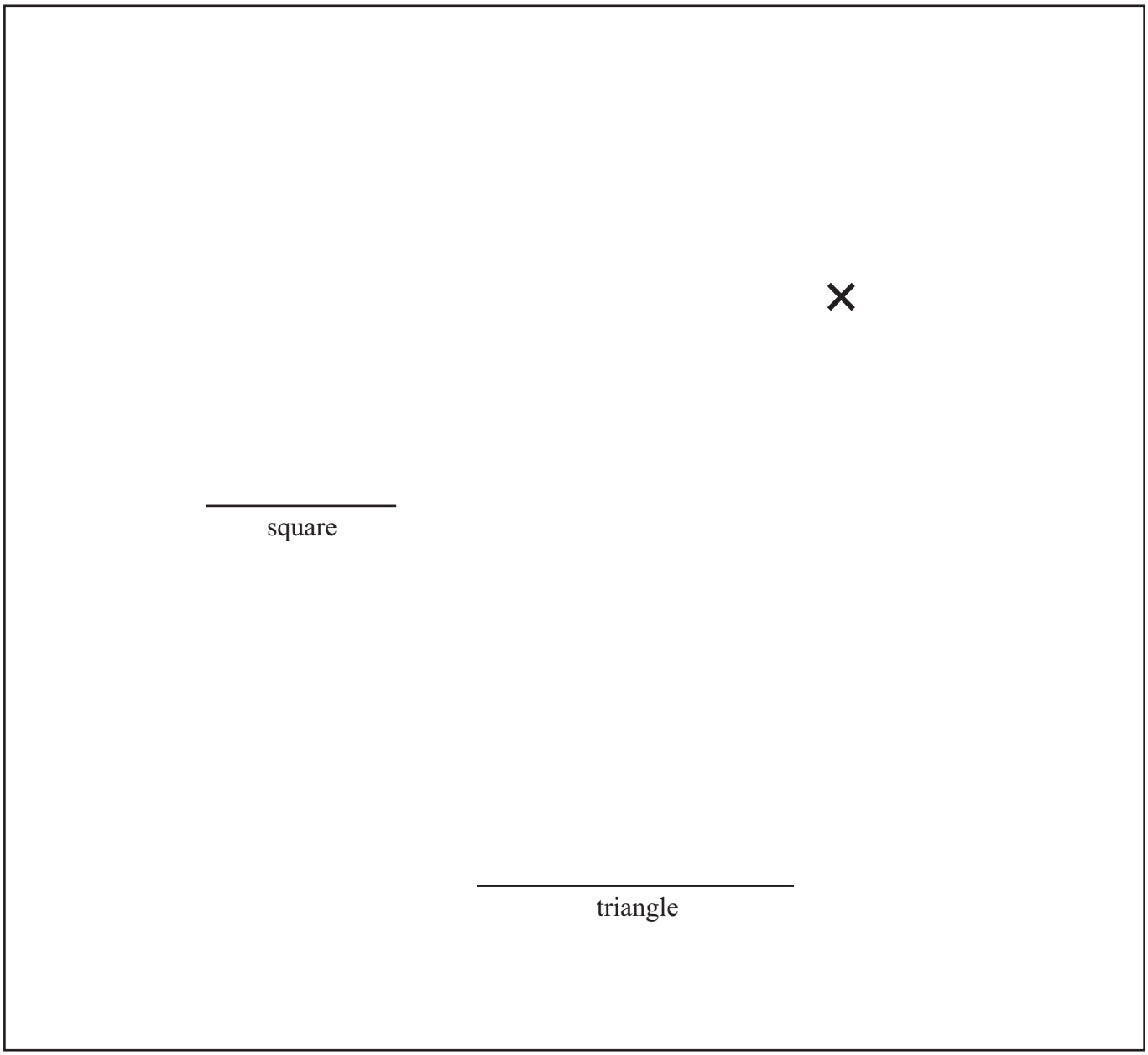
Stuart wants to make an accurate drawing of the front of the toy.

The square has a side length of 3 cm.
The circle has a radius of 4 cm.
The equilateral triangle has a side length of 5 cm.

One side of the square has been drawn.
The centre of the circle has been labelled with a cross (×).
The base of the equilateral triangle has been drawn.

On the next page, complete accurately the drawing of the front of the toy.

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(Total for Question 15 is 5 marks)

16 A shop makes 1200 doughnuts every day.

The shop packs the doughnuts in boxes.
They pack 6 doughnuts in each box.

The shop sold

184 boxes of doughnuts on Monday,
195 boxes of doughnuts on Tuesday,
171 boxes of doughnuts on Wednesday.

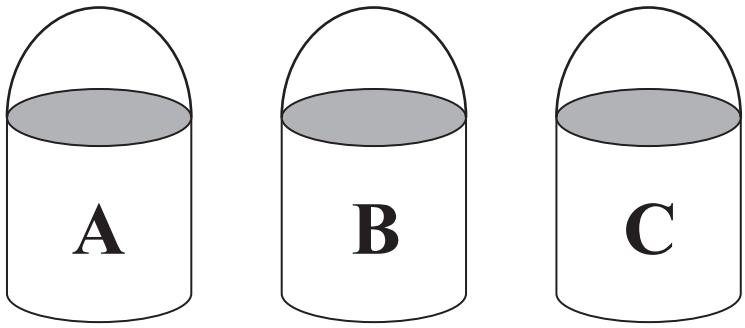
Work out the total number of doughnuts the shop did **not** sell on these days.

.....

(Total for Question 16 is 4 marks)

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***17** Jason is collecting rainwater in buckets.



Buckets A, B and C are the same size.

Bucket A is $\frac{2}{3}$ full.

Bucket B is $\frac{3}{4}$ full.

Bucket C is $\frac{5}{6}$ full.

Is there enough rainwater in bucket C to pour into bucket A and B to fill them completely?
You must show all your working.

(Total for Question 17 is 4 marks)

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18 Last week James worked $37\frac{3}{4}$ hours.

His total pay was £484.71

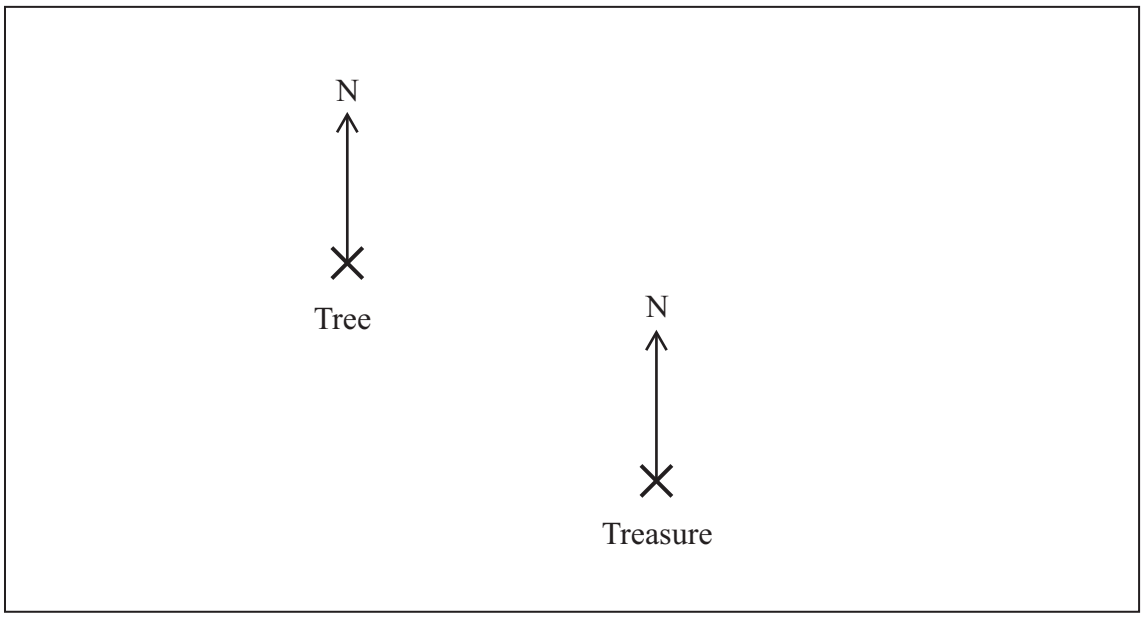
Work out how much James was paid for each hour he worked.

£ .....

(Total for Question 18 is 2 marks)

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19 Mrs Rice draws a map for a treasure hunt.



Scale: 1 cm represents 1.5 m

(a) Measure the bearing of the treasure from the tree.

..... °

(1)

(b) Work out the real distance of the treasure from the tree.
Use the scale: 1 cm represents 1.5 m

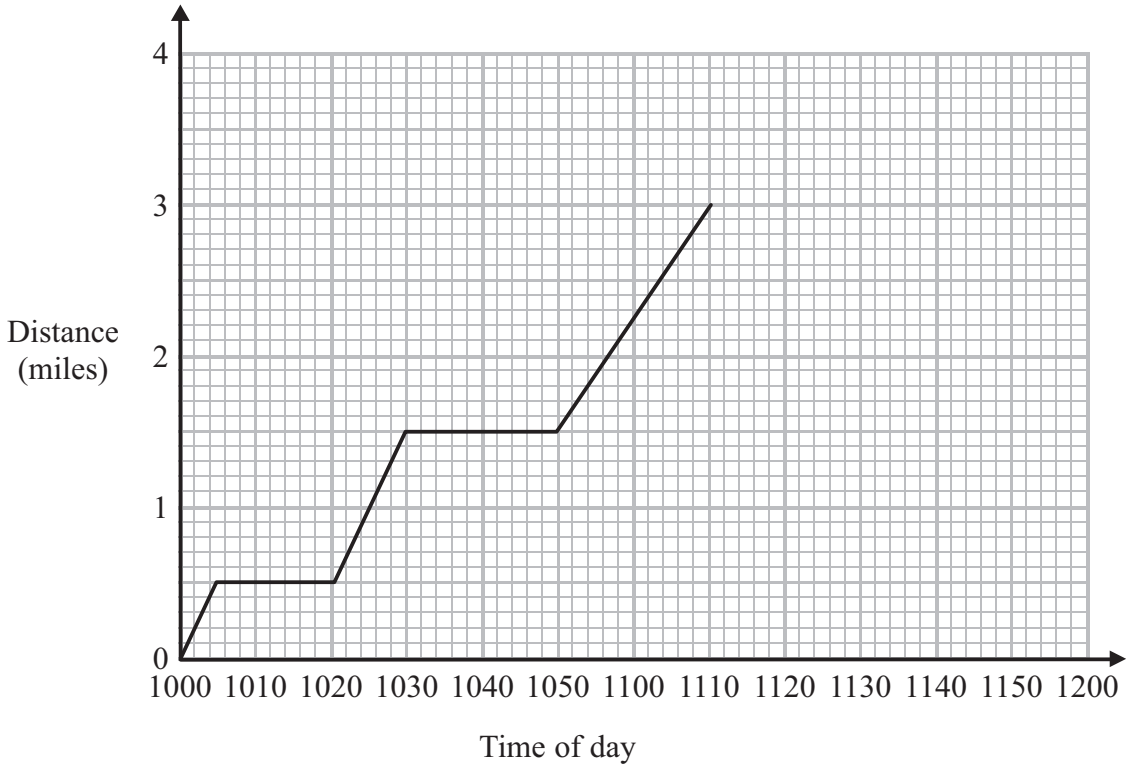
..... m

(2)

(Total for Question 19 is 3 marks)

20 The Cooper family go to a Safari park by car.

Here is a travel graph for the first 3 miles of their drive through the Safari park.



(a) What time did the Cooper family start their drive through the Safari park?

.....

(1)

The first time they stopped they watched the lions.

(b) How long did they watch the lions for?

..... minutes

(1)

The second time they stopped they watched the monkeys.

(c) Find the total distance they drove through the Safari park to the second time they stopped.

..... miles

(1)

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The Cooper family then drove to see the elephants.

They stopped to watch the elephants at 1110
They watched the elephants for 10 minutes.

The family then drove to the end of the Safari park.
They got to the end of the Safari park at 1140

The family drove a total distance of 4 miles through the Safari park.

(d) Complete the travel graph.

(2)

(Total for Question 20 is 5 marks)

21 Tia works at a kennels for dogs.

She has 4 types of dog food to feed the dogs.
She takes, at random, a tin of dog food.

The table below shows the probabilities that Tia will take a tin of lamb dog food or a tin of beef dog food or a tin of chicken dog food.

Dog Food	lamb	beef	chicken	turkey
Probability	0.35	0.26	0.07	

(a) Work out the probability that Tia will take a tin of turkey dog food.

.....

(2)

(b) Work out the probability that Tia will take a tin of chicken dog food or a tin of lamb dog food.

.....

(2)

Tia has 500 tins of dog food.

(c) Work out the number of tins of lamb dog food she has.

.....

(2)

(Total for Question 21 is 6 marks)

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***22** When you know the length of an adult's foot (i) in inches, you can use the formula

$$S = 3i - 25$$

to calculate their UK shoe size (S).

When you know an adult's UK shoe size (S), you can use the formula

$$E = S + 33$$

to calculate their European shoe size (E).

Tamsin is buying some shoes as a present for her friend Jane.

Jane is an adult with a foot length of 11 inches.

Tamsin orders some shoes.
The shoes are European size 38

Will the shoes fit Jane?
You must show all your working.

(Total for Question 22 is 3 marks)

***23** Here is a picture frame.

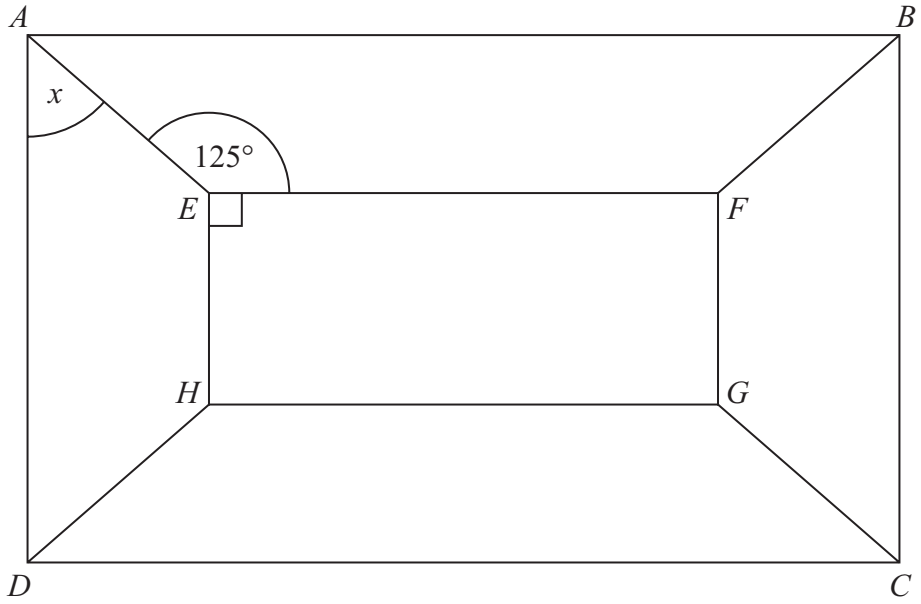


Diagram **NOT** accurately drawn

ABCD and *EFGH* are rectangles.
AB is parallel to *EF*.

Work out the size of angle *x*.
You must give reasons for your answer.

(Total for Question 23 is 3 marks)

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24 Jennifer wins £4560

She shares the money between a charity, herself and her son in the ratio 2 : 7 : 3

Work out how much money Jennifer gives to the charity.

£ .....

(Total for Question 24 is 3 marks)

25 The diagram shows the lines of a netball court.

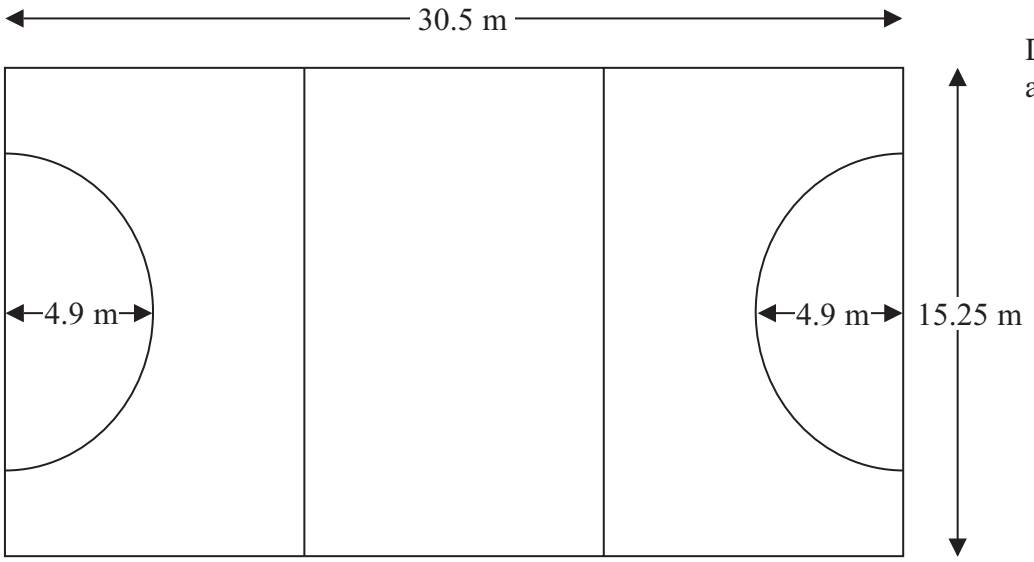


Diagram **NOT** accurately drawn

The court is made from three rectangles and two semi-circles.

All the corners are right angles.

Mr Handy is painting the lines for the netball court on the floor of a school sports hall.

Work out the total length of the lines of the netball court.
Give your answer correct to the nearest metre.

..... m

(Total for Question 25 is 4 marks)

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26 Stephen throws a ball vertically downwards.

The distance, x, which the ball travels, is given by the formula $x = \dfrac{v^2 - u^2}{19.6}$

$v = 14.3$
$u = 6.2$

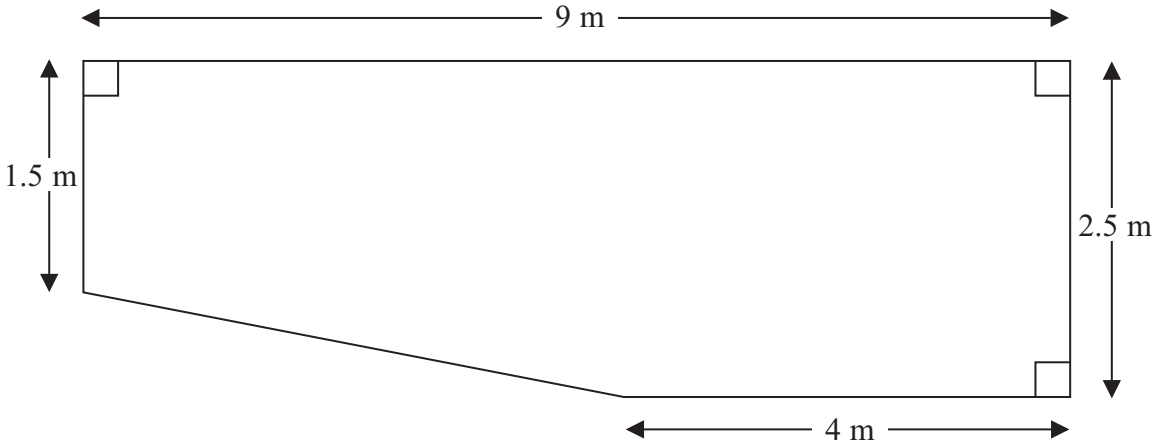
Work out the value of x.
Give your answer correct to 1 decimal place.

$x =$ .....

(Total for Question 26 is 2 marks)

27 The diagram shows the cross-section of a swimming pool.

Diagram **NOT** accurately drawn



The pool is a prism.
The width of the pool is 5 m.

Calculate the volume of water needed to fill the swimming pool.

..... m^3

(Total for Question 27 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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Mark Scheme (Results)

November 2013

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

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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: 5AM2F_01					
Question		Working	Answer	Mark	Notes
1	(a)	1.7 + 9.05	10.75	1	B1 cao
	(b)	9.05 – 3.62	5.43	1	B1 cao
2			17	3	M1 48 – 27 + 12 or 21+ 12 or 60 – 27 (=33) M1 50 – "33" A1 cao **or** M1 50 – 48 (=2) or 27 – 12 (=15) M1 "2" + "15" A1 cao
3		Counting squares	Answer in range	2	M1 attempt to count squares A1 10 to 14 SC if M0, then B1 for $9 \leq$ area < 10 or $14 <$ area ≤ 15
4	(a)		3 thousand	1	B1 3 thousand or 3000
	(b)		8 hundredths	1	B1 8 hundredths or $\frac{8}{100}$ or 0.08 (accept 8 cm)

Paper: 5AM2F_01					
Question		Working	Answer	Mark	Notes
5		mum 3 × 0.80 × 4 = 9.60 dad 2 × 2.50 × 4 = 20.00 auntie 4 × 1.20 = 4.80	£34.40	4	M1 3 × 0.80 or 2 × 2.50 M1 for a correct method find total savings for week (=£8.60) M1 for a correct method to find total savings for a month A1 cao correct money notation **or** M1 3 × 0.80 or 2 × 2.50 M1 for a correct method to work out 1 month's savings for either mum or dad or auntie M1 for a correct method to work out total savings for a month A1 cao correct money notation
6	(a)	11 × 14 + 12	166	2	M1 11 × 14 A1 cao
	(b)		11	2	12 × 14 + 9 – "166" A1 (ft)

Paper: 5AM2F_01					
Question		Working	Answer	Mark	Notes
7	(a)		185	1	B1
	(b)		2	1	B1
8		3120 + 300 - 1880	£1540	6	M1 for correct method to find total costs M1 480 × 6.50 (=3120) M1 (600 – 480) × 2.50 (= 300) A1 300 M1 for correct method to find profit A1 cao
9	(a)(i)		unlikely	1	B1
	(a)(ii)		evens	1	B1
	(b)		overlay	1	B1 cross marked $\frac{1}{4} < x < \frac{1}{2}$

Paper: 5AM2F_01					
Question		Working	Answer	Mark	Notes
10	(a)		268	1	B1 cao
	(b)		87	2	M1 102 + 186 – 201 A1 cao
	(c)	220 ÷ 50 = 4.4	4 or 5	2	M1 220 ÷ 50 (=4.4) or additions of 50 until >220 A1 accept 4 or 5
11	(a)		10 – 10.5	1	B1 10 - 10.5
	(b)		6.0 to 6.4	1	B1 6.0 - 6.4
	(c)		23 to 25	3	B1 graph fact e.g. 20cm = 7.8 ± 0.2inches M1 appropriate multiplication e.g. (7.8 ± 0.2) × 3 A1 23 - 25 **or** B1 1 inch = 2.5(4)cm M1 60 ÷ 2.5(4) A1 23 - 25

Paper: 5AM2F_01					
Question		Working	Answer	Mark	Notes
12	(a)	9 30 + 40	10 10	1	B1 oe e.g. 10.10, 10:10, 10.10am, ten past ten
	(b)	7 + 30	37	1	B1 cao
	*(c)		Sinita spends more time in exams	4	M1 for correct method to total time for Sinita 8h 25m or 505 min M1 for correct method to convert 500 minutes and Sinita's total time to equivalent units A1 8 hours 25 mins and 8 hours 20 mins or 500 mins and 505 mins C1 (dep on M1) Sinita spends more time in exams
13	(a)		$\frac{1}{24}$	1	B1 $\frac{1}{24}$ oe
	(b)		$\frac{6}{24}$	1	B1 $\frac{6}{24}$ oe
	(c)		$\frac{3}{24}$	1	B1 $\frac{3}{24}$ oe
14	(a)		£4.20	2	M1 2 × 150 + 120 oe A1 accept 4.2
	(b)		5	3	M1 950 – 50 oe M1 “900” ÷ 180 A1 cao

Paper: 5AM2F_01					
Question		Working	Answer	Mark	Notes
15			overlay overlay overlay	2 1 2	B2 square of side length 3± 0.2cm drawn (B1 one side of 3 ± 0.2cm drawn or two angles of 90^{o}) B1 circle drawn of radius 4 ± 0.2cm M1 for constructing intersecting arcs of equal radius or second side of 5cm drawn A1 for a correct triangle drawn within guidelines NB: Guidelines allow for 2mm tolerance
16		184 × 6 = 1104 195 × 6 = 1170 171 × 6 = 1026 1104 + 1170 + 1026 = 3300 3600 – 3300 **Or** 184 + 195 + 171 = 550 550 × 6 = 3300 3600 – 3300	300	4	M1 for a correct method to find the number of doughnuts sold on one of the days. M1 for a correct method to find the total number of doughnuts sold. M1 3 × 1200 – "3300" A1 cao **or** M1 for a correct method to find the total number of boxes sold M1 for a correct method to find the total number of doughnuts sold. M1 3 × 1200 – "3300" A1 cao

Paper: 5AM2F_01					
Question		Working	Answer	Mark	Notes
*17			Yes there is enough water in bucket C	4	M1 $\frac{2}{3}+\frac{3}{4}+\frac{5}{6}$ M1 $\frac{8}{12}+\frac{9}{12}+\frac{10}{12}$ oe with at least one correct numerator A1 $\frac{27}{12}$ oe C1 (dep on M1) yes, $\frac{27}{12}$ oe > 2, there is enough water in the bucket **or** M1 $1-\frac{2}{3}+1-\frac{3}{4}$ M1 $\frac{4}{12}+\frac{3}{12}$ oe with at least one correct numerator A1 $\frac{7}{12}$ oe C1 (dep on M1) yes, $\frac{5}{6}=\frac{10}{12}>\frac{7}{12}$, there is enough water in the bucket NB Accept decimals if written correct or truncated to 2 dp

Paper: 5AM2F_01					
Question		Working	Answer	Mark	Notes
18			£12.84	2	M1 484.71 ÷ 37.75 A1 cao
19	(a)		125	1	B1 125 ± 2
	(b)		7.5	2	M1 (5 ± 0.2) × 1.5 A1 7.5 ± 0.3
20	(a)		10 00	1	B1 10 00 oe
	(b)		15 to 16	1	B1 15 to 16
	(c)		1.5	1	B1 1.5 oe
	(d)		(on graph)	2	B1 line joining (11 10, 3) to (11 20, 3) B1 line joining (11 20, 3) to (11 40, 4) SC If B0, B0 award B1 for line joining (11 10, 3) to (11 30, 4)
21	(a)		0.32	2	M1 1 – (0.35 + 0.26 + 0.07) A1 cao
	(b)		0.42	2	M1 0.07 + 0.35 A1 oe **or** M1 1 – (“0.32” + 0.26) A1 oe
	(c)		175	2	M1 500 × 0.35 A1 cao

Paper: 5AM2F_01					
Question		Working	Answer	Mark	Notes
*22			No the shoes won't fit	3	M1 $S = 3 \times 11 - 25$ M1 E = 33 + "8" C1 (dep on M1) 41 and 'the shoes will not fit' **or** M1 38 = S + 33 M1 $S = 3 \times 11 - 25$ C1 (dep on M1) 8 and 5 and 'the shoes will not fit'
*23			35	3	M1 for a correct first step to find an angle which will lead to x e.g 180 – 125 or 360 – 125 – 90 A1 x = 35 C1 (dep M1) one relevant reason **e.g alternate** angles are **equal**
24			760	3	M1 4560 ÷ "2 + 7 + 3" (=380) M1 "380" × 2 A1 cao
25			153	4	M1 π × 9.8 (= 30.(7916...)) or π × 4.9 (=15.(3958...)) M1 15.25 × 4 (=61) or 30.5 × 2 (=61) M1 (dep on first M1) for a correct method to find the total length of all lines A1 152 -153

Paper: 5AM2F_01					
Question		Working	Answer	Mark	Notes
26		$(14.3^2 - 6.2^2) \div 19.6$ $= 166.05 \div 19.6$	8.5	2	M1 $\frac{14.3^2 - 6.2^2}{19.6}$ A1 8.45 - 8.5
27			100	4	M1 correct method to work out one part of the cross-sectional area M1 correct method to work out total cross-sectional area M1(dep on M1,M1) cross - sectional area × 5 A1 cao **or** M1 correct method to work out one part of the volume M1 correct method to work out a second part of the volume M1 (dep on M1, M1) correct method to work out total volume A1 cao

Ofqual



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Welsh Assembly Government

Rewarding Learning

Write your name here

Surname	Other names

Edexcel GCSE

Centre Number	Candidate Number

Applications of Mathematics

Unit 2: Applications 2

For Approved Pilot Centres ONLY

Foundation Tier

Friday 14 June 2013 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM2F/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 ▶

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6/7/8/

P 4 2 0 6 2 A 0 1 2 8

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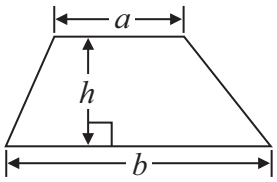
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GCSE Mathematics 2AM01

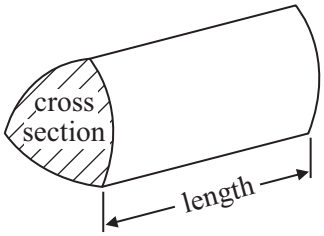
Formulae: Foundation Tier

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



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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 The distance from New York to Miami is 1756 kilometres.

