WJEC GCSE MATHEMATICS (LINEAR)

# MATHS



EXAM QUESTION PACK

PAPER 1 FOUNDATION TIER 4370 PAPERS

STEMUP

# These questions belong to WJEC, not to us.

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

## What we do not own

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

## Where to find the originals

WJEC publishes its past papers, mark schemes and examiner reports free of charge. Always check the current specification at wjec.co.uk before you revise, because content and wording can change between series.

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

| Surname | Centre Number | Candidate Number |
|---|---|---|
| Other Names | | 0 |

# GCSE

4370/03

S16-4370-03

# MATHEMATICS – LINEAR
## PAPER 1
## FOUNDATION TIER

A.M. THURSDAY, 26 May 2016

1 hour 45 minutes

**CALCULATORS ARE NOT TO BE USED FOR THIS PAPER**

### ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

### INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

Take $\pi$ as 3·14.

### INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **3**.

| For Examiner's use only | | |
|---|---|---|
| **Question** | **Maximum Mark** | **Mark Awarded** |
| **1.** | **11** | |
| **2.** | **8** | |
| **3.** | **6** | |
| **4.** | **4** | |
| **5.** | **7** | |
| **6.** | **3** | |
| **7.** | **4** | |
| **8.** | **9** | |
| **9.** | **3** | |
| **10.** | **6** | |
| **11.** | **4** | |
| **12.** | **5** | |
| **13.** | **4** | |
| **14.** | **3** | |
| **15.** | **5** | |
| **16.** | **4** | |
| **17.** | **5** | |
| **18.** | **9** | |
| **Total** | **100** | |

4370 030001

MAY1643700301

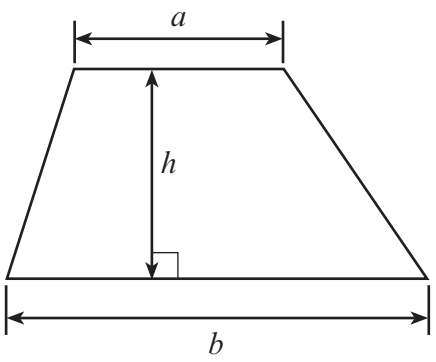
© WJEC CBAC Ltd.



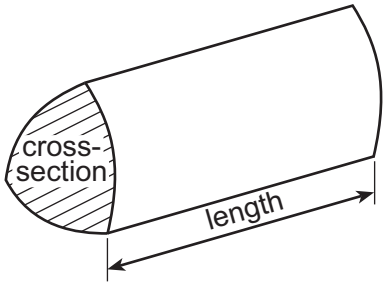
STEMUP.CO.UK

## Formula List

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




**Volume of prism** = area of cross-section × length






© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**1.** *(a)* (i) Write down, in figures, the number forty-six thousand and eight. [1]

.....

(ii) Write down, in words, the number 8 600 000. [1]

.....

.....

*(b)* Using only the numbers in the following list,

38 42 64 14 52 24

write down

(i) two numbers that have a sum of 90, [1]

.....

(ii) two numbers that have a difference of 18, [1]

.....

(iii) the number less than 30 that is divisible by 6, [1]

.....

(iv) a square number. [1]

.....

*(c)* Write 6657 correct to the nearest hundred. [1]

.....

*(d)* Write down all the factors of 77. [2]

.....

*(e)* Each of the digits 5, 7, 2 and 6 is used once to make a four-digit number.

(i) What is the largest number that can be made? [1]

.....

(ii) What is the smallest even number that can be made? [1]

.....

4370 030003



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**2.** *(a)* Write down the next term in each of the following sequences. [2]

(i) 15, 24, 33, 42, .....

(ii) 8, 9, 11, 14, .....

.....

.....

*(b)* Write down the value of the 8 in the number 56182. [1]

.....

*(c)* Write $\frac{13}{25}$ as a percentage .....

Write 0·51 as a percentage .....

Write 55%, 0·51 and $\frac{13}{25}$ in ascending order. [3]

.....

*(d)* Find an estimate for the value of 42·2 × 11·3.
Show all your working. [2]

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**3.** *You will be assessed on the quality of your written communication in this question.*

Ali, Claire, Nick and Sam go out for a meal together.
The meal costs a total of £40.
Ali pays £9.35.
Claire pays £8.85.
Nick pays £1.50 less than Sam.
How much does Nick pay?
You must show all your working. [6]



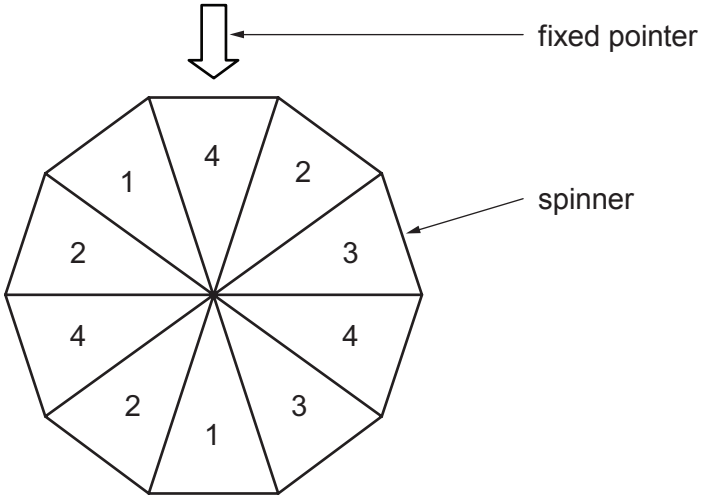
© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**4.** *(a)* A spinner has numbers on each of its equal sections, as shown in the diagram.



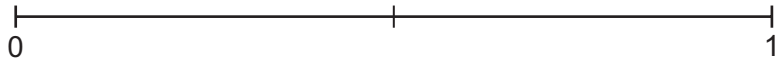

The spinner is spun and the number shown at the fixed pointer when it stops is the result.

On the probability scale shown below, mark the points **A**, **B** and **C** where:

**A** is the probability that the result is less than 5,

**B** is the probability that the result is more than 2,

**C** is the probability that the result is a 3. [3]




*(b)* Choose the best expression from those given below to describe the chance that the number spun is **not** a 2. [1]

**impossible** **unlikely** **even chance** **likely** **certain**

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**5.** *(a)* Simplify $6c - 4c + c$. [1]

.....

.....

*(b)* Use the formula $T = 7A - 3B - 8C$ to find the value of $T$ when $A = 3$, $B = 4$ and $C = \frac{1}{4}$. [2]

.....

.....

.....

*(c)* The $x$ and $y$ values of the coordinates of the points (4, 16), (5, 20), (6, 24), ....., $(x, y)$ all follow the same rule.
Write down the rule connecting $x$ and $y$. [2]

.....

.....

.....

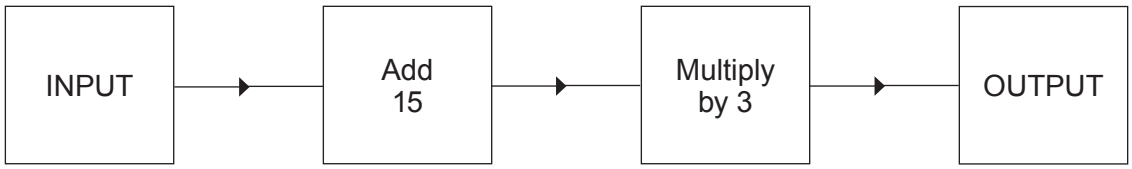
*(d)* Solve $10 - x = 4$. [1]

.....

.....

.....

*(e)* The diagram below represents a number machine.




Find the OUTPUT when the INPUT is $-8$. [1]

.....

.....

.....

4370 030007



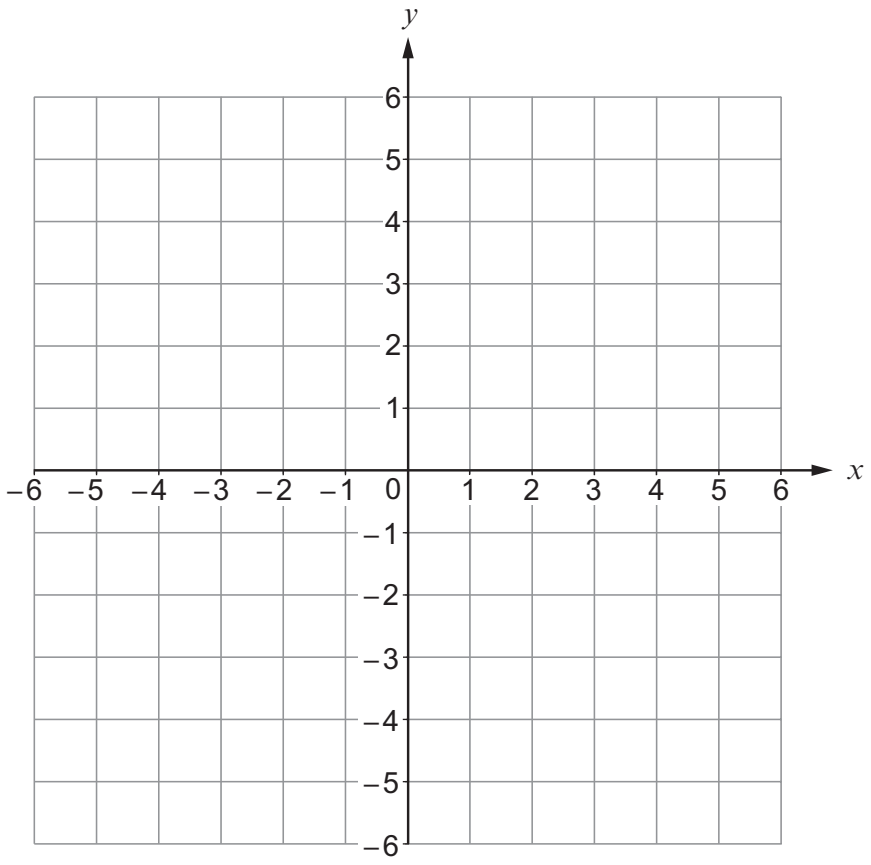
© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**6.** On the squared paper below, plot the points $A(5, -5)$, $B(-2, 4)$ and $C(-4, -3)$. [3]






© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**7.** A washing machine engineer takes 1 hour 15 minutes to service a machine.

The cost is found using the following formula:

**Cost = £40 × number of hours worked + total cost of parts**

Calculate the cost for servicing 6 washing machines when the total cost of parts is £87. [4]

.....

.....

.....

.....

.....

.....

.....

.....

4370 030009



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**8.** The table below shows the times and heights of tides in Swansea Bay for a week in 2015.

| | Tide out | | Tide in | | Tide out | | Tide in | |
|---|---|---|---|---|---|---|---|---|
| | Time | Height (metres) | Time | Height (metres) | Time | Height (metres) | Time | Height (metres) |
| 11th March | 03:07 | 4·57 | 09:21 | 11·77 | 15:26 | 4·76 | 21:39 | 11·53 |
| 12th March | 03:45 | 4·94 | 10:00 | 11·34 | 16:07 | 5·18 | 22:22 | 11·10 |
| 13th March | 04:32 | 5·37 | 10:49 | 10·85 | 16:59 | 5·63 | 23:18 | 10·68 |
| 14th March | 05:33 | 5·78 | 11:53 | 10·43 | 18:07 | 5·98 | | |
| 15th March | | | | | | | 00:30 | 10·39 |
| | 06:53 | 6·00 | 13:17 | 10·27 | 19:34 | 6·03 | | |
| 16th March | | | | | | | 02:00 | 10·51 |
| | 08:23 | 5·77 | 14:46 | 10·60 | 21:00 | 5·60 | | |
| 17th March | | | | | | | 03:22 | 11·07 |
| | 09:39 | 5·15 | 15:58 | 11·26 | 22:06 | 4·92 | | |

*(a)* The times of tides differ every day.
When was the tide **in** for the first time on

(i) 12th March ..... [1]

(ii) 15th March ..... [1]

*(b)* How long is it between the times that the tides were **out** on 13th March? [2]

.....

.....

*(c)* How much earlier in the day was the **first tide out** on 11th March than the **first tide out** on 17th March? [2]

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(d)* When was the highest tide? [1]

Time ..... Date .....

*(e)* How much did the sea rise during the first tide on 14th March? [2]

.....

.....

**9.** A cuboid is labelled P.
A cone is labelled Q.
A cylinder is labelled R.
A triangular prism is labelled S.
A hexagon is labelled T.

Complete the following table. [3]

| Property of the shape | Label on shape |
|---|---|
| It has 5 faces, 3 of which are rectangular | |
| It is not a 3D shape | |
| It has **exactly** one circular face | |
| It has 12 edges | |

4370 030011



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**10.** An 8 cm by 3 cm rectangle is placed with two 6 cm by 3 cm rectangles to make the shape shown in the diagram.

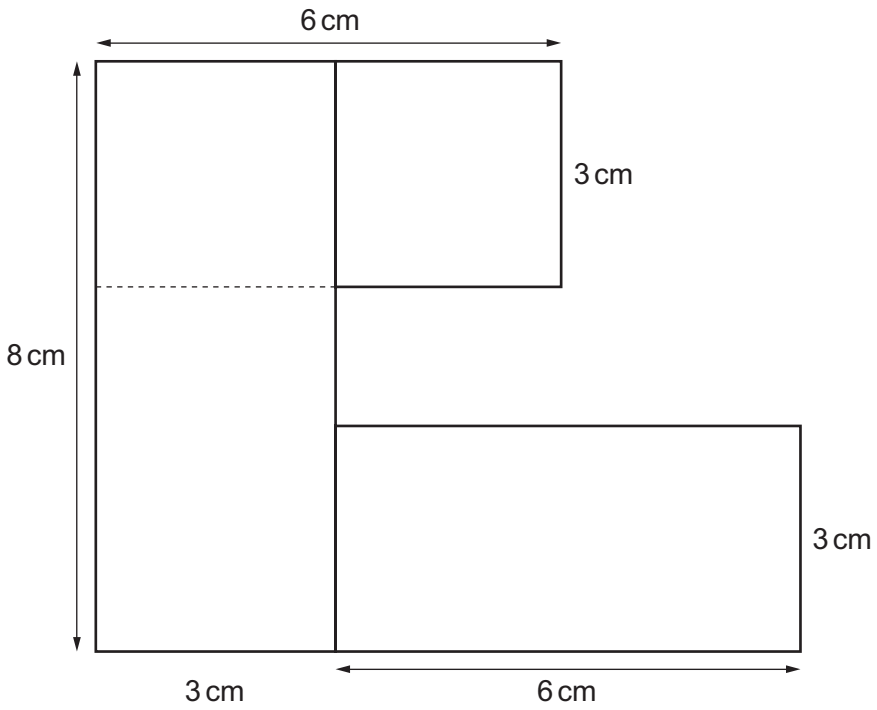



*Diagram not drawn to scale*

*(a)* Calculate the perimeter of the shape. [3]

.....

.....

.....

*(b)* Calculate the area of the shape.
Write down the units of your answer. [3]

.....

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**11.** The diagram shows the parallelogram $PQRS$ in which $\hat{QRS} = 48^\circ$.

The line $QT$ is drawn so that $\hat{PQT} = 53^\circ$.

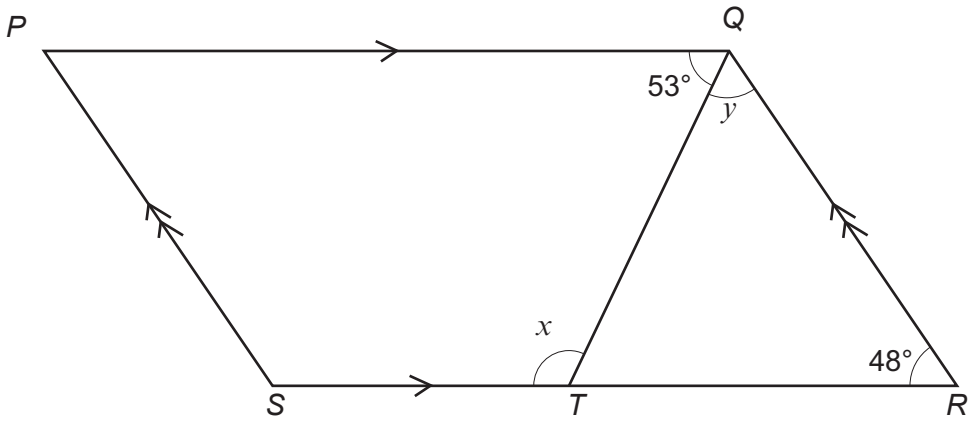



*Diagram not drawn to scale*

*(a)* Find the size of angle $x$. [2]

*(b)* Find the size of angle $y$. [2]



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**12.** The graph opposite shows John's journey by car from his home in Bangor to a roadside café and then on to Cardigan.
Cardigan is 120 miles from Bangor.

*(a)* How far did John travel in the first hour? [1]

.....

*(b)* John was, on average, travelling faster before stopping at the café than he was after he left the café.
Without calculating any speeds, explain how you can tell this from the graph. [1]

.....

.....

*(c)* John's friend Marcus sets out from Cardigan at 13:00 and travels at an average speed of 30 mph to the café.
Draw his journey on the graph paper. [2]

*(d)* By how many minutes did Marcus miss meeting his friend at the café? [1]

.....

.....

.....

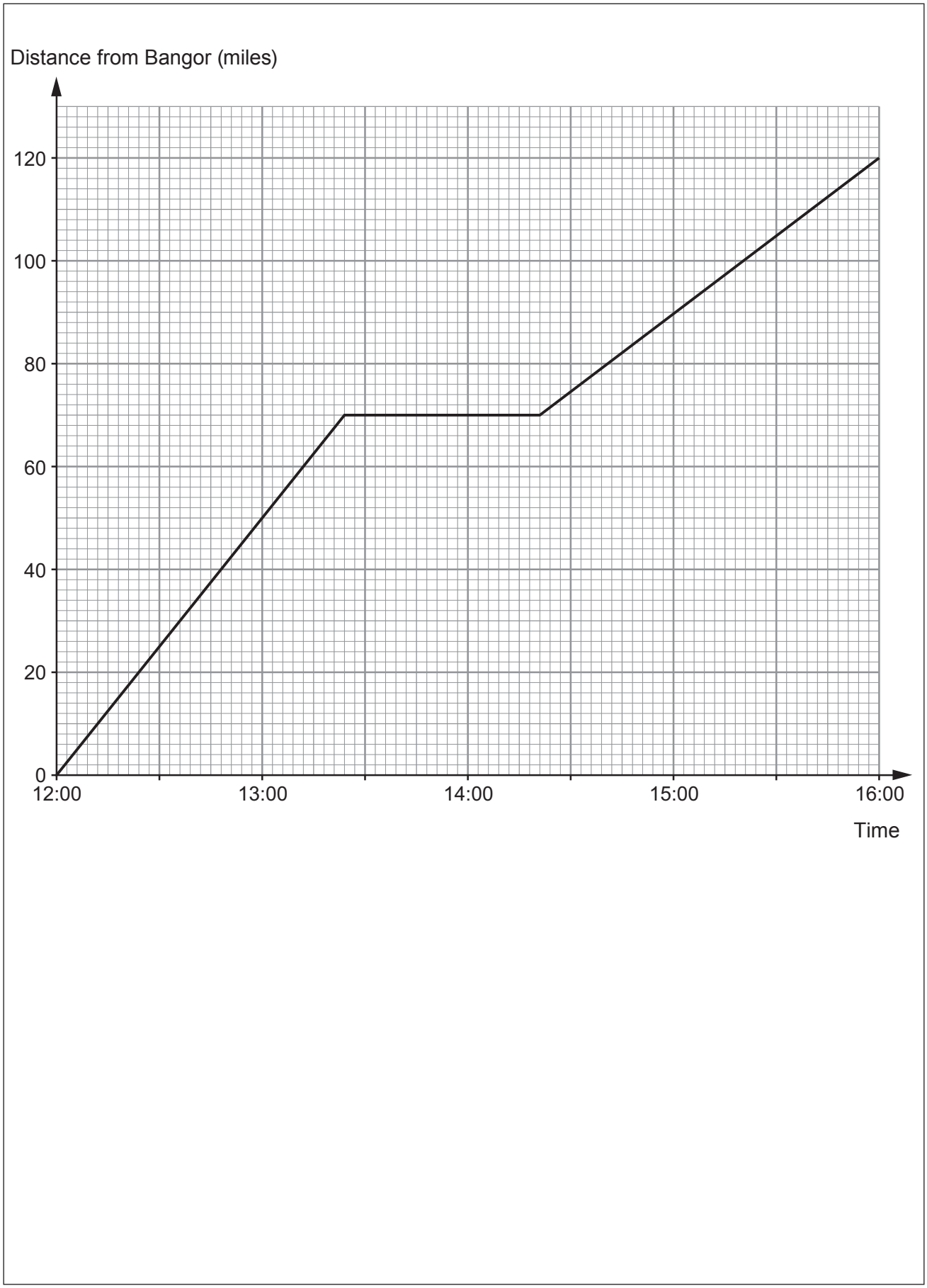


© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only





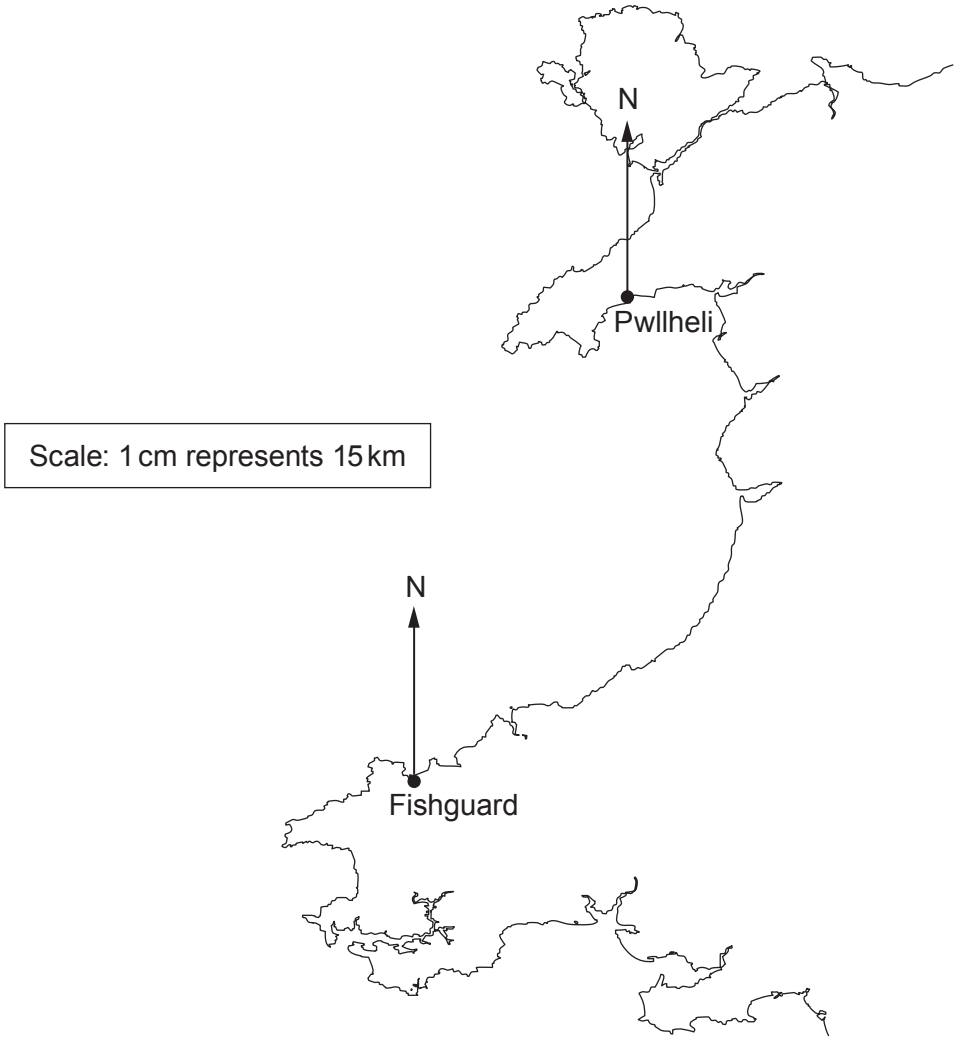

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**13.** *(a)* The diagram shows Pwllheli and Fishguard on a map of Wales.
Calculate the actual straight-line distance between Pwllheli and Fishguard.
Give your answer in km. [3]




.....

.....

.....

Actual distance between Pwllheli and Fishguard = ..... km

*(b)* What is the bearing of Pwllheli from Fishguard? [1]

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**14.**

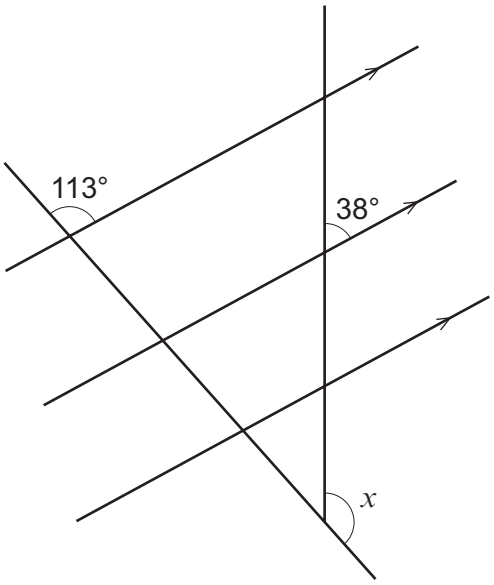



*Diagram not drawn to scale*

Calculate the size of angle $x$. [3]

.....

.....

.....

$x$ = ..... °



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**15.** Maria sells ribbon.

She has a 400 cm length of ribbon.

Maria cuts off $\frac{3}{10}$ of this ribbon and sells this piece to a customer.

She uses $\frac{2}{5}$ of the **remaining** ribbon herself to decorate a card.

Then, Maria cuts the ribbon that is left over into three equal lengths.

What is the length of each of these three remaining pieces of ribbon? [5]

The length of each remaining piece of ribbon is ..... cm



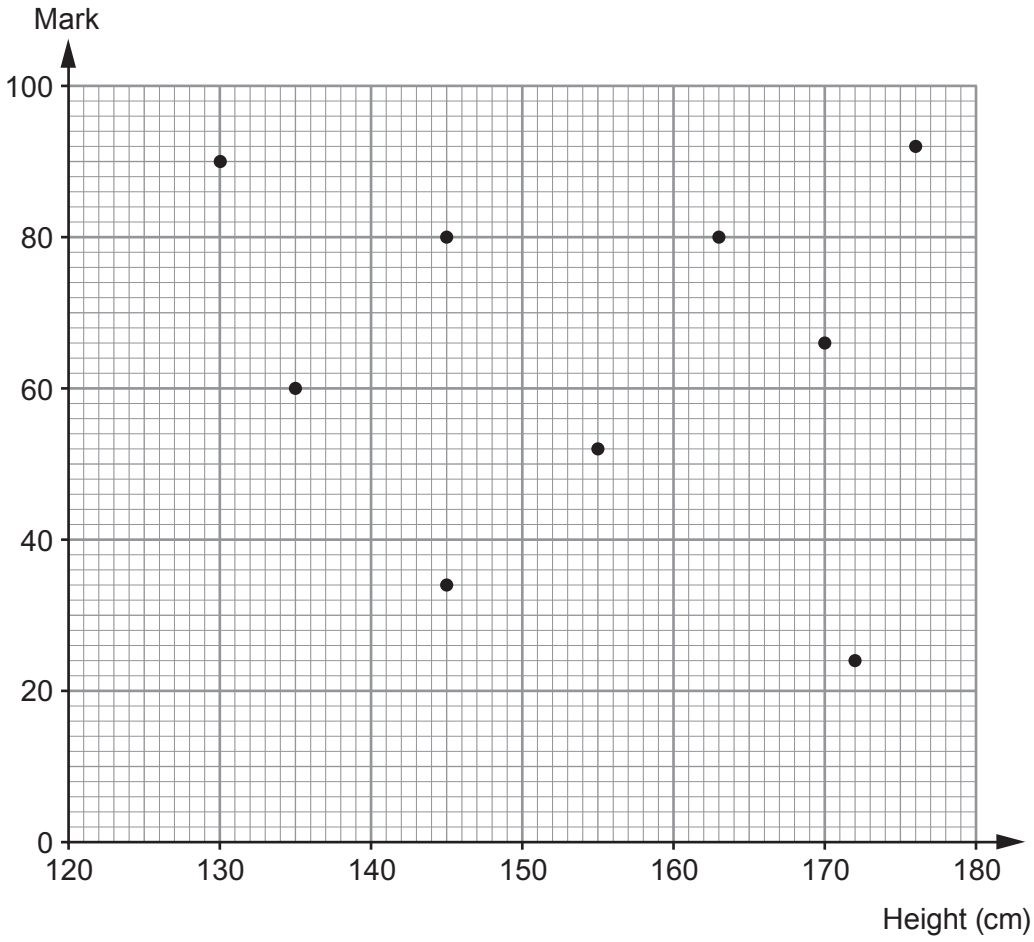
© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**16.** A number of students took an examination.
The heights of these students and the mark they each scored is shown in the scatter diagram below.




*(a)* Describe the correlation shown by the scatter diagram. [1]

.....

*(b)* Charlotte scored the same mark as Dewi.
Charlotte is taller than Dewi.
Henri is the tallest student in the class.
Dewi and Gareth are both the same height.

Complete the table. [3]

| Name | Height (cm) | Mark |
|---|---|---|
| Dewi | | |
| Charlotte | | |
| Henri | | |
| Gareth | | |


© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**17.** Our recommended daily intake of food is often given in calories.



A small bag of 20 almonds provides 160 calories.

It is recommended that Joseff's diet should contain 1920 calories per day.

Joseff eats a large portion of almonds one day.
It is 25% of his recommended daily calories.

How many almonds does he eat?
You must show all your working. [5]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**18.** *(a)* Solve $5x - 65 = 3x - 17$. [3]

*(b)* Solve $\frac{x}{4} + 12 = 28$. [2]

*(c)* Expand $y(y + 8)$. [2]

*(d)* Solve $10x + 8 < 42$. [2]

**END OF PAPER**



© WJEC CBAC Ltd.



STEMUP.CO.UK

# BLANK PAGE

# PLEASE DO NOT WRITE ON THIS PAGE



© WJEC CBAC Ltd.



STEMUP.CO.UK

| Question number | Additional page, if required.<br>Write the question number(s) in the left-hand margin. |
|---|---|
| | |

Examiner only



© WJEC CBAC Ltd.



STEMUP.CO.UK

# BLANK PAGE

# PLEASE DO NOT WRITE ON THIS PAGE



© WJEC CBAC Ltd.



STEMUP.CO.UK

# GCSE MARKING SCHEME

## SUMMER 2016

## GCSE MATHEMATICS - LINEAR PAPER 1
## FOUNDATION TIER

## 4370/03

© WJEC CBAC Ltd.

STEMUP.CO.UK

## INTRODUCTION

This marking scheme was used by WJEC for the 2016 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

© WJEC CBAC Ltd.

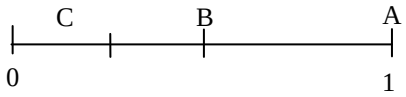
**GCSE Mathematics - Linear Paper 1 Foundation Tier**
**Summer 2016 Mark Scheme**