(a) Write down the value of the 7 in the number 1756

.....

(1)

A mountain is 4357 metres high.

(b) Change 4357 metres to kilometres.

..... kilometres

(1)

A swimming pool is 2.65 metres deep.

(c) Write down the value of the 6 in the number 2.65

.....

(1)

The length of a piece of wood is 1.74 metres.

(d) Change 1.74 metres to centimetres.

..... centimetres

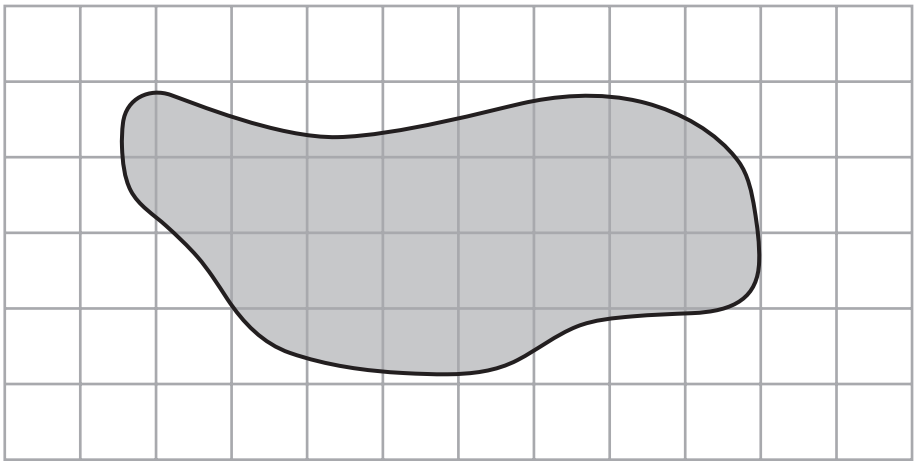
(1)

(Total for Question 1 is 4 marks)

2 On this grid every centimetre square represents 100 m^2.

An oil slick is shown shaded on the grid.

represents 100 m^2



Find an estimate for the area of the oil slick.

.....

(Total for Question 2 is 4 marks)

3 A shop sells digital cameras and laptops.

The table shows the number of digital cameras and the number of laptops sold each month from January to March.

	January	**February**	**March**
Digital cameras	35	23	39
Laptops	63	32	55

The total number of laptops sold was more than the total number of digital cameras sold.

How many more?

.....

(Total for Question 3 is 3 marks)

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4 You can use this rule to work out the total cost, in £, of hiring a cement mixer.

> Multiply the number of days by 19 and then add 10

Dan hires a cement mixer for 3 days.

(a) Work out the total cost.

£ .....

(2)

Alan hires a cement mixer.
The total cost is £143

(b) Work out the number of days Alan hires the cement mixer for.

..... days

(3)

(Total for Question 4 is 5 marks)

5 The diagram shows 5 villages.
It also shows the times it takes to walk between some of the villages.

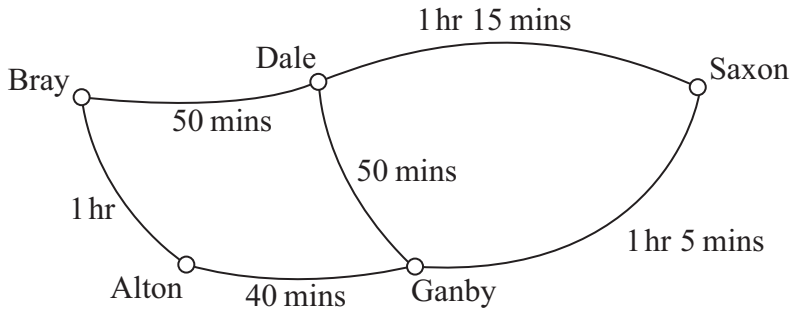


Diagram **NOT** accurately drawn

Ester is planning a walk.
The walk will start and finish in Alton.

She will walk from Alton to Ganby,
from Ganby to Dale,
from Dale to Saxon,
from Saxon to Ganby,
and from Ganby to Alton.

During the walk Ester will stop in Saxon for 30 minutes.

She wants to be back in Alton by 3 pm.

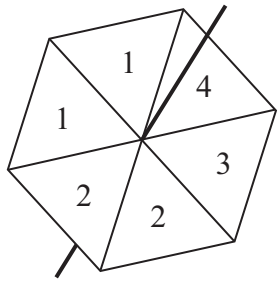
What is the latest time Ester can start her walk from Alton?

.....

(Total for Question 5 is 4 marks)

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6 Jack makes a fair 6-sided spinner to use for a game.



Jack will spin the spinner once.
The spinner will land on one of the numbers.

Draw a circle around the word that best describes the probability of each of the following events.

(a) The spinner will land on 3

impossible	unlikely	evens	likely	certain

(1)

(b) The spinner will land on a number less than 6

impossible	unlikely	evens	likely	certain

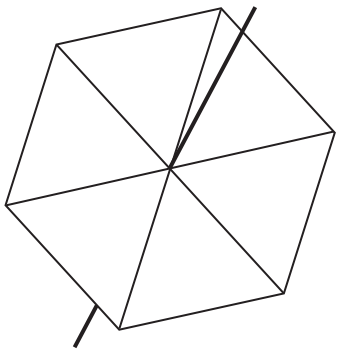
(1)

Jack makes a different fair 6-sided spinner.
The spinner only has the numbers 1, 2 and 3 on it.

The probability that the spinner will land on 1 is $\frac{1}{2}$

The probability that the spinner will land on 2 is greater than the probability that the spinner will land on 3

(c) Write the numbers on the spinner.



(2)

(Total for Question 6 is 4 marks)

7 Naheed and her three friends are going to go from Paston to Deeping.
They can go by bus or by taxi.

If they go by bus, the cost will be £2.35 each.
If they go by taxi, the total cost will be £2 plus £1.10 per mile.

The distance from Paston to Deeping is 8 miles.

Will it be cheaper for the four friends to all go by bus or all go by taxi?
You must show your working.

.....

(Total for Question 7 is 4 marks)

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8 Colin makes chairs, tables and cupboards.

Here is information about the time he takes to make each item.
His profit when he sells each item is also shown.

Item	Time taken	Profit
Chair	1 day	£75
Table	2 days	£175
Cupboard	3 days	£300

Colin made a table and 4 chairs.

(a) (i) How many days in total did it take Colin to make the table and 4 chairs?

..... days

Colin sold the table and 4 chairs.

(ii) How much was Colin's total profit?

£ .....

(3)

One week Colin is going to work for exactly 7 days.

Colin wants his profit to be as much as possible.

(b) What items should Colin make?

.....

(3)

(Total for Question 8 is 6 marks)

9 Amanda has 10 sweets in a bag.
The sweets are yellow or are orange.

9 of the sweets are orange.

Amanda takes at random a sweet from the bag.

(i) Write down the probability that she will take an orange sweet.

.....

(ii) Write down the probability that she will take a yellow sweet.

.....

(iii) Write down the probability that she will take a blue sweet.

.....

(Total for Question 9 is 3 marks)

10 Vicky goes to a cafe.
She is going to choose one main course and one dessert.

Menu

Main course	**Dessert**
Lasagne	Ice cream
Pizza	Fruit
Burger	Cheesecake

Write down all the possible combinations Vicky can choose.

.....

.....

.....

.....

.....

.....

(Total for Question 10 is 2 marks)

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11 Vikram sells packets of sweets.

There are s sweets in a small packet.
There are m sweets in a medium packet.

There are 8 more sweets in a medium packet than in a small packet.

(a) Write down a formula for m in terms of s.

.....

(2)

Vikram also sells large packets of sweets.

The number of sweets, p, in a large packet is given by the formula $p = 2s + 16$

There are 10 sweets in a small packet.

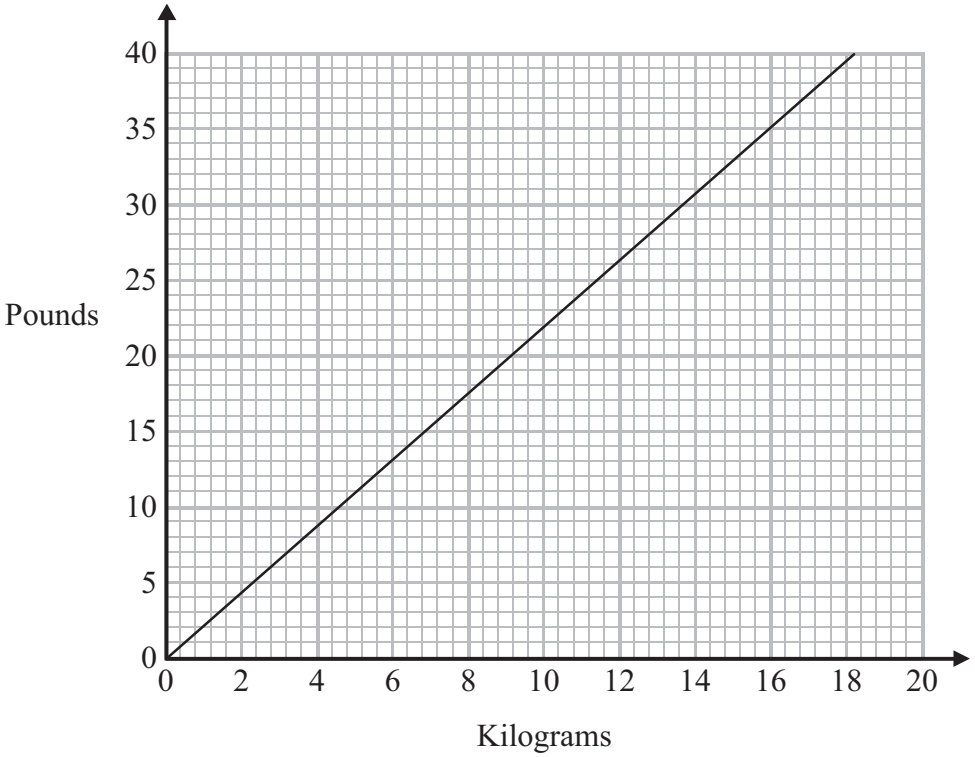
(b) How many sweets are there in a large packet?

.....

(2)

(Total for Question 11 is 4 marks)

12 You can use this graph to change between pounds and kilograms.



A bag of potatoes weighs 10 kilograms.

(a) Change 10 kilograms to pounds.

..... pounds
(1)

A baby weighs 9 pounds.

(b) Change 9 pounds to kilograms.

..... kilograms
(1)

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The table below gives the weights, in pounds, of four people.

Tom	Zak	Tina	Asif
165	180	135	170

A lift can carry a maximum weight of 320 kilograms.

(c) Can these four people use the lift at the same time?
You must show your working.

.....

(4)

(Total for Question 12 is 6 marks)

*13 Janet sends parcels by Parcel Express.

The table shows information about the cost of sending a parcel by Parcel Express.

Parcel Express	
Weight range	**Cost**
Less than 2 kg	£3.80
2 kg to less than 5 kg	£5.99
5 kg to 10 kg	£7.14

The table below gives information about the numbers and weights of the parcels Janet sent in April and in May.

	Number of parcels	
Weight range	**April**	**May**
Less than 2 kg	23	21
2 kg to less than 5 kg	28	27
5 kg to 10 kg	19	32

Janet could have sent her parcels by Parcels R Go.

The table below shows information about the cost of sending a parcel by Parcels R Go.

Parcels R Go	
Weight range	**Cost**
0–15 kg	£5.99

Janet thinks that it would have been cheaper to send all her parcels by Parcels R Go.

Is Janet right?
You must show your working.

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(Total for Question 13 is 5 marks)

14 Judith has a garden in the shape of a triangle.

Here is a sketch of the garden.

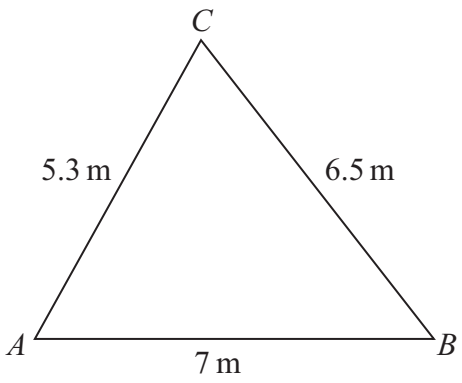


Diagram **NOT** accurately drawn

(a) Use ruler and compasses to construct an accurate scale drawing of the garden.
You must show all your construction lines.
Use a scale of 1 cm represents 1 m.
The side *AB* has been drawn for you.

A ——————————————— *B*

(2)

Judith is going to build a patio in the garden.
The patio will be in the shape of a rectangle.

Judith wants the patio to be 3 m long and 2 m wide.

(b) Is the garden big enough for Judith to build the patio?
You must show how you got your answer.

.....

(2)

(Total for Question 14 is 4 marks)

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15 Lee's company makes cans of drink.
The cans are in the shape of a cylinder.

Each can has a diameter of 6 cm and a height of 10 cm.

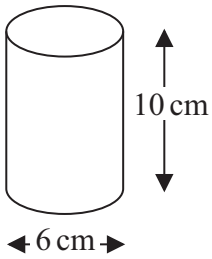


Diagram **NOT** accurately drawn

Lee is going to design a box for 8 cans of drink.
The box will be in the shape of a cuboid.

(a) In the space below, draw a sketch of a box for 8 cans of drink.

Write the dimensions of the box on your sketch.

(3)

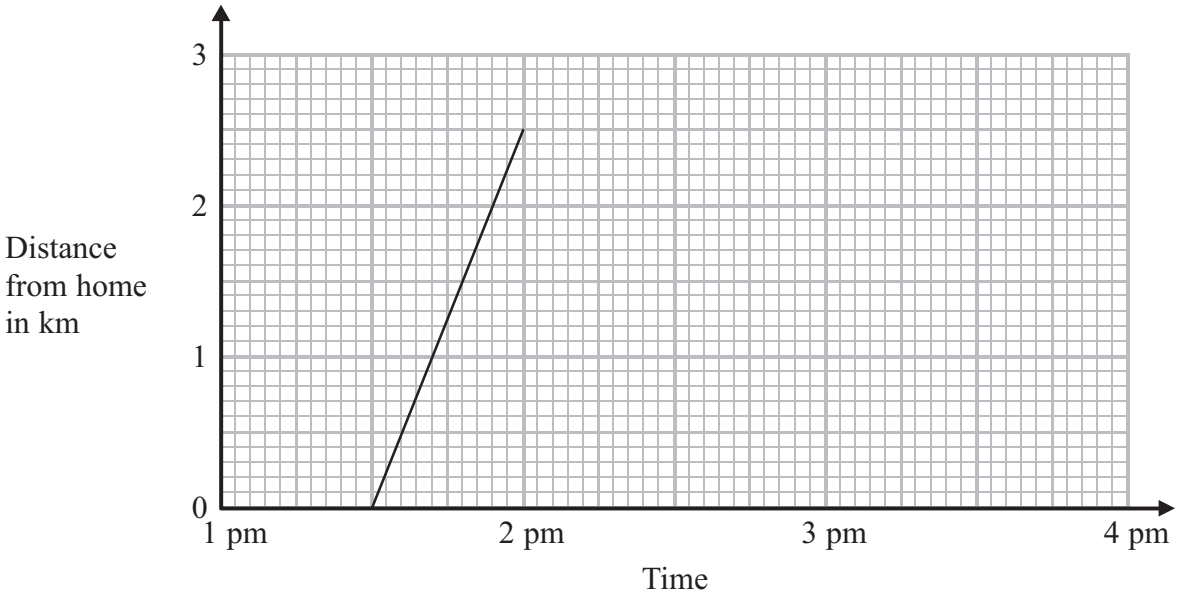
(b) In the space below, draw a sketch of a net for the box you drew in part (a).

(2)

(Total for Question 15 is 5 marks)

16 Sophie walked from her home to her friend's house.

The travel graph shows Sophie's journey to her friend's house.



(a) What time did Sophie get to her friend's house?

.....

(1)

Sophie spent 1 hour at her friend's house.
She then walked home at a steady speed.
It took her 45 minutes to walk home.

(b) Complete the travel graph for this information.

(2)

(c) What was the total distance Sophie walked?

..... km

(1)

(Total for Question 16 is 4 marks)

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***17** The diagram shows a sandpit in the shape of a cuboid.

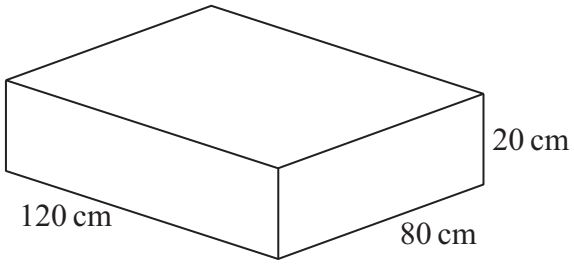


Diagram **NOT** accurately drawn

The sandpit is 120 cm by 80 cm by 20 cm.

The sandpit is empty.
Jade is going to put sand into the sandpit.

A bag of sand costs £2.99
There are 10 000 cm^3 of sand in a bag.

Jade has only £50 to spend on sand.

Show that Jade cannot buy enough sand to fill the sandpit completely.
You must show all your working.

(Total for Question 17 is 5 marks)

*18 Here are the ingredients needed to make 20 cookies.

Cookies

Ingredients to make **20** cookies

225 g of butter
120 g of castor sugar
275 g of flour

Liz is going to make some cookies for a party.

There will be 4 adults and 14 children at the party.

Liz wants to make 2 cookies for each adult and 3 cookies for each child.

Liz has

500 g of butter
300 g of castor sugar
1 kg of flour

Does Liz have enough butter, enough castor sugar and enough flour to make all the cookies for the party?
You must show all your working.

(Total for Question 18 is 5 marks)

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19 Greta, Hakim and Chloe wanted to know how often the letter 'e' is used in English words.

They each chose a different section from the same book written in English.
They each counted the total number of letters in their section
and the number of times the letter 'e' occurred.

The table gives information about their results.

	Greta	Hakim	Chloe
Total number of letters counted	20	1000	30 000
Frequency of letter 'e'	5	170	4100

Which of these results should give the best estimate for the probability that a letter picked at random from the book will be the letter 'e'?
Give a reason for your answer.

.....

.....

.....

.....

(Total for Question 19 is 2 marks)

20 Here is a diagram of Jim's shed.

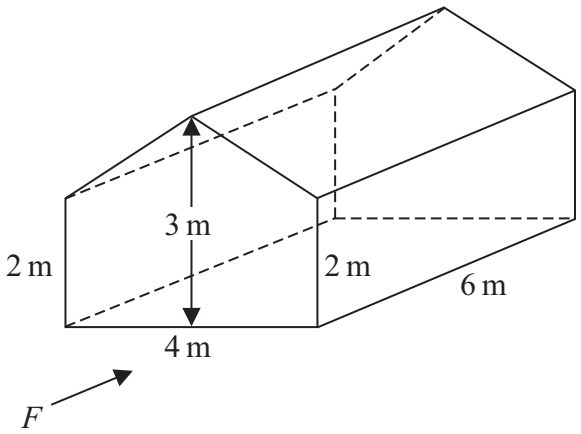
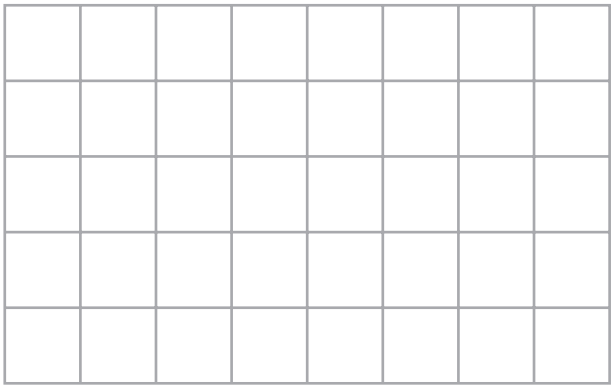


Diagram **NOT** accurately drawn

The shed is in the shape of a prism.
The shed is on horizontal ground.
The two ends and the two sides of the shed are vertical.

(a) On the centimetre grid, draw the front elevation of the shed from direction *F*.
Use a scale of 1 cm to 1 m.



(2)

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Jim is going to paint the two ends and the two sides of the shed.

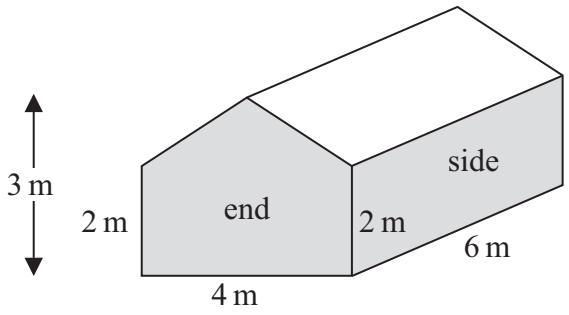


Diagram **NOT** accurately drawn

1 litre of paint will cover an area of 8 m^2.

Paint is sold in 1 litre tins, in 2.5 litre tins and in 5 litre tins.



Jim wants the total cost of the paint to be as little as possible.

(b) Work out the total cost of the paint.
You must show all your working.

£ .....

(6)

(Total for Question 20 is 8 marks)

21 Here is a formula used to work out the speed, v mph, of a car making an emergency stop.

$$v = \sqrt{21d}$$

d feet is the length of the mark the car's tyres make on the road when making an emergency stop.

A car makes an emergency stop.
The car's tyres make a mark 90 feet long.

(a) Work out the speed of the car.
Give your answer correct to the nearest whole number.

..... mph
(2)

A car made an emergency stop.
The car's speed was 50 mph.

(b) Work out the length of the mark on the road.
Give your answer correct to the nearest whole number.

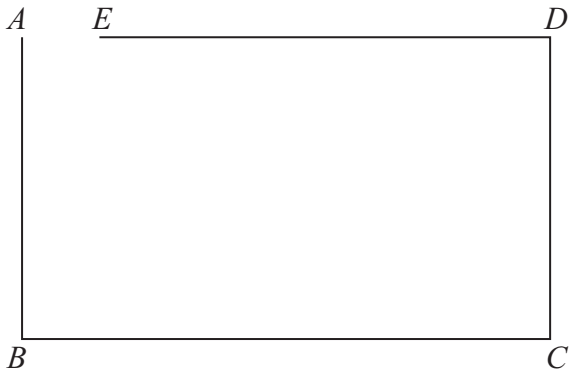
..... feet
(3)

(Total for Question 21 is 5 marks)

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22 The diagram represents a harbour *ABCDE*.

The scale of the diagram is 1 cm represents 10 m.



Scale: 1 cm represents 10 m

People can leave boats in the harbour.

People **cannot** leave boats

less than 30 metres from point *A*
or less than 10 metres from the line *ED*.

On the diagram, shade the region where people **cannot** leave boats.

(Total for Question 22 is 4 marks)

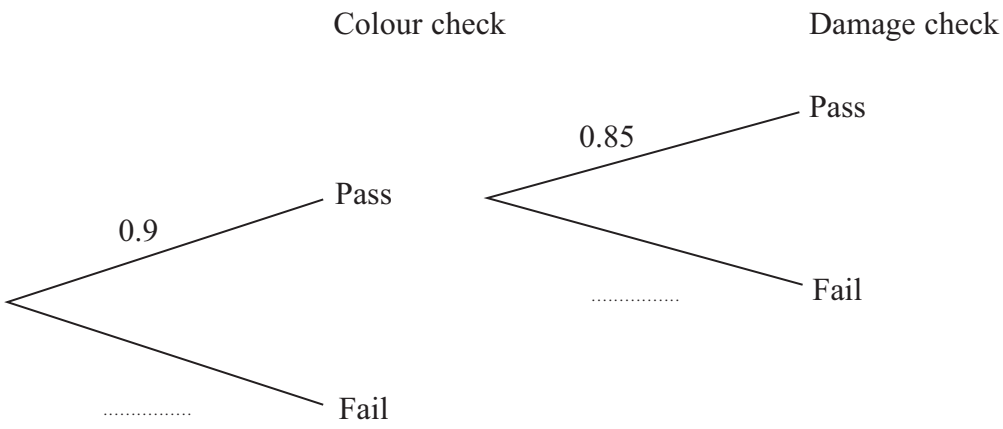
Turn over for Question 23

23 Joe has a job packing tomatoes in boxes.

First he has to check the colour of each tomato.
He also has to check the tomato for damage.

The decision tree diagram gives information about the probability of a tomato passing the colour check and the probability of a tomato passing the damage check.

(a) Complete the decision tree diagram.



(2)

Joe will pack the tomatoes that pass both the colour check and the damage check.

Joe takes a tomato at random.

(b) Work out the probability that he will pack this tomato.

.....

(2)

(Total for Question 23 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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Mark Scheme (Results)

Summer 2013

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

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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: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		700 or 7 hundred(s) or seven hundred(s)	1	B1 for 700 or 7 hundreds oe (do not accept 100)
	(b)		4.357	1	B1 for 4.357 (accept 4 km 357 m)
	(c)		$\frac{6}{10}$ or 6 tenths or 60 cm	1	B1 for $\frac{6}{10}$ or 6 tenths or 60 cm (do not accept 'tenths' or 0.6)
	(d)		174	1	B1 cao
2			2100 – 2500	4	M1 for attempting to count the squares or for sight of a number in the range 21 to 25 seen implying the area of the region. M1 (dep) for multiplying any number of squares by 100 A1 for an answer in the range 2100 to 2500. B1 (indep) for m^2
3			53	3	M1 for an attempt to find either the total number of cameras (= 150) or the total number of laptops (= 97) M1 (dep) for finding the difference between their numbers of cameras and laptops A1 cao OR M1 for an attempt to find the difference in the number of cameras and the number of laptops in either January (= 28) or February (= 9) or March (= 16) M1 (dep) for adding their 3 differences A1 cao

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		67	2	M1 for 3 × 19 + 10 A1 cao
	(b)		7	3	M1 for 143 – 10 or 133 seen M1 for "143 – 10" ÷ 19 or 133 ÷ 19 A1 cao
5			10 am	4	B1 for inclusion of 30 (minute rest) in a calculation M1 for identifying 40, 50, 1hr 15 (75) and 1hr 5 (65) M1 for adding at least 4 correct times or 'subtracting' at least 4 correct times from 3 pm A1 for 10 am or 10 00
6	(a)		unlikely	1	B1 cao
	(b)		certain	1	B1 cao
	(c)		1, 1, 1, 2, 2, 3	2	B1 for three 1s B1 for more 2s than 3s
7		2.35 × 4 = 9.40 2 + 8 × 1.10 = 10.80 OR 2 + 8 × 1.10 = 10.80 10.80 ÷ 4 = 2.70	Bus	4	M1 for 2.35 × 4 (= 9.40) M1 for 2 + 8 × 1.10 (=10.80) A1 for 9.4(0) cao and 10.8(0) cao A1 (dep on at least M1) for correct decision based on their calculations OR M1 for 2 + 8 × 1.10 (= 10.80) M1 (dep) for "10.80" ÷ 4 A1 for 2.7(0) cao A1 (dep on at least M1) for correct decision based on their calculations

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)(i)		6	3	M1 for a fully correct method to find either the total number of days or the total profit A1 for 6 A1 for 475
	(ii)		475		
	(b)		2 cupboards and 1 chair	3	M1 for a combination of items that takes 7 days to make M1 (dep) for a correct method to work out the total profit for their items A1 for 2 cupboards and 1 chair OR M1 for a correct method to work out the profit per day for either 1 table or 1 cupboard M1 (dep) for using a combination with 2 cupboards A1 for 2 cupboards and 1 chair [SC: B2 for an answer of 675 if M0 scored]
		175 ÷ 2 = 87.5 300 ÷ 3 = 100			
9	(i)		$\frac{9}{10}$ oe	3	B1 for $\frac{9}{10}$ oe or 0.9 or 90%
	(ii)		$\frac{1}{10}$ oe		B1 for $\frac{1}{10}$ oe or 0.1 or 10%
	(ii)		0		B1 for 0 or 0% or zero (accept $\frac{0}{10}$)
10			(L, I), (L, F), (L, C), (P, I),(P, F), (P, C), (B, I), (B, F),(B, C)	2	B2 for all 9 pairs with no incorrect pairs – ignore repeats or additional reversed pairs. (B1 for at least 4 pairs - ignore any incorrect pairs, repeats or additional reversed pairs)

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		$m = s + 8$	2	B2 for $m = s + 8$ (B1 for $m - s = 8$ or m = expression in s or for $s + 8$ or for $s = m - 8$)
	(b)	$2 \times 10 + 16$	36	2	M1 for $2 \times 10 + 16$ A1 cao
12	(a)		21.5 to 22	1	B1 for an answer in the range 21.5 to 22
	(b)		4 to 4.4	1	B1 for an answer in the range 4 – 4.4
	(c)		Yes	4	M1 for the adding the 4 weights in pounds (= 650) M1 for selecting a factor of 320 or "650" and attempting to read this from the graph M1 for a fully correct method leading to total weights in pounds and kg which could be compared. A1 (dep on M3) for "yes" and either a converted maximum weight of 700 – 710 pounds or a converted total weight of 286 – 302 (kg) OR M1 for selecting a factor of 165 or 180 or 135 or 170 and attempting to read this from the graph M1 for a fully correct method leading to a converted weight into kg of at least one person Accept converted weights in the ranges: Tom = 73 to 77 (kg), Zak = 79 to 83 (kg), Tina = 59 to 63 (kg) and Asif = 75 to 79 (kg) M1 (indep) for adding their 4 converted weights. A1 (dep on M3) for "yes" and a converted total weight in the range 286 – 302 (kg) provided all 4 converted weights are within the accepted ranges above.