| Summer 2016 Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| 1. (a) (i) 46**(,)**008 | B1 | B0 for 46.008 |
| 1. (a) (ii) eight million (and) six hundred thousand | B1 | **Accept eight point six million**<br>eighty six hundred thousand' gets B0 |
| 1. (b) (i) 38 and 52 | B1 | Accept either order OR 38 + 52 = 90 |
| 1. (b) (ii) 42 and 24 | B1 | Accept 24 + 18 = 42 OR equivalent |
| 1. (b) (iii) 24 | B1 | **6÷4 = 24 gets B0** |
| 1. (b) (iv) 64 | B1 | Accept $8^2$, 8×8 but NOT 8 |
| 1. (c) 6700 | B1 | Accept written in words |
| 1. (d) 1, 7, 11, 77 **Accept 1×77, 7×11.** | B2 | B1 for any 3 correct factors and up to 1 incorrect<br>**OR B1 for all 4 correct and 1 incorrect.** |
| 1. (e) (i) 7652 | B1 | Do NOT allow commas e.g. 7, 6, 5, 2 gets B0.<br>But B1 for 7,652. |
| 1. (e) (ii) 2576 | B1 | Do NOT allow commas e.g. 2,5,7, 6 gets B0.<br>But B1 for 2,576. |
| Parts (i) and (ii) marked together<br>2. (a) (i) 51<br>(ii) 18 | B2 | For both correct.<br>B1 for either 51 OR 18 correct |
| 2. (b) 80 OR 8 ten(s) OR tens OR eighty | B1 | B0 for 1 ten OR B0 for 10 |
| 2. (c) (0) 52**(%)**<br>(0) 51**(%)**<br>(0) ·51, $\frac{13}{25}$, 55(%) | B1<br>B1<br>B1 | Accept equivalent. F.T. their values. |
| 2. (d) 40 × 10 OR 42·2 × 10 OR 40 × 11 OR 42 × 11 OR 42 × 10<br>400, 422, 440, 462, 420 | M1<br>A1 | F.T their estimates for simple calculations<br>SC1 for unsupported 400 only<br>Penalise extra working (towards actual answer) M0A0 |
| 3. (£)9.35 + (£)8.85 = (£)18.2(0)<br>Sam and Nick pay (£) 21.8(0)<br><br>Nick pays ((£) 21.8(0) – £1.50)/2 = (£)10.15<br>Look for (in the most part)<br><br>Strand 1: For 1 mark<br>Candidates will be expected to<br>• present their response in a structured way<br>• explain to the reader what they are doing at each step of their response<br>• lay out their explanations and working in a way that is clear and logical<br>• write a conclusion that draws together their results and explains what their answer means<br><br>Strand 2: For 1 mark<br>Candidates will be expected to<br>• show all their working<br>• make few, if any, errors in spelling, punctuation and grammar<br>• use correct mathematical form in their working<br>• use appropriate terminology, units, etc | ✓<br>B1<br>B1<br><br>M1<br>A1<br>QWC 2 | OR B1 for (40 – 9.35) = (£) 30.65<br>F.T. £40 – 'their £18.2(0)' OR F.T. 'their (£)30.65' – (£)8.85 evaluated correctly.<br>Any correct method. F.T. 'their £21.8(0)'<br><br>**Nick pays (£)21.80/2 + (£)1.50/2 gets M1**<br><br>QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.<br><br>QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar<br>OR<br>evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar.<br><br>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation or grammar |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Summer 2016 Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| 4. (a)<br><br> | B1<br>B1<br>B1 | A should be at 1.<br>B should be at the middle.<br>C should be between 0 (exclusive) and 0.25 (exclusive).<br>English: The ¼ mark is to the left of the 't' in '..**t**he result..'<br>Welsh: The ¼ mark is to the left of the 'i' in ...ma**i**<br>Letters must be seen on scale (i.e. not probabilities)<br>**Accept 5 for A, 2 for B and 3 for C** |
| 4. (b) likely | B1 | |
| 5. (a) 3c | B1 | |
| 5. (b) ($T$ = ) 7 | B2 | B1 for either (21 AND −12) OR −2<br>B0 for 21A, (−)12B and/or (−)2C |
| 5. (c) y is 4 times x OR 'y = 4 times x' OR y = 4x OR x is 1/4 times y OR 'x = 1/4 times y OR x = y/4 OR 'x = ¼ of y OR (x,4x) OR (¼y,y) | B2 | B1 for ×4 OR 'times 4' **OR y=×4**<br>OR B1 for ÷4 OR 'divide by 4' |
| 5. (d) (x = ) 6 | B1 | Accept embedded answers, e.g. 10 – 6 = 4 |
| 5. (e) 21 | B1 | |
| 6. A(5, −5), B (−2, 4) and C(−4, −3) plotted. | B3 | B1 for each. Reversed coordinates get B0 every time.<br>Letters A,B,C not needed as long as the point is identified. |
| 7. (Hours worked =) 6 × 75 OR 6 × 1¼<br>= 450 (mins) OR = 7½ (hours)<br>OR 7 hours 30 minutes<br>OR 6 hours 90 minutes<br>**OR 7:30**<br>(Charge =) (£)40 × 7½ + (£)87<br>= (£) 387 | ✓<br>M1<br>A1<br><br><br><br>M1<br><br><br><br>A1 | Allow M1 for 6 × 1.15 OR 6.90 OR 7.3(0)<br>Hours not required at this stage.<br><br>**M1 for 40×7.3(0) + (£)87 OR 40×7hrs 30 mins + (£)87**<br><br>FT 'their derived 7½'.<br>Hours required. Must be some conversion attempt.<br>M0 for use of 'their 450/100.<br>If no marks, SC1 for (£)137. (1¼×40 + 87) | • 7hrs 30mins' with no method shown gets M1A1.<br>• '7 hours 30' with no method shown gets M1,A1<br>• 1hour 15mins x 6 gets M1, but A0 unless answer is 7½ or equivalent.<br><br>•1hr 15mins x 6 = 7 hours M1A0 then<br>40 x 7 + 87 = £367 M1,A0<br>(The whole number, 7, is over simplifying) |
| **Alternative Method**<br>**(Cost of 1 machine =)(40 × (£)1.25) = 50**<br>**(Cost of 6 machines =) (50 × 6) = (£) 300**<br>**(Total cost = ) (£) 300 + (£) 87**<br>**(£) 387** | **M1**<br>**A1**<br>**M1**<br>**A1** | |
| 8. (a) (i) 10:00 | B1 | Accept 10.00 OR 10 (a.m.)<br>(Decimal point is acceptable in a specific time) |
| 8. (a) (ii) 00:30 | B1 | Accept (0)0.30 OR 12:30 am |
| 8. (b) 16:59 – 04:32<br>= 12 hours 27 minutes<br>OR 12:27 | M1<br>A1 | M1, A0 for 12.27<br>(Decimal point is NOT acceptable in a time interval) |
| 8. (c) 09:39 – 03:07<br>= 6 hours 32 minutes<br>OR (0)6:32 | M1<br>A1 | M1, A0 for (0)6.32 |
| 8. (d) (0)9:21 (on 11th March) | B1 | Accept (0)9.21 |
| 8. (e) 10.43 – 5.78<br>= 4.65 (m) | M1<br>A1 | SC1 for 4.45 (m) (10.43 – 5.98) |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Summer 2016 Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| 9. S (OR triangular prism)<br>T (OR hexagon)<br>Q (OR cone)<br>P (OR cuboid) | B3 | All correct<br>B2 for any 3 correct<br>B1 for any 2 correct. |
| 10. (a) Missing inside segments = **2 or 3 (and 6)**<br>Perimeter = 6+3+3+2+6+3+6+3+8<br>**If the sum of their figures is 40 then M1**<br><br>= 40 (cm) | S1<br>M1<br><br><br><br>A1 | One of 2 or 3 in correct place gets S1<br>Attempt to add ALL sides of the shape<br>FT 'their 2' for possible M1<br>The M1, A0 can be implied by their answer.<br>If the 2 is not shown on diagram but is in the sum of sides for the perimeter then award S1 here.<br>C.A.O. |
| 10. (b) Area = 6×3+2×3+9×3<br>OR 3×3 + 3×8 + 6×3 OR 4×3×3 + 3×5<br>= 51<br>**If the sum of their areas is 51 then M1**<br>$cm^2$ | M1<br><br>A1<br><br>U1 | Attempt to add a correct set of areas of the shape<br>(You may need to scroll up to see the diagram)<br>F.T. if missing sides (even incorrect) are clearly indicated<br>Independent of all other marks. |
| 11. Parts (a) and (b) marked together<br>With diagram<br>(a) (x = ) 180 – 53<br>(x = ) = 127(°) | <br><br>M1<br>A1 | Look at diagram **also**, but written work takes precedence.<br>For any correct method that finds x |
| (b)(y =) 180 – 53 – 48 \| OR (y =) 127(°) – 48<br>= 79(°) | M1<br>A1 | For any correct method that finds y<br>F.T. 'their 127(°)' provided M1 awarded in part (a). |
| 12. (a) 50 (miles) | B1 | |
| 12. (b) (Before stopping,) slope is steeper<br>OR after stopping slope is less steep<br>'The steeper the line the faster the speed'. | B1 | Do not accept 'More miles in less time'. |
| 12. Parts (c) and (d) marked together<br>(c) Line starting at (13:00,120) passing through (14:00,90) and intersecting John's journey. | B2 | B1 for a line starting at (13:00, 120) going to at least the point (14:00, 90).<br>OR for line starting at (12:00,120) ending at least through (13:00,90)<br>Award SC1 for a line starting at (13:00, 0) going to at least the point (14:00, 30). |
| 12. (d) 18 ± 3 (mins) | B1 | FT their line from Cardigan starting at **(13:00,120)** provided the lines cross after John has left the cafe. |
| 13. (a) 7·0 (cm)<br>7·0 × 15<br>= 105 (km) | B1<br>M1<br>A1 | Allow 6·8 – 7·2<br>FT 'their 7·0'× 15<br>Unsupported answers in the range 102−108 get 3 marks |
| 13. (b) 024(°) | B1 | Allow ± 2°. |
| 14. 105(°)<br><br>**H1** | B3 | Allow even if contradicted on the diagram<br><br>B2 for sight of 75(°) (including as a final response or incorrectly placed on the diagram)<br>B2 for sight of 105(°) in working not as an answer or contradicted as a final response in the answer space<br>B2 for working:<br>38 + 67 or 180 – 75, or<br>the intention of either calculation, allowing missing brackets<br>180 – (180 – 38 - 67 ) (= 38 + 67) or<br>180 – (180 – 38 – (180 – 113) (= 180 – 75), or<br><br>OR<br><br>B1 for any further unambiguous correct angle indicated on the diagram: 113(°), 67(°), 38(°) or 142(°), or<br>B1 for working: 180 – 38 – 67 or 113 – 38 or<br>180 – 38 –(180 -113), or equivalent |

© WJEC CBAC Ltd.



STEMUP.CO.UK

<table>
<tr><th>Summer 2016 Linear Paper 1 (Non calculator)<br>Foundation Tier</th><th>Marks</th><th>Comments</th></tr>
<tr><td>15. 400×7÷10 or 400 - 400×3÷10 or equivalent<br>280(cm)<br><br>280 ×⅗ or 280 – 280×2÷5 or 280 – 112<br>168(cm)<br><br>56 (cm)</td><td>M1<br>A1<br><br><br><br>M1<br>A1<br><br>B1</td><td><br>May be implied in further calculation<br>Incorrect working leading to 280 is M0 A0, e.g.<br>3/10 × 400 + 2/5 × 400 = 120 + 160 = 280<br><br>FT 'their 280' provided < 400<br>May be implied in further calculation<br><br>FT 'their 168' ÷ 3 correctly evaluated (rounded or truncated) provided either<br>at least M1 previously awarded or<br>‘their two stages of calculations’ previously attempted<br>(However if 3/10 & 2/5 used throughout SC marks may be awarded instead of possible B1 if a higher mark can be awarded)<br><br>For consistent use of 3/10 and 2/5 award:<br>SC3 for an answer of 16(cm from 400 × 3/10 × 2/5 ÷3), or<br>SC2 for workings equivalent to 400 × 3/10 × 2/5 ÷3 (may be in stages), or<br>SC1 for an answer of 48(cm from 400 × 3/10 × 2/5)</td></tr>
<tr><td>16. (a) Descriptions of no correlation, e.g. ‘no relationship’, ‘no correlation’, 'none', ‘no connection’</td><td>B1</td><td>Do not accept '(all) scattered (about)', or 'random', or ‘neutral’, ‘no pattern’<br>Allow if a correct response is given with one of the phrases listed above. Do not allow a correct response with an incorrect response, e.g. ‘none but slightly positive’</td></tr>
<tr><td>16.(b)<br><table><tr><th>Name</th><th>Height (cm)</th><th>Mark</th></tr><tr><td>Dewi</td><td>145</td><td>80</td></tr><tr><td>Charlotte</td><td>163</td><td>80</td></tr><tr><td>Henri</td><td>176</td><td>92</td></tr><tr><td>Gareth</td><td>145</td><td>34</td></tr></table></td><td>B3</td><td>All entries correct<br><u>Accept mark entries as a fraction of 100, or written as a percentage</u><br><br>B2 for any 5, 6 or 7 entries correct, or if the correct entries in the table but they are in reversed columns, OR<br><br>B1 for any 3 or 4 entries correct, or for any 5, 6 or 7 reversed entries in the table</td></tr>
</table>

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Summer 2016 Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| | ✓ | |
| 17. (% of daily calories 25% of 1920 = ) 480 (calories) | B1 | |
| (Number of bags needed) 480÷160 | M1 | FT 'their 480' provided attempt at 1920×25÷100 or 1920÷4 or equivalent is seen or implied |
| (=) 3 | A1 | May be implied in later working |
| (Number of almonds eaten 3 × 20) ×20 | m1 | |
| 60 (almonds) | A1 | FT 'their 3'×20 evaluated provided attempt to find 25% of 1920 and M1, m1 previously awarded |
| | | ***Alternatives*** |
| | | ***(% of daily calories 25% of 1920 = ) 480 (calories) B1*** |
| | | ***160÷20 M1*** |
| | | ***= 8 (calories per almond) A1*** |
| | | *(May be implied in later working)* |
| | | ***(Number of almonds) 480÷8 m1*** |
| | | *(FT 'their 25% of 1920'÷ 'their 160÷20')* |
| | | ***60 (almonds) A1*** |
| | | *(FT provided attempt to find 25% of 1920 and M1, m1 previously awarded)* |
| | | ***or*** |
| | | ***(Number of bags in a full daily allowance is)*** |
| | | ***1920÷160 M1*** |
| | | ***= 12 (bags) A1*** |
| | | *(May be implied in later working)* |
| | | ***(Number of bags 25% of allowance is ¼×12=) 3 (bags) B1*** |
| | | *(FT 'their ¼ × 1920÷160 provided M1 previously awarded)* |
| | | ***(Number of almonds eaten) 3 × 20 m1*** |
| | | *(FT 'their ¼ × 1920÷160'×20 provided M1 previously awarded)* |
| | | ***(Previous B1 & m1 calculations may be seen in either order)*** |
| | | ***60 (almonds) A1*** |
| | | *(FT provided attempt to find 25% of 1920÷160 and M1, m1 previously awarded)* |
| | | *or* |
| | | ***20 (almonds) with 160 (calories) used as a ratio M1*** |
| | | *e.g. sight of 40 almonds is 320 calories or similar* |
| | | ***Use of ratio or multiples that lead to 1920 (calories) m1*** |
| | | ***240 (almonds is 1920 calories) A1*** |
| | | ***(Number of almonds is) ¼ × 240 M1*** |
| | | *(FT provided M1, m1 previously awarded)* |
| | | ***60 (almonds) A1*** |
| | | *(FT provided M1, m1 previously awarded AND attempt to find the number of almonds in 1920 calories)* |
| | | **If no marks, and no incorrect logic seen, then award SC2 for an answer of 60 almonds** |
| **H7** | | |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Summer 2016 Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| 18.(a) $5x - 3x = 65 - 17$<br>$2x = 48$<br>$x = 24$<br>**H8a** | B1<br>B1<br>B1 | FT until 2nd error, then stop marking<br><br>Must be simplified if possible for this final B1 mark |
| 18(b) $x/4 = 28 - 12$ or $x/4 = 16$ or $x + 12 \times 4 = 28 \times 4$<br>$x = 64$<br>**H8b** | M1<br>A1 | Mark final answer<br>*Accept embedded answer, e.g. 64/4 + 12 = 28* |
| 18(c) $y^2 + 8y$<br>**H8c** | B2 | y×y must be written as $y^2$ & 8×y as 8y for B2<br>B1 for y×y + 8×y, or<br>B1 for 1 correct term, e.g.<br>2y + **8y** = 10y or y + **8y** = 9y<br>BUT do not accept from incorrect working, e.g.<br>B0 for 'y + 8 = 8y'<br><br>Mark final answer, e.g. B1 only for '$y^2 + 8y = 8y^3$' |
| 18.(d) $10x < 34$ or $10x < 42 - 8$<br>$x < 34/10$ or $x < 3.4$ or $x < 3\,^4/_{10}$ or $x < 3\,^2/_5$ or equivalent<br>**H8e** | B1<br>B1 | Do not accept '='<br>FT from 1 error only. ISW<br>*If '=' used but replaced by '<' to give final correct answer, allow B2*<br><br>*Note: 10x < 42 + 8 must lead to x < 5 to be awarded B0,B1* |



© WJEC CBAC Ltd.



STEMUP.CO.UK

| Surname | Centre Number | Candidate Number |
|---|---|---|
| Other Names | | 0 |

# GCSE

4370/03

S15-4370-03

# MATHEMATICS – LINEAR
## PAPER 1
## FOUNDATION TIER

A.M. THURSDAY, 21 May 2015

1 hour 45 minutes

**CALCULATORS ARE NOT TO BE USED FOR THIS PAPER**

### ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

### INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

Take $\pi$ as 3·14.

### INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **11**.

| For Examiner's use only | | |
|---|---|---|
| **Question** | **Maximum Mark** | **Mark Awarded** |
| **1.** | **11** | |
| **2.** | **8** | |
| **3.** | **4** | |
| **4.** | **4** | |
| **5.** | **8** | |
| **6.** | **6** | |
| **7.** | **3** | |
| **8.** | **4** | |
| **9.** | **3** | |
| **10.** | **4** | |
| **11.** | **8** | |
| **12.** | **6** | |
| **13.** | **5** | |
| **14.** | **5** | |
| **15.** | **5** | |
| **16.** | **6** | |
| **17.** | **4** | |
| **18.** | **3** | |
| **19.** | **3** | |
| **Total** | **100** | |

4370 030001

MAY1543700301

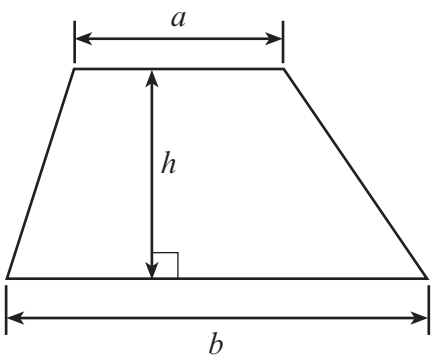
© WJEC CBAC Ltd.



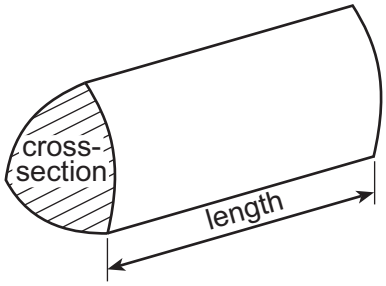
STEMUP.CO.UK

## Formula List

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




**Volume of prism** = area of cross-section × length






© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**1.** *(a)* (i) In a recent election, the winning candidate had twenty-six thousand and forty-three votes. Write down this number of votes in figures. [1]

.....

(ii) The candidate who came second received 20 015 votes.
Write down this number of votes in words. [1]

.....

(iii) By how many votes did the winning candidate beat the second-placed candidate?
Write your answer in figures. [1]

.....

.....

.....

*(b)* Using only the numbers in the following list,

38 49 23 12 47 37 40

write down

(i) two numbers that add up to 75, [1]

.....

(ii) two numbers which differ by 17, [1]

.....

(iii) a square number. [1]

.....

*(c)* Write 9758 correct to the nearest thousand. [1]

.....

*(d)* Write down all the factors of 21. [2]

.....

*(e)* Each of the digits 7, 9, 2 and 6 is used once to make a four-digit number.

(i) What is the smallest number that can be made? [1]

.....

(ii) What is the largest odd number that can be made? [1]

.....

4370 030003



© WJEC CBAC Ltd.





STEMUP.CO.UK

Examiner only

**2.** *(a)* Write down the next term in each of the following sequences. [2]

(i) 45, 34, 23, 12, .....

(ii) 64, 16, 4, 1, .....

.....

.....

*(b)* What is the value of the 6 in the number 95 612? [1]

.....

*(c)* Write $\frac{33}{50}$ as a decimal .....

Write 67% as a decimal .....

Write 67%, 0·68 and $\frac{33}{50}$ in ascending order. [3]

.....

*(d)* Showing all your working, find an estimate for the value of 5·17 × 9·8. [2]

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**3.** The formula for finding the value of any term in a sequence is

**value = 6 × the term number – 5**

*(a)* Find the **value** when the **term number** is 7. [2]

.....

.....

.....

.....

*(b)* Find the **term number** when the **value** is 67. [2]

.....

.....

.....

.....

4370 030005



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**4.** *(a)* A box contains the following 10 cards.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 7 | 6 | 8 | 6 | 7 | 8 | 6 | 7 | 6 |

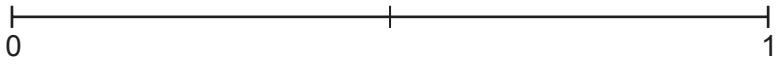
One card is chosen at random from the box.

On the probability scale shown below, mark the points A, B and C where:

A is the probability that the chosen card has the number 6 on it,

B is the probability that the chosen card has a number **less than 8** on it,

C is the probability that the chosen card has a number **more than 5** on it. [3]




*(b)* Choose the best word from those given below to describe the chance that the chosen card has a 7 on it. [1]

**impossible** **unlikely** **even chance** **likely** **certain**

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**5.** *(a)* Simplify $4a + 2a - a$. [1]

.....

.....

*(b)* Use the formula $W = 7R - 3T$ to find the value of $W$ when $R = 5$ and $T = 9$. [2]

.....

.....

.....

*(c)* The $x$ and $y$ values of the coordinates of the points (2, 6), (3, 9), (4, 12) ..... , $(x, y)$ all follow the same rule.
Write down the rule connecting $x$ and $y$. [2]

.....

.....

.....

*(d)* Solve

(i) $5x = 20$ [1]

.....

.....

.....

(ii) $y + 8 = 20$ [1]

.....

.....

.....

(iii) $9 - t = 7$ [1]

.....

.....

.....

4370 030007



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**6.** An 8 cm by 3 cm rectangle is placed on top of two 6 cm by 3 cm rectangles to make the shape shown in the diagram.

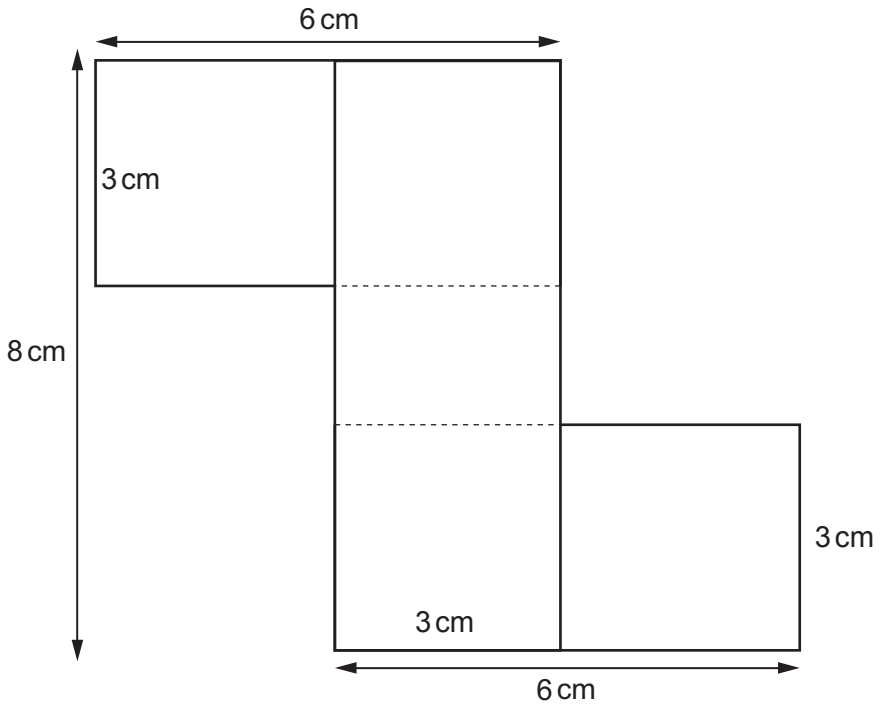



*Diagram not drawn to scale*

*(a)* Calculate the perimeter of the shape. [3]

.....

.....

.....

*(b)* Calculate the area of the shape.
Write down the units of your answer. [3]

.....

.....

.....

.....



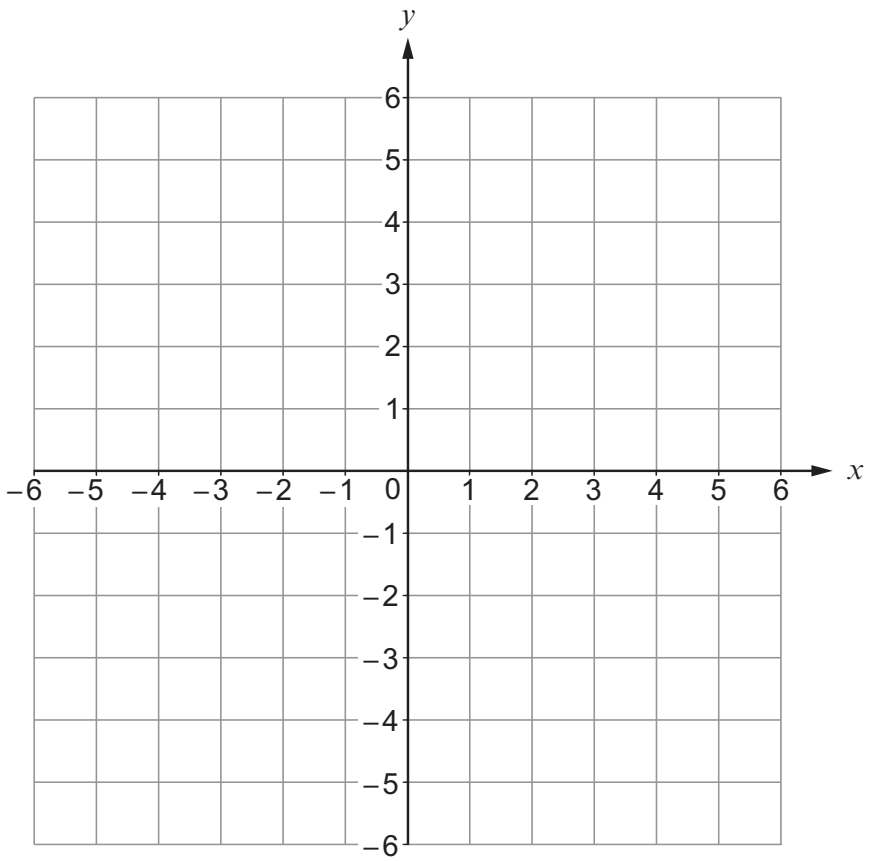
© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**7.** On the squared paper below, plot the points $A(5, 2)$, $B(-1, -5)$ and $C(-4, 3)$. [3]




4370 030009



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**8.** A surveyor has placed a pole at a point $Q$ and another at $R$. The poles are 100 m apart.

He needs to position another pole at a point $P$ such that:

- $P\hat{Q}R = 44°$
- $P$ is at a distance of 80 metres from $Q$.

*(a)* Using a scale of 1 cm to represent 10 metres draw an accurate drawing of the position of the pole at $P$. [2]




*(b)* How far is the pole at $P$ from $R$? Give your answer in metres. [2]

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**9.** Water is poured into an empty rectangular tank of length 15 cm, width 10 cm and height 12 cm until the tank is full.
Calculate the volume, in litres, of the water in the tank. [3]

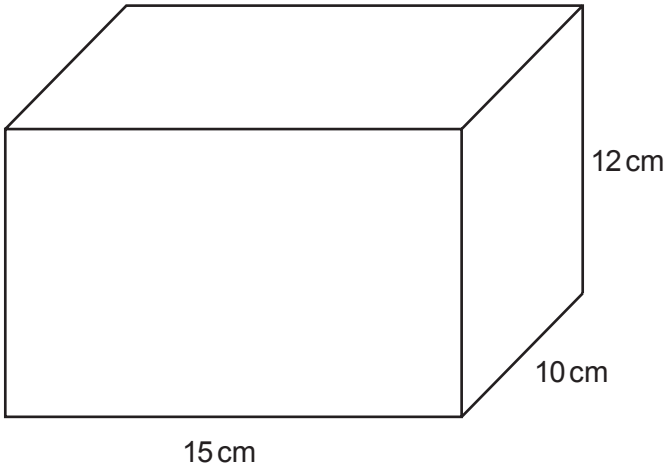



*Diagram not drawn to scale*

.....

.....

.....

.....

.....

Volume of water = ..... litres

4370 030011



© WJEC CBAC Ltd.

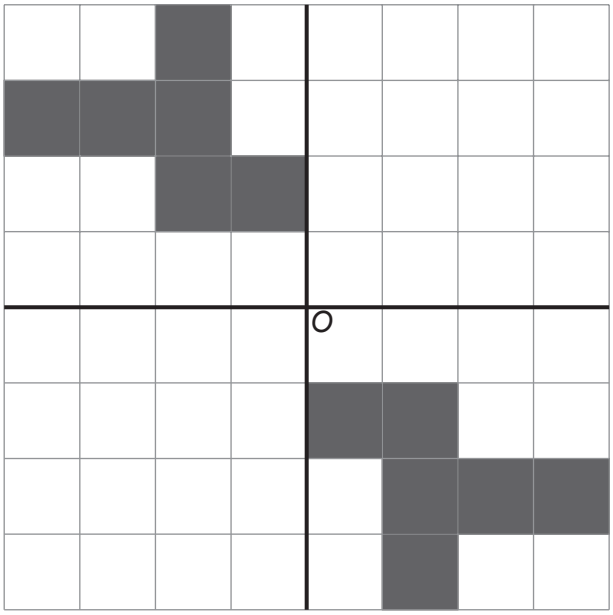


STEMUP.CO.UK

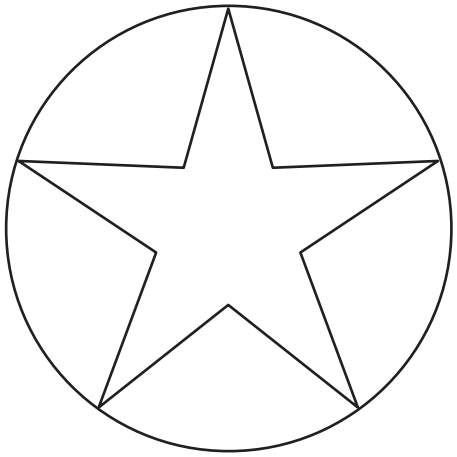
**Turn over.**

Examiner only

**10.** *(a)* Draw two more shapes so that the completed pattern has rotational symmetry of order 4 about *O*. [2]




*(b)* Draw all the lines of symmetry on the following diagram. [2]





© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**11.** *You will be assessed on the quality of your written communication in this question.*

Tim owns a clothes shop.
He buys 60 shirts at £8 each.

The selling price of each shirt is worked out so that he makes a profit of 50% on each shirt.
He sells 15 shirts at this price.

After a few months Tim reduces the selling price of each shirt by £5.
He then sells the remaining shirts at this reduced selling price.

Has Tim made a profit or loss?
You must explain your answer clearly. [8]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**12.** *(a)* Karen has 12 cards.
4 are yellow, 4 are red and 4 are blue.
The 4 yellow cards are numbered 1, 2, 3 and 4. Similarly, the 4 red cards and the 4 blue cards are numbered 1, 2, 3 and 4.
The 12 cards are all put in a bag and one card is drawn out of the bag at random.
Write down all the possible outcomes. One has been done for you. [2]

Yellow, 1

*(b)* (i) In a game, a player selects a card at random from the bag.
The player wins a prize if the selected card is a red card with an even number on it.
What is the probability that the player wins a prize? [2]

(ii) One day 120 people play this game once. How many people would you expect to win a prize? [2]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**13.** *(a)* In the diagram, *PS*, *QT* and *RU* are straight lines.
Find the size of angle $x$. [2]

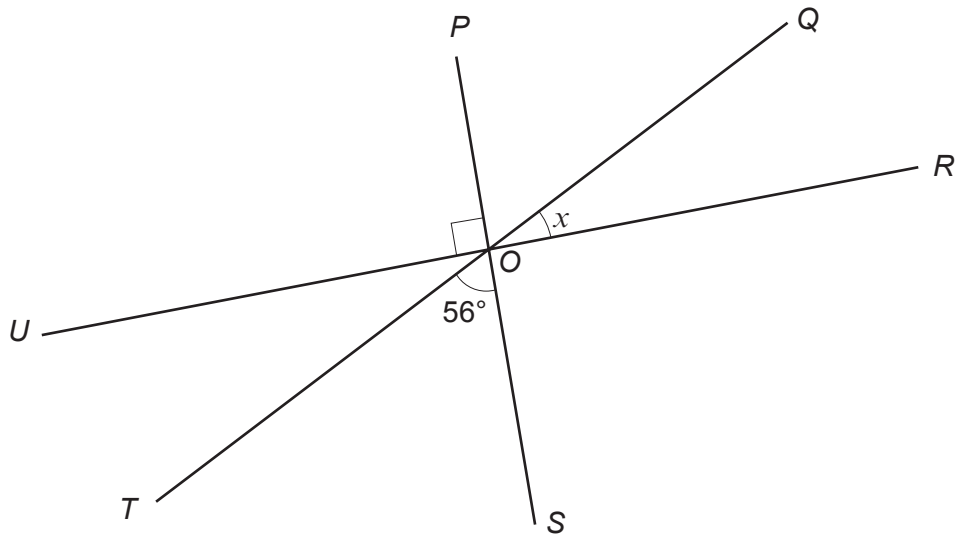



*Diagram not drawn to scale*

.....

.....

$x$ = ..... °

*(b)* *ABCD* is a rhombus. Find the size of angle $y$. [3]

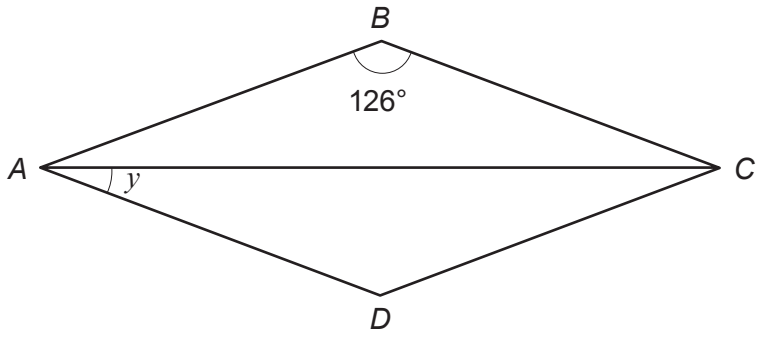



*Diagram not drawn to scale*

.....

.....

.....

.....

$y$ = ..... °



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**14.** In a factory there are two machines.
Machine A makes plastic spoons and Machine B makes plastic forks.
Both machines work at a steady rate.

Machine A makes **180** plastic spoons per hour.



Machine B makes **240** plastic forks per hour.



Both machines start their production on a Monday morning at 9 a.m.
Both machines are stopped for maintenance after 450 spoons have been produced.
Calculate

- the time at which the machines were stopped for maintenance
- the number of forks produced between 9 a.m. and the time the machines were stopped for maintenance. [5]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only



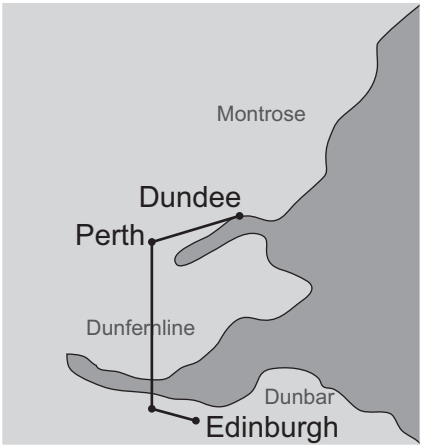
© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**15.** The map below shows a route from Edinburgh to Dundee.




The route from Edinburgh to Dundee is approximately 4 cm on the map.
The actual journey is approximately 100 kilometres.

*(a)* Calculate the scale of the map, giving your answer in the form **1** : ..... [2]

.....

.....

.....

.....

.....

.....

*(b)* The journey from Edinburgh to Dundee takes 2 hours 30 minutes by car.
Calculate the average speed of this journey.
Give your answer in kilometres per hour. [3]

.....

.....

.....

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**16.**

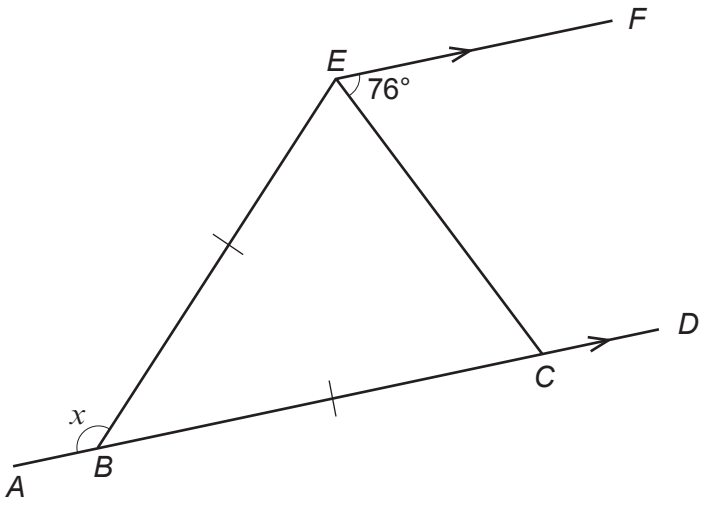



*Diagram not drawn to scale*

*ABCD* is a straight line.
*EF* is parallel to *AD*.
*BE* = *BC*.

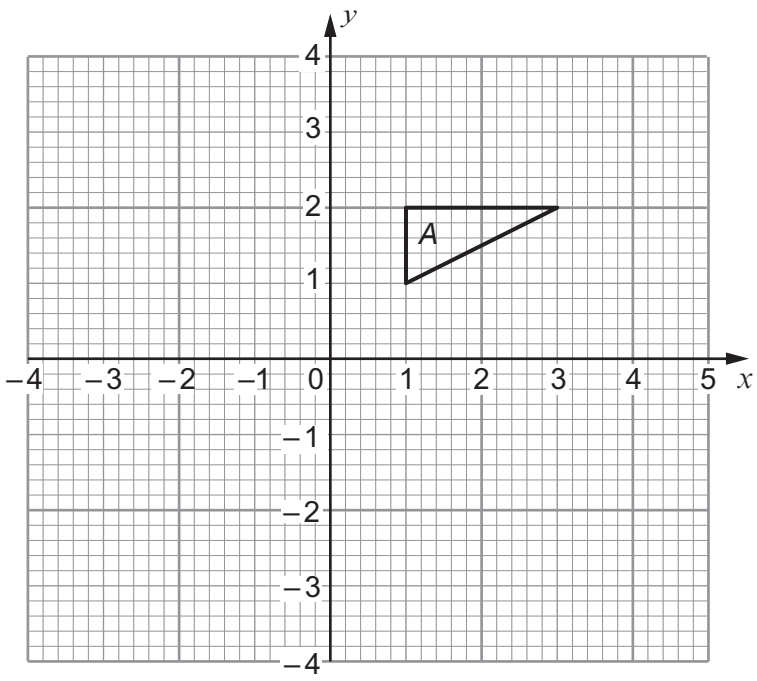
Calculate the size of angle $x$.
**You must give a reason for each step of your answer.**
You must show all your working. [6]


© WJEC CBAC Ltd.

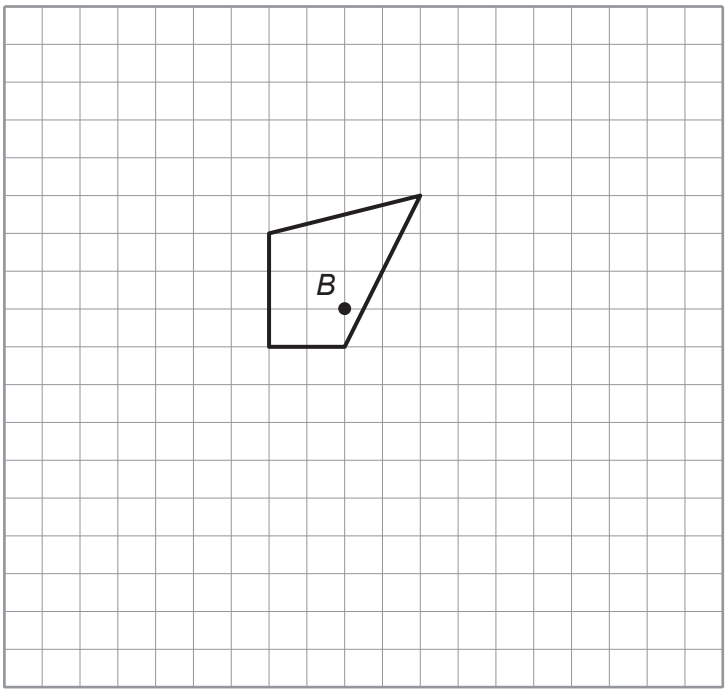
STEMUP.CO.UK

Examiner only

**17.** *(a)* Rotate triangle *A* through 90° anticlockwise about the point (2, –1). [2]




*(b)* Using the point *B* as the centre, enlarge the quadrilateral by a scale factor of 2. [2]






© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**18.** The diagram below shows part of a regular polygon.