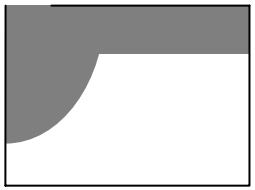
PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*13		3.80 × (23 + 21) = 87.4 + 79.8 = 167.20 5.99 × (28 + 27) = 167.72 + 161.73 = 329.45 7.14 × (19 + 32) = 135.66 + 228.48 = 364.14 860.79 5.99 × (23 + 21 + 28 + 27 + 19 + 32) = 898.50	No, Parcel Express is cheaper	5	M1 for a correct method to find cost of Parcel Express for either month or for the two months for one of the weight ranges M1 for method to find cost of Parcels R Go for either one month or for two months A1 for 860.79 A1 for 898.5(0) C1 (dep on M2) for a correct conclusion from their comparable calculations; units must be included [SC: B2 for a correct conclusion and £860.79 and £898.5(0) without working if M0 scored. B1 only if units omitted]
14	(a)		Triangle constructed	2	M1 for intersecting arcs drawn of radii 5.3cm and 6.5cm A1 for a fully correct triangle [SC: B1 for correct triangle with no arcs] Ignore any rectangles
	(b)		Yes with 3 cm by 2 cm rectangle inside triangle	2	M1 for a rectangle drawn inside their triangle with one side either 2cm or 3cm in length OR a line drawn parallel to one side of their triangle 3 cm or 2 cm from the side A1 for a 3 cm by 2 cm rectangle drawn inside triangle or ft from an incorrect triangle in (a) [Note: a rectangle drawn of dimensions 3+cm by 2+cm is acceptable]

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)		Cuboid with dimensions	3	B1 for sketch of cuboid M1 for showing the dimensions of the cuboid A1 for cuboid with correct dimensions that allow 8 cans to fit inside it.
	(b)		Net drawn	2	B2 for a correct sketch of a net of an open or closed box/cuboid (ignore flaps) [B1 for at least 4 rectangles drawn and connected at complete sides]
16	(a)		2pm	1	B1 for 2 (pm) Accept 2 o'clock (in the afternoon) or 14 00 but not 2 am or 02 00
	(b)		Graph completed	2	B1 for line from (2 pm, 2.5) to (3pm, 2.5) B1 for line from (t, 2.5) to (t + 45mins, 0)
	(c)		5	1	B1 for 5 or ft from 'graph' in part (b)

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*17			She cannot buy enough sand to fill the sandpit	5	M1 for a correct method to find the volume of the sandpit (= 192000) M1 (dep) for "192000" ÷ 10000 (= 19.2) M1 (dep on previous M1) for their number of bags × 2.99 A1 for (£)59.8(0) (20 bags) or (£)57.40(8) or (£)57.41 (19.2 bags) C1 (dep on at least M2) for comparing cost of sand needed (with units) with £50 SC: B1 for correct value(s) with units and correct statement if M0 scored OR M1 for a correct method to find the volume of the sandpit (= 192000) M1 for 50 ÷ 2.99 (= 16.722...) M1 (dep on previous M1) for "16" × 10000 A1 for 160000 (cm^3) C1 (dep on at least M2) for comparing volume of sand needed (with units) with volume that can be bought for £50 SC: B1 for correct value(s) with units and correct statement if M0 scored

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*18			Not enough butter Enough sugar and flour	5	M1 for a correct method to find the total number of cookies required (= 50) M1 (dep) for "50" ÷ 20 (= 2.5) M1 (dep on M2) for "2.5" used as a factor A1 for two of: 562.5, 300, 687.5 or two of: 2.22.., 2.5, 3.636... or two of: 200, 120, 400 C1 (dep on at least M2) for 562.5g and 300g and 687.5g or for 2.22.. and 2.5 and 3.636.. or for 200g and 120g and 400g AND a correct decision for all three ingredients OR M1 for a correct method to find the total number of cookies required (= 50) M1 for a correct method to find the number of cookies one ingredient could produce M1 for a correct method to find the number of cookies that ALL ingredients could produce A1 for two of: 44. ..., 50, 72. ... C1 (dep on at least M2) for 44. ... cookies and 50 cookies and 72. .... cookies AND a correct decision for all three ingredients
19			$\frac{4100}{30000}$ or Chloe The larger the sample the better the estimate	2	B1 for identifying the trial that gives the best estimate, e.g. $\frac{4100}{30000}$ or Chloe B1 for the larger the sample the better the estimate oe

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)		Diagram	2	M1 for pentagon with at least two sides correct A1 cao
	(b)		42.98	6	M1 for a correct method to find the area of either a side (= 12) or an end (= 10) M1 for a correct method to find both the area of a side (= 12) **and** the area of an end (= 10) A1 for 44 or 12 and 12 and 10 and 10 M1 for an area ÷ 8 or for a correct method to work out how many m^2 can be painted from each tin. M1 (dep on previous M1) for a correct method to find a cost of paint required for their number of litres to cover their total area of 4 faces A1 cao
21	(a)	$21 \times 90 = 1890$ $\sqrt{1890} =$	43	2	M1 for $\sqrt{21 \times 90}$ or 1890 seen A1 for answer in the range 43 – 43.5
	(b)	$50 = \sqrt{21 \times d}$ $2500 = 21d$ $d = 2500 \div 21$	119	3	M1 for $50 = \sqrt{21 \times d}$ or 50^2 or 2500 M1 for $21d = 50^2$ oe A1 for answer in the range 119 – 119.05

PAPER: 5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
22		B1 for arc of radius 3 cm (± 0.2)	Correct region 	4	B4 fully correct [B3 for fully correct shading of the area where people **can** leave boats] OR B1 for arc of radius 3 cm (± 0.2 cm) centre *A* B1 for a straight line parallel to ED and 1 cm (± 0.2 cm) from it B1 shading inside their arc or for shading above their line, provided that their line is drawn parallel to ED B1 fully correct Ignore any drawing outside the harbour
23	(a)		0.1 on 1st branch 0.15 on 2nd branch	2	B1 for 0.1 on first branch B1 for 0.15 on 2nd branch
	(b)		0.765	2	M1 for 0.9 × 0.85 A1 for 0.765 oe

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Applications of Mathematics

Unit 2: Applications 2

For Approved Pilot Centres ONLY

Foundation Tier

Thursday 8 November 2012 – Afternoon
Time: 1 hour 45 minutes

Paper Reference
5AM2F/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 ▶

P40656A

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6/6/7/5/

P 4 0 6 5 6 A 0 1 3 2

PEARSON

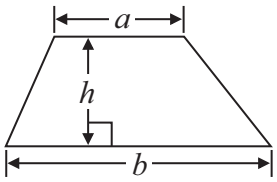
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GCSE Mathematics 2AM01

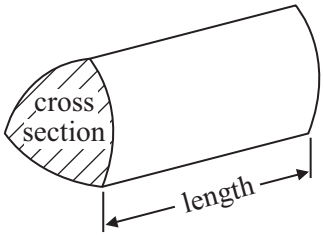
Formulae: Foundation Tier

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



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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 There are 2380 books in a library.

On Monday

74 books are borrowed
51 books are returned.

On Tuesday

42 books are borrowed
30 books are returned.

How many books are there in the library now?

.....

(Total for Question 1 is 3 marks)

2 The diagram shows a field in the shape of a quadrilateral.

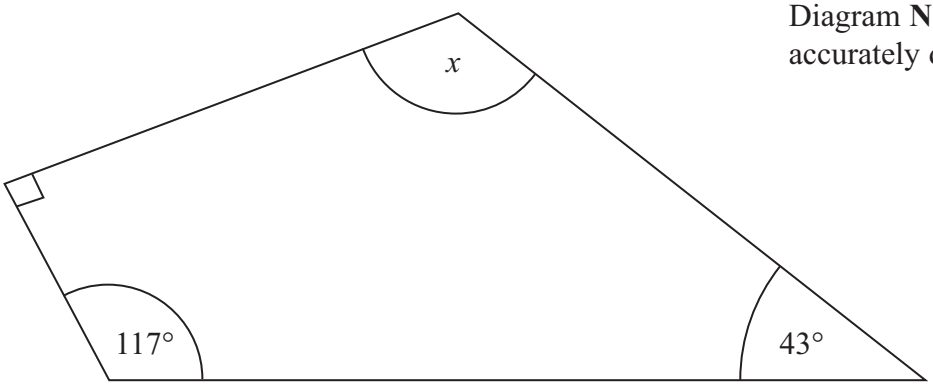


Diagram **NOT** accurately drawn

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

.....°

(ii) Give a reason for your answer.

.....

.....

(Total for Question 2 is 3 marks)

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3 Hamish uses Ace taxis to take him from his hotel to the airport.

The taxi left the hotel at 19 45
It got to the airport at 21 18

(a) How long did the journey from Hamish's hotel to the airport take?

.....

(2)

At the airport Hamish buys

2 travel adaptors costing £4.50 each
1 magazine costing £2.90
and 1 pair of sunglasses costing £18.00

Hamish pays with a £50 note.

(b) Work out how much change he should get.

£.....

(3)

(Total for Question 3 is 5 marks)

4 A baby weighs 3.25 kg.

(a) Write down the value of the 2 in the number 3.25

.....

(1)

Josh uses 1.75 kg of flour in a recipe.

(b) How many grams of flour does he use?

.....g

(1)

A ball of string has a length 8952 cm.

(c) Write down the length of the string in metres.

.....m

(1)

(Total for Question 4 is 3 marks)

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5 The diagram shows the distances, in km, between four towns **A**, **B**, **C** and **D**.

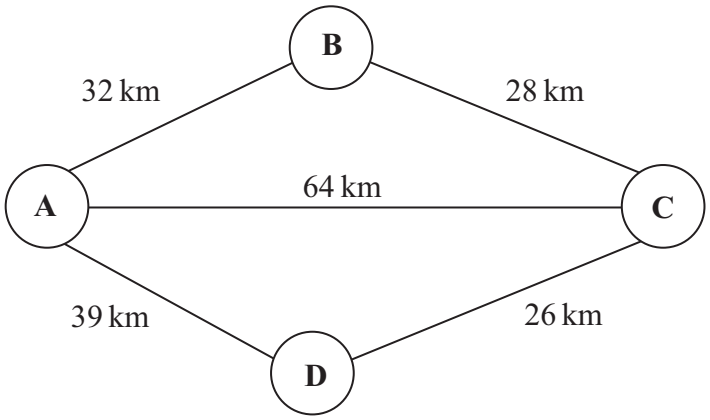


Diagram **NOT** accurately drawn

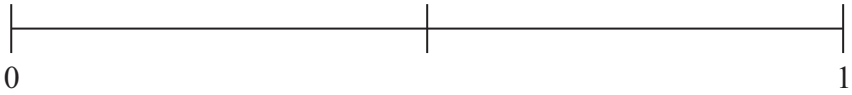
Sanjay needs to drive from town **A** to town **C**.
He wants to use the shortest route.

Work out the shortest route Sanjay can use.
You must write down the route and the distance.

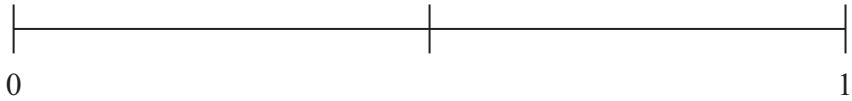
.....km

(Total for Question 5 is 3 marks)

6 (a) (i) On the probability scale below, mark with a cross (×) the probability that the sun will rise next Friday.



(ii) On the probability scale below, mark with a cross (×) the probability that the next baby born will be a boy.



(2)

Raj has 8 tins of soup in his cupboard.

He has

4 tins of tomato soup
1 tin of chicken soup
3 tins of lentil soup

Raj takes at random a tin of soup from the cupboard.

(b) Write down the probability that he takes a tin of chicken soup.

.....

(1)

(Total for Question 6 is 3 marks)

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7 There were 60 votes in an election.
There were two candidates, Jared and Beth.

Jared had 18 more votes than Beth.

How many votes did Beth get?

.....

(Total for Question 7 is 2 marks)

8 The diagram shows a sign outside a hat shop.

The sign is made from 2 cuboids.

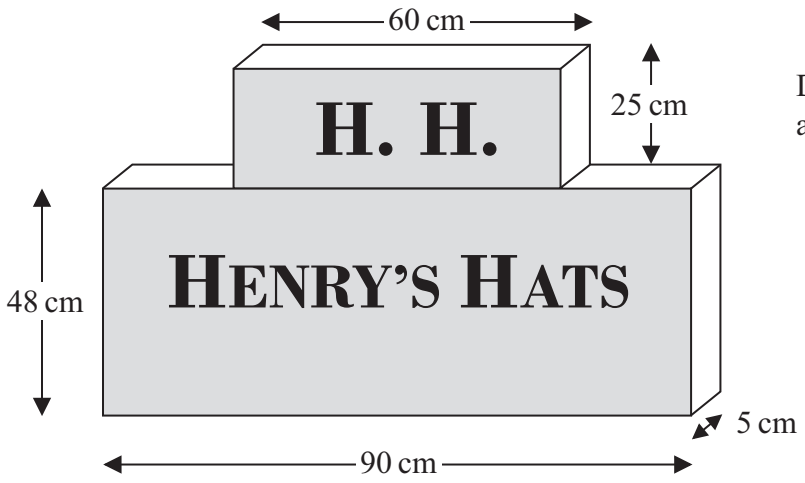


Diagram **NOT** accurately drawn

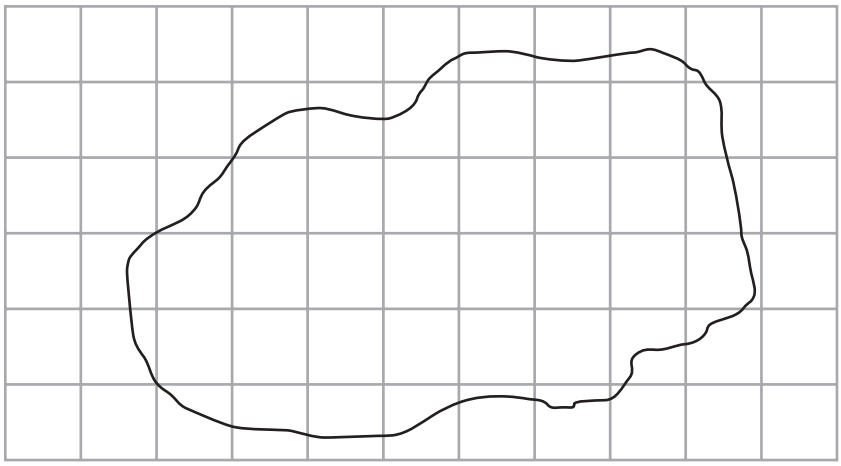
Work out the surface area of the **front** of the sign.

.....

(Total for Question 8 is 4 marks)

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9 The diagram shows a scale drawing of a field.
Each square of the grid has an area of 1 cm^2.



The scale of the diagram is 1 cm^2 represents 100 m^2.

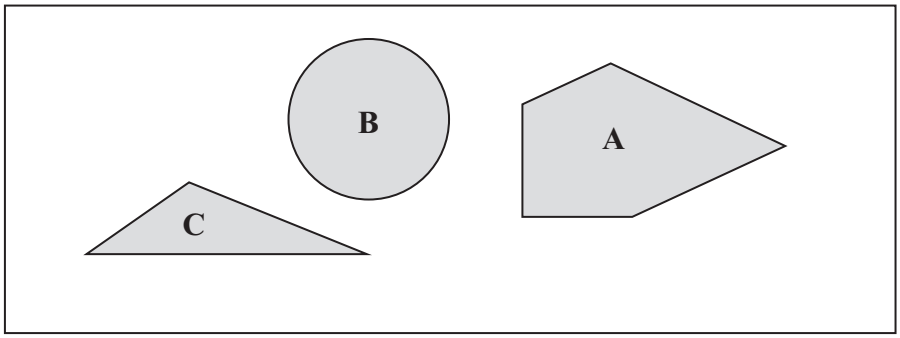
Find an estimate for the area of the field.
Give your answer in m^2.

.....m^2

(Total for Question 9 is 3 marks)

10 Zina makes a children's puzzle with three shapes.

Here is a sketch of her puzzle.



Shape **A** has one pair of parallel sides.

(a) Mark with arrows (>>) the pair of parallel sides.

(1)

Shape **B** is a circle.
It has a radius of 4 cm.

(b) In the space below, draw accurately a circle of radius 4 cm.
Use the point *P* as the centre of your circle.

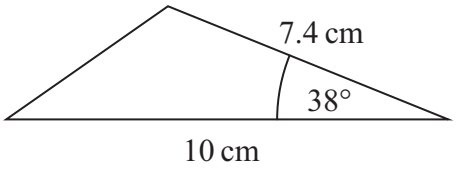


(1)

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Shape **C** is a triangle.

Here is a sketch of the triangle.



(c) Make an accurate drawing of this triangle.
The 10 cm line has been drawn for you.

10 cm

(2)

(Total for Question 10 is 4 marks)

***11** Mrs Wilson works in a factory.

The table shows the amount of time she worked each day for a week.

Mon	Tues	Wed	Thurs	Fri
3 h 30 min	3 h 45 min	3 h 30 min	4 h 15 min	2 h 0 min

Mrs Wilson is paid for the total time she works in a week.

Mrs Wilson's pay is £8 per hour for the first 15 hours she works in the week.
She is paid £10 per hour for any extra hours she works in the week.

Work out Mrs Wilson's pay for the week.
You must show all your working.

(Total for Question 11 is 4 marks)

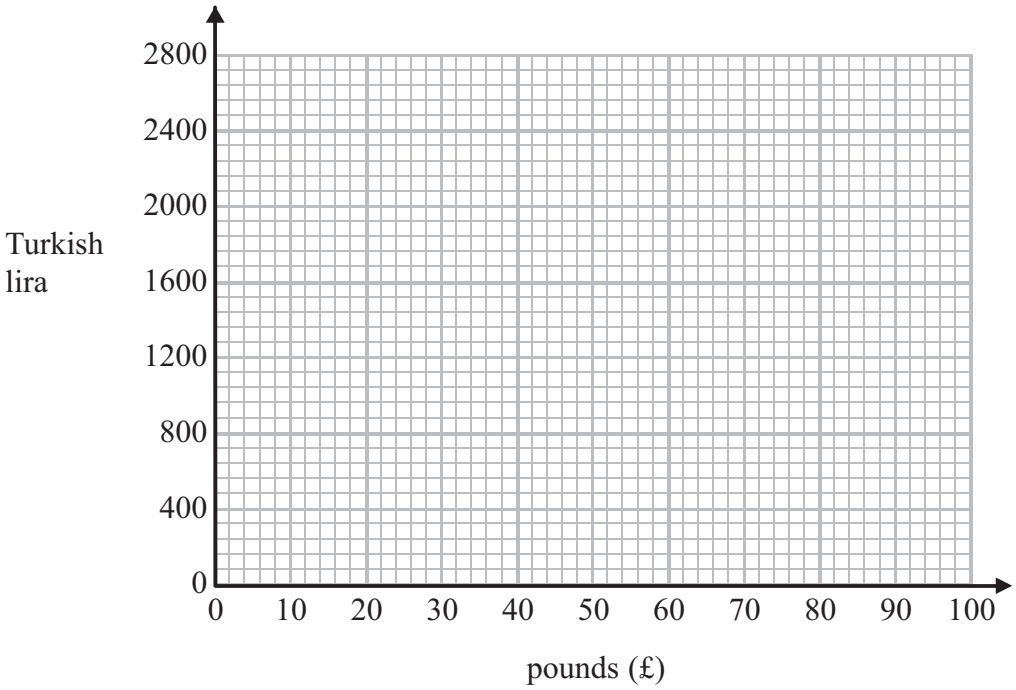
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12 Mary goes on holiday to Turkey.

Mary needs to change between pounds (£) and Turkish lira.

£1 = 24 Turkish lira

(a) On the grid, draw a conversion graph Mary can use to change between pounds and Turkish lira.



(2)

Mary changes 1800 Turkish lira into pounds.

(b) Use your graph to change 1800 Turkish lira into pounds.

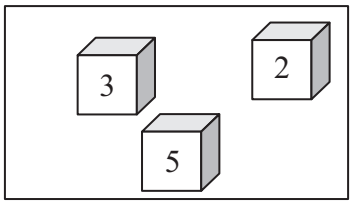
£.....

(2)

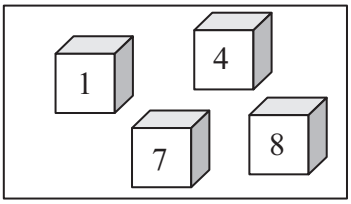
(Total for Question 12 is 4 marks)

13 There are some centimetre cubes in two boxes.
There is a number on each cube.

Box A



Box B



Esen takes at random one cube from Box A.
She then takes at random one cube from Box B.

(a) List all the pairs of numbers Esen can pick.

.....

.....

.....

(2)

Suzy plays a game with the centimetre cubes.
She takes at random a cube from each box.
She adds the two numbers on the cubes to get her score.

Suzy wins the game if she gets a score of 9

(b) Work out the probability that she wins the game on her first attempt.

.....

(3)

(Total for Question 13 is 5 marks)

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14 Gita buys watches from a company.
She sells the watches for a higher price than she pays for them.

Gita uses this rule to work out the selling price of the watches.

selling price = multiply cost price by 1.5 and then add £10

Gita buys a watch that has a cost price of £18

(a) Work out the selling price of this watch.

£.....

(2)

A different watch has a selling price of £43

(b) Work out the cost price of this watch.

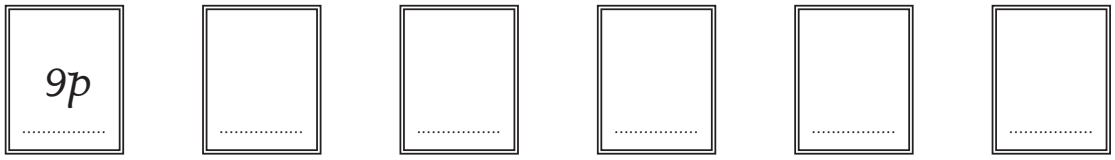
£.....

(3)

(Total for Question 14 is 5 marks)

15 Kirsty uses some 9p stamps and some 10p stamps to send a letter.

She uses exactly 6 stamps.
The total value of the stamps is 56p.



(a) Write down the value of each stamp she uses.
One has been done for you.

(1)

Phil wants to post a letter.
It costs £1.60 to post the letter.

Phil uses

one 32p stamp,
three 41p stamps,
and some 1p stamps.

(b) How many 1p stamps does Phil use?

.....

(2)

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Amy puts some first class stamps and some second class stamps on a parcel.

The ratio of the number of first class stamps to the number of second class stamps is 2 : 3
Amy uses a total of 15 stamps.

(c) How many second class stamps does Amy use?

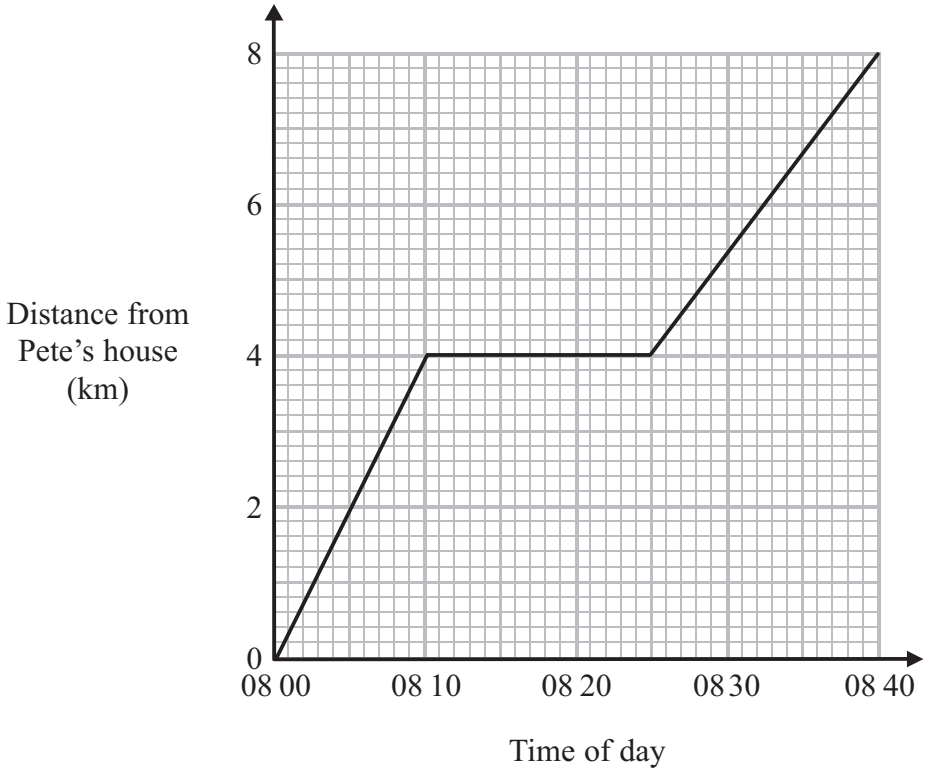
.....

(3)

(Total for Question 15 is 6 marks)

16 Pete cycled 8 km from his house to Fred's house.
He stopped for a rest on the way.

Here is a distance-time graph for Pete's complete journey.



(a) How far was Pete from his house when he stopped for a rest?

..... km
(1)

(b) How many minutes did Pete stop for a rest?

..... minutes
(1)

Hajra cycled from Pete's house to Fred's house.
She cycled there at a constant speed without stopping.

Hajra left Pete's house at 08 00
She arrived at Fred's house at the same time as Pete.

(c) At what other time were Hajra and Pete the same distance from Fred's house?

.....
(2)

(Total for Question 16 is 4 marks)

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*17 A shop sells tins of beans in three different sizes.

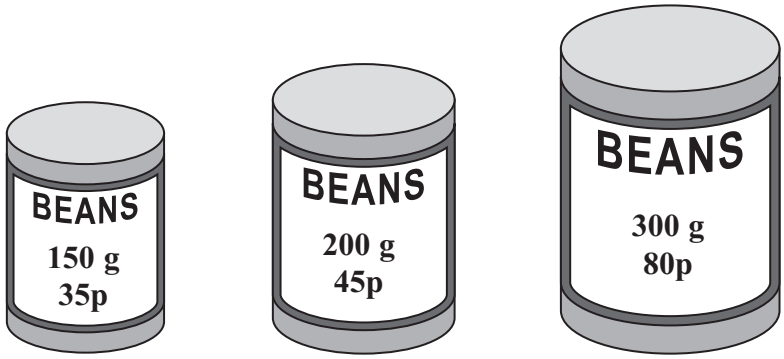


Diagram **NOT** accurately drawn

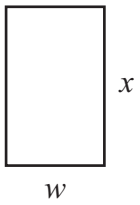
A **B** **C**

Kathy wants to buy exactly 750 g of beans.
She wants to buy the beans at the cheapest possible cost.

Work out the cheapest cost.
You must show all your working.

(Total for Question 17 is 4 marks)

18 A parking space is in the shape of a rectangle.



The length of the parking space is x metres.
The width of the parking space is w metres.

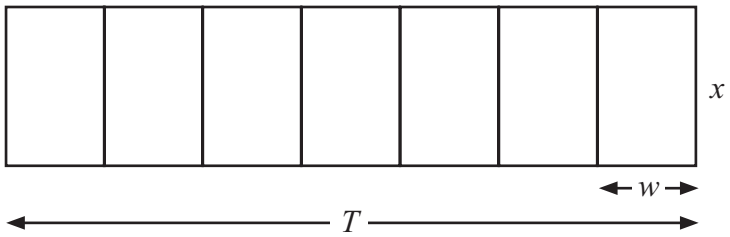
The width of the parking space is 1 metre less than the length of the parking space.

(a) Write down a formula for w in terms of x.

.....

(2)

The diagram shows 7 of these parking spaces in a street.



The total width of these 7 spaces is T metres.

(b) Write down a formula for T in terms of x.

.....

(1)

(Total for Question 18 is 3 marks)

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19 There are 12 girls and 18 boys in a class.

One of the students in the class is picked at random to give out some rulers.

Work out the probability that this student will be a girl.

.....

(Total for Question 19 is 2 marks)

20 When you buy something from Quickmart you get points.

Smart Phone	DVDs	Lawnmower
£419	**£8.99 each**	**Basic £57** **Electric £81**
get 838 points	get 16 points for each DVD you buy	get 12 points for every £3 you spend

Chantal buys a Smart Phone, 4 DVDs and a basic lawnmower from Quickmart.

(a) Work out how many points she gets.

.....points

(3)

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You can get money off the cost of your shopping at Quickmart.

Get £2.40 off the cost of your shopping for every 500 points

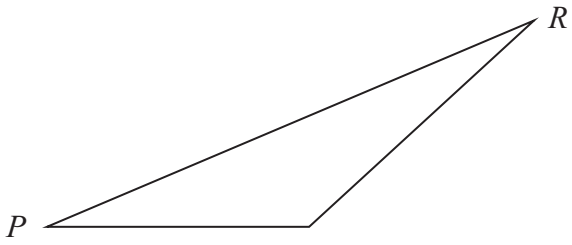
Louis has 4500 points.
He wants to get a DVD player costing £22
He wants to use his points to get the DVD player.

*(b) Does Louis have enough points to get the DVD player?

(4)

(Total for Question 20 is 7 marks)

21 Here is a scale drawing of a field.



Scale: 1 cm represents 3 m.

Harry is going to plant some bushes on the side *PR*.
He is going to plant the first bush at *P*.

The bushes will be 2 m apart.
The cost of each bush is £11.99

Work out the total cost of the bushes on the side *PR*.

£.....

(Total for Question 21 is 5 marks)

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22 There are only red pens and blue pens in a box.

There are 12 red pens in the box.

The probability of taking at random a blue pen from the box is $\frac{2}{3}$

Work out the total number of pens in the box.

.....

(Total for Question 22 is 3 marks)

23 Here is a diagram of a house.

The house is in the shape of a prism.

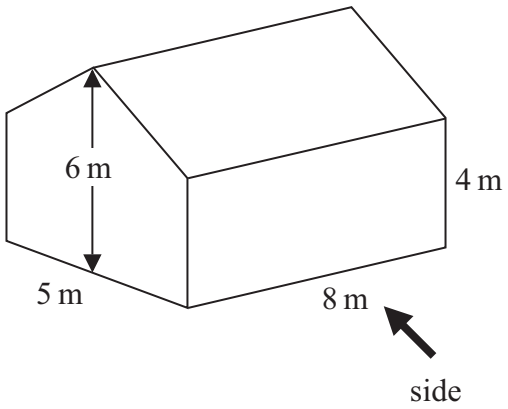
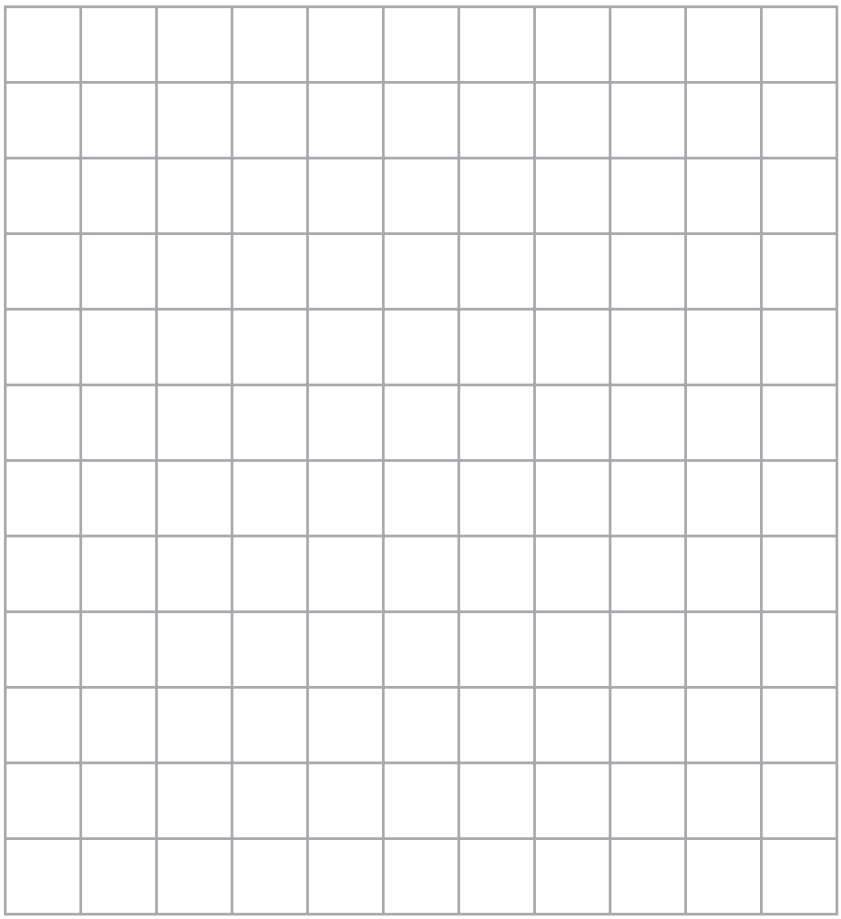


Diagram **NOT** accurately drawn

(a) On the grid, draw accurately the side elevation of the house from the direction marked with the arrow.

Use the scale 1 cm represents 1 m.

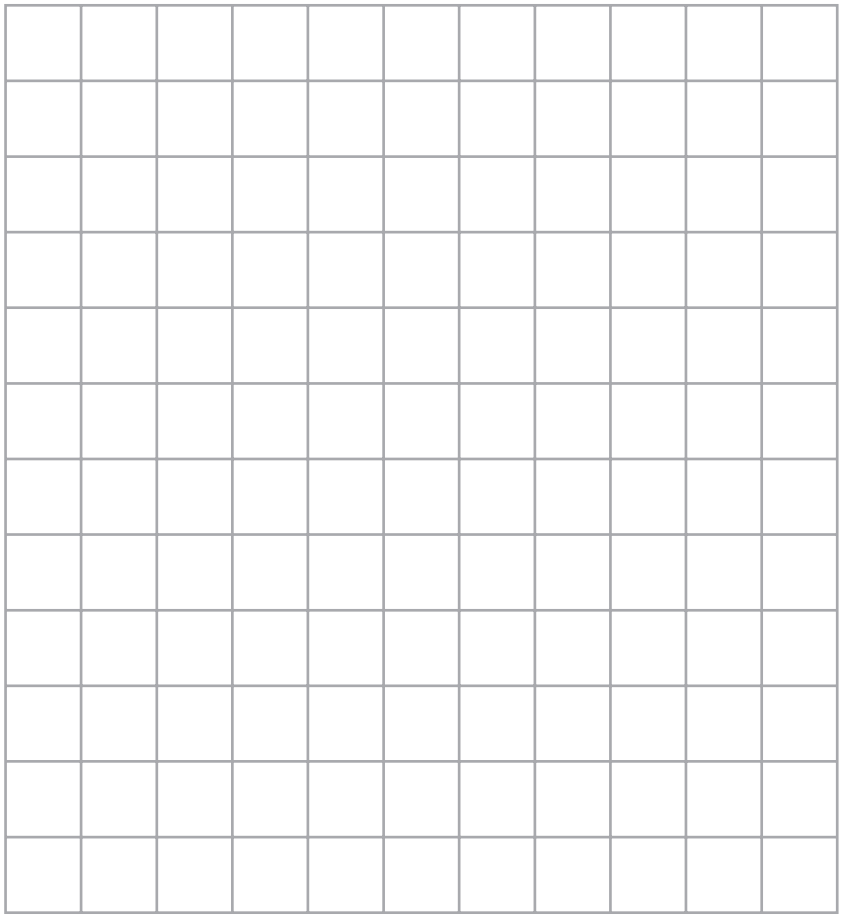


(2)

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(b) On the grid below, draw accurately the plan of the house.

Use the scale 1 cm represents 1 m.



(2)

(Total for Question 23 is 4 marks)

*24 The diagram shows the side view of a kitchen step ladder.

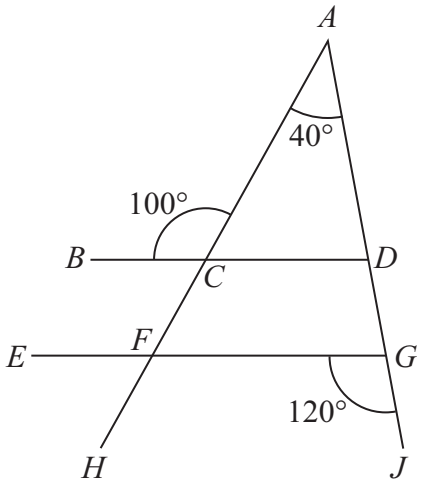


Diagram **NOT** accurately drawn

Brian says the straight lines *BCD* and *EFG* are parallel.

Is Brian correct?
You must show all your working.
Give reasons for your answer.

(Total for Question 24 is 3 marks)

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25 Stefan is x years old.

Martin is 5 years younger than Stefan.
James is twice as old as Stefan.

The sum of their ages, in years, is less than 30

Work out the oldest age Stefan can be.
Give your answer as a whole number of years.

.....years

(Total for Question 25 is 4 marks)

26 A compost bin is in the shape of a prism.

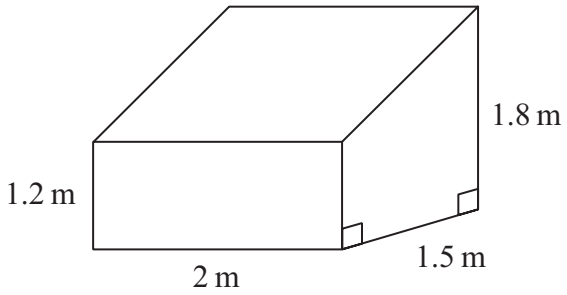


Diagram **NOT** accurately drawn

Work out the volume of the compost bin.

.....m^3

(Total for Question 26 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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Mark Scheme (Results)

November 2012

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

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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

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1		2380 – 74 + 51 = 2357 2357 – 42 + 30 = 2345 Or 74 – 51 = 23, 42 – 30 = 12 2380 – 23 – 12 = 2345 Or 74 + 42 = 116, 51 + 30 = 81 2380 – 116 + 81 =	2345	3	M1 for 2380 – 74 (=2306) or 2380 + 51 (= 2431) oe M1 for 2380 – 74 + 51 – 42 + 30 oe A1 cao Or M1 for 74 – 51(= 23) or 42 – 30 (= 12) M1 for 2380 – (74 – 51) – (42 – 30) A1 cao Or M1 for 74 + 42 (= 116) or 51 + 30 (= 81) oe M1 for 2380 – (74 +42) + (51 + 30) A1 cao
2	(i) (ii)	360 – (117 + 90 + 43) = 360 – 250	110 Reason	3	M1 for 360 – (117 + 90 + 43) or 360 – 250 A1 for 110 cao C1 for angles in a quadrilateral sum to 360º

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
3	(a)	21 18 19 45 – 1 33 15 min + 1hr + 18 min	1h 33m	2	M1 for 21 18 – 19 45 or 9 18 – 7 45 or attempt to subtract by decomposing one hour into 60 minutes A1 cao Or M1 for counting on eg 15 + 60 + 18 or answer of 93 with no units seen A1 for 1 hr 33 min or 93 min B1 **SC** for answer of 1.33 or 133 or 1.73 or 173 with or without h or hours
	(b)	4.50 + 4.50 + 2.90 + 18.00 = 29.90 50 – 29.90 OR 50 – 18 – 2.90 – 2 × 4.50 = 50 – 29.90	20.10	3	M1 for 4.50 + 4.50 + 2.90 + 18.00 oe M1 for 50 – "(4.50 + 4.50 + 2.90 + 18.00)" A1 cao OR M2 for 50 – 18 – 2.90 – 2(4.50) oe (M1 for subtracting at least 3 items) A1 cao SC: B2 for an answer of 24.60
4	(a)		tenth	1	B1 for tenth, $\frac{2}{10}$ oe, 200 g, 0.2 kg
	(b)		1750	1	B1 cao
	(c)	8952 ÷ 100	89.52	1	B1 cao

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5		AC direct = 64 AC via B = 32 + 28 = 60 AC via D = 39 + 26 = 65 OR +7 – 2 = +5	ABC 60	3	M1 for 32 + 28 or 39 + 26 or 60 or 65 shown for ABC or ADC respectively or +7 –2 is 5km longer M1 for 32 + 28 and 39 + 26 or 60 and 65 shown for ABC and ADC respectively A1 for ABC and 60
6	(a) (b)	(i) (ii)	cross at 1 cross at ½ $\frac{1}{8}$	2 1	B1 for cross at 1 or very near 1 B1 for cross at ½ or very near ½ B1 oe
7		60 – 18 = 42, 42 ÷ 2 = 21 OR $x + x + 18 = 60$, $2x = 42$	21	2	M1 for (60 – 18) ÷ 2 A1 cao Or M1 for $x + x + 18 = 60$ oe A1 cao Or M1 for 3 trials differing by 18 eg (20, 38), (10, 28), (22, 40) A1 cao

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8			5820 cm^2	4	M1for 60 × 25 or 48 × 90 or 1500 or 4320 seen (ignore units) M1for 60 × 25 + 48 × 90 or 1500 + 4320 seen (ignore units) A1 for 5820 B1 for cm^2
9		count squares × 100 = 2900 or put 100 in each square and count	2600 – 3200	3	B3 for answer in the range 2600 ⎪ answer <3200 B2 for answer between 26 and 32 inclusive or 2400 ⎪ answer < 2600 or 3200 < answer ⎪ 3400 B1 for answer in ranges 24 ≤ answer < 26 or 32 < answer ≤ 34
10	(a) (b) (c)		parallel lines circle triangle	1 1 2	B1 for correct lines marked with arrows B1 for circle radius 4 cm within overlay M1 for 38° ± 2° drawn or 7.4 cm ± 0.2 cm drawn A1 for correct triangle within overlay

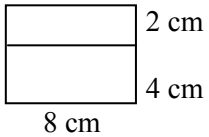
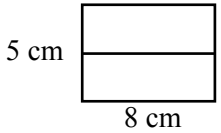
5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11 **QWC**		3h 30 + 3h 45 + 3h 30 + 4h 15 + 2h = 15h + 120m 15 × 8 + 120 ÷ 60 × 10 or 15 × 8 = 120 2 × 10 = 20 120 + 20	£140	4	M1 for adding all 5 times (or 15 hours and 120 minutes) M1 for 15 × 8 oe M1 for 15 × 8 + ("17" – 15) × 10 oe C1 for £140 indicated with correct money notation Or M1 for3 + 3 + 3 + 4 + 2 (= 15) and 30 + 45 + 30 + 15 (=120) M1 for 15 × 8 or "17" × 8 M1 for 15 × 8 + '120' ÷ 60 × 10 or "17" × 8 + ("17" – 15) × 2 C1 for £140 indicated with correct money notation **SC** for working with 16h 20 mins B2 for multiplying15 by 8 and a remainder by 10
12	(a)	Graph (0, 0) to (100, 2400)	conversion graph	2	M1 for straight line through (0, 0) or through one other correct point e.g. (10, 240) or (50, 1200) or through (100, 2400) A1 cao
	(b)	Line from 1800 lira to graph and down	73 – 77	2	M1for line drawn from 1800 lira to their graph A1 ft for '75' ± £2

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		List all 12 outcomes	2	B2 for listing all 12 possibilities condone repeats e.g. (3,1) and (1, 3) but not extras (B1 for at least 6 correct)
	(b)	(2, 7) and (5, 4)	$\frac{2}{12}$	3	M1 for selecting at least one total of 9 A2 for $\frac{2}{12}$ oe (A1 for $\frac{x}{12}$ where $x < 12$ or $\frac{2}{y}$ where $y > 2$
14	(a)	$18 \times 1.5 + 10$ $= 27 + 10$	37	2	M1 for $18 \times 1.5 + 10$ or digits 37 seen A1 cao
	(b)	$43 - 10 \div 1.5 = 33 \div 1.5$ 1.5 + 1.5 + 1.5 + 1.5 etc Or 37 + 1.5 + 1.5 + 1.5 etc or $43 = 1.5C + 10$ $43 - 10 = 1.5C$ $1.5c = 33$	22	3	M1 for $43 - 10$ or 33 seen M1 for "(43 – 10)" ÷ 1.5 oe A1 for 22 cao or M2 for starting at '37' and adding on at least three 1.5s (M1 for starting by adding at least six 1.5s) A1 for 22 cao or M1 for setting up an equation eg $43 = 1.5C + 10$ M1 for $43 - 10 = 1.5C$ or $1.5c = 33$ A1 for 22 cao

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)		(9),9,9,9, 10,10	1	B1 for (9), 9, 9, 9, 10, 10 (any order)
	(b)	32 + 41 + 41+ 41 = 155 160 – 155 Or 160 –32 – 41 – 41 – 41 = 5	5	2	M1 for 160 – 32 – 3 × 41 oe A1 cao **SC** B1 for 87 given as the answer from 160 – (32 + 41)
	(c)	15 ÷ (2 + 3) = 15 ÷ 5 = 3 3 × 3	9	3	M1 for 15 ÷ (2 + 3) oe M1 for 3 × '(15 ÷ (2 + 3))' A1 cao
16	(a)		4	1	B1 cao
	(b)		15	1	B1 cao
	(c)		08 20	2	B2 for answer in range 08 19 to 08 21 B1 for answer in range 08 15 to 08 25 (ignore extra times of 08 00 and 08 40 included)

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17 **QWC**		**5A** =150 + 150 + 150 + 150 + 150 = 35p × 5 = £1.75 **2C + A** = 300 + 300 + 150 = £1.60 + 35p = £1.95 **3B + A** =200+200+200 +150 = 45p × 3 + 35p = £1.70 **3A + C** = 150+150+150+300 = 35p × 3 + 80p = £1.85	£1.70	4	M1 for attempt to find at least 2 different combinations of weights (can be implied by costs) with at least one correct that add to 750g M1 for identifying and attempting to calculate the costs of two out of the four possibilities from 5A or 2C + A or 3B + A or 3A + C oe (can be implied by the costs) **either** A1 for at least 3 costs correct from £1.75, £1.95, £1.70, £1.85 ignore units) C1 ft (dep on M1) for £1.70 (or 170p) identified as lowest cost from all four possible combinations **Or** A1 for working out 5A to £1.75 and 3B + A out to £1.70 **and** C1 ft (dep on M1)for £1.70 (or 170p) identified as lowest cost **and** an explanation that 300g size can be replaced more cheaply by two 150g sized tins
18	(a)		$w = x - 1$	2	B2 for $w = x - 1$ oe (B1 for $x - 1$ or $w = 1 - x$ or $w = x + 1$ or $x = w - 1$ oe)
	(b)		$T = 7(x - 1)$	1	B1 ft for $T = 7(x - 1)$ oe
19		12 + 18 = 30	$\frac{12}{30}$	2	B2 for $\frac{12}{30}$ oe (eg 40%, 0.4, $\frac{2}{5}$ (B1 for $\frac{x}{30}$, where $x < 30$ or $\frac{12}{y}$ where $y > 12$

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)	Smart phone 838 DVDs 4 × 16 = 64 Lawnmower 57 ÷ 3 × 12 = 19 × 12 = 228 838 + 64 + 228 = 1130	1130	3	M1 for 57 ÷ 3 × 12 or 228 seen M1 for 838 + 4 × 16 + '57 ÷ 3 × 12' A1 cao
QWC	*(b)	4500 ÷ 500 = 9 9 × 2.40 = 21.60 Or 22 ÷ 2.40 = 9.1666... 9.1666... × 500 = 4583.33... Or £2.40 needs 500 points £24 needs 5000 points 24 – 2.40 needs 4500 points £21.60 needs 4500 points	No with explanation	4	M1 for 4500 ÷ 500 (= 9) (maybe implied by 9 lots of 500 seen) M1 for '9' × 2.40 A1 cao for 21.60 C1 (dep on M1) f.t. for 'No' Decision must be stated and must be attributable from a correct method. for 22 ÷ 2.40 (= 9.1666) Or M1 for '22 ÷ 2.40' × 500 A1 for answer in range 4583 to 4583.33.... C1 (dep on M1) f.t. for 'No' Decision must be stated and must be attributable from a correct method. Or M1 for £24 (or 2400p) = 5000 M1 for 24 – 2.40 (or 2400 – 240) = 4500 A1 cao for 21.60 C1 (dep on M1) f.t. for 'No' Decision must be stated and must be attributable from a correct method.

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21			131.89	5	B2 for PR = 21 m (± 0.6 m) or at least 3 bushes 0.5 to 0.9 cm apart on PR (B1 for PR = 7cm (± 0.2 cm) or at least 3 bushes 1.8 to 2.2 cm apart on PR) M1 "21" ÷ 2 or for indication of 10 or 11 bushes (may be on diagram) M1 (dep on 2 marks earned previously) for '11' × 11.99 A1 cao
22		12 are red. 1/3 are red 12 × 3 = 2 blue for 1 red 24 blue for 12 red 24 + 12 =	36	3	M1 for P(red) = 1/3 M1 for 1/3 × 36 = 12 red or 12 × 3 A1 for 36 cao OR M1 for 2 blue for 1 red M1 for 24 blue for 12 red or 24 + 12 A1 for 36 cao
23	(a)		side elevation	2	B2 for 8 cm by 6 cm side elevation with horizontal line at height of 4 cm (B1 for any rectangle base 8 cm or height 6 cm)
	(b)		plan	2	B2 5cm by 8cm rectangle, any orientation, with line joining the mid-points of the 5 cm side (B1 for any rectangle with one side 5 cm)

<table>
<tr><th colspan="6">5AM2F_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
QWC</td><td></td><td>eg <DGF = 60 (line = 180)
<AFG = 80 (<s in Δ AFG)
<EFC = 100 = <BCA (corresponding angles)

eg <DGF = 60 (line = 180)
<AFG = 80 (<s in Δ AFG)
<DCF = 100 (opposite <s)
(allied angles sum to 180)</td><td>Yes with reasons</td><td>3</td><td>B1 for at least two correct angles given or marked on the diagram.

C1 for any one reason given from angles on a line = 180, angles in a triangle = 180, vertically opposite angles are equal or angles in a quadrilateral add to 360 , exterior angle of a triangle = sum of interior opposite angles

C1 for Yes with clearly identified angles with fully correct reasons that define the parallel lines e.g. identified alternate angles equal, identified corresponding angles equal, identified allied or co-interior angles sum to 180</td></tr>
<tr><td>25</td><td></td><td>x + x – 5 + 2x < 30
x + x + 2x < 30 + 5
4x < 35
x < 35 ÷ 4

Or

<table><tr><td>S</td><td>10</td><td>9</td><td>8</td></tr><tr><td>M</td><td>5</td><td>4</td><td>3</td></tr><tr><td>J</td><td>20</td><td>18</td><td>16</td></tr><tr><td>Sum</td><td>35</td><td>31</td><td>27</td></tr><tr><td></td><td>no</td><td>no</td><td>yes</td></tr></table></td><td>8</td><td>4</td><td>M1 for x – 5 for Martin or 2x for James
M1 (dep on M1) for x + ‘x – 5’ + ‘2x’ < 30 (or = 30)
M1 (dep on M2) for complete correct method to solve their equality or inequality or 8.75 oe seen
A1 cao

Or for trial and improvement method

M1 for x – 5 for Martin or 2x for James (can be implied by one correct trial)
M1 for 3 trials with correct ages (totals not needed) or 2 trials with correct ages and totals
M1 for a trial total < 30 and a trial total > 30 or 8, 3, 16 identified as answer
A1 cao</td></tr>
</table>

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
26		Area cross section is ½ (1.2 + 1.8) × 1.5 = 1.5 × 1.5 = 2.25 Or 1.5 × 1.2 + ½ 1.5 × (1.8 – 1.2) 1.8 + 0.45 = 2.25 Or 1.5 × 1.8 – ½ 1.5 × (1.8 – 1.2) 2.7 – 0.45 = 2.25 Volume = 2.25 × 2 = Or Cuboid volume is 1.2 × 2 × 1.5 = 3.6 Triangular prism volume is ½ × 1.5 × (1.8 – 1.2) × 2 =0.9 3.6 + 0.9 Or Outer cuboid volume is 2 × 1.5 × 1.8 = 5.4 Triangular prism volume is ½ × 1.5 × (1.8 – 1.2) × 2 = 0.9 5.4 – 0.9	4.5	4	**Volume from area of cross section × length** M2 for ½ (1.2 + 1.8) × 1.5 oe or 1.5 × 1.2 + ½ 1.5 × (1.8 – 1.2) or 1.5 × 1.8 – ½ 1.5 × (1.8 – 1.2) or 2.25 given as cross sectional area (M1 for (1.2 + 1.8) × 1.5 or 1.5 × 1.2 + 1.5 × (1.8 – 1.2) or 1.5 × 1.8 – 1.5 × (1.8 – 1.2)) M1 for "2.25" × 2 A1 cao **SC** B2 for answer of 9 if this method is used Or **Volume from cuboid vol + triangular prism vol** M1 for 1.2 × 2 × 1.5 or 3.6 given as volume of cuboid M1 for ½ × 1.5 × (1.8 – 1.2) × 2 or 0.9 given as volume of triangular prism M1 for "3.6" + "0.9" where (3.6" and "0.9" are volumes A1 cao **SC** B2 for answer of 5.4 if this method is used Or **Volume from cuboid vol – triangular prism vol** M1 for 2 × 1.5 × 1.8 or 5.4 given as volume of outer cuboid M1 for ½ × 1.5 × (1.8 – 1.2) × 2 or 0.9 given as volume of triangular prism M1 for "5.4" − "0.9" where "5.4" and "0.9" are both volumes A1 cao **SC** B2 for answer of 3.6 if this method is used

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Write your name here

Surname	Other names

Edexcel GCSE

Centre Number	Candidate Number

Applications of Mathematics

Unit 2: Applications 2

For Approved Pilot Centres ONLY

Foundation Tier

Wednesday 13 June 2012 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM2F/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 ▶

P40682A

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6/6/7/3/

P 4 0 6 8 2 A 0 1 2 4

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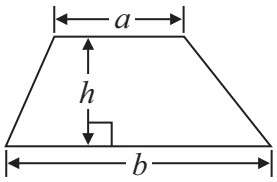
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GCSE Mathematics 2AM01

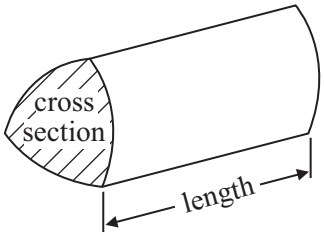
Formulae: Foundation Tier

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



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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 12475 people went to a concert.