*Diagram not drawn to scale*

How many sides does this regular polygon have altogether? [3]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**19.** A hollow cylinder is made with an internal radius of 4 cm and an internal height of 10 cm.

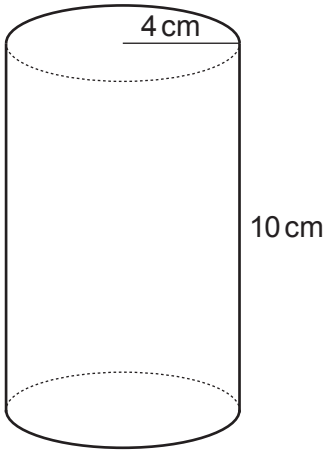



*Diagram not drawn to scale*

Carwyn says

'This cylinder holds approximately 5 litres of liquid.'

By estimating $\pi$ as 3, show whether Carwyn is correct or not.

You must show your working and give a reason for your answer. [3]

**END OF PAPER**



© WJEC CBAC Ltd.



STEMUP.CO.UK

# BLANK PAGE

# PLEASE DO NOT WRITE ON THIS PAGE



© WJEC CBAC Ltd.



STEMUP.CO.UK

| Question number | Additional page, if required. Write the question number(s) in the left-hand margin. |
|---|---|
| | |

Examiner only



© WJEC CBAC Ltd.



STEMUP.CO.UK

# GCSE MARKING SCHEME

## MATHEMATICS - LINEAR

## SUMMER 2015

© WJEC CBAC Ltd.

## INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2015 examination in GCSE MATHEMATICS - LINEAR. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

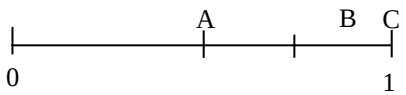
It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.


| | Page |
|---|---|
| Paper 1 - Foundation Tier | 1 |
| Paper 1 - Higher Tier | 6 |
| Paper 2 - Foundation Tier | 12 |
| Paper 2 - Higher Tier | 16 |


© WJEC CBAC Ltd.

STEMUP.CO.UK

| 2015 Summer Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| **Parts (i), (ii) and (iii) marked together**<br>1. (a) (i) 26 043 | B1 | |
| 1. (a) (ii) twenty thousand (and) fifteen | B1 | |
| 1. (a) (iii) 6028 | B1 | F.T. 'their (a)(i) in figures – 20 015' , provided equivalent difficulty.<br>**Accept answer in figures OR in words** |
| 1. (b) (i) 38 and 37 | B1 | |
| 1. (b) (ii) 23 and 40 | B1 | |
| 1. (b) (iii) 49 | B1 | Accept $7^2$ OR 7×7 but NOT 7 |
| 1. (c) 10 000 | B1 | **B1 for 'ten thousand' in words.** |
| 1. (d) 1, 3, 7, 21 | B2 | B1 for any 3 correct factors and up to 1 incorrect<br>**OR B1 for 4 correct factors and 1 incorrect**<br>**Accept 1×21, 3×7** |
| 1. (e) (i) 2679 | B1 | |
| 1. (e) (ii) 9627 | B1 | |
| 2. (a) (i) 1<br>(ii) ¼ OR (0).25 | B1<br>B1 | B0 for 'Divide by 4' etc. Must be the term.<br>B0 for 1÷4, but B1 for 1/4 |
| 2. (b) 600 OR 6 hundred OR hundred (s) | B1 | B0 for 1 hundred OR 100 **OR 6H OR H** |
| 2. (c) (0) ·66<br>(0) ·67<br>$\frac{33}{50}$ , 67% , (0) ·68 | B1<br>B1<br>B1 | Accept (0) ·66 , (0) ·67 , (0) ·68 or equivalent<br>F.T their decimal values |
| 2. (d) 5 × 10 OR 5·1 × 10 OR 5·17 × 10 OR 5·2 × 10 OR 5 × 9·8<br>50, 51, 51.7, 52 OR 49 | M1<br>A1 | F.T their estimates for simple calculations<br>**SC1 for unsupported 50 only**<br>Penalise extra working (towards actual answer) M0A0 |
| 3. (a) Value = 6×7 – 5<br>= 37 | M1<br>A1 | Correctly substituted and correct attempt to evaluate.<br>e.g. 6×7 – 5 = 6×2 (=12) gets M0, A0. |
| 3. (b) term number = (67 + 5) /6<br>= 12 | M1<br>A1 | For correct substitution with addition and division<br>Allow embedded references to the correct answer,<br>e.g. 67 = 12×6 – 5.<br>**NOTE: If a candidate then writes 'term number = 72' award M1A0. Their final answer must be correct.** |
| 4. (a)<br><br> | B1<br>B1<br><br><br><br>B1 | A should be at ½. Condone use of 6 for A.<br>B should be between 0.75 (exclusive) and 1 exclusive.<br>0.75 is to the right of the 'e' in 'number'.<br>Welsh scripts: To the right of the 'y' in 'cerdyn'.<br>Condone use of 8 for B<br>C should be at 1. Condone use of 5 for C.<br>Letters must be seen on scale (i.e. not probabilities) |
| 4. (b) unlikely | B1 | C.A.O.<br>**Award B1 3/10 AND unlikely, but B0 for 3/10 ONLY** |

© WJEC CBAC Ltd.



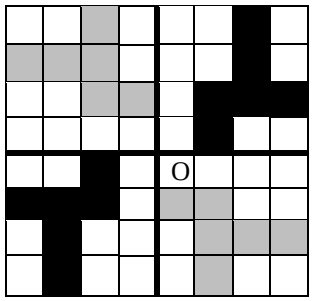
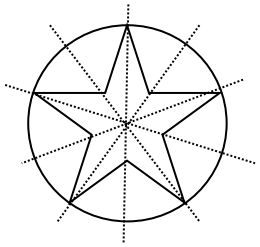
STEMUP.CO.UK

| 2015 Summer Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| 5. (a) 5a | B1 | |
| 5. (b) ($W$ = ) 8 | B2 | B1 for either 35 OR −27 **OR W = 35 – 27 =8W**<br>B0 for 35R and/or −27T OR W = 35 – 27T |
| 5. (c) y is 3 times x OR 'y = 3 times x' OR y = 3x<br>OR x is 1/3 times y OR 'x = 1/3 times y OR x = y/3<br>**OR (x,3x)** | B2 | B1 for ×3 OR 'times 3'OR 'x multiplied by 3'<br>OR B1 for ÷3 OR 'divide by 3' |
| 5. (d) (i) (x = ) 4 | **B1** | **Accept embedded answers. B0 for x4**<br>**Ignore use of incorrect letter.** |
| 5. (d) (ii) (y = ) 12 | **B1** | **Accept embedded answers. B0 for y12**<br>**Ignore use of incorrect letter.** |
| 5. (d) (iii) (t=) 2 | **B1** | **Accept embedded answers. B0 for t2**<br>**Ignore use of incorrect letter.** |
| **To be viewed with diagram**<br>6. (a) Missing inside segments = 2 or 5 (and 3)<br>Perimeter = 6+3+2+3+3+6+3+2+3+3<br><br>= 34 (cm) | <br>S1<br>M1<br><br><br>A1 | <br>One 2 or 5 in correct place gets S1<br>Attempt to add all sides of the shape<br>FT 'their 2' for possible M1<br>If the 2 is not shown on diagram but is in the sum of sides for the perimeter then award S1 here.<br>C.A.O |
| **To be viewed with diagram**<br><br>6. (b) Area = 6×3+2×3+6×3<br>OR 3×3 + 3×8 + 3×3 OR 4×3×3 + 3×2<br>= 42<br>$cm^2$ | <br><br>M1<br><br>A1<br>U1 | **You must check the diagram and their value for '2' or '5' in their part (a)**<br>Attempt to add all areas of the shape<br>F.T. if missing sides (even incorrect) are clearly indicated<br><br>Independent of all other marks. |
| 7. A(5, 2), B (−1, −5) and C(−4, 3) plotted. | ✓<br>B3 | B1 for each. Reversed coordinates get B0 every time.<br>Letters A,B,C not needed as long as the point is identified. |
| **Both parts (a) – (b) marked at the same time**<br>**To be viewed with diagram**<br>8. (a) **Use overlay**<br>$P\hat{Q}R$ = 44° (±2º)<br>QP = 8cm (±2mm) | <br><br><br>B1<br>B1 | <br><br><br><br>**B0 if P drawn on QR** |
| **To be viewed with diagram**<br>**If needed use the measuring tool to measure their PR**<br><br>8. (b) Their PR = '7' (±2mm)<br>PR × 10 = '70' **(m)** | <br><br><br>B1<br>B1 | <br><br>Their measurement in cm<br>Their measurement × 10 evaluated correctly<br>**Allow F.T. even if P is on QR** |
| 9. 12 × 15 × 10<br>= 1800 ($cm^3$)<br>= 1.8 (litres) | M1<br>A1<br>B1 | <br><br>FT 'their 1800'÷1000 |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| 2015 Summer Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| 10. (a)<br><br><br>(b)<br> | B2<br><br><br><br><br><br><br><br><br><br>B2 | B1 for each of 1st and 3rd quadrants<br><br><br><br><br><br><br><br><br><br>B1 for at least 3 correct lines and none incorrect |
| 11. (60 shirts at £8 each, 60×8 = £) 480<br>(Selling Price for profit of 50% = £) 12<br>(15 shirts at £12 **= 15×12** = £) 180<br>(Reduced selling price **= 12 – 5** = £) 7<br>(45 shirts at £7 **= 45 × 7** = £) 315<br>Having the (£)495 and (£)480 and stating 'profit' OR (£)15 profit<br>Alternative method using 'Profit'<br>Considers profit on full price shirt AND loss on reduced price shirt.<br>(Profit on one shirt = 50% of £8 = £) 4<br>(Profit on 15 shirts = 15 x 4 = £) 60<br>(Loss on one shirt = £5 - £4 = £) 1<br>(Loss on 45 shirts = 45 x £1 = £) 45<br>Having the (£)60 and (£)45 and stating 'profit' OR (£)15 profit | ✓<br>B1<br>B1<br>B1<br>B1<br>B1<br>B1<br><br><br>S1<br><br>B1<br>B1<br>B1<br>B1<br>B1<br>B1 | <br><br><br>F.T. 'their £12' **but NOT £8 for this B1 ONLY**<br>F.T. 'their £12'<br>F.T. 'their £7'<br>Correct conclusion on their figures<br>**Do not penalise an incorrect evaluation of their profit**<br><br><br><br>F.T. 'their £4'<br>F.T. 'their £4'. **Could also be profit of '–(£)1' etc**<br>F.T. 'their £1'<br>Correct conclusion on their figures<br>**Do not penalise an incorrect evaluation of their profit** |
| Look for<br>• spelling<br>• clarity of text explanations,<br>• the use of notation (watch for the use of '=', £ being appropriate)<br>QWC2: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>AND<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer<br>QWC1: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>OR<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer | QWC 2 | QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.<br>QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar .<br>OR<br>Evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar.<br>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation and grammar. |

© WJEC CBAC Ltd.



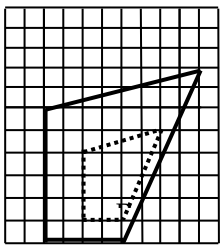
STEMUP.CO.UK

| 2015 Summer Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| **Parts (a) to (b)(ii) marked together**<br>12. (a) (Yellow, 1) Yellow, 2 Yellow 3 Yellow, 4<br>Red, 1 Red, 2 Red, 3 Red, 4<br>Blue, 1 Blue, 2 Blue, 3 Blue, 4 | B2 | B1 for a complete row OR a complete column **OR any 6 extra correct**<br>**OR B1 for Y 1, 2, 3, 4 AND**<br>**R 1, 2, 3, 4 AND**<br>**B 1, 2, 3, 4** |
| 12. (b) (i) 2/12 (ISW) OR 1/6 | B2 | **F.T. sample space in part(a) only if at least B1 awarded.**<br>Ignore incorrect attempts at cancelling.<br>B1 for the numerator of 2 in a fraction <1<br>OR B1 for the denominator of 12 in a fraction <1<br>Penalise −1 once only for consistent use of words such as "2 out of 12", "2 in 12" OR "2:12".<br>When fraction and wrong notation seen, DO NOT penalise wrong notation.<br>If incorrect reduction of fraction in (b) (i), then give the full marks at that point, but if they go on to use the incorrect fraction in (b) (ii), penalise −1. |
| 12. (b) (ii)<br><br>1/6 × 120<br>= 20 (people) | <br><br>M1<br>A1 | There is no F.T. for the use of any probabilities outside the range 0 to 1 inclusive **OR for ½**<br>Penalise incorrect cancelling of 2/12 here, but F.T.<br>20 out of 120 gets the M1, A1 but 20/120 gets M1, A0 |
| 13. (a) (x = ) 180 – 56 – 90 OR equivalent<br>(x = ) 34(°) | M1<br>A1 | Look at diagram also, but written work takes precedence.<br>**Mark final answer. Candidates who get 34 then go on to divide by 2 to get 17 should be awarded M0,A0.** |
| 13. (b) Other angle of rhombus = 180 – 126 = 54(°)<br><br>(y =) 27(°) | M1<br>A1<br><br>A1 | OR in triangle ABC, angle at A = angle at C = (180 - 126)/2<br><br>(y =) 27(°) | M1<br>m1<br><br>A1 | For any correct method to find y<br>For correctly calculating first angle<br><br>For correctly calculating y on F.T.<br>SC2 for sight of unsupported (y=) 54(°) |
| 14. For spoons: sight of 450÷180 OR<br>sight of 450 split as 360**,** 90 or 180, 180, 90<br>(Machine stopped at) 11(:)30 (am)<br><br>For forks: 240 × 2.5 OR<br>240÷60 = 4 (forks per minute) **and** (4)× 150 or equivalent<br>600 (forks**)** | ✓<br>M1<br><br>A2<br><br>M1<br><br>A1 | OR 3(spoons per min) or 30(spoons in) 10 mins<br><br>A1 for 2.5 (hours) or 2 hours 30 minutes or 150 minutes<br>For A1 allow poor or incorrect notation of time, e.g. 2.3 hrs<br><br>FT 'their 2.5 hours' or 'their 150 minutes'<br><br>FT 'their 2.5 hours' provided not a whole number or 'their 150 minutes' provided not a multiple of 60<br><br>*Alternative if the time period is not considered (for max 3 marks):*<br>*M1 for an attempt to find the multiplier180 × … = 450, e.g. 18:24 **and** 450÷18 (=25),*<br>*M1 for a final calculation that could lead to a correct answer, e.g. applying the multiplier to the right hand side of their ratio, for attempt 24×450÷18*<br>*A1 for 600 forks* |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| 2015 Summer Linear Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| 15. (a) 1 cm represents either<br>25 km or 25 000 m or 2 500 000cm<br><br>1 : 2 500 000 | M1<br><br><br>A1 | Do not accept 4 cm represents 100 km (given in question)<br>**An answer of** 1 : 25 is M0 (and A0) however allow 1 : 25 km for M1<br>1 : 2.5 million<br>Allow 1: 2 500 000cm (must be within a ratio) |
| 15.(b) 100 / 2hr 30 min or 200 km in 5 hours<br><br>100 / 2.5 or 200/5<br>40 (km/h) | M1<br><br>m1<br>A1 | Accept time written incorrectly, for the idea distance /time, e.g. 100/2.3, 100/150<br>Alternatively M1, m1 for 20km in 30 minutes<br>Sight of 40 irrespective of units given |
| 16.<br>(<ECB =) 76(°)<br>(<EBC =) 180(°) - 76(°) - 76(°)<br>(=) 28(°)<br>( x =) 152(°)<br><br><br><br><br>Reasons in any order:<br>• Alternate or allied or (co)interior<br>• Isosceles triangle (with angle sum 180°)<br>• Angles on a straight line (180°) OR<br>exterior angle equal to the sum of the two opposite interior angles OR for a 2nd time: Alternate or allied or (co)interior | ✓<br>B1<br>M1<br>A1<br>A1<br><br><br><br><br><br>E2 | <br>Accept shown on the diagram or other indication<br>FT 'their 76°'<br><br>FT their 28(°) provided M1 awarded<br><br>*Alternatively:*<br>*(<ECB =) 76(°)* *B1*<br>*((x =) <BEC = 76(°) leading to ) 76(°) + 76(°)* *M2*<br>*FT 'their 76°'*<br>*152(°)* *A1*<br><br>All 3 appropriate reasons given<br>E1 for any 2 of the 3 reasons given<br><br>Do not accept informal descriptions of angles on parallel lines |
| 17. (a) Correct rotation | B2 | B1 for a near miss i.e. not on grid points but within the small grid square, or for 90° clockwise rotation about (2, -1), or for 2 vertices correct. |
| 17. (b) Correct enlargement, scale factor 2 in correct position<br> | B2 | B1 for scale factor 2 enlargement but incorrect position, or for correct position with intention scale factor 2 with at least 2 lines drawn correctly.<br>Incorrect scale factor should be marked as if correct SF then penalise –1. |
| 18. 180 – 162 (= 18)<br>360 ÷ (180 – 162)<br>20 (sides) | M1<br>m1<br>A1 | <br><br><br>**C.A.O.**<br>*Alternative:*<br>*n × 162 = (n – 2)×180* *M2*<br>*OR M1 for sight of matched trials with values of n with attempt to calculate n × 162 and (n – 2)×180*<br>*n = 20 (sides)* *A1* |
| 19. Volume = $\pi \times 4^2 \times 10$ or $3 \times 4^2 \times 10$<br>480($cm^3$)<br><br><br><br>Conclusion, e.g. 'incorrect as it is approximately (0).48 litres', 'no he is wrong it holds about 480$cm^3$ not 5000$cm^3$', 'no he is incorrect as it is 4520$cm^3$ difference' | M1<br>A1<br><br><br><br>E1 | <br>ISW (change of units). Ignore units given for A1, but they must be correct in order to award E1<br>**160 π gets M1A0**<br><br>'No' or 'incorrect' may be implied. The reason must be showing comparison (like units), e.g. 0.48(0) (with 5 litres), or 480 with 5000 ($cm^3$), **or 480$cm^3$ approximately 500$cm^3$ with 5000$cm^3$**<br>FT 'their 480 ($cm^3$)' provided M1 awarded and 'their 480' has dimensionally correct units for comparison with 5 litres |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Surname | Centre Number | Candidate Number |
|---|---|---|
| Other Names | | 0 |

WJEC CBAC

# GCSE

4370/03

A14-4370-03

# MATHEMATICS – LINEAR
## PAPER 1
## FOUNDATION TIER

A.M. WEDNESDAY, 5 November 2014

1 hour 45 minutes

**CALCULATORS ARE NOT TO BE USED FOR THIS PAPER**

### ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

### INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take $\pi$ as 3·14.

### INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **2***(c)*.

| For Examiner's use only | | |
|---|---|---|
| **Question** | **Maximum Mark** | **Mark Awarded** |
| **1.** | **12** | |
| **2.** | **7** | |
| **3.** | **4** | |
| **4.** | **11** | |
| **5.** | **6** | |
| **6.** | **4** | |
| **7.** | **3** | |
| **8.** | **4** | |
| **9.** | **6** | |
| **10.** | **3** | |
| **11.** | **6** | |
| **12.** | **6** | |
| **13.** | **3** | |
| **14.** | **3** | |
| **15.** | **6** | |
| **16.** | **7** | |
| **17.** | **5** | |
| **18.** | **4** | |
| **Total** | **100** | |

4370 030001

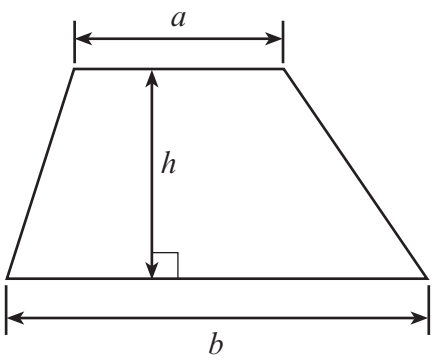
© WJEC CBAC Ltd.