(a) Write down the value of **2** in the number 12475

.....

(1)

6.3 million people watched the concert on television.

(b) (i) Write down 6.3 million in figures.

.....

(ii) What is the value of **3** in 6.3 million?

.....

(2)

The concert finished at 9.45 pm.

(c) Write 9.45 pm as a 24-hour clock time.

.....

(1)

(Total for Question 1 is 4 marks)

2 Here are the prices of tickets for a Summer Fair.

Summer Fair tickets	
Adult ticket:	£3.85
Child ticket:	£2.25
Senior ticket:	£3.40

Graham buys one adult ticket and one child ticket.

(a) Work out the total cost.

£.....

(2)

Natalie buys one adult ticket and three senior tickets.
She pays with a £20 note.

(b) How much change should Natalie get?

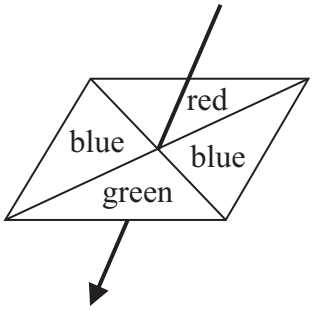
£.....

(3)

(Total for Question 2 is 5 marks)

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3 Here is a fair 4-sided spinner for a game.



Gemma spins the spinner.

Impossible	Unlikely	Even	Likely	Certain

Use a word from the box that best describes the chance of each of the following events.

(a) Gemma gets a blue.

.....

(1)

(b) Gemma gets a red.

.....

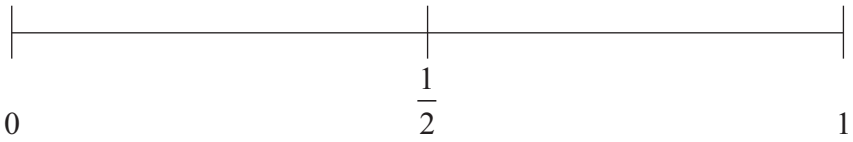
(1)

There are 6 coins in a bag.
There are

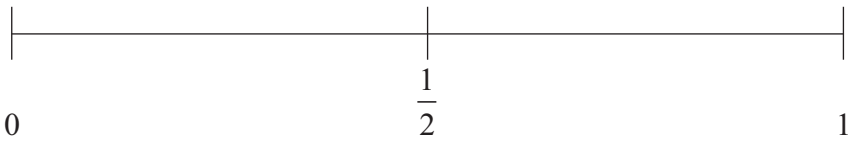
three 10p coins
two 5p coins
one 2p coin

Chris takes at random a coin from the bag.

(c) (i) On the probability scale below, mark with a cross (**X**) the probability that Chris will take a 20p coin.



(ii) On the probability scale below, mark with a cross (**X**) the probability that Chris will take a coin with a value less than 20p.



(2)

(Total for Question 3 is 4 marks)

4 Jason is a racing driver.
Jason drove 72 laps in a race.

Jason drove the first 23 laps.
Then he stopped to have his tyres changed.

Jason drove for some more laps.
Then he stopped for a second time.

Jason then drove the last 20 laps of the race.

(a) Work out the number of laps between Jason's first stop and his second stop.

.....

(3)

Jason took on average 2.25 minutes to drive each of the 72 laps.

(b) Work out the total time Jason drove.
Give your answer in hours and minutes.

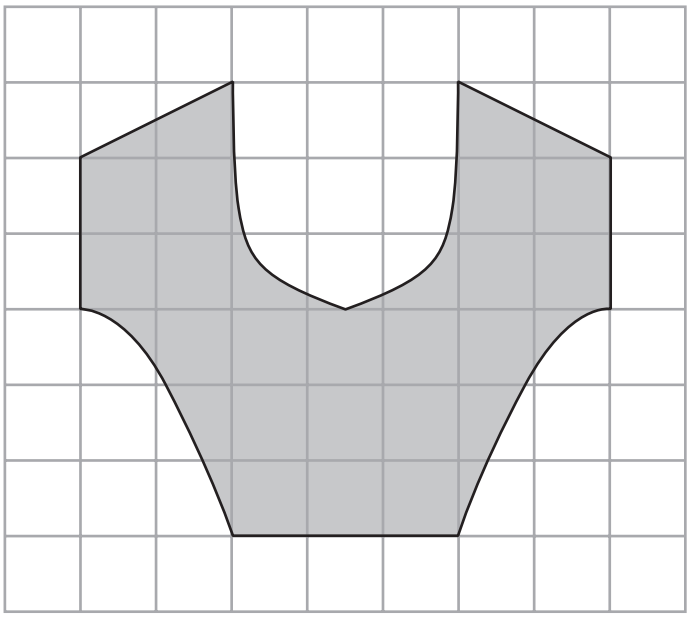
..... hours ..... minutes

(3)

(Total for Question 4 is 6 marks)

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5 The diagram shows a company logo drawn on a centimetre grid.



Estimate the area of the logo.

.....cm^2

(Total for Question 5 is 2 marks)

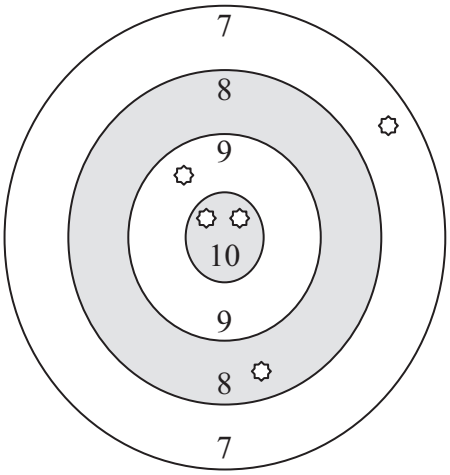
6 Parveen and Jenny are in a shooting competition.
They each have 5 shots at a target.

Each time they hit the target, they score 7 or 8 or 9 or 10

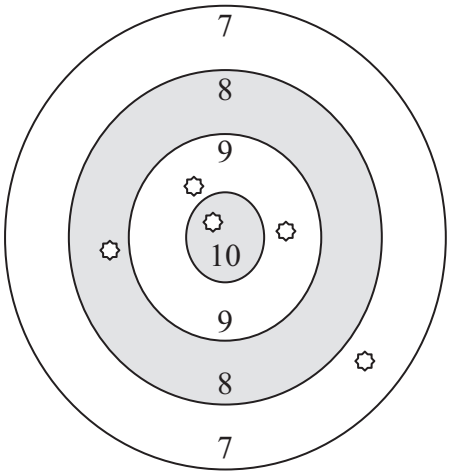
The diagrams show the results of each of their 5 shots.

✿ shows a shot that has hit the target

Parveen's target



Jenny's target



The five scores are added to get the total score.

(a) Work out the difference between Parveen's total score and Jenny's total score.

.....

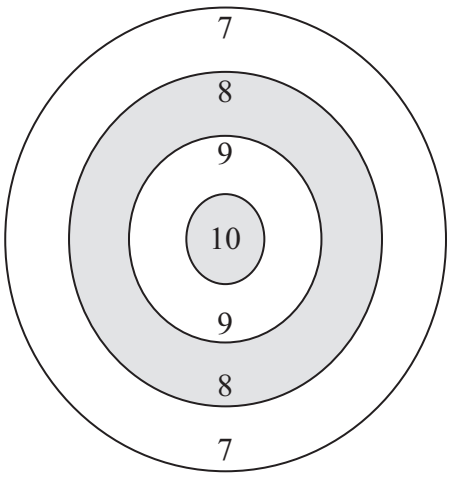
(3)

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Marta is also in the shooting competition.
Marta's total score is 39

(b) On the target below, show with a ✪, the possible result of each of Marta's 5 shots.

Marta's target



(2)

(Total for Question 6 is 5 marks)

7 The diagram shows Bob's bathroom wall.

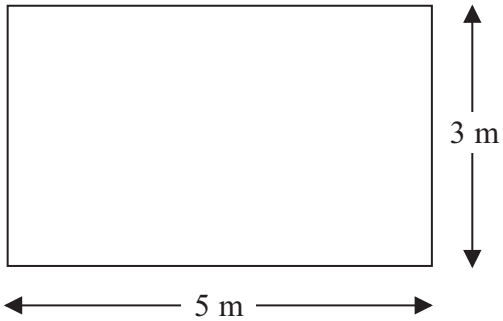


Diagram **NOT** accurately drawn

The wall has a length of 5 m.
The wall has a height of 3 m.

Bob is going to cover the wall with tiles.
He is going to use square tiles of side 25 cm.

How many tiles will Bob have on the bathroom wall?

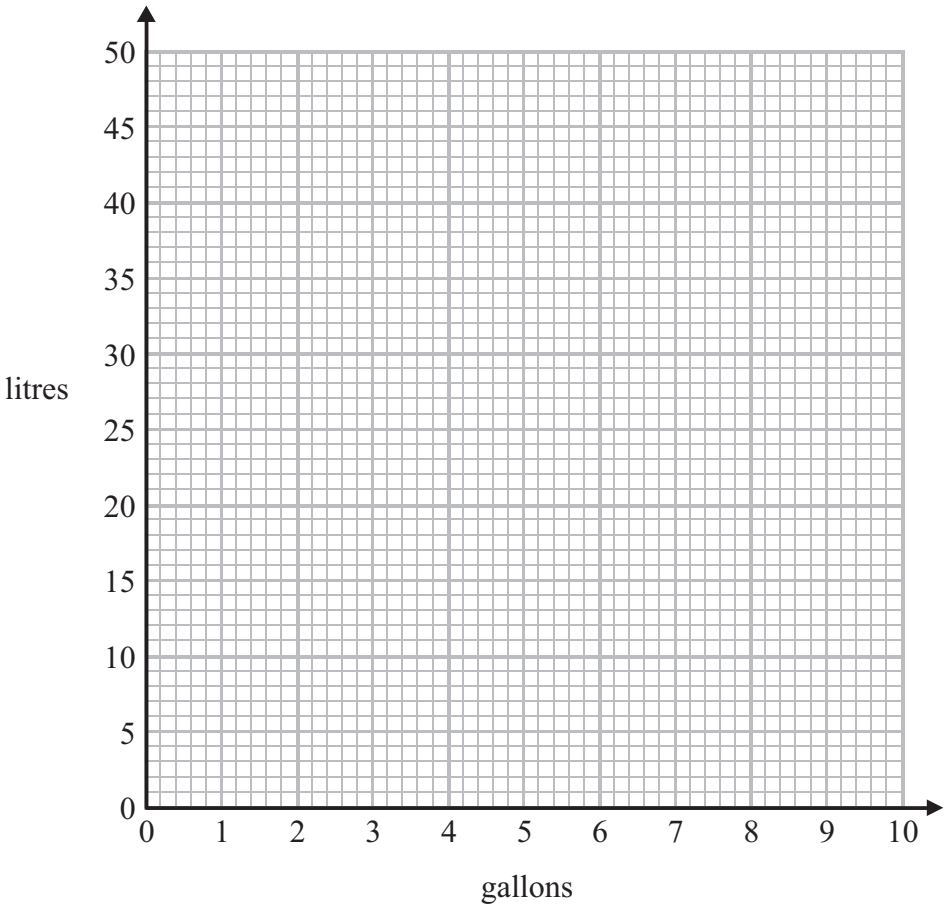
.....

(Total for Question 7 is 3 marks)

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8 Given that 1 gallon = 4.5 litres

(a) On the grid, draw a conversion graph you can use to convert between gallons and litres.



(2)

Caroline buys 30 litres of petrol.

(b) How many gallons of petrol does Caroline buy?

..... gallons

(2)

There are 60 gallons of oil in an oil tank.

(c) How many litres of oil are in the oil tank?

..... litres

(2)

(Total for Question 8 is 6 marks)

9 Here is a photograph.
The photograph is in the shape of a rectangle.



Diagrams **NOT** accurately drawn

Jill makes enlargements of photographs.

Jill made Enlargement **A** and Enlargement **B** of the photograph.

Enlargement **A**



Enlargement **B**



(a) Work out the scale factor of Enlargement **A**.

.....

(1)

(b) Work out the perimeter of Enlargement **B**.

..... cm

(3)

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The table shows the cost of each enlargement.

	Cost
Enlargement **A**	£4.00
Enlargement **B**	£6.00

David buys some of the enlargements.
He pays exactly £34

(c) Work out how many of Enlargement **A** and how many of Enlargement **B** David could buy.

..... Enlargement **A**

..... Enlargement **B**

(3)

(Total for Question 9 is 7 marks)

10 Hawk Shop has scooters for hire.
You can use this rule to work out the total cost of hiring a scooter.

Total cost = Fixed charge + number of days × cost per day

The table below shows the fixed charge and the cost per day for hiring scooters.

Scooter	Fixed charge	Cost per day
3-wheel scooter	£20	£10
4-wheel scooter	£25	£12
deluxe scooter	£30	£15

Robert hires a 3-wheel scooter for 7 days.

(a) Work out the total cost.

£.....

(2)

Elaine hires a deluxe scooter.
The total cost is £180

(b) Work out how many days Elaine hired the deluxe scooter for.

..... days

(3)

(Total for Question 10 is 5 marks)

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11 Mrs Defoe is organising a school trip for 72 children.

The total cost of the trip is £680
The school will pay £500 towards the total cost of the trip.
The children will pay the rest of the total cost.

(a) Work out how much money each child has to pay.

£.....

(3)

The ratio of the number of adults on the trip to the number of children on the trip is 1 : 8

Mrs Defoe has booked two coaches.
There are 40 seats on each coach.

*(b) Will there be enough seats on these two coaches for all the adults and the 72 children?
You must show all your working.

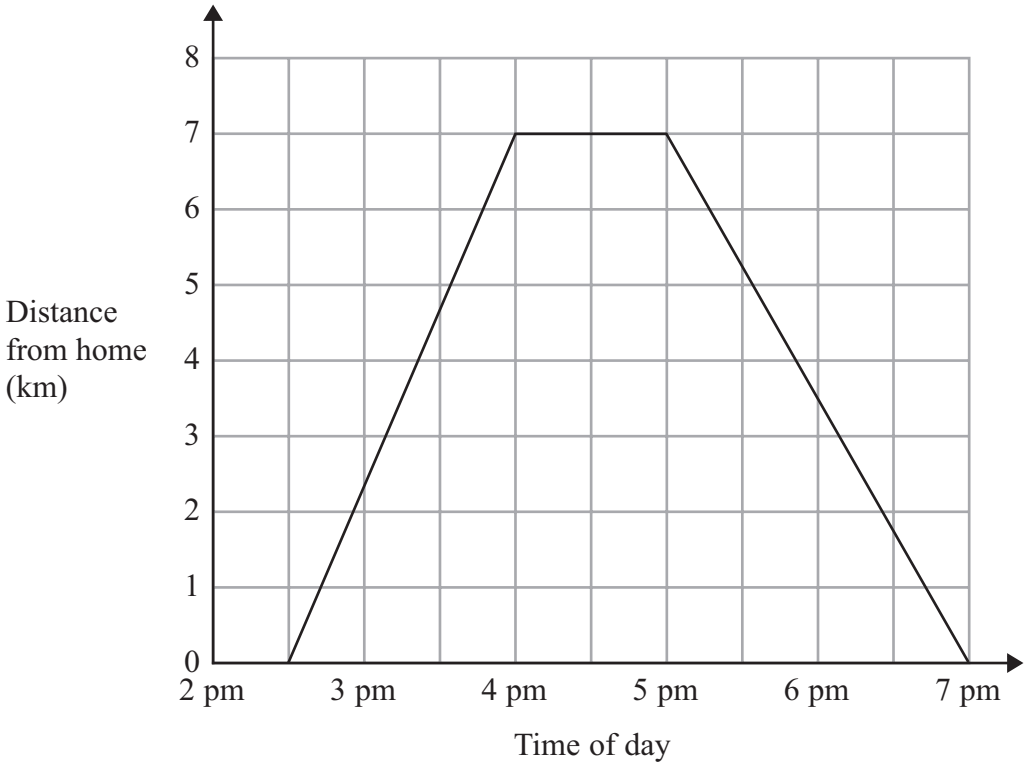
(4)

(Total for Question 11 is 7 marks)

12 Suha walked 7 km from her home.

She then had a rest.
Suha then walked home.

Here is Suha's travel graph.



(a) What time did Suha leave home?

.....

(1)

(b) How long did Suha rest for?

.....

(1)

(c) What time did Suha start to walk home?

.....

(1)

(d) Work out the total time that Suha was away from home.

..... hours

(1)

(Total for Question 12 is 4 marks)

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13 The diagram shows a ramp next to a step.

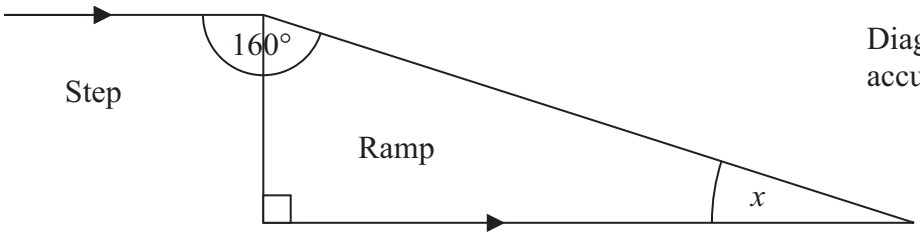


Diagram **NOT** accurately drawn

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

$x =$ ..... °

(ii) Give a reason for your answer.

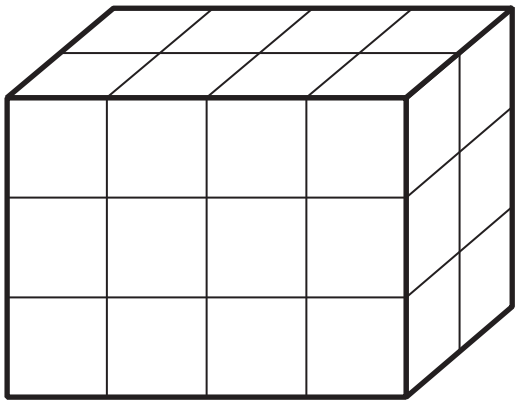
.....

.....

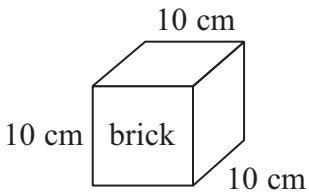
.....

(Total for Question 13 is 3 marks)

14 Here is a box in the shape of a cuboid.



Diagrams **NOT** accurately drawn



The box is completely full of bricks as shown in the diagram.
Each brick is in the shape of a cube of side 10 cm.

Work out the volume of the box.

.....

(Total for Question 14 is 4 marks)

15 Jim buys 3 portions of chips.
The total cost is £2.85

Emma buys fish and 2 portions of chips.
The total cost is £4.80

(a) Work out the cost of the fish.

£.....

(3)

Emma and Dan share the cost of £4.80 in the ratio 5 : 3

(b) Work out how much Emma and Dan each pay.

Emma £.....

Dan £.....

(3)

(Total for Question 15 is 6 marks)

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16 The diagram shows a box for chocolates.
The box is in the shape of a triangular prism.

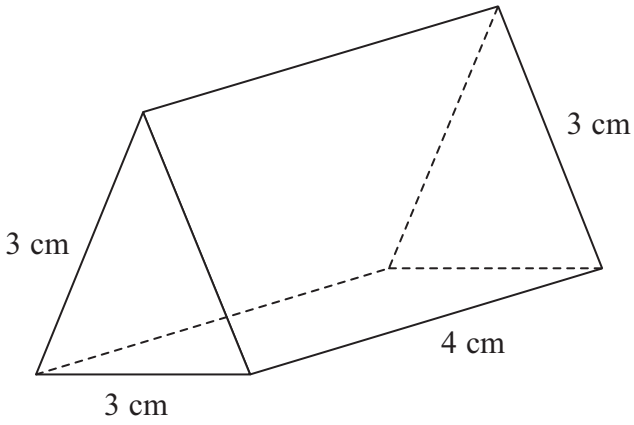
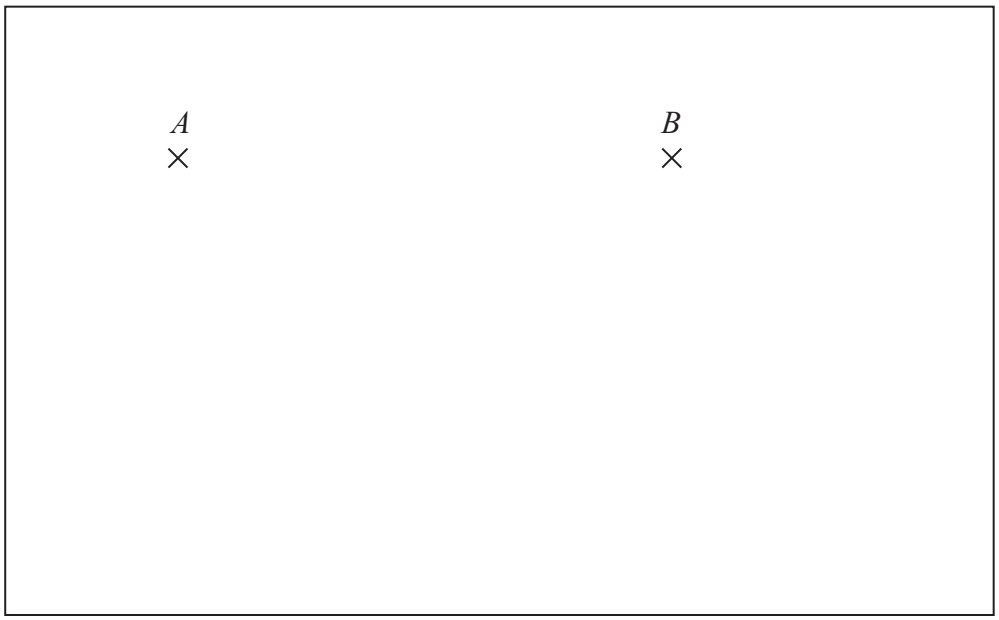


Diagram **NOT** accurately drawn

In the space below, draw an accurate net of this box.

(Total for Question 16 is 3 marks)

17 The diagram shows a map of a field.
The scale of the map is 1 cm represents 20 m.



Wind turbines



A and *B* are two wind turbines in the field.

(a) Find the real distance, in metres, between the two wind turbines.

..... m

(3)

A third wind turbine is to be put in this field.
There must be at least 100 m between wind turbines.

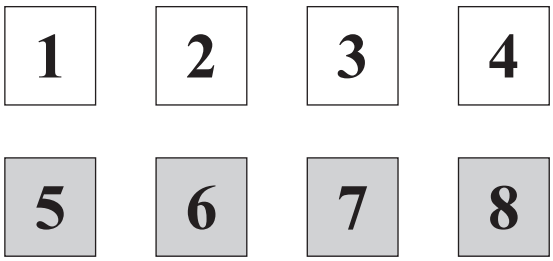
*(b) Show, by shading, where the third wind turbine can be put.

(3)

(Total for Question 17 is 6 marks)

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18 Mark has 4 white cards and 4 grey cards.
There is a number on each card, as shown below.



Mark mixes up the white cards.
He puts the cards on the table so that the numbers are hidden.

Mark mixes up the grey cards.
He puts the cards on the table so that the numbers are hidden.

Mark and Jean play a game with all of these cards.

Mark asks Jean to take at random one white card and one grey card.

(a) Write down all the possible combinations of the pairs of numbers that Jean can take.

.....

.....

.....

.....

(2)

Jean wins the game when the numbers on the two cards add up to more than 9

Mark and Jean are going to play this game 80 times.
Mark will mix up the white cards and mix up the grey cards after each game.

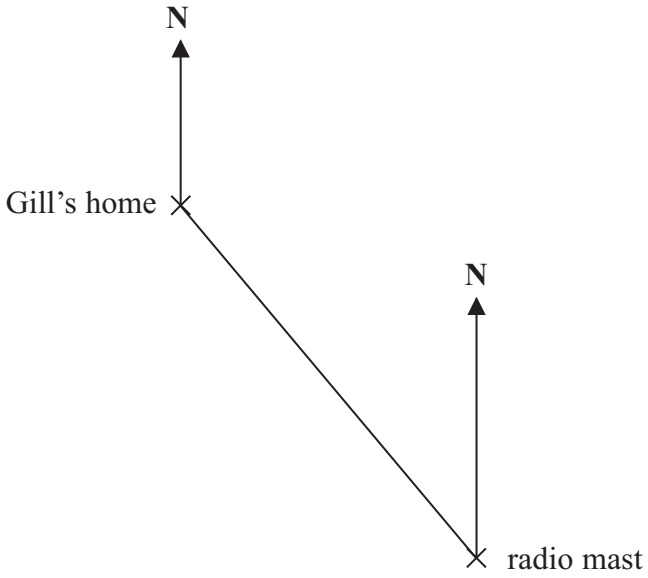
(b) Estimate the number of games that Jean will win.

.....

(3)

(Total for Question 18 is 5 marks)

19 The accurate diagram shows the position of a radio mast and the position of Gill's home.



(a) What is the bearing of Gill's home from the radio mast?

.....°

(1)

Malcolm's home is
due East of Gill's home,
on a bearing of 040° from the radio mast.

(b) On the diagram, mark the position of Malcolm's home with a cross (**X**).

(2)

A signal from the radio mast has a range of 8 km, as shown in the diagram.

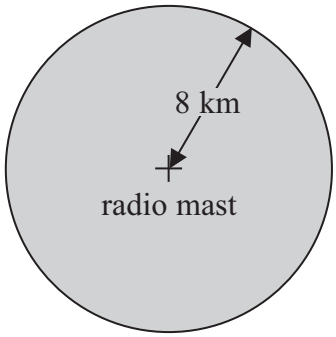


Diagram **NOT** accurately drawn

(c) Calculate the area of the shaded region.
Give your answer correct to 3 significant figures.

..... km^2

(2)

(Total for Question 19 is 5 marks)

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20 Michelle is x years old.
Angela is 5 years older than Michelle.

The sum of their ages, in years, is less than 50

(a) Write down, in terms of x, an inequality to show this information.

.....

(2)

(b) Work out the oldest age that Michelle can be.
Give your answer as a whole number of years.

..... years

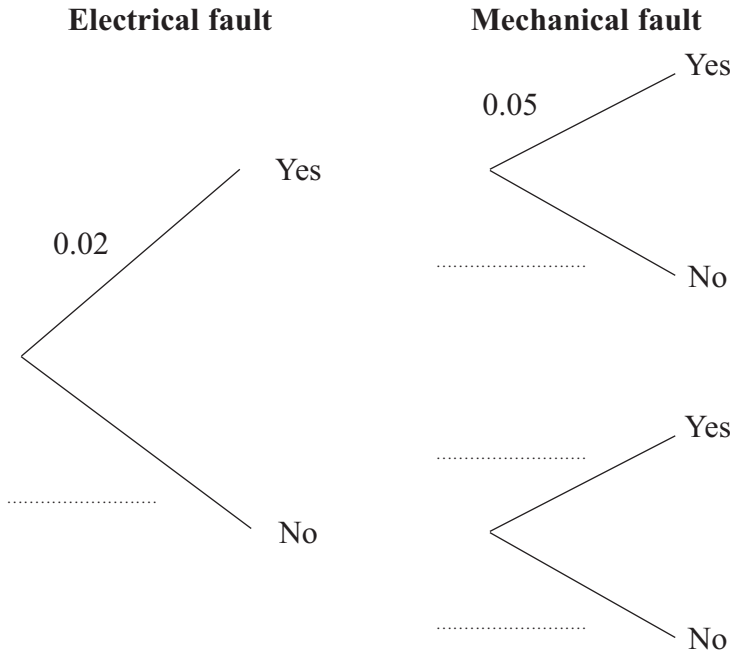
(3)

(Total for Question 20 is 5 marks)

21 Icetown makes fridges.

The probability that an Icetown fridge will have an electrical fault is 0.02
The probability that an Icetown fridge will have a mechanical fault is 0.05

(a) Complete the decision tree diagram.



(2)

Coolbox also makes fridges.

The probability that a Coolbox fridge will have **no** electrical fault and **no** mechanical fault is 0.93

Janet wants to buy a fridge with the least risk of any fault.

*(b) Which make of fridge should Janet buy, an Icetown fridge or a Coolbox fridge?

(3)

(Total for Question 21 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

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Mark Scheme (Results)

Summer 2012

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

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June 2012

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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

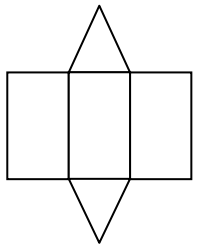
5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		2000	1	B1 for 2000 or two thousand
	(b)(i)		6300000	2	B1 cao
	(ii)		300000		B1 for 300000 or 300 thousand or three hundred thousand
	(c)		21.45	1	B1 for 21.45 or 21 45 or 21:45
2	(a)	3.85 + 2.25	6.10	2	M1 for 3.85 + 2.25 or 6.1 seen A1 for 6.10 (correct money notation)
	(b)	20 – (3.85 + 3 × 3.40) 20 – 3.85 – 10.20 **OR** 20 – 3.85 = 16.15 16.15 – 3.40 = 12.75 12.75 – 3.40 = 9.35 9.35 – 3.40	5.95	3	M1 for 3.85 + 3 × 3.40 (=14.05) M1 for 20 – "14.05" A1 cao **OR** M1 for one subtraction from 20 of 3.85 or 3.40 M1 for fully correct method A1 cao
3	(a)		Even	1	B1 cao
	(b)		Unlikely	1	B1 cao
	(c)(i)		× at 0	2	B1 cao
	(ii)		× at 1		B1 cao

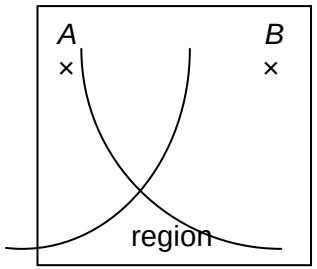
5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)	23 + 20 = 43; 72 – 43 **OR** 72 – 23 = 49; 49 – 20	29	3	M1 for 23 + 20 (=43) or 72 – 23 (=49) M1 for 72 – '43' or '49' – 20 A1 cao
	(b)	162 ÷ 60	2 hours 42 mins	3	M1 for 2.25 × 72 or 135 × 72 A1 for 162 or 9720 A1 ft for correct conversion to hours and minutes
5			25	2	B2 for answer in the range 24 to 26 (B1 for answer in the range 23 to 27)
6	(a)	P = 7 + 8 + 9 + 10 + 10 = 44 J = 7 + 8 + 9 + 9 + 10 = 43 44 – 43 **OR** Same 7 and 8 (20 + 9) – (10 + 18) **OR** They both score 7, 8, 9 and 10 P gets a 10 and J gets a 9 with 5th shot: 10 – 9	1	3	M1 for 7 + 8 + 9 + 10 + 10 (= 44) or 7 + 8 + 9 + 9 + 10 (= 43) M1 for '44' – '43' A1 cao **OR** M1 for 20 + 9 or 10 + 18 M1 for '29' – '28' A1 cao **OR** M1 for statement that they both score 7, 8, 9, 10 M1 for P gets 10, J gets 9 A1 cao
	(b)	e.g. 7, 7, 7, 9, 9; 10, 10, 10, 9; 7, 7, 8, 8, 9; 7, 7, 7, 8, 10	5 scores total 39	1	M1 for any combination of scores totalling 39 A1 for correct diagram

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
7		300 ÷ 25 or 3 ÷ 0.25 = 12 500 ÷ 25 or 5 ÷ 0.25 = 20 12 × 20	240	3	M1 for 300 ÷ 25 or 3 ÷ 0.25 oe OR 500 ÷ 25 or 5 ÷ 0.25 = 20 oe M1 for '12' ×' 20' A1 cao **OR** M1 for 0.25×0.25 (=0.0625) or 3×5(=15) or 25×25 (=625) or 300×500(=150000) M1 for "15"÷"0.0625" or "150000"÷"625" A1 cao
8	(a)		Straight line graph from (0, 0) to (10, 45)	2	M1 for at least one correct point plotted < 5 gall AND at least one correct point plotted ≥5 gall or a graph that passes through. A1 for line from (0, 0) to (10, 45)
	(b)		6.5 to 6.8	2	M1 for 30÷4.5 or evidence of using the graph from 30 litres (ft) A1 for answer in the range 6.5 to 6.8
	(c)	From graph or 4.5 × 60	270	2	M1 for using a correct reading from the graph at a factor of 60 gallons or 4.5× 60 or 27 seen A1 cao

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		2	1	B1 for 8 ÷ 4 or 12 ÷ 6 oe or 2
	(b)	5 × 6 = 30 2 × 20 + 2 × 30 OR 2 × 4 + 2 × 6 = 20 5× 20	100	3	M1 for use of the scale factor of 5 or 30 seen M1 for 2 × (20 + '30') or 2×20 + 2×*n* oe **OR** M1 for 2 × 4 + 2 × 6 (= 20) M1 for 5× '20' A1 cao SC B1 for 88
	(c)	eg. 5 × 6 + 1 × 4 OR 34 – 6 = 28 28 – 4 = 24 24 = 4 × 6 or 6 × 4	1A and 5B's or 4A's and 3B's or 7A's and 1B	3	M1 for a combination of A and B M1 for trying to make up 34 with multiples of 4 & 6 by subtracting from 34 to give zero A1 for a correct combination SC B2 for a correct combination written the wrong way around.
10	(a)	680 – 500 = 180 180 ÷ 72	90	2	M1 for 20 + 10 × 7 A1 cao
	(b)	(180 – 30) ÷ 15	10	3	M1 for 180 – 30 (=150) or for 30 + n ×15 (n ≥1) or ÷15 M1 for ('180 – 30') ÷ 15 or for 30 + repeated addition of 15 up to 180 A1 cao

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)	680 – 500 = 180 180 ÷ 72	2.50	3	M1 for 680 – 500 (= 180) M1 for '180' ÷ 72 (=2.5) A1 cao (do NOT accept 2.5)
	*(b)	72 ÷ 8 = 9 adults 72 + 9 = 81	No with some evidence	4	M1 for 72 ÷ 8 (=9) or adding up groups of 9 M1 for 72 + '9' and 40 × 2 (=80) A1 cao for 81 people on the trip (accept 82 with driver) C1 (dep on M1) ft for "No, with some evidence including use of figures
12	(a)		2.30 pm	1	B1 cao
	(b)		1 hour	1	B1 for 1 hour or 60 minutes
	(c)		5 pm	1	B1 cao
	(d)		4.5	1	B1 for 4.5 hours oe

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(i)	160 – 90 = 70; 180 – 90 – 70 or 180 - 160	20	3	M1 for 180 – 90 – (160 – 90) or 180 – 90 – 70 or 180 – 160 oe A1 cao
	(ii)		Geometric reasoning		B1 for angles in a triangle add up to 180^{o} or alternate angles are equal
14		24 × 1000 = OR 4 × 10 = 40; 3 × 10 = 30; 2 × 10 = 20; 40 × 30 × 20 =	24 000 cm^3	4	M2 for 24 × 1000 or 4×10 × 3×10 × 2×10 (M1 for 24 or 4×3×2 or ×1000) A1 for 24 000 B1 for cm^3 (or m^3 if working in metres)
15	(a)	2.85 ÷ 3 = 0.95 4.80 – (0.95 ×2)	2.90	3	M1 for 2.85 ÷ 3 or 285÷3 or sight of 0.95 or 95 M1 for 4.80 – (‘0.95’ × 2) oe A1 for 2.90 (accept 2.9)
	(b)	480 ÷ (5 + 3) = 60 3 × 60 5 × 60	3.00 1.80	3	M1 for 480 ÷ (5 + 3) or 60 seen or at least three multiples of 5:3 M1 for ‘60’ × 3 or ‘60’ × 5 A1 for 3.00 and 1.80 (accept 3, 3.0, 1.8)
16				3	B3 for a fully correct net [B2 for 3 rectangles and 2 triangles (not to correct scale) B1 for any rectangle or triangle drawn accurately to the correct scale] NB: ignore tabs.

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17	(a)	6.5 × 20	130	3	B1 for 6.5 (±2 mm) oe M1 for '6.5' × 20 A1 ft
	(b)			3	M1 for an arc drawn, centre *A* or *B*, radius 5 cm M1 for two intersecting correct arcs drawn A1 for identifying the correct region. SC: B2 for two hand drawn arcs within tolerance and region identified SC: B1 for two hand drawn arcs within tolerance only.
18	(a)		1,5, 1,6, 1,7, 1,8, 2,5, 2,6, 2,7, 2,8, 3,5, 3,6, 3,7, 3,8, 4,5, 4,6, 4,7, 4,8	2	B2 for all 16 combinations (accept 1,5 etc. and ignore repeats) (B1 for at least 4 correct combinations)
	(b)	P(Jean wins) = $\frac{6}{16}$ $\frac{6}{16}$ × 80	30	3	B1 for P(Jean wins) = $\frac{6}{16}$ oe M1 for '$\frac{6}{16}$' × 80 A1 cao SC B2 for 30/80
19	(a)	360 – 40	320	1	B1 for an answer in the range 318 to 322
	(b)			2	M1 for an angle of 40° (allow 38-42°) from radio mast A1 for position of *x*, east of Gill's house
	(c)	$\pi \times 8^2$	201	2	M1 for $\pi \times 8^2$ A1 for an answer in the range 199 to 202

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)	A = $x + 5$	$2x + 5 < 50$	2	M1 for $x + x + 5$ or $x + 5 < 50$ A1 for $x + x + 5 < 50$ or better
	(b)	$2x < 50 - 5$ $x < 22.5$	22	3	M1 for attempt to isolate x or a term in x on one side of an "equation" or "inequality". eg $2x < 50 - 5$ eg $2x + 5 - 5 = 50 - 5$ M1 for $x < 22.5$ oe A1 cao SC B2 for 44 from $x + 5 < 50$ in (a)
21	(a)	$30 \times 5 - 4.9 \times 5^2$	0.95 0.98 0.05 0.95	2	M1 for 1 – 0.02 (= 0.98) or 1 – 0.05 (= 0.95) A1 for all 4 correct probabilities shown
	*(b)	$0.98 \times 0.95 = 0.931$	Icetown since $0.93 < 0.931$	3	M1 for 0.98×0.95 A1 for 0.931 C1 (dep on M1) for correct comparison, selecting their greater probability of no faults and naming company.

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Applications of Mathematics

Unit 2: Applications 2

For Approved Pilot Centres ONLY

Foundation Tier

Monday 14 November 2011 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM2F/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 ▶

P40608A

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6/6/6/3

P 4 0 6 0 8 A 0 1 2 8

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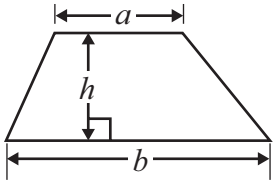
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GCSE Mathematics 2AM01

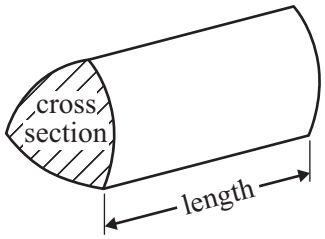
Formulae: Foundation Tier

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



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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 There are 8437 people at an airport.

(a) Write down the value of the **4** in the number 8437

.....

(1)

A suitcase weighs 24.16 kg.

(b) Write down the value of the **6** in the number 24.16

.....

(1)

On a plane, the maximum weight allowed for hand luggage is 5 kg.

Jane's hand luggage weighs 5460 g.
Jane's hand luggage is too heavy.

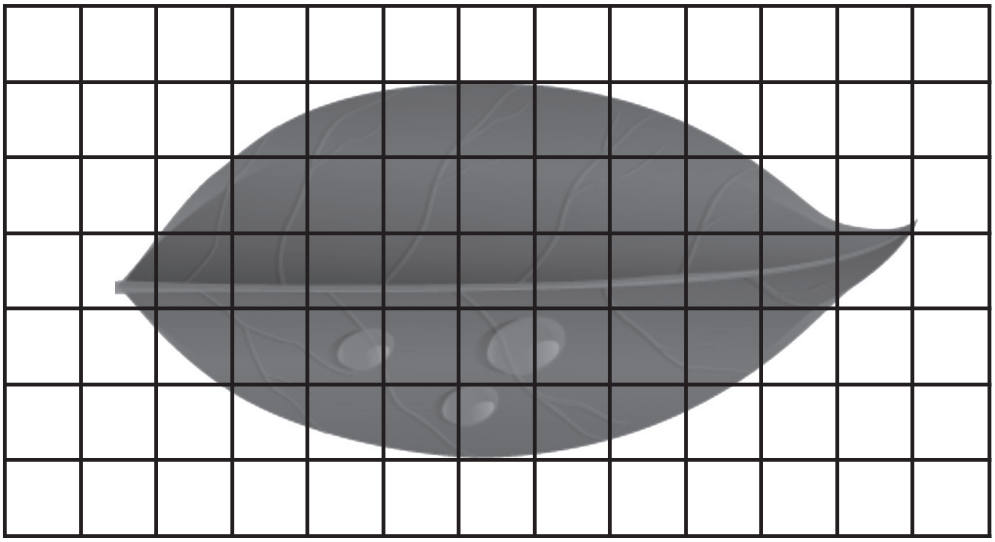
(c) How much too heavy?

.....

(2)

(Total for Question 1 is 4 marks)

2 The diagram shows a leaf on a centimetre square grid.



Estimate the area, in cm^2, of the leaf.

..... cm^2

(Total for Question 2 is 2 marks)

3 A car park holds 120 cars.
There are 85 cars in the car park.
29 cars leave.
37 cars arrive.

How many more cars can the car park hold now?

.....

(Total for Question 3 is 3 marks)

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4 Lara is cutting a 100 cm length of string into

6 cm lengths
8 cm lengths
and 14 cm lengths

First, Lara cuts three 6 cm lengths of string.
She then cuts some 8 cm lengths of string and some 14 cm lengths of string.
There is no string left over.

Work out how many 8 cm lengths of string and 14 cm lengths of string she cuts.

.....

.....

(Total for Question 4 is 4 marks)

5 Jenny wants to record 15 minutes of songs for a film.
The table shows the playing time of 3 songs she has recorded.

Song	Playing time
A	4 minutes and 33 seconds
B	3 minutes and 42 seconds
C	3 minutes and 06 seconds

How much more time, in minutes and seconds, does she need to record?

..... minutes ..... seconds

(Total for Question 5 is 4 marks)

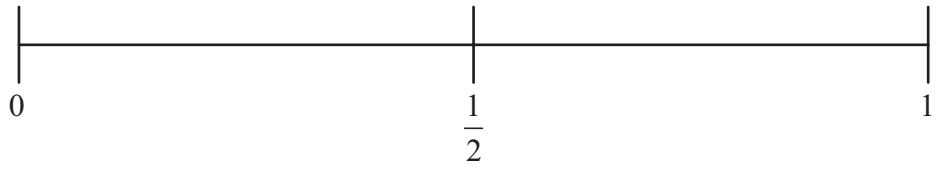
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6 A company sells toy cars.
The company has 5 cars left to sell.

2 of the cars are blue.
3 of the cars are red.

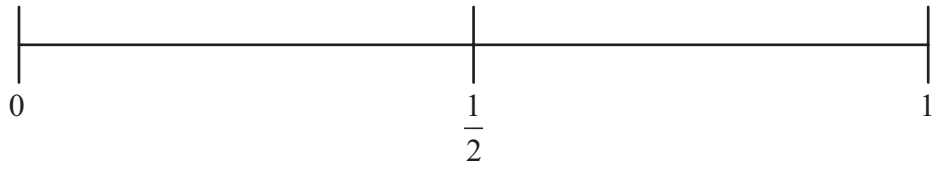
Carl buys a toy car.
The company picks at random the toy car.

(a) On the probability scale, mark with a cross (×) the probability that Carl gets a yellow car.



(1)

(b) On the probability scale, mark with a cross (×) the probability that Carl gets a blue car.



(1)

(Total for Question 6 is 2 marks)

7 George and Harry work in a factory.

They use this rule to calculate their total pay in pounds.

Total pay = 8 × number of hours worked + bonus

George worked 30 hours.
He was paid a bonus of £20

(a) Work out George's total pay.

£.....

(2)

Harry worked 34 hours.
His total pay was £300

(b) Work out the bonus that Harry was paid.

£.....

(3)

(Total for Question 7 is 5 marks)

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8 Here is a café menu.

Menu	
Cup of tea	75p
Cup of coffee	95p
Can of cola	80p
Beefburger	£1.65
Hot dog	£1.40

Kerry buys **one** beefburger and **one** can of cola.

(a) Work out the total cost.

£.....

(2)

Tyler wants to buy 2 hot dogs, a cup of tea and a can of cola.
He has a £5 note.

***(b)** Does Tyler have enough money?
Give reasons for your answer.

(3)

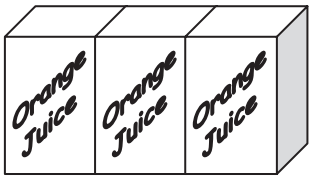
(Total for Question 8 is 5 marks)

***9** Rumana is going to take some children on a picnic.
She needs 26 cartons of orange juice.

Rumana can buy a single carton of orange juice for 38p.
She can buy a pack of 3 cartons for 90p.



single carton 38p



3 cartons 90p

Rumana buys all the cartons she needs for the least possible amount of money.
How much did she spend?

(Total for Question 9 is 5 marks)

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10 Josh is going to an activity centre.
He has to choose 2 different activities to do.

Josh can choose from

Swimming
Art
Climbing
Film making

Write down all the possible pairs of activities that Josh could choose.

.....

.....

.....

.....

(Total for Question 10 is 2 marks)

11 A farm shop sells apples and pears.

Apples cost 45 pence per kg.

(a) Work out the cost of 12 kg of apples.

£.....

(2)

8 kg of pears cost £6

(b) Work out the cost of 5 kg of pears.

£.....

(2)

(Total for Question 11 is 4 marks)

12 A rectangular piece of paper measures n cm by 12 cm.

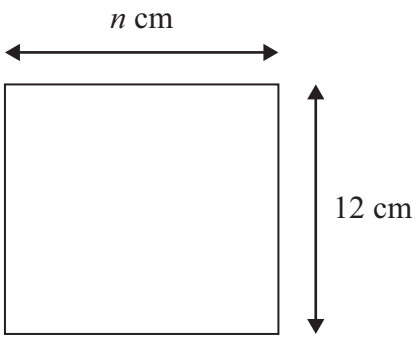
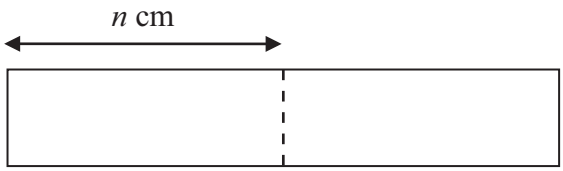


Diagram **NOT** accurately drawn

The paper is cut in half and the two halves are put side by side as shown below.



Write a formula for the **perimeter** P of the new rectangle formed.

.....

(Total for Question 12 is 2 marks)

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13 The diagram shows part of a roof.

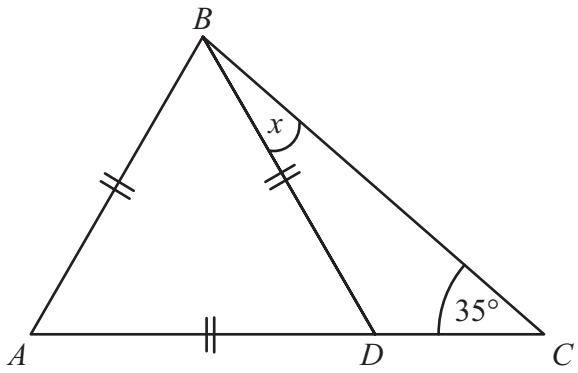


Diagram **NOT** accurately drawn

ABD is an equilateral triangle.
ADC is a straight line.

Work out the size of angle *x*.

.....°

(Total for Question 13 is 3 marks)

***14** It costs £17.50 for a rail ticket lasting one day from Stevenage to London.
It costs £2828 for an annual rail ticket lasting one year from Stevenage to London.

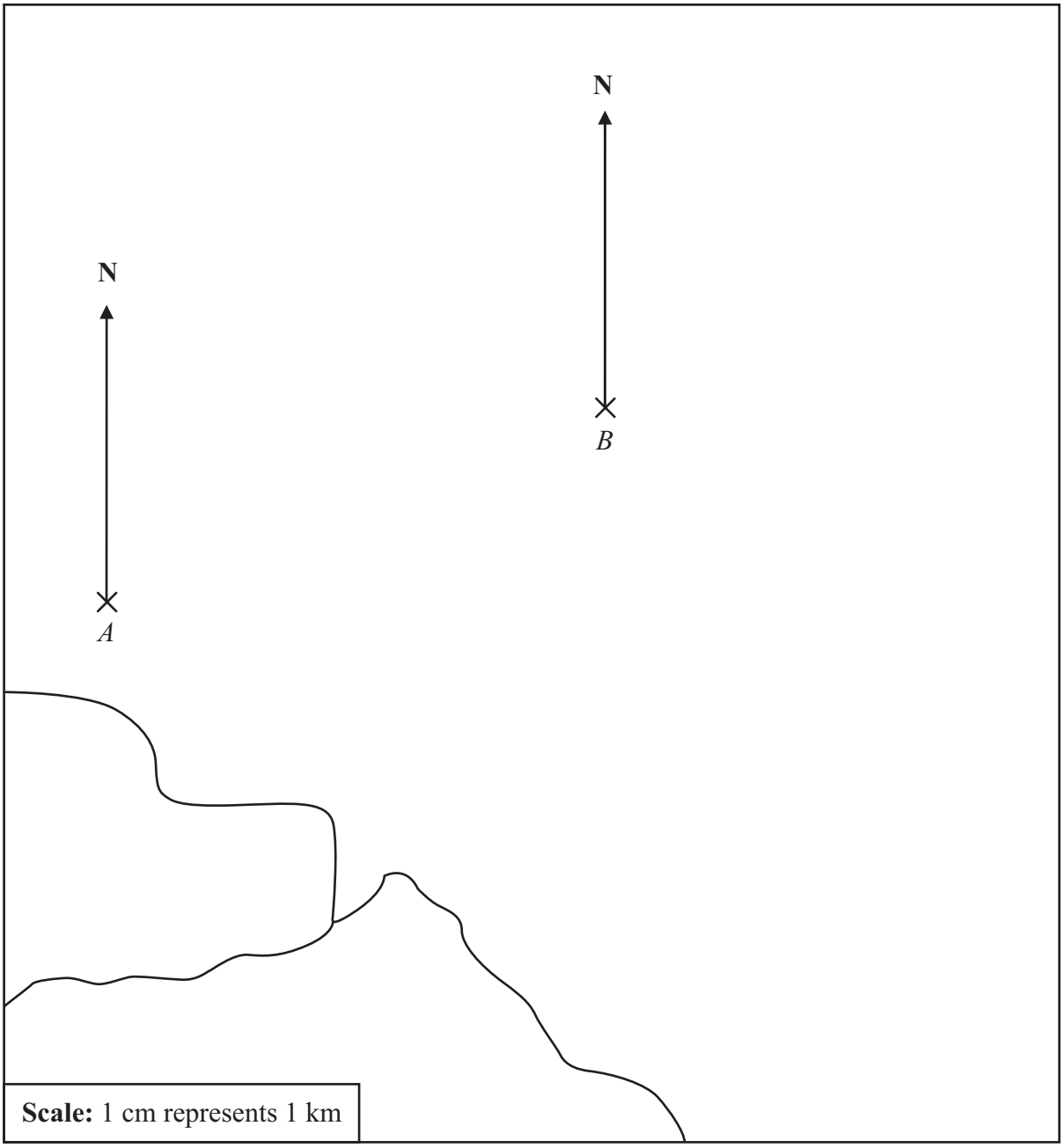
Tony travels from Stevenage to London 200 days in every year.
Is it cheaper for Tony to buy a £17.50 ticket each day or to buy a £2828 ticket for the year?

You must show all your working.

(Total for Question 14 is 3 marks)

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15 The diagram shows the position of two ships, *A* and *B*.



(a) Find the bearing of ship *B* from ship *A*.

.....

(1)

A ship *C* is on a bearing of 125° from *B*.
This ship is 6 km from *B*.

(b) Mark the position of ship *C* with a cross (×).

(2)

(Total for Question 15 is 3 marks)

16 A shop sells boxes of paper clips.

Each box is a cuboid with

length 6 cm
width 4 cm
height 2 cm

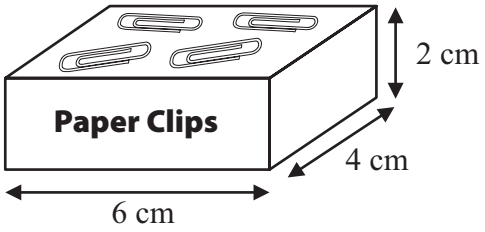


Diagram **NOT** accurately drawn

(a) Draw an accurate net for this cuboid.

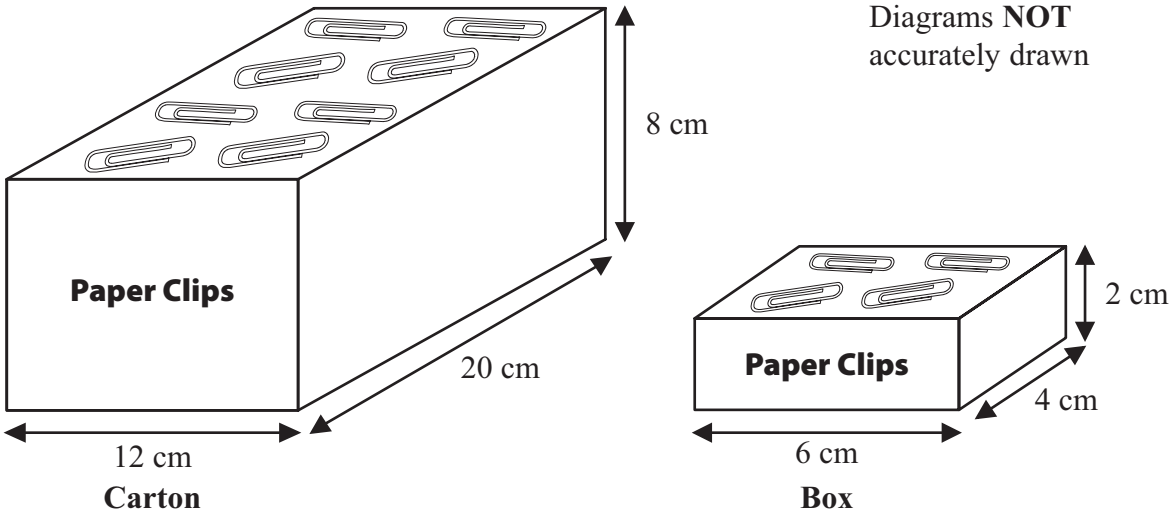
(3)

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The boxes of paper clips are delivered to the shop in cartons.

A carton has

length 20 cm
width 12 cm
height 8 cm



(b) Work out the greatest number of boxes that fit into a carton.

..... boxes

(3)

(Total for Question 16 is 6 marks)

17 Steven is driving from his home to a concert.
It is 78 miles from his home to the concert.

The journey takes $1\frac{1}{2}$ hours.

(a) What is Steven's average speed, in miles per hour, for this journey?

..... miles per hour
(2)

Steven estimates that his car uses 1 gallon of petrol to travel 40 miles.

(b) How many gallons of petrol does Steven expect to use to drive to the concert and back home?

..... gallons
(2)

(Total for Question 17 is 4 marks)

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18 The diagram shows part of a bicycle frame.

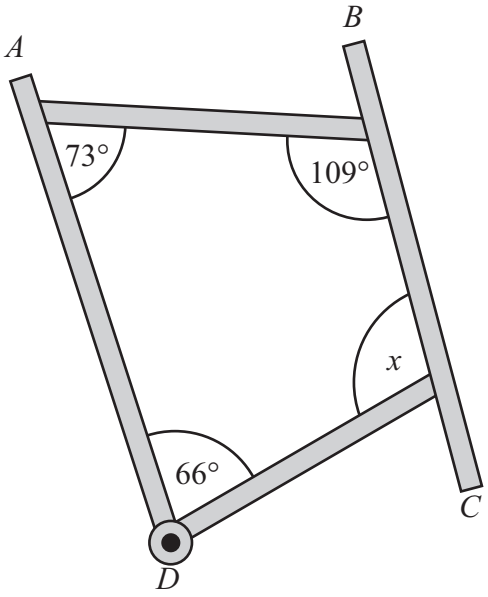


Diagram **NOT** accurately drawn

(a) Work out the size of angle x.