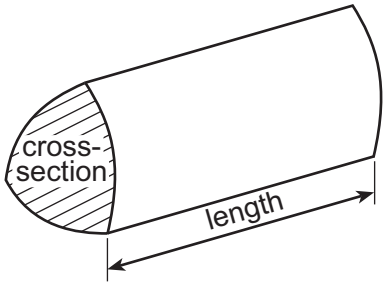
STEMUP.CO.UK

## Formula List

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




**Volume of prism** = area of cross-section × length




© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**1.** *(a)* (i) Write down, in figures, the number fifty two thousand and four. [1]

.....

(ii) Write down, in words, the number 6 700 000. [1]

.....

*(b)* Using only the numbers in the following list,

36 37 47 53 56 44 81 34

write down

(i) two numbers that add up to 80, [1]

.....

(ii) the number which must be added to 46 to make 83, [1]

.....

(iii) a multiple of 8, [1]

.....

(iv) the square number that is also an odd number. [1]

.....

*(c)* Write 79 634

(i) correct to the nearest 100, [1]

.....

(ii) correct to the nearest 1000. [1]

.....

*(d)* Write down all the factors of 12. [2]

.....

.....

*(e)* A packet of paper costs £2.97. How many packets of paper can be bought for £15? [2]

.....

.....

.....



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**2.** *(a)* Write down the value of the 7 in the number 12 762. [1]

.....

*(b)* Write down a prime number between 20 and 30. [1]

.....

*(c)* *You will be assessed on the quality of your written communication in this part of the question.*

Disha has £6.
She buys some pineapples at 80p each and has 40p left over.
How many pineapples did she buy?
You must show all your working. [5]

.....

.....

.....

.....

.....

.....

.....

.....

.....

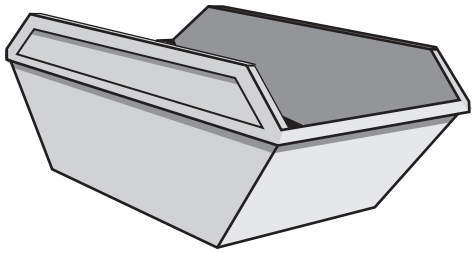
.....

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**3.** The formula for the cost of hiring a skip is given below.



**cost of hire = number of days × £40 + delivery charge**

*(a)* Jac hired a skip for 5 days and the cost was £250.
What was the delivery charge? [2]

.....

.....

.....

.....

*(b)* On another occasion, Jac hired a skip for £350 and the delivery charge was £30.
For how many days did he hire the skip? [2]

.....

.....

.....

.....

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**4.** At a sporting event, Rhian carried out a survey to find out from which continent each athlete had come. Her results are shown below.

| Continent | Europe | Africa | Asia | The Americas | Australasia |
|---|---|---|---|---|---|
| Number of athletes | 40 | 30 | 35 | 70 | 25 |

*(a)* Draw a pictogram to represent the above information, using  to represent 20 athletes. [4]

| | |
|---|---|
| Europe | |
| Africa | |
| Asia | |
| The Americas | |
| Australasia | |

*(b)* On the centimetre squared paper on the next page, draw a bar chart to represent the above information. [4]

*(c)* Write down the mode. [1]

.....

*(d)* Find the probability that an athlete, chosen at random from this group, comes from Africa. [2]

.....

.....

.....

.....

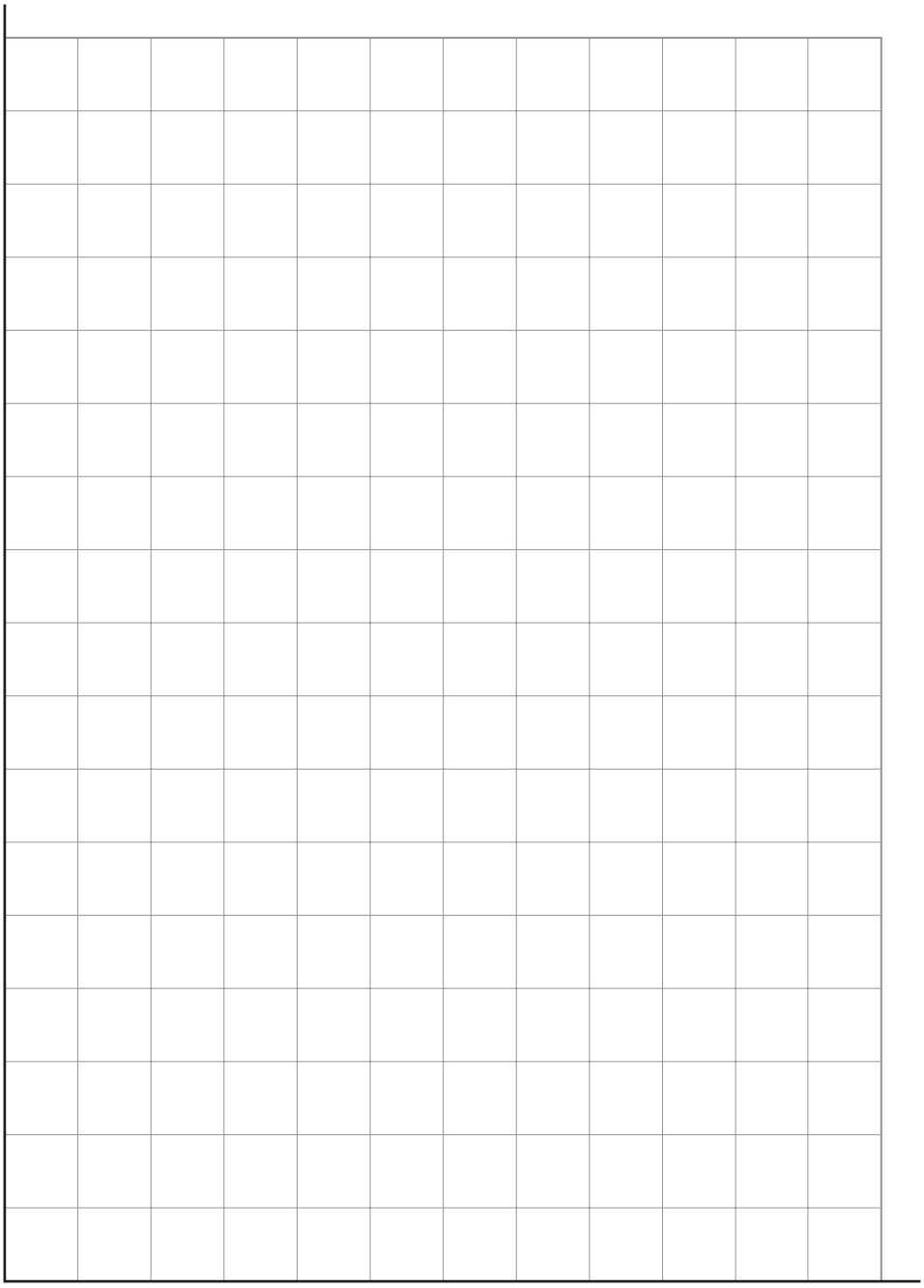
.....

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only





© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**5.** Three identical rectangles, each measuring 7 cm by 3 cm, are placed together to make the shape shown in the diagram.

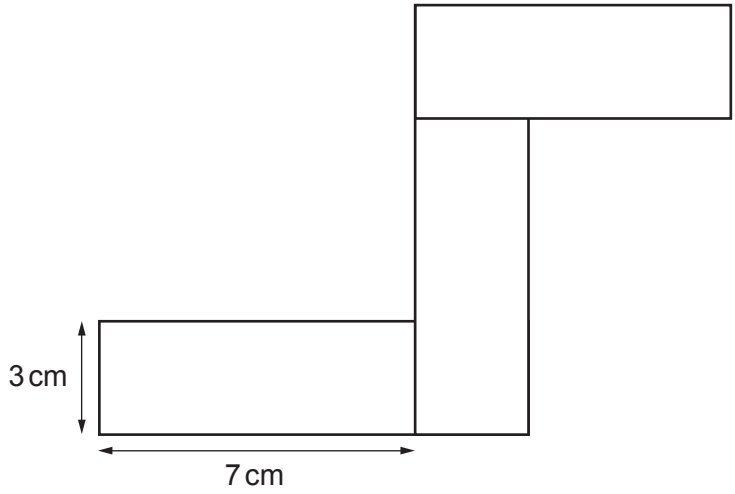



*Diagram not drawn to scale*

*(a)* Calculate the perimeter of the shape. [3]

.....

.....

.....

*(b)* Calculate the area of the shape.
Write down the units of your answer. [3]

.....

.....

.....

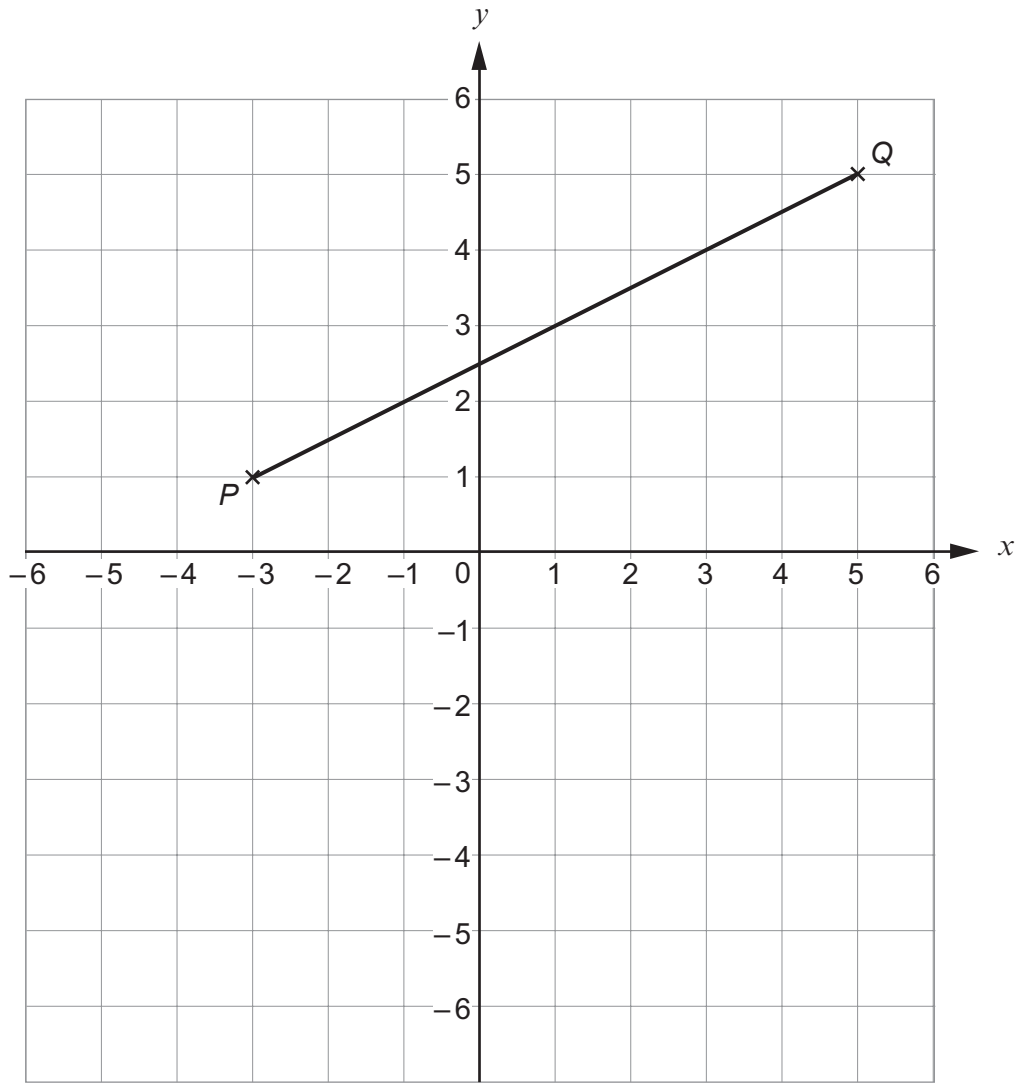
.....

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**6.**




*(a)* Write down the coordinates of the point *P*. [1]

(..... , .....)

*(b)* The point *R* lies on the line *PQ*.
The $y$-coordinate of *R* is 4.
What is the $x$-coordinate of the point *R*? [1]

$x$-coordinate = .....

*(c)* The coordinates of the point (1, 3) add up to 4.
Write down the coordinates of the point on *PQ* which add up to 1. [2]

(..... , .....)

4370 030009

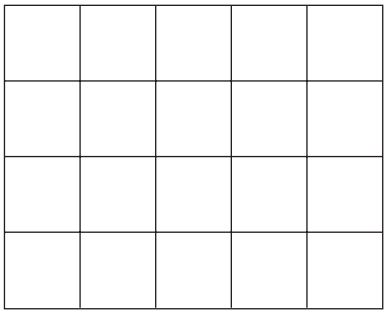
© WJEC CBAC Ltd.

STEMUP.CO.UK

**Turn over.**

Examiner only

**7.** Three children share 20 cubes.
Melanie takes 25% of the cubes.
John and Denise share the rest of the cubes.
John gets more cubes than Denise.



What is the greatest number of cubes that Denise could get? [3]

**8.** Gayle buys 8 biros for £3.
Three of them are black.
The others are red.
Each red biro costs 45p.
What is the cost of one black biro? [4]

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**9.** *(a)* Simplify $4x - 2y - 3x + 5y$. [2]

*(b)* Solve $5t - 6 = 9$. [2]

*(c)* Find the value of $2p + 5q$ when $p = -3$ and $q = 2$. [2]

4370 030011

© WJEC CBAC Ltd.



STEMUP.CO.UK

**Turn over.**

Examiner only

**10.** The sketch shows a triangular plot of land, with a church marked *C*, a school marked *S* and a bus stop marked *B*. The actual straight line distances between these places are also shown on the diagram.

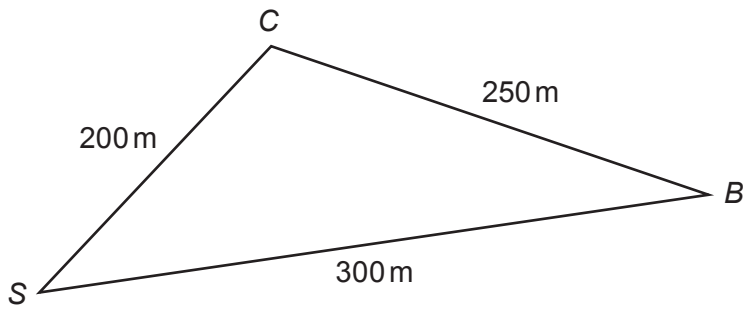



*Diagram not drawn to scale*

Using a scale of 1 cm to represent 25 m, construct a scale drawing of the plot of land. [3]

.....

.....

.....

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**11.** In a game, a player rolls a coin onto a board marked out in squares.
The squares on the board are coloured red, blue or green.
If the coin lands entirely within one of these coloured squares the player wins a prize.
Otherwise the player loses.

The table below shows the probabilities of the coin landing entirely within each coloured square.

| Colour | Red | Blue | Green |
|---|---|---|---|
| Probability | 0·13 | 0·14 | 0·04 |

*(a)* What is the probability that a player wins a prize? [2]

*(b)* One day 200 people play this game. How many people would you expect to win a prize? [2]

*(c)* It costs 70p to play the game once. The prize for winning is £1.50. If the 200 people play the game once, how much profit do you expect the game to make? [2]

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**12.** *(a)* $ABCD$ is a parallelogram with $A\hat{D}C = 46°$ and $A\hat{C}B = 59°$.
Find the size of angle $x$. [3]

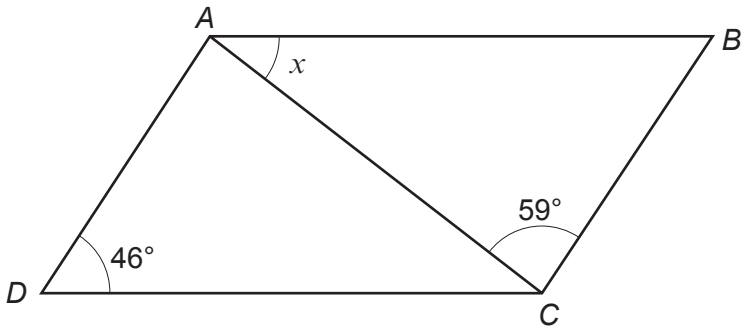



*Diagram not drawn to scale*

.....