.....°

(2)

(b) Are the lines AD and BC parallel?
You must explain your answer.

.....

.....

.....

.....

(2)

(Total for Question 18 is 4 marks)

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19 A factory makes light bulbs.
The probability that any light bulb the factory makes is faulty is 0.03

(a) Work out the probability that any light bulb the factory makes is **not** faulty.

.....

(2)

The factory makes 1200 light bulbs.

(b) Estimate how many of these light bulbs **will** be faulty.

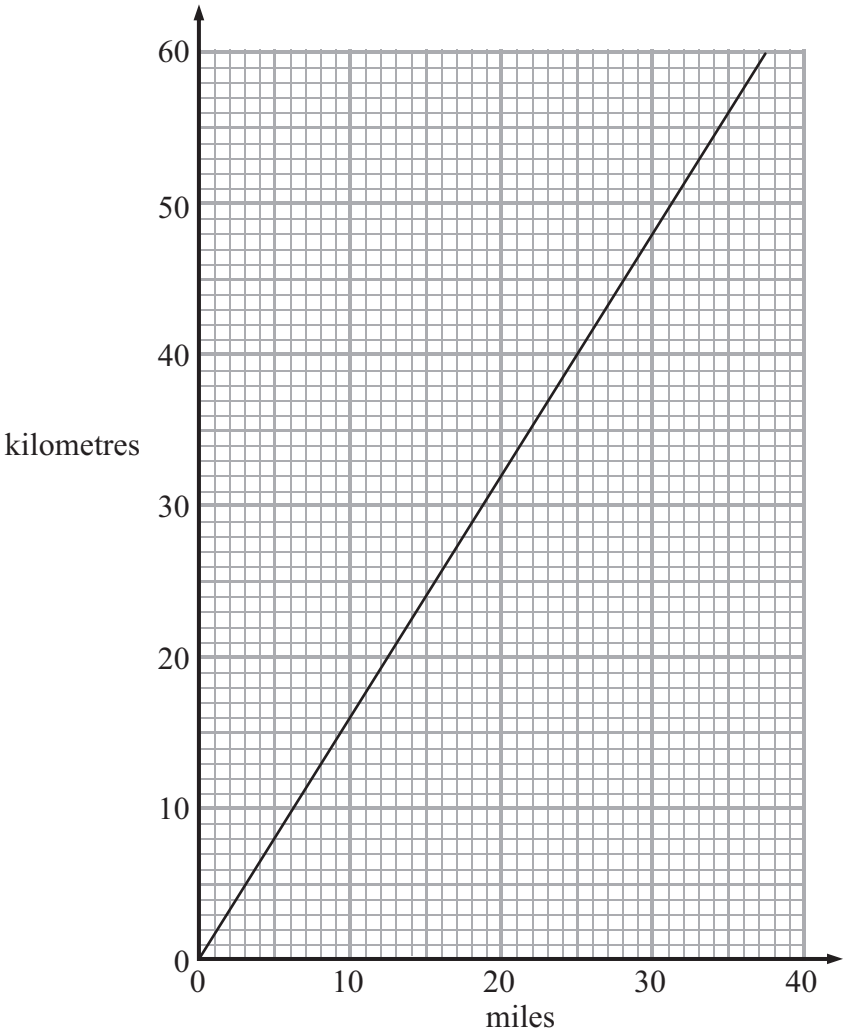
.....

(2)

(Total for Question 19 is 4 marks)

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20 You can use this conversion graph to change between miles and kilometres.



(a) (i) Use the graph to change 20 miles to kilometres.

..... kilometres

(ii) Use the graph to change 48 kilometres to miles.

..... miles

(2)

Sue travels 60 miles.
Henri travels 100 kilometres.

(b) Who travels the furthest?
Give reasons for your answer.

(2)

(Total for Question 20 is 4 marks)

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21 Rukia is making a child's toy.



She draws a circle, radius 4 cm, on a piece of wood.

(a) In the space below, draw accurately this circle.
The centre of the circle has been marked with a cross (×).

×

(1)

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Rukia draws an equilateral triangle with side lengths of 7 cm.

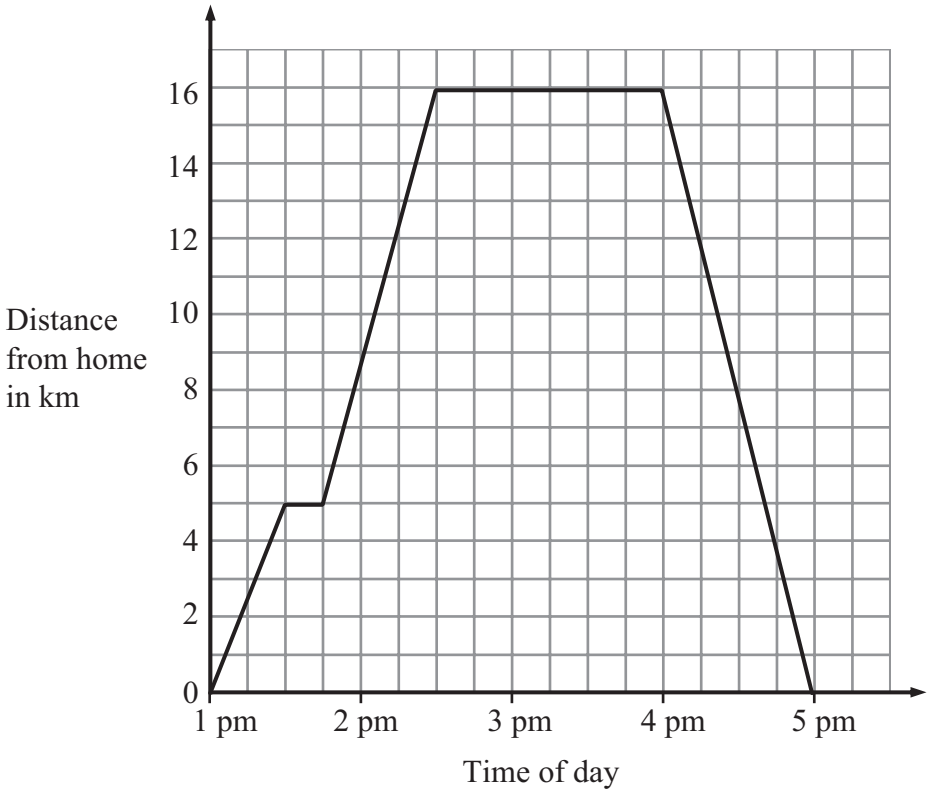
(b) In the space below, using ruler and compasses, **construct** an equilateral triangle with sides of length 7 cm.
You must show all your construction lines.

One side of the triangle has been drawn for you.

(2)

(Total for Question 21 is 3 marks)

22 The travel graph shows some information about Sarah's trip to the swimming pool.



At 1.30 pm Sarah stopped.

(a) (i) Find her distance from home when she first stopped.

..... km

(ii) For how many minutes did she first stop?

..... minutes

(2)

Sarah got to the swimming pool at 2.30 pm.

(b) Write down the time that Sarah left the swimming pool.

.....

(1)

(c) Work out the total distance Sarah travelled on this trip.

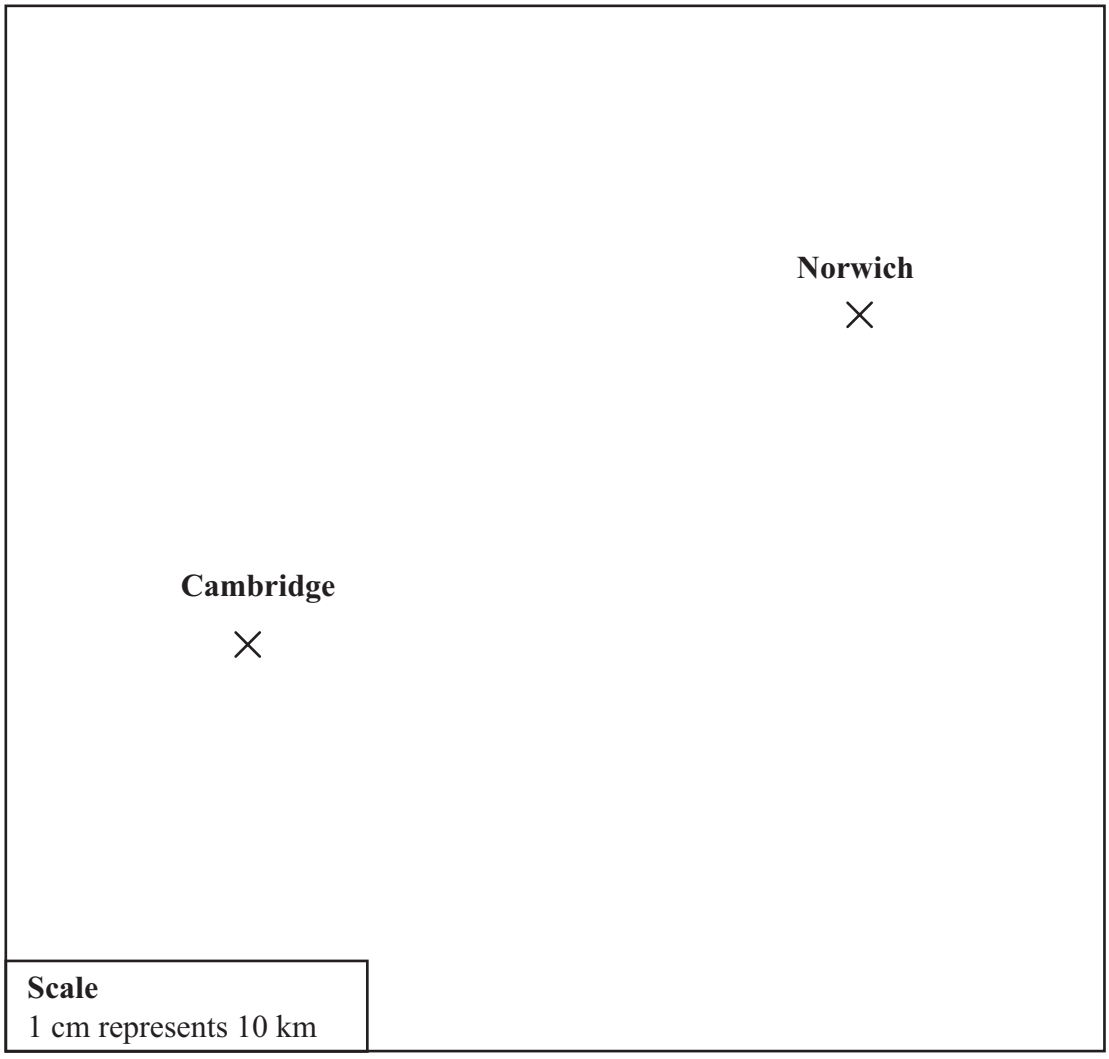
..... km

(2)

(Total for Question 22 is 5 marks)

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23 The map shows 2 cities, Cambridge and Norwich.



A new hotel is going to be built.

The hotel will be nearer to Norwich than to Cambridge.
It will be less than 60 kilometres from Cambridge.

Shade the region on the map where the hotel could be built.

(Total for Question 23 is 3 marks)

24 A circular flower bed is in the shape of a circle, radius 4.5 metres.

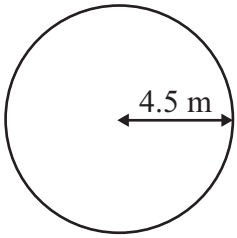


Diagram **NOT** accurately drawn

(a) Work out the area of the flower bed.
Give your answer correct to 3 significant figures.

..... m^2

(2)

The council plants 1000 flower bulbs in the flower bed.

$\frac{1}{4}$ of the bulbs are daffodil bulbs.

The other bulbs are hyacinth bulbs and tulip bulbs in the ratio 2 : 3

(b) Work out how many of each bulb the council plants.

..... daffodil bulbs

..... hyacinth bulbs

..... tulip bulbs

(4)

(Total for Question 24 is 6 marks)

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25 The diagram shows a sketch of a plastic block.

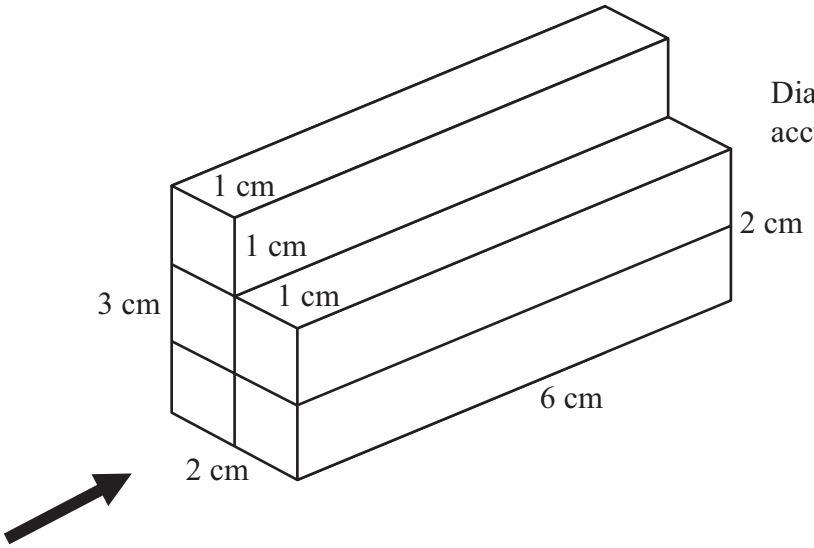


Diagram **NOT** accurately drawn

(a) Draw the side elevation of the plastic block in the direction of the arrow.

(2)

(b) Draw a plan of the plastic block.

(2)

(Total for Question 25 is 4 marks)

26 Ali makes a model of a boat to a scale of 1 : 50

The model is 23 cm long.

(a) Work out the length, in metres, of the real boat.

..... m

(2)

The real boat is 2.4 m wide.

(b) Work out the width, in centimetres, of the model boat.

..... cm

(2)

(Total for Question 26 is 4 marks)

27 $h = ut - 4.9t^2$ is a formula used to work out the height h of a ball thrown upwards.

Work out the value of h when $u = 30$ and $t = 5$

.....

(Total for Question 27 is 2 marks)

TOTAL FOR PAPER IS 100 MARKS

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Mark Scheme (Results)

November 2011

Applications of Mathematics (GCSE)
Unit 2: 5AM2F_01 (Foundation)

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November 2011

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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

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		400 or 4 hundred	1	B1
	(b)		6 hundredths or $\frac{6}{100}$	1	B1 (SC B1 accept 60g)
	(c)	5.46 – 5 Or 5460 – 5000		2	M1 for conversion 5kg = 5000g or 5460g = 5.46kg or digits 460 seen A1 460g or 0.46kg units needed.
2			Accept 31 to 36	2	B2 for answer in range 33 – 38 inclusive (B1 for answer in range 31 – 40 where B2 not awarded)
3		$85 - 28 + 37 = 93$ $120 - 93$ $120 - 85 = 35 \quad 35 - (37 - 29)$ $35 - 8$	27	3	M1 for first stage $85 - 29$ or $85 + 37$ or $37 - 29$ or $120 - 85$ M1 complete method 120 – "93" oe A1 cao

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4		$3 \times 6 = 18$ $100 - 18 = 82$ $5 \times 8 = 40$ $3 \times 14 = 42$	5, 3	4	M1 finding 18 cm already used or $100 - 18$ or $100 - 3 \times 6$ M1 for finding at least a multiple of 8 cm and 14 cm or adding at least three 14's and 6's M1 for finding totals and comparing with 82 or 100 if 18 totalled as well A1 for 5 and 3 OR M1 finding 18 cm already used, or deducting from total (eg using 82 cm) M1 for deducting total length of 8 cm and 14 cm lengths of string from 100 M1 for finding length remaining each time , at least three deductions of 8 or 14 A1 for 5 and 3 (SC B2 only 5 or 3 on the answer line)
5		4 + 3 + 3 = 10 33 + 42 + 6 = 81 81 – 60 = 21 10 + 1 = 11 or 4:33 = 273 secs 3:42 = 222 secs 3.06 = 186 secs 273 + 222 + 186=684 15:00 – 11:21 or 900–684	3 minutes 39 seconds	4	M1 for attempting to add minutes or seconds or 684 or 1081 or 1121 seen M1 for a conversion at any stage using 60 (indep) eg 4 × 60 + 33, or 10 minutes 81 seconds or 81 ÷ 60 M1 for attempting to subtract "total time" from 15 minutes 1500 – 1121 or 15.00 – 1081 or 900 – 684 A1 cao.

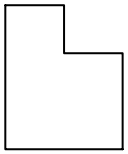
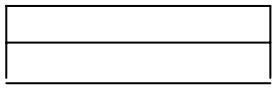
5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)			1	B1 for X at 0 (+5mm)
	(b)			1	B1 for X at $\frac{2}{5}$ within guidelines ($>\frac{1}{4}$, $<\frac{1}{2}$)
7	(a)	8 × 30 + 20	260	2	M1 for 8 × 30 + 20 A1 cao
	(b)	34 × 8 = 272 300 – 272 Or 34 × 8 + *b* = 300 272 + *b* = 300 *b* = 300–272	28	3	M1 for 34 × 8 or 272 or forming equation M1 dep for 300 – "272" A1 cao M1 300 = 34 × 8+b M1 300 –"34×8"=b A1 cao
8	(a)	1.65 + 0.80	2.45	2	M1 for 1.65 + 0.80 or digits 245 seen A1 for 2.45 condone £2.45p
	(b)	1.40 + 1.40 + 0.75 + 0.80 = 4.35 4.35 < 5.00 or 5.00 – 4.35 =0.65 or rounded values used eg 1.50 + 1.50 + 1 + 1 = 5 All rounded up so enough money	Yes	3	M1 for 1.40 + 1.40 + 0.75 + 0.80 or 435 digits seen A1 for 4.35 or digits 65 C1 (dep on M1) based on their 4.35 Or M1 for addition of appropriately rounded prices A1 for correct total of rounded prices. C1 (dep on M1) Decision given – he has enough money

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9		26 ÷ 3 = 8 × 2 × 38 remainder 2 8 × 90 + 238 = 796	£7.96 or 796p	5	M1 for attempting to add carton prices or 26 ÷ 3 M1 26 × 38 or 988 seen M1 for "8" × 90 + "2" ×38 A1 £7.96 or 796p C1 ft (dep on M1) "£7.96" is the least they can spend
10			(S,A) (S,C) (S,F) (A,C) (A,F) (C,F)	2	M1 for any 3 different combinations ignore repeats and condone one incorrect extra A1 for all 6 (ignore repeats)
11	(a)	12 × 0.45	5.40	2	M1 for 12 × 45 or 12 × 0.45 or digits 54(0) or 5.4 seen A1 cao
	(b)	6 ÷ 8 × 5	3.75	2	M1 for 6 ÷ 8 or 6 × 5 or digits 375 seen or 0.75 or 30 A1 cao
12		$n + n + 6 + n + n + 6$	$P = 4n + 12$	2	M1 $n + n + 6 + n + n + 6$ or $4n + 12$ oe or $P=6n\pm k$ A1 for $P = 4n + 12$ oe
13		180 – 60 = 120 180 – 120 – 35 = 25 Or 60 – 35 = 25	25°	3	B1 for 60 or 120 M1 for 180 – (2 x 60) – 35 A1 for 25° Or B1 for 60 M1 for 180 – (180–60) –35 A1 for 25°
14		200 × 17.5 = 3500 Or 2828 ÷ 17.5 = 161.6	162 Annual ticket is cheaper	3	M1 for 200 × 17.5 or 2828 ÷ 17.5 or 1616 digits seen A1 for 3500 or 161.6 or 161 seen C1 ft (dep M1) For conclusion that an annual ticket is cheaper.

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)		69	1	B1 for (0)69° ±2°
	(b)		Point marked	2	B2 inside overlay lines (B1 for correct bearing 125° within guidelines (± 2°) B1 for correct length 6mm within guidelines (± 2mm))
16	(a)		Correct net drawn	3	B3 for any correct complete net or outline of a correct net (B2 for 4 correct adjacent rectangles or correct net wrong scale) (B1 for one rectangle of correct dimensions but not part of a 3D diagram)
	(b)	(8÷2) × (20÷4) × (12÷6) or (8÷4) × (20÷2) × (12÷6) or (8 × 12 × 20) ÷ (6 × 4 × 2)	40	3	M1 for 8 ÷ 2 or 20 ÷ 4 or 12 ÷ 6 or 8 ÷ 4 or 20 ÷ 10 or clearly marked on diagram M1 for "4" × "5" × "2" or "10" × "2" × "2" A1 cao Alternative: M1 for 8 × 12 × 20 or 6 × 4 × 2 M1 for "1920" ÷ "48" A1 cao
17	(a)	78 ÷ 1.5	52	2	M1 for 78 ÷ 1.5 or 78÷$1\frac{1}{2}$ or digits 52 A1 for 52 cao
	(b)	78 × 2 ÷ 40 or 80 × 2 ÷ 40 (estimate)	3.9 (or 4)	2	M1 for 78 × 2 ÷ 40 or 78 ÷40×2 or 80 × 2 ÷ 40 A1 for 3.9 or 4 (SC B1 for 2 on answer line)

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)	73 + 109 + 66 = 248 360 – 248 = 112	112	2	M1 for 360 – (73 + 109 + 66) A1 for 112 cao
	(b)	109 + 73 ≠ 180 or 66 + 112 ≠ 180 180–109 ≠ 73 180– 73 ≠ 109 180 – 66 ≠ 112 180 – 112 ≠ 66	No with reasoning given	2	M1 for "*x*"+ 66 or 73 + 109 A1 for stating that the total of the co–interior angles is not 180 OR M1 for stating an appropriate pair of alternate angles 71, 107, 114 or 68(ft from (a)) A1 for stating that alternate angles are not equal
19	(a)	1 – 0.03	0.97	2	M1 for 1 – 0.03 A1 for 0.97 oe
	(b)	0.03 × 1200	36	2	M1 for 0.03 × 1200 A1 for 36 cao

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)(i)		32	2	B1 cao
	(ii)		30		B1 cao
	(b)	60 miles ≈ 96 km or 100 km ≈ 62 miles	Henri with reason give	2	M1 for correct conversion method or 96km or 62 miles A1 for Henri (travels furthest)
21	(a)		Circle	1	B1 for circle drawn within guidelines
	(b)		Triangle	2	M1 for constructing intersecting arcs of equal radius A1 for a correct triangle within guidelines, with appropriate arcs (SC B1 for a triangle drawn within guidelines if M0)
22	(a)(i)		5	2	B1 cao
	(ii)		15		B1 cao
	(b)		4 (pm)	1	B1 cao
	(c)	16 + 16	32	2	M1 for 16 seen A1 for 32 cao
23			Correct region shaded	3	B1for perpendicular bisector within guidelines B1 for arc of circle within guidelines B1 for correct region shaded or otherwise indicated

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)	$\pi \times 4.5^2$	63.6	2	M1 for $\pi \times 4.5^2$ A1 for 63.5 – 63.7
	(b)	$1000 \div 4$ $1000 - 250 = 750$ $\frac{750}{(2+3)} \times 2$ $\frac{750}{(2+3)} \times 3$	250 300 450	4	M1 for 1000 ÷ 4 or 250 or 750 seen M1 for (1000 − 250) ÷ (2 + 3) oe or $\frac{2}{5}$ or $\frac{3}{5}$ oe or 150 seen M1 (dep) for '150' × 2 or '150' × 3 or $\frac{2}{5} \times 750$ or $\frac{3}{5} \times 750$ A1 for 250, 300 and 450 in correct places (SC: B2 for 250, 450, 300, i.e. tulips and hyacinths transposed)
25	(a)		Correct elevation 	2	B2 for correct elevation in correct orientation (B1 for incorrect orientation)
	(b)		Correct plan 	2	B2 for correct plan with internal line shown (B1 for internal line missing or for rectangle with one wrong dimension)

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)	$23 \times 50 \div 100$	11.5	2	M1 for 23×50 or 1150 seen or 0.23×50 or 23×0.5 A1 cao
	(b)	$2.4 \div 50 \times 100$	4.8	2	M1 for $2.4 \div 50$ or 0.048 seen or $240 \div 50$ or $2.4 \div 0.5$ A1 cao
27		$30 \times 5 - 4.9 \times 5^2$	27.5	2	M1 for 30×5 and 4.9×5^2 or 150 and 122.5 A1 cao

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Applications of Mathematics

Unit 2: Applications 2

For Approved Pilot Centres ONLY

Foundation Tier

Friday 10 June 2011 – Morning
Time: 1 hour 45 minutes

Paper Reference
5AM2F/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 ▶

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6/6/6/6

P 3 8 9 5 3 A 0 1 2 8

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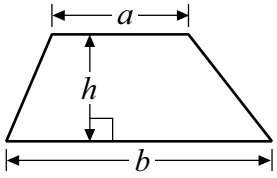
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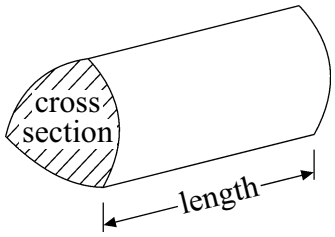
Formulae: Foundation Tier

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



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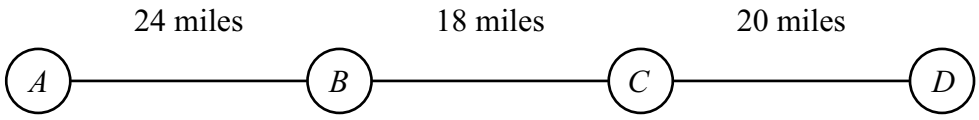
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 The diagram shows four motorway service stations *A*, *B*, *C* and *D*.

Diagram **NOT** accurately drawn



The diagram also shows the distances between the service stations.

(a) Work out the distance from *A* to *D*.

..... miles

(2)

It is further from *A* to *C* than it is from *B* to *D*.

(b) How much further?

..... miles

(2)

There is a telephone every mile from *A* to *B*.
The first telephone is at *A*.
The last telephone is at *B*.

(c) Work out the number of telephones there are from *A* to *B*.

.....

(2)

(Total for Question 1 is 6 marks)

2 Tim has 17 bags of coins.
There are 100 coins in each bag.
Nicky has 10 times as many coins as Tim.

(a) (i) Work out the total number of coins Tim has.

.....

(ii) Work out the total number of coins Nicky has.

.....

(2)

One quarter of Tim's coins are 10p coins.

(b) Work out how many 10p coins Tim has.

.....

(2)

(Total for Question 2 is 4 marks)

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3 There were 5781 people at a football match.

(a) Write down the value of the **8** in the number 5781

.....

(1)

The length of a nail is 1.76 cm.

(b) Write down the value of the **7** in 1.76

.....

(1)

Annabel's thumb is 2.5 centimetres long.

(c) Change 2.5 centimetres to millimetres.

..... mm

(1)

There are 450 millilitres of water in a jug.

(d) Change 450 millilitres to litres.

..... litres

(1)

(Total for Question 3 is 4 marks)

4 A shop sells bags of crisps.
The bags of crisps are delivered in boxes.
There are 48 bags of crisps in each box.

In January, the shop sold all the bags of crisps in 243 boxes.
In February, the shop sold all the bags of crisps in 425 boxes.

(a) Work out the total number of bags of crisps the shop sold.

.....

(2)

Vans deliver the boxes to the shop.
A van can carry up to 96 boxes.
The shop wants 380 boxes of crisps delivered.

(b) Work out the number of vans needed.

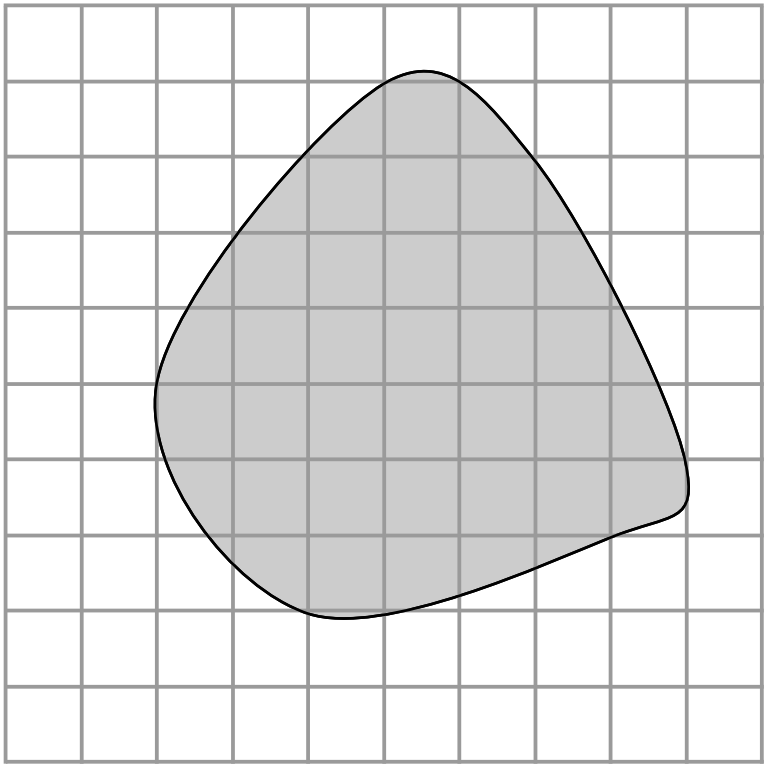
.....

(2)

(Total for Question 4 is 4 marks)

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5 The shaded shape drawn on a centimetre grid represents a stain on a carpet.



Find an estimate for the area of the stain.

..... cm^2

(Total for Question 5 is 2 marks)

6

Evens	Unlikely	Impossible	Certain	Likely

Use a word from the box which best describes the chance of each of the following events.

(i) Jim gets a head when he spins an ordinary coin to start a football match.

.....

(ii) Alice gets a six when she rolls an ordinary dice in a game.

.....

(iii) Jane gets a 10p coin when she takes a coin from a bag that has only 1p coins and 2p coins.

.....

(Total for Question 6 is 3 marks)

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7 Here is some information about the cost of carpet tiles at the Handiman Superstore.



Josh needs 120 carpet tiles.

He buys all the carpet tiles in packs.

(a) Work out how much he pays.

£ .....

(2)

Gemma needs 68 tiles.
She wants to pay the least amount.

(b) How much will she pay?

£ .....

(3)

(Total for Question 7 is 5 marks)

8 The table below gives information about the size and cost of coaches available for hire from the GoAway coach company.

Size of coach	Cost
16 seater	£220
24 seater	£310
50 seater	£345
72 seater	£500

Mrs Prim hires two 16 seater coaches and one 24 seater coach.

(a) Work out the total cost.

£ .....

(2)

Mr Benn is organising a school trip to the British Museum.

60 students and 4 teachers are to go on the trip.
The teachers do not pay.

The students will pay for the cost of hiring the coaches.
Each student will pay the same amount of money.

Mr Benn wants each student to pay less than £8

*(b) Can he do this by using the GoAway coach company?
You must show your working.

(4)

(Total for Question 8 is 6 marks)

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9 Amy has x pence.
Barry has twice as much money as Amy.
Colin has 4 pence more than Amy.

The total amount of money they have is T pence.

(a) Show that a formula for the total amount of money they have is $T = 4x + 4$

(2)

Amy has 6 pence.

(b) Work out the total amount of money Amy, Barry and Colin have.

..... pence

(2)

(Total for Question 9 is 4 marks)

***10** Jim sells televisions.
He keeps a record of the number of televisions he sells each week.

The table gives some information about the number of each make of television he sold last week.

	Make of television		
	Sandi	**Bish**	**Ebo**
Monday	4	2	1
Tuesday	3	4	2
Wednesday	0	3	1
Thursday	0	5	2
Friday	1	1	1
Saturday	4	5	3

Jim's shop is closed on Sunday.

The table below gives information about the cost of each television.

	Make of television		
	Sandi	**Bish**	**Ebo**
Cost	£129	£149	£169

Jim is paid a bonus when all the televisions he sells in a week have a total cost of £6000 or more.

Will Jim be paid a bonus for last week?

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(Total for Question 10 is 5 marks)

11 Here is the sketch of a garden.

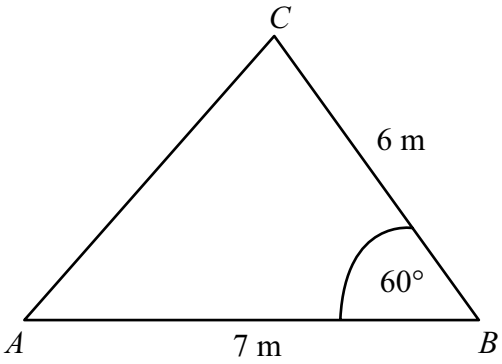
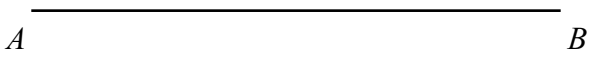


Diagram **NOT** accurately drawn

(a) Draw an accurate diagram of the garden.
Use a scale of 1 cm represents 1 m.
The side AB has already been drawn for you.



(3)

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Jim is going to put a fence along all three sides of the garden.
1 metre of fence costs £12.99

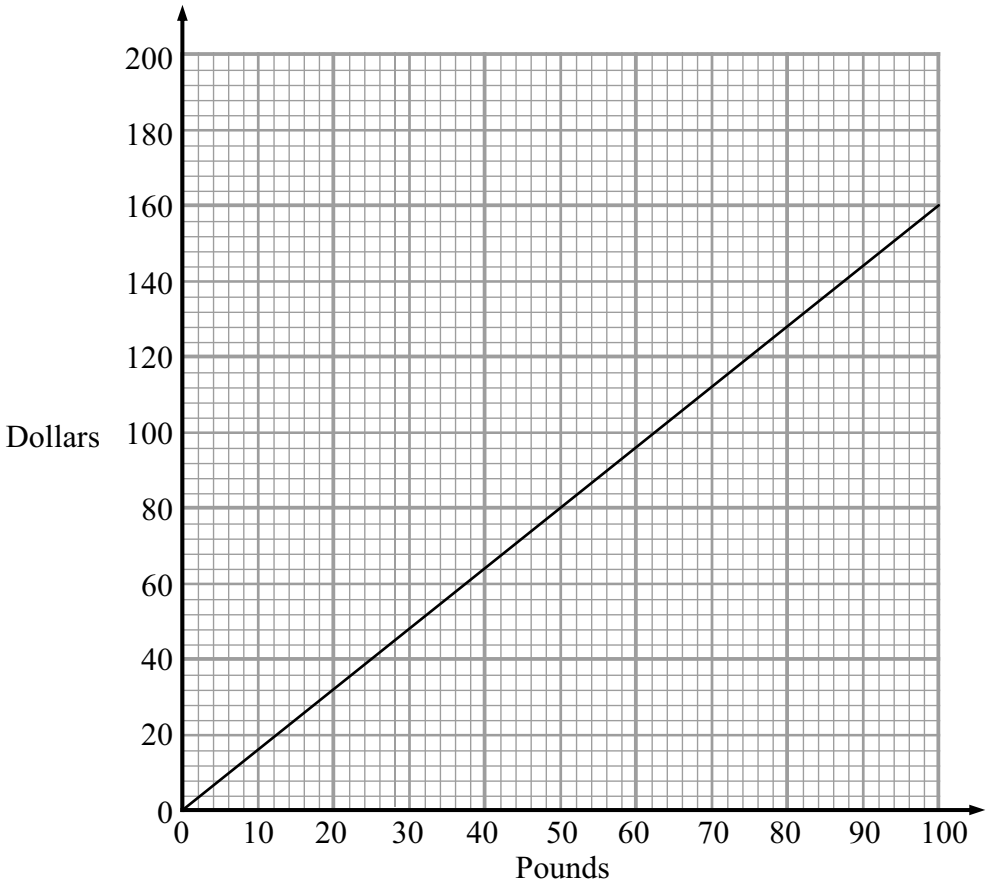
(b) Work out the total cost of the fence.
Give your answer correct to the nearest £10

£ .....

(4)

(Total for Question 11 is 7 marks)

12



This graph can be used to convert between pounds (£) and dollars($).

Jill changes £500 into dollars.
She spends $600

How many dollars does she have left?

$ .....

(Total for Question 12 is 3 marks)

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13 Sarfraz uses Tariff A to work out the total cost of using his telephone each month.

Tariff A

Total cost = number of minutes used × £0.03 + fixed charge

For Tariff A, the fixed charge is £33

In January, Sarfraz used his telephone for 400 minutes.

(a) Work out the total telephone cost for this month.

£ .....

(3)

In February, Sarfraz paid a total cost of £69

(b) Work out how many minutes Sarfraz used.

..... minutes

(3)

Ben uses Tariff B to work out the total cost of using his telephone each month.

Tariff B

Total cost = number of minutes used × cost for one minute + fixed charge

In January, Ben used his telephone for 400 minutes and the total cost was £58
In February, Ben used his telephone for 600 minutes and the total cost was £62
In March, Ben used his telephone for 700 minutes

(c) (i) Work out the total cost for March.

£ .....

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(ii) Work out the fixed charge for Tariff B.

£ .....

(4)

(Total for Question 13 is 10 marks)

14 100 raffle tickets are sold at a school fete.
There is 1 star prize and 4 other prizes.

Harry buys one of the tickets.

(a) Work out the probability that he will win the star prize.

.....

(1)

Geoff buys one of the tickets.

(b) Work out the probability that he will win a prize.

.....

(1)

The winning ticket for the star prize is called out.
Harry's ticket is not called out.
Geoff's ticket is not called out.

Another ticket is called out.

(c) What is the probability that this ticket is Harry's or Geoff's ticket?

.....

(2)

(Total for Question 14 is 4 marks)

15 The table gives some information about the costs of posting large letters.

First Class Post – Delivery takes 1 to 2 days	
Weight (g)	**Cost**
50 – 100	50p
101 – 250	72p
251 – 500	£1.04
501 – 750	£1.51

Second Class Post – Delivery takes 3 to 5 days	
Weight (g)	**Cost**
50 – 100	40p
101 – 250	59p
251 – 500	85p
501 – 750	£1.23

Leroy works for a company.
In January he sends some large letters by first class post.

The table gives information about numbers and weights of the large letters.

Weight (g)	Number of large letters
50 – 100	28
101 – 250	32
251 – 500	50
501 – 750	18

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(a) Calculate the total cost of sending these large letters by first class post.

£ .....

(3)

In February, Leroy is going to send some more large letters.

The table gives information about the weights and numbers of these large letters.

Weight (g)	Number of large letters
50 – 100	32
101 – 250	40
251 – 500	68
501 – 750	34

Leroy can use either first class post or second class post.
He thinks it will cost £20 less to send the letters by second class post.

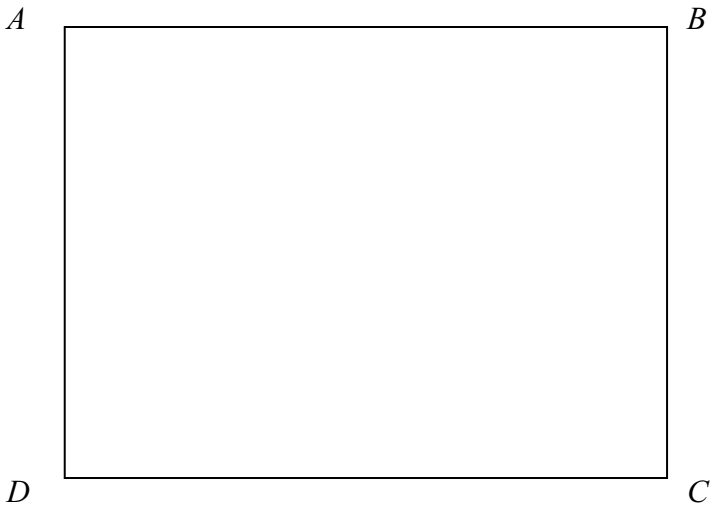
* (b) Is Leroy correct?
You must show your working.

(4)

(Total for Question 15 is 7 marks)

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16 Here is an accurate scale diagram of a car park in the shape of a rectangle.



The scale is 1 cm to 10 m.

Cars must **not** be parked

within 20 m of the centre of the rectangle

or

within 20 m of the side *BC*.

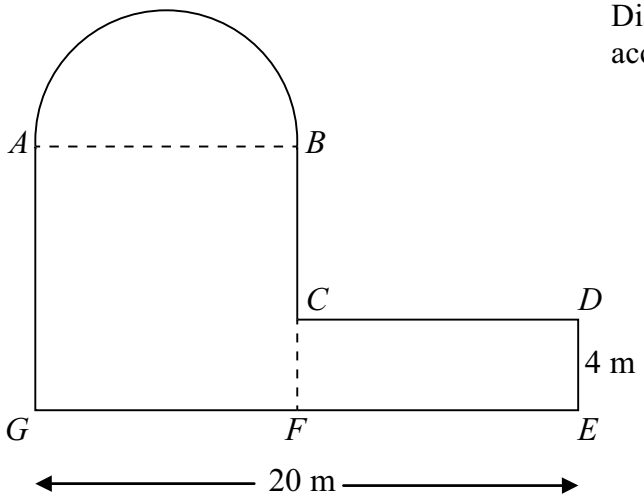
On the diagram, show accurately by shading, the regions where cars must not be parked.

(Total for Question 16 is 4 marks)

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

Diagram **NOT** accurately drawn



The room has three parts,
a square *ABFG*.
a rectangle *CDEF*.
a semicircle with *AB* as diameter.

GF = *FE*
GE = 20 m
DE = 4 m

Jenny is going to cover the floor with varnish.
1 litre of varnish will cover an area of 20 m^2.

Work out the number of litres of varnish Jenny needs.

.....

(Total for Question 17 is 8 marks)

18 Here is a diagram of Brian's garage.

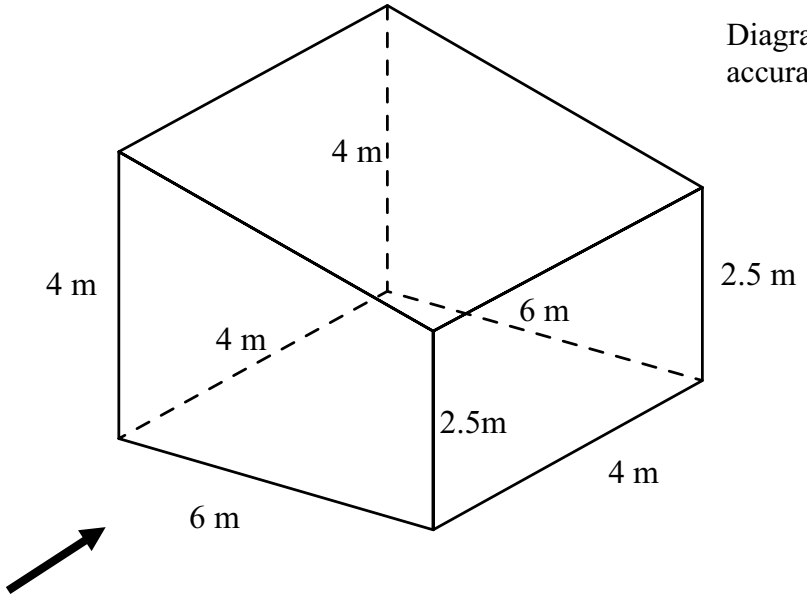
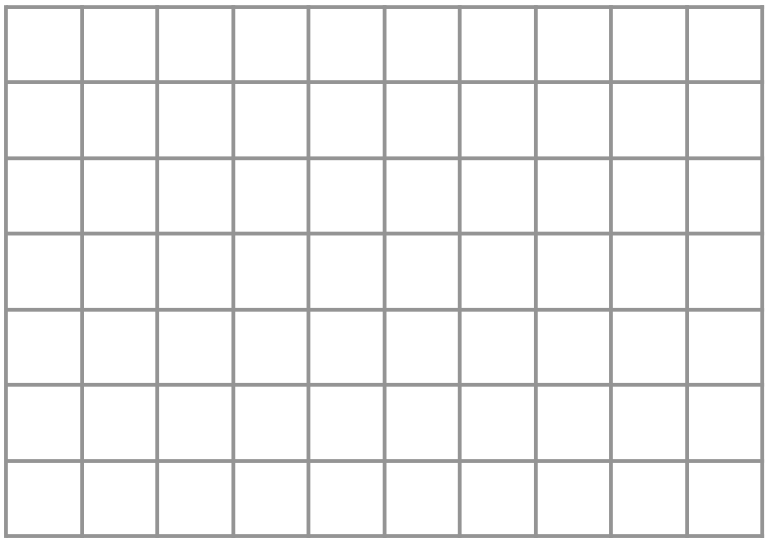


Diagram **NOT** accurately drawn

The floor of the garage is horizontal.
All the walls are vertical.

(a) Draw the front elevation of the garage from the direction of the arrow.
Use a scale of 1 cm to 1 m.



(2)

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(b) Work out an estimate for the total surface area of the garage.

..... m^2

(5)

(Total for Question 18 is 7 marks)

19 Keith, Ben and Liz tested a coin to find out if it was biased.
They each threw the coin a number of times.
They counted the number of heads and the number of tails they each got.

The table gives information about their results.

	Keith	**Ben**	**Liz**
Number of heads	12	34	57
Number of tails	28	66	243

(a) Which person, Keith, Ben or Liz, will have the best estimate for the probability of getting a head on this coin? Explain your answer.

.....

.....

(1)

(b) Using all the results in the table, work out an estimate for the probability that the next throw of the coin will be a head.

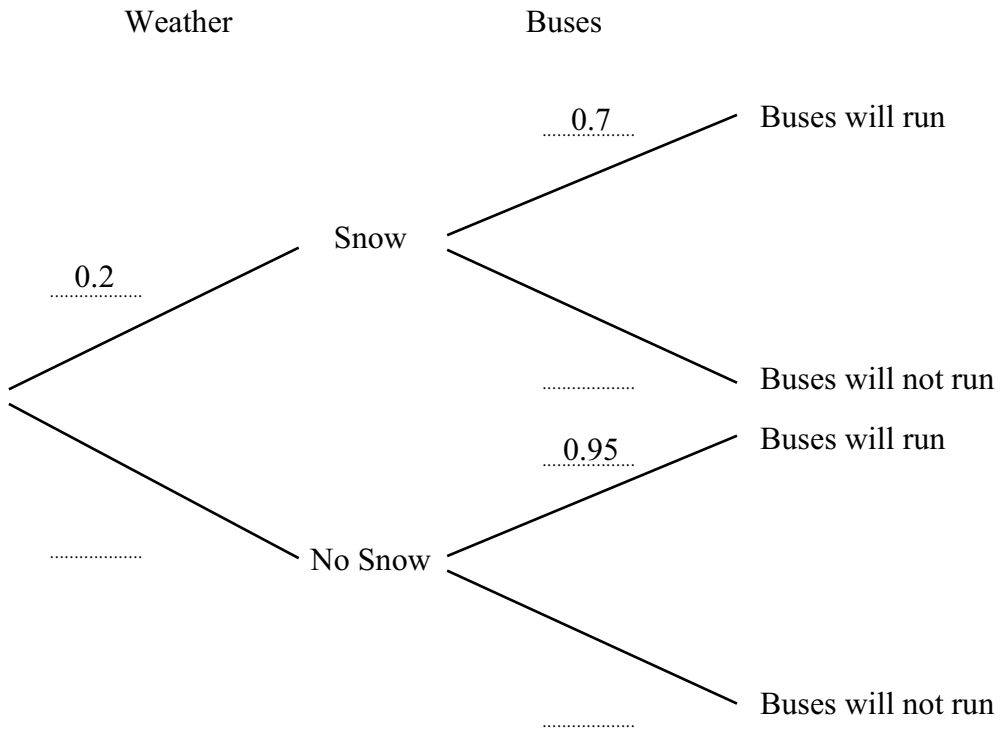
.....

(2)

(Total for Question 19 is 3 marks)

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20 The decision tree diagram gives information about the probability of snow for the first 50 days in winter and the probability of whether buses will run or not run.



(a) Complete the decision tree diagram.

(2)

(b) Work out the probability that it will snow and the buses will not run.

.....

(2)

(Total for Question 20 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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Mark Scheme (Results)

June 2011

Applications of Mathematics (GCSE)
Unit 2: Applications 5AM2F_01

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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

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)	24+18 + 20	62	2	M1 24+18 + 20 A1 cao
	(b)	*AC* = 42, *BD* = 38 or 24-20	4	2	M1 24+18 or 18+20 or 24-20 A1 cao
	(c)		25	2	M1 Evidence that telephones are every mile including at A AND B (e.g. tally marks or similar) A1 cao
2	(a)(i)	17 × 100	1700	2	B1 cao 1700
	(ii)		17000		B1 ft '(i)'x10
	(b)	17 × 100 ÷ 4	425	1	M1 ft '(i)'÷ 4 A1 ft correct number of whole coins given either truncated or rounded
3	(a)		eighty	1	B1 accept 'tens' 'eighty' '10', '10s'
	(b)		'tenths'	1	B1 'tenths' $\frac{7}{10}$, 7 mm
	(c)		25	1	B1 cao
	(d)		0.45	1	B1 0.45, 0.45(0), .45 oe

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)	(243+425) = 668 668 × 48 Or 243× 48 = 11664 425 × 48= 20400	32064	2	M1 (243+425) × 48 or 243× 48 + 425 × 48 A1 cao
	(b)	380 ÷ 96	4	2	M1 380 ÷ 96 or 3x96 AND 4x96 seen A1 cao
5			36 cm^2	2	B2 34 – 38 (B1 32-34 including 32 but not 34 OR 38-40 including 40 but not 38)
6	(i)		Evens	3	B1 cao
	(ii)		Unlikely		B1 cao
	(iii)		Impossible		B1 cao
7	(a)	120 ÷10 = 12 12×30 = 360	£360	2	M1 for 120 ÷10x30 oe A1 cao
	(b)	6 packs of 10 costs £180 8 single tiles cost £29.52	£209.52	3	M1 for attempting to work out the cost of 6 or 7 packs or 68 tiles in any combination A1 ft correct cost for their purchase A1 cao

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)	$2\times220+310$	£750	2	M1 $2\times220+310$ A1 cao
	(b)	500 ÷ 60 8.33	No as the cost per student is more than £8	4	M1 '500' ÷ 60 A1 ft '8.33' correct to 2 dp (ie price per pupil) M1 attempting to work out two coach costs C1 Correct conclusion for their working, placed in a sentence and supported by their calculations provided at least one previous mark is earned Or M1 60x8 or 60x7.99 A1 480 or 479.40 M1 attempting to work out two coach costs C1 Correct conclusion for their working, placed in a sentence and supported by their calculations provided at least one previous mark is awarded
9	(a)	$x+2x+x+4$		2	M1 $2x$ seen A1 $x+2x+x+4$
	(b)	$T=4\times5+4$	28	2	M1 $T=4\times6+4$ or 6+12+10 A1 cao
10		12 Sandis 20 Bish 10 Ebos 12 × 129 + 20 × 149 + 10 × 169 1548 + 2980 + 1690 =6218	Yes	5	B1 for all 3 totals M1 any one of '12' × 129 or '20' × 149 or '10' × 169 M1 '12' × 129 + '20' × 149 + '10' × 169 A1 cao C1 Correct conclusion for their working, placed in a sentence and supported by their calculations provided at least one M1 awarded

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		Correct diagram	3	B1 BC correct length within tolerance B1 angle ABC correct angle within tolerance B1 AC correct within tolerance
	(b)	Diagram 7 + 6 + 6.6 Cost = 19.6 × 12.99	£250	4	B1 ft AC stated M1 6x12.99 or 7x12.99 or '6.6'x12.99 M1 77.94+90.93+'85.73' A1 ft on 'AC' exact answer or answer given to nearest £10 Or B1 ft AC stated M1 7 + 6 + '6.6' M1 '19.6'×12.99 A1 ft on 'AC' exact answer or answer given to nearest £10

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12		£100 = $160 £500 = $800 $800 - $600	$200	3	M1 Equates £ and $ M1 Correct method to attempt to find £500 A1 cao
13	(a)	33 + 0.03 × 400	£45	3	M1 0.03 × 400 or 3 × 400 M1 '12' + 33 A1 cao
	(b)	69 = 33 +0.03 × minutes Minutes = $\frac{69-33}{0.03}$	1200	3	M1 69 - 33 M1 Minutes = $\frac{"36"}{0.03}$ '36' must not be 69 A1 cao SC B1 for 12 seen
	(c)(i)	400 to 600 is £4 600 to 700 is £2	£64	4	M1 for 200 minutes cost £4 A1 £64 cao
	(ii)	58 – 2 × 4.00 Or 62 – 2 × 6.00	£50		M1 58 – '2' × 4.00 or 58-400x'0.02' or 62-600x'0.02' A1 ft
14	(a)		$\frac{1}{100}$	1	B1 $\frac{1}{100}$ oe
	(b)		$\frac{5}{100}$	1	B1 $\frac{5}{100}$ oe
	(c)		$\frac{2}{99}$	1	M1 for a numerator of 2 or denominator of 99 A1 cao

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)	28 × 0.50 + 32 × 0.72 + 50 × 1.04 + 18 × 1.51 14.00+23.04 + 52 + 27.18	£ 116.22	3	M1 at least one fx where the fs are correct M1 $\sum fx$ where the fs are correct A1 cao
	(b)	32 × (50 – 40) + 40 × (72 – 59) + 68 × (104 – 85) + 34 × (151 – 123) 320 + 520 + 1292 + 952 = 3084 Or 32 × 50 + 40 × 72 + 68 × 104 + 34 × 151 – (32 × 40 + 40 × 59 + 68 × 85 + 34 × 123)	£30.84	4	M1 attempts to find differences in costs M1 $\sum f \times \text{diff}$ A1 cao C1 Correct conclusion for their working, placed in a sentence and supported by their calculations provided at least one M1 awarded OR M1 $\sum fx$ for first class and second class M1 attempts to find difference between two totals A1 cao C1 Correct conclusion for their working, placed in a sentence and supported by their calculations provided at least one M1 awarded
16			Correct region	4	B4 fully correct OR B1 straight line parallel to *BC* and 2 cm (± 0.2 cm) from it B1 shading to the right of the line B1 circle radius 2 cm (± 0.2 cm) centre the centre of the rectangle B1 shading inside the circle Ignore any drawing outside the given rectangle

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17		Area CDEF = 10× 4 = 40 Area ABFG = 10 × 10 = 100 Area semi circle = $\pi \times 5^2 \div 2 = 39\ldots$ Total area = 179 179 ÷ 20 = 8.9….	9	8	B1 10 M1 '10' × 4 A1 cao M1 area *ABFG* = '10' × '10' M1 $\pi \times \left(\frac{'10'}{2}\right)^2 \div 2$ or $\pi \times \left(\frac{'10'}{2}\right)^2$ M1 '40' + '39' + '100' dep on one previous M1 M1 '179' ÷ 20 A1 cao
18	(a)		Diagram	2	M1 trapezium with at least one side correct A1 cao
	(b)	Length of roof = 6.2 m Area of roof = 6.2 × 4 = 24.8 Other areas are 10, 16, 19.5 and 24	113.8 m^2	5	M1 a correct method to find the area of a rectangular face **or** 10 or 24 or 16 or '24.8' seen M1 a correct method to find the area of a trapezoidal face A1 for 19.5 or for 15 and 4.5 M1 for adding areas of 5 or 6 faces A1 113 – 115 (accept 89 – 91)
19	(a)		Liz explanation	1	B1 Liz because she carried out most trials
	(b)	12 + 34 + 57 = 103 40 + 100 +300 103 ÷ 40	0.23 or $\frac{103}{440}$	2	M1 (12 + 34 + 57)/*b* where *b* > 103 or *a*/(12 + 28 + 34 + 66 + 57 + 243) where *a* < 440 A1 0.23or 0.234(09..) or $\frac{103}{440}$ oe (SC If M0 then B1 for $12 \div 40$ or $34 \div 100$ or $57 \div 300$

5AM2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)		0.8 on 1st branch 0.3 and 0.05 on 2nd branches	2	B1 0.8 oe on 1st branch B1 0.3 and 0.05 oe on 2nd branches
	(b)	0.2 × 0.3	0.06	2	M1 0.2 ×'0.3' A1 0.06 ft from '0.3' in the tree diagram

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