.....

.....

$x$ = ..... °

*(b)* Find the size of angle $y$. [3]

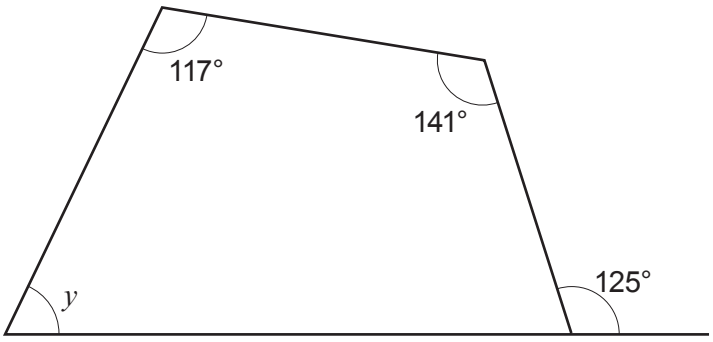



*Diagram not drawn to scale*

.....

.....

.....

.....

$y$ = ..... °

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**13.** The following is part of a train timetable from Bangor to Chester.

| | | | |
|---|---|---|---|
| Bangor | 11:07 | 12:24 | 13:07 |
| Llandudno Junction | 11:25 | 12:42 | 13:25 |
| Colwyn Bay | 11:31 | 12:48 | 13:31 |
| Rhyl | 11:41 | 12:59 | 13:41 |
| Prestatyn | 11:47 | 13:05 | 13:47 |
| Flint | 12:00 | 13:18 | 14:00 |
| Chester | 12:19 | 13:32 | 14:19 |

*(a)* Bob catches the 11:31 train from Colwyn Bay.
When should the train arrive at Prestatyn? [1]

.....

*(b)* Mary catches the 13:25 train at Llandudno Junction.
How long should it take her to get to Chester? [2]

.....

.....

.....

**14.** Express 240 as a product of prime numbers in index form. [3]

.....

.....

.....

.....

.....

.....

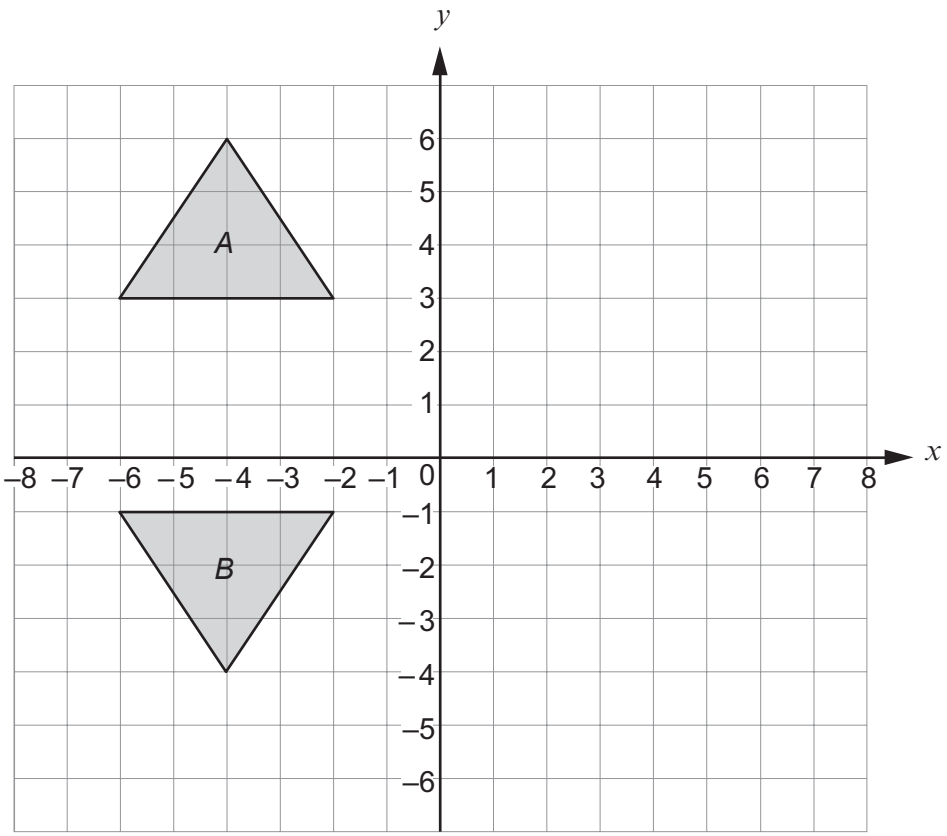
.....

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**15.**




The diagram shows the transformation of triangle *A* to triangle *B*.

*(a)* Fully describe a possible transformation of triangle *A* to triangle *B*. [2]

.....

.....

.....

.....

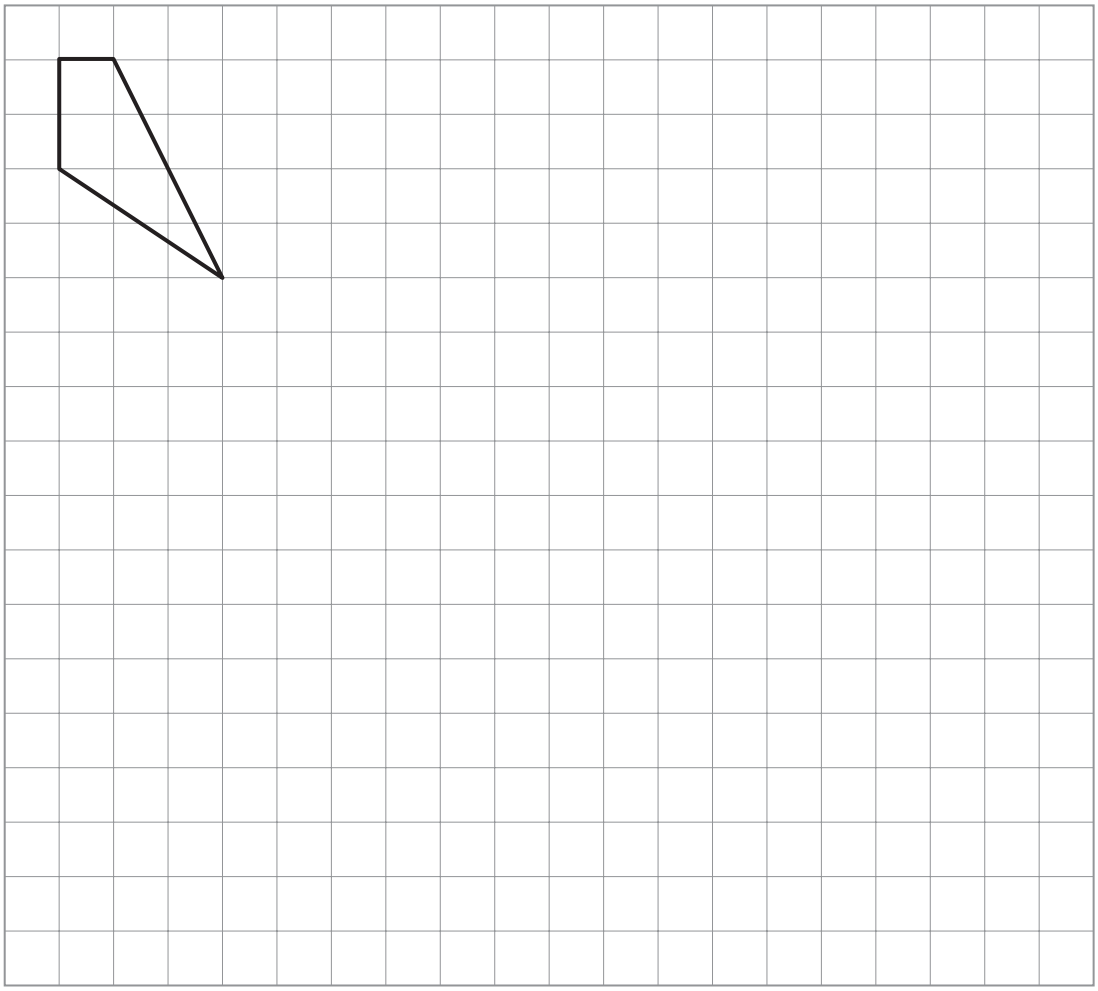
*(b)* Rotate triangle *A* through 90° clockwise about the origin.
Label your answer *C*. [2]

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

*(c)* Draw an enlargement of the shape below, using a scale factor of 2. [2]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**16.** Sophie is going on holiday.

*(a)* Sophie travels a distance of 35 miles in 2 hours 30 minutes through busy traffic.

Calculate Sophie's average speed, in miles per hour. [3]

*(b)* Sophie's luggage weighs 22lb.



Approximately how much does her luggage weigh in kg? [1]

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(c)* Sophie is due to fly from Glasgow to San Francisco.
She arrives at Glasgow airport on Wednesday at 13:40.
She has to wait 4 hours 25 minutes for her flight.

It takes 13 hours to fly between Glasgow and San Francisco.
She knows that the time in Glasgow is 8 hours ahead of the time in San Francisco.
For example, when it is 10:00 a.m. in Glasgow it is 2:00 a.m. in San Francisco.

On which day and at what time does Sophie expect to arrive in San Francisco airport?
You must show all your working. [3]

Day ..... Time .....

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**17.** *(a)* Solve $5x - 12 = 3(x + 6)$. [3]

*(b)* Solve the inequality $9x + 5 < 77$. [2]

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**18.** The diagram shows a rectangle *ABCD*.

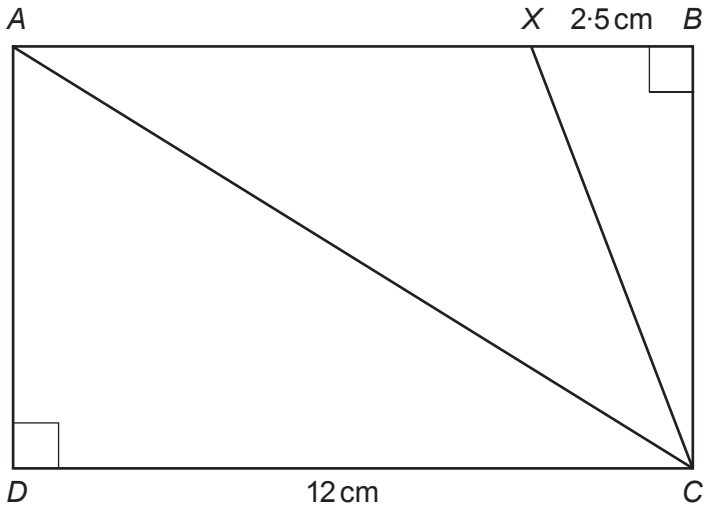



*Diagram not drawn to scale*

Given that *XB* = 2·5 cm, *DC* = 12 cm and the area of triangle *ADC* is 60 $cm^2$, calculate the area of triangle *XBC*. [4]

**END OF PAPER**

© WJEC CBAC Ltd.

STEMUP.CO.UK

# BLANK PAGE

© WJEC CBAC Ltd.

# BLANK PAGE

© WJEC CBAC Ltd.

# GCSE MARKING SCHEME

## MATHEMATICS - LINEAR

## NOVEMBER 2014

© WJEC CBAC Ltd.

## INTRODUCTION

The marking schemes which follow were those used by WJEC for the November 2014 examination in GCSE MATHEMATICS - LINEAR. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

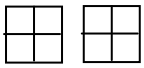
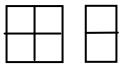
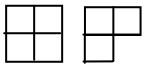
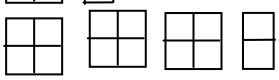
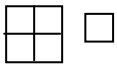
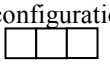
© WJEC CBAC Ltd.

| GCSE Mathematics - Linear<br>Paper 1 (Non calculator)<br>Foundation Tier November 2014 | Marks | Final Mark Scheme<br>Comments |
|---|---|---|
| 1. (a) (i) 52004<br>(ii) six million **(and)** seven hundred thousand<br><br>(b) (i) 36 and 44<br>(ii) 37<br>(iii) 56<br>(iv) 81<br><br>(c) (i) 79600<br>(ii) 80000<br><br>(d) 1, 2, 3, 4, 6, 12<br><br>(e) 15/2.97 OR 15/3<br><br>= 5 | B1<br>B1<br><br>B1<br>B1<br>B1<br>B1<br><br>B1<br>B1<br><br>B2<br><br>M1<br><br>A1<br><br>12 | **Accept six point seven million**<br><br>Allow 37+46 etc as long as 37 seen<br><br>B1 for at least 4 correct factors with at most 1 incorrect number. Ignore repeated numbers<br>Accept answers written in the form 1×12, 2×6, 3×4<br><br>Using a repeated addition method (or multiplication) only gets M1 if it shows trying to get the most for £15.<br>£14.85 gets M1 A0.<br>Note:<br>We condone 3/15 =5 and award M1,A1. If their answer is incorrect, such as 3/15 = 4 then award M0,A0. |
| 2. (a) 7 hundred(s) OR 700 OR hundred(s)<br><br>(b) 23 OR 29<br><br>(c) (Disha spends) **(£)**5.60 **OR 560 (p)**<br>(Number of pineapples =) 560/80<br>= 7 (pineapples)<br>Look for<br>• spelling<br>• clarity of text explanations,<br>• the use of notation (watch for the use of '=', £, p)<br><br>QWC2: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>AND<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer<br>QWC1: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>OR<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer | B1<br><br>B1<br><br>B1<br>M1<br>A1<br><br>QWC<br>2<br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br>7 | **Do not accept 100**<br><br>QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.<br><br>QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar<br>OR<br>evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar.<br><br>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation or grammar |
| 3. (a) Delivery charge = 250 – 5 × 40<br>Delivery charge = (£)50<br><br>(b) Number of days = (350 – 30)/40<br>= 8 (days) | M1<br>A1<br><br>M1<br>A1<br>4 | Correctly substituted shown by correct attempt to evaluate.<br><br>For correct substitution with subtraction<br>Allow embedded references to the correct answer. |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| GCSE Mathematics - Linear<br>Paper 1 (Non calculator)<br>Foundation Tier November 2014 | Marks | Final Mark Scheme<br>Comments |
|---|---|---|
| 4. (a)<br>E <br>AF <br>AS <br>AM <br>AU  | B1<br>B1<br>B1<br>B1 | **Penalise −1 once only for contiguous or fragmented symbols**<br>**For Africa AND America**. Accept other configurations of the 2 squares, **for example** <br>Accept other configurations of the 3 squares<br>**for example**  |
| (b) Both axes labelled, e.g. frequency along one axis and Europe (E), Africa (AF), Asia (AS), Americas (AM), Australasia (AU), along other axis - anywhere within the base (inc.) of the corresponding bar. | B1 | Accept 'Number' OR 'Athletes' for frequency. |
| Uniform scale for the frequency axis starting at 0. | B1 | If no scale then B0 and allow one 2 cm square to represent 10. Same applies to any other consistent recognisable scale. For example one 1cm square to represent 10 consistently. |
| Five bars at correct heights (bars must be of equal width). | B2 | B1 for any 3 or 4 correct bars. |
| (c) (The) America(s) OR (AM) | B1 | Accept 70 and (The) America(s) OR (AM), but B0 for 70 only. |
| (d) 30/200 OR 3/20 **OR 15%** OR equivalent **I.S.W.** | B2<br>11 | B1 for 200, B1 for a correct numerator on F.T. in a fraction <1. Penalise -1 for incorrect notation, e.g. '30 out of 200', '30:200' |
| 5. (a) Missing side segments = 4<br>Perimeter = 7+3+7+4+3+7+3+4+7+3<br>= 48 (cm) | S1<br>M1<br>A1 | May be implied by correct working.<br>Attempt to add **all** sides of the shape. **M0 if 7 OR 3 used instead of 4**<br>C.A.O. |
| (b) Area = 3 × 7 × 3<br>= 63<br>$cm^2$ | M1<br>A1<br>U1<br>6 | OR equivalent<br>C.A.O.<br>Independent of all other marks. |
| 6. (a) (−3,1)<br>(b) 3<br>(c) (−1, 2) | B1<br>B1<br>B2<br>4 | **Accept (3, ...)**<br>B1 for any point with coordinates that add up to 1 with one negative.<br>**B0 for (x −1, y 2) but B1 for x= -1, y=2** |
| 7. 25% of 20 = 5<br>John and Denise share 15 cubes<br>Maximum for Denise = 7 | B1<br>B1<br>B1<br>3 | **May be indicated on the diagram**<br>F.T. '20 – their 5'<br>F.T. 'their 15' if possible.<br>**For example, suppose John and Denise share 14 cubes then maximum for Denise is 6 (with John 8).** |
| 8. There are 5 (red biros)<br>Red biros cost = 225(p) OR (£)2.25<br>3 black biros costs 75(p)<br>Each costs = 25 (p) | B1<br>B1<br>B1<br>B1<br>4 | F.T 'their 5' × 45 evaluated correctly (provided 'their 5' ≠ 3)<br>F.T. '£3 - their 225' evaluated correctly<br>F.T. 'their 75' ÷ 3. **B0 for 0.25p** |

© WJEC CBAC Ltd.



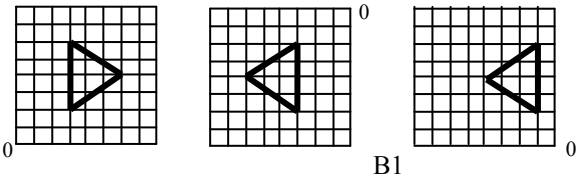
STEMUP.CO.UK

| GCSE Mathematics - Linear<br>Paper 1 (Non calculator)<br>Foundation Tier November 2014 | Marks | Final Mark Scheme<br>Comments | |
|---|---|---|---|
| 9. (a) $x + 3y$ | B2 | B1 for the x OR (+) 3y | |
| (b) $5t = 15$ | B1 | | |
| $(t =)$ 3 | B1 | F.T from one error. Accept embedded answers. | |
| (c) 4 | B2<br>6 | B1 for the −6 OR (+)10. **<u>−6p +10q gets B0.</u>** | |
| 10. **<u>Use Overlay</u>**<br>Correct use of the scale on any line OR First correct line | B1 | **<u>For any 1 correct line drawn OR All 3sides 8cm,10cm and 12cm corectly calculated.</u>** | |
| Method for finding intersection of the other 2 sides | M1 | **<u>Arcs must be shown.</u>** | |
| Completed drawing | A1 | | |
| | | Allow B1, SC1 if their triangle is within the tolerances of the overlay but no arcs shown. | |
| | 3 | | |
| 11. (a) (0).13 +(0).14 + (0).04 | M1 | | **<u>NOTES:</u>** |
| **<u>(0).31 OR equivalent, e.g. 31%</u>** | A1 | | (1) There is no F.T. for the use of any probabilities outside the range 0 to 1 inclusive. |
| (b) (0).31 of 200 | M1 | F.T 'their 0.31' | |
| = 62 | A1 | 62 out of 200 gets M1, A1<br>$\frac{62}{200}$ gets M1, A0. | (2) Penalise −1 once only for consistent use of words such as "31 out of 100", "31 in 100" OR "31:100". |
| (c) $200 \times 70p - 62 \times £1.50$ (=140 – 93) | M1 | F.T. 'their 62', OR rounded up or down figure.<br>**<u>OR</u>**<br>**<u>Profit =</u>**<br>**<u>138×70(p)–62×80(p)</u>**<br>**<u>= (£)96.60 - (£)49.60</u>**<br>**<u>= (£)47</u>** | (3) When fraction and wrong notation seen, DO NOT penalise wrong notation. |
| Profit =(£)47 OR 4700 (p) | A1 | | (4) If incorrect reduction of fractions, then give the full marks at that point, but if they go on to use the incorrect fraction in part (b), penalise −1. |
| | 6 | | |
| 12. (a) ∠ABC = 46 (°) | B1 | Look at diagram also | |
| x = 180 – 46(°) - 59(°) OR 180 – 105(°) | M1 | | |
| x = 75(°) | A1 | | |
| (b) Interior angle = 55 | B1 | 55 on its own gets this B1, even as y = 55. | |
| 360 – 117 – 141 – 55 OR 360 – 313 | M1 | Angle sum of quadrilateral. Note that 360 – 117 – 141 – (180 – 125) is equivalent to 180 + 125 – (117 + 141) | |
| y = 47 (°) | A1 | For finding 4th angle. Also look in their diagram.<br>F.T. 'their 55' | |
| | 6 | | |
| 13. (a) 11:47 | B1 | | |
| (b) 14:19 – 13:25 | M1 | **<u>For the intent to subtract 13:25 from 14:19</u>** | |
| = 54 minutes | A1 | | |
| | 3 | | |
| 14. | M1 | For a method that produces 2 prime factors from the set {2, 2, 2, 2, 3, 5 } before their second error. If their 2nd prime and 2nd error occur at the same 'level' then allow M1. | |
| 2, 2, 2, 2, 3, 5 | A1 | C.A.O. for the six correct factors. (Ignore 1s). | |
| $2^4 \times 3 \times 5$ | B1 | F.T. their answer if at least one index form used with at least a square. Ignore prime number requirement for this B mark.<br>Use of brackets $(2^4)(3)(5)$ OR dot $2^4.3.5$ gets the B1.<br>The inclusion of any 1s as factors, for example, $2^4 \times 3 \times 1 \times 5$ in their index form gets B0. Note that $2^4 \times 3^1 \times 5^1$ gets B1. | |
| | 3 | | |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| GCSE Mathematics - Linear<br>Paper 1 (Non calculator)<br>Foundation Tier November 2014 | Marks | Final Mark Scheme<br>Comments |
|---|---|---|
| 15.(a) Reflection (in) y = 1 OR rotation 180° about (-4, 1) OR rotation 180° about origin or (0, 0) followed by translation $\begin{pmatrix}-8\\2\end{pmatrix}$ OR **or enlargement -1 with centre (-4, 1)** **OR equivalent .** | E2 | Do not accept informal or imprecise language such as 'flipped' or 'mirror' or 'translation' for E2<br>E1 for 'rotation' or ('turn around') 180° with (-4, 1) indicated, OR 'reflection' and an attempt to indicate a horizontal line (accept incorrect lines) or reflection in x=1, OR for 'flipped in y=1' or 'mirror in y=1' but do not allow 'flipped' or 'mirror' with y=1 drawn but not described, OR E1 for rotation 'about (0, 0)' or '180°' and translate $\begin{pmatrix}-8\\2\end{pmatrix}$. |
| (b) Correct rotation<br><br>B1<br>**H1** | (b)<br>B2 | B1 for anticlockwise 90° about the origin **(2nd diagram)** OR 90° clockwise about origin of triangle B **(3rd diagram)** |
| (c) Correct enlargement | B2<br><br>6 | B1 for any 3 correct vertices **OR completely correct with a different scale factor (≠1)** |
| 16.(a) Use of distance /time (35/2.5)<br>35/2.5<br>14(mph) | B1<br>B1<br>B1 | For example, accept 35/2.3**(0) or 35/150**<br>*An answer of 15.2…. implies this first B1*<br>C.A.O.<br>*Alternative: 70÷5 B2 then 14(mph) B1, or*<br>*35/5 = 7 with 7+7 B2, then 14(mph) B1*<br>*(35/7 is insufficient to convince distance/time)* |
| (b) 10(kg) **or 11(kg)** | B1 | |
| (c) (In Glasgow time flight arrives San Francisco at) 13:40 add 4h 25 min add 13 h ( 7:05 on Thursday/next day)<br>(To find San Francisco time) subtract 8 h<br>Day Wednesday Time 23(:)05 **OR 11:05 pm OR 11:05 Wednesday night OR equivalent**<br>**H4** | M1<br>M1<br>A1<br><br>7 | All times and periods and attempt addition forward<br>May be in stages. Accept 4.25 as indication of 4hr 25mins<br>Intention 8 hours back from their intention of addition of 4h 25min or 13 h to 13:40<br>CAO<br>An answer of 23:05 without stating Wednesday is M1, M1, A0. Allow 23(:)05 pm, but do not allow 23(:)05 am<br>Accept 11(:)05 pm. Allow 11(:)05 Wednesday night |
| 17. (a) **(5x –12 =)** 3x+18<br>5x –3x = 18+12 or 2x=30<br>x=15 | B1<br>B1<br>B1 | **For clearing the bracket correctly.** FT until 2nd error.<br>If FT leads to a whole number, answer must be given as whole number, otherwise allow as an improper fraction |
| (b) 9x < 72 or x < 72/9 **OR 9x < 77 - 5**<br>x < 8<br>**H2c&d** | M1<br>A1<br><br>5 | A0 for a final answer 'x=7', however ignore continuation to state x = 7, 6, 5, … with x<8 seen award A1<br>No marks for use of "=" throughout, unless finally replaced to give x<8 then award M1 A1.<br>*SC1 for x<82/9 ISW* |
| 18. Area triangle ADC ½ ×12×AD = 60 or equivalent<br>AD = 10 (cm)<br>Area triangle XBC = ½ × 2.5× AD<br>12.5 ($cm^2$)<br>**H6** | M1<br>A1<br>M1<br><br>A1<br><br>4 | **FT 'their AD' and/or FT consistent use of 'their area formula'.**<br>*Alternative:*<br>*(Using ratio of base) Area XBC = 60 ×2.5/12 M1, A1, M1*<br>*= 12.5(cm2) A1*<br>*OR in parts: 60/12 M1 (NOT labelled AD)*<br>*= 5 A1*<br>*Area 2.5 × 5 M1*<br>*= 12.5(cm2) A1* |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Surname | Centre Number | Candidate Number |
|---|---|---|
| Other Names | | 0 |

# GCSE

4370/03

# MATHEMATICS – LINEAR
## PAPER 1
## FOUNDATION TIER

A.M. MONDAY, 9 June 2014

1 hour 45 minutes

**CALCULATORS ARE NOT TO BE USED FOR THIS PAPER**

### ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

### INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

Take $\pi$ as 3·14.

### INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **3**.

| For Examiner's use only | | |
|---|---|---|
| **Question** | **Maximum Mark** | **Mark Awarded** |
| **1.** | **10** | |
| **2.** | **6** | |
| **3.** | **6** | |
| **4.** | **3** | |
| **5.** | **6** | |
| **6.** | **6** | |
| **7.** | **3** | |
| **8.** | **4** | |
| **9.** | **4** | |
| **10.** | **6** | |
| **11.** | **4** | |
| **12.** | **2** | |
| **13.** | **6** | |
| **14.** | **5** | |
| **15.** | **6** | |
| **16.** | **4** | |
| **17.** | **4** | |
| **18.** | **4** | |
| **19.** | **3** | |
| **20.** | **3** | |
| **21.** | **5** | |
| **Total** | **100** | |

4370 030001

J U N 1 4 4 3 7 0 0 3 0 1

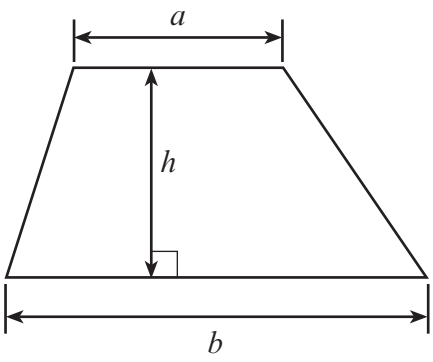
© WJEC CBAC Ltd.

CJ*(S14-4370-03)

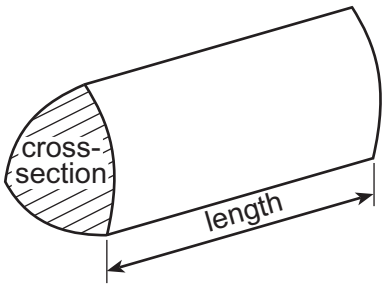
STEMUP.CO.UK

## Formula List

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




**Volume of prism** = area of cross-section × length






© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**1.** *(a)* (i) Write down, in figures, the number three million, four hundred and eleven thousand and two. [1]

.....

(ii) Write down, in words, the number 72 065. [1]

.....

*(b)* Using the following list of numbers

17 6 53 40 63 36 39 81

write down

(i) two numbers that add up to 80, [1]

.....

(ii) the number that is the difference between 67 and 28, [1]

.....

(iii) a multiple of 7, [1]

.....

(iv) the answer when 48 is divided by 8, [1]

.....

(v) the square of 9. [1]

.....

*(c)* Write down a factor of 96 which is between 10 and 20. [1]

.....

*(d)* Write 6571

(i) correct to the nearest 10, [1]

.....

(ii) correct to the nearest 100. [1]

.....

4370 030003



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**2.** *(a)* Each of the digits 5, 2, 6 and 7 is used once to make a four-digit number.

(i) What is the largest number that can be made? [1]

.....

(ii) What is the smallest even number that can be made? [1]

.....

*(b)* Find the value of each of the following.

(i) 0·2 × 0·3 [1]

.....

.....

(ii) 6·2 – 3·28 [1]

.....

.....

.....

*(c)* Estimate the value of 2·9 × 98·2. [2]

.....

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**3.** *You will be assessed on the quality of your written communication in this question.*

A window cleaner takes 15 minutes to clean each window in a large building.
He charges using the following formula:

**payment = £8 x number of hours worked + call-out charge**

Calculate the payment for cleaning 20 windows when the call-out charge is £12. [6]

.....

.....

.....

.....

.....

.....

.....

.....

4370
030005



© WJEC CBAC Ltd.



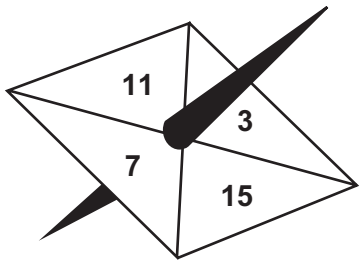
STEMUP.CO.UK

Examiner only

**4.** Choose the best word from those given below to describe the chance of each of the following events occurring.

**impossible** **unlikely** **even chance** **likely** **certain**

*(a)* You get an odd number when the following spinner is spun once. [1]




.....

*(b)* You win a raffle when 200 tickets are sold and you have bought one. [1]

.....

*(c)* You get an even number when a fair dice is rolled once. [1]

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**5.** *(a)* Write down the next term in **each** of the following sequences. [2]

(i) 15, 21, 27, 33, .....

(ii) 62, 56, 51, 47, .....

.....

.....

*(b)* Describe, in words, the rule for continuing the sequence 48, 12, 3, $\frac{3}{4}$, ..... [1]

.....

*(c)* Find the value of $p = 3a + 4b - 6c$ when $a = 2$, $b = 3$ and $c = -1$. [2]

.....

.....

.....

*(d)* Simplify $5x + 2x - 3x$. [1]

.....

.....

4370 030007



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**6.** Two rectangles, each 9 cm by 3 cm, and an overlapping rectangle, 8 cm by 3 cm, are placed so that they make the H shape shown in the diagram.

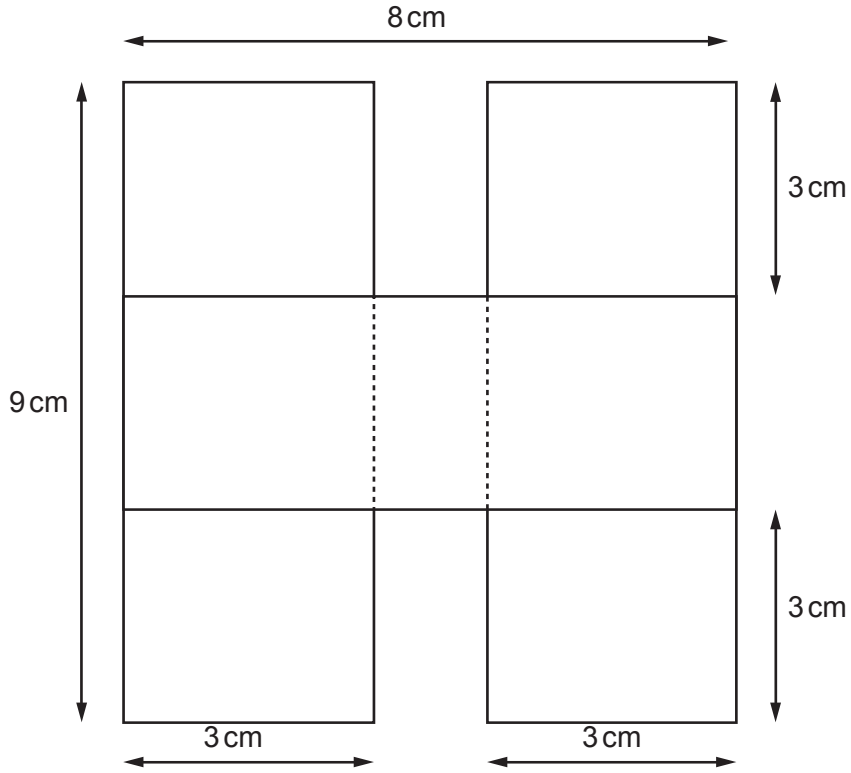



*Diagram not drawn to scale*

*(a)* Calculate the perimeter of the shape. [3]

.....

.....

.....

*(b)* Calculate the area of the shape.
Write down the units of your answer. [3]

.....

.....

.....

.....



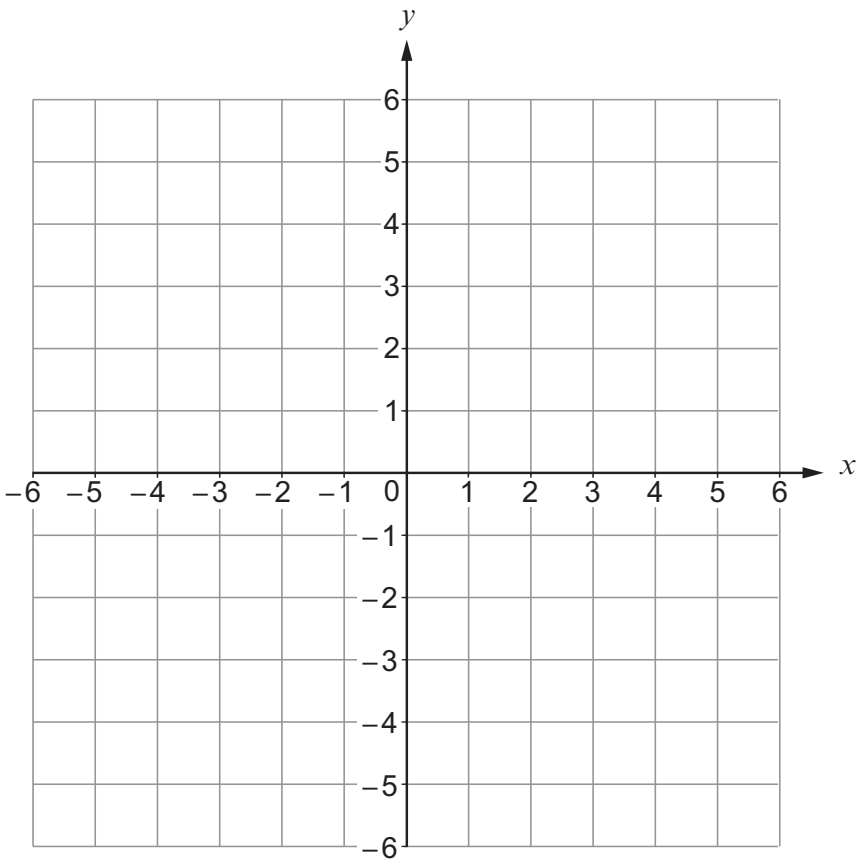
© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**7.** On the squared paper below, plot the points $A(-4, 2)$, $B(-1, -5)$ and $C(4, 3)$. [3]




4370 030009



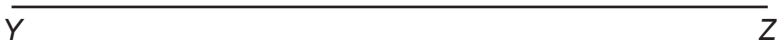
© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**8.** *(a)* Complete an accurate drawing of triangle $XYZ$ in which $YZ = 10\,\text{cm}$, $X\hat{Y}Z = 62°$ and $X\hat{Z}Y = 47°$.
The side $YZ$ has been drawn for you. [3]




*(b)* Write down the special name given to an angle which is more than 90°, but less than 180°. [1]

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**9.** A rectangular tank has a length of 20 cm, a width of 15 cm and a height of 10 cm.
Water is poured into the tank until it is half full.
Calculate the volume of the water in **litres**. [4]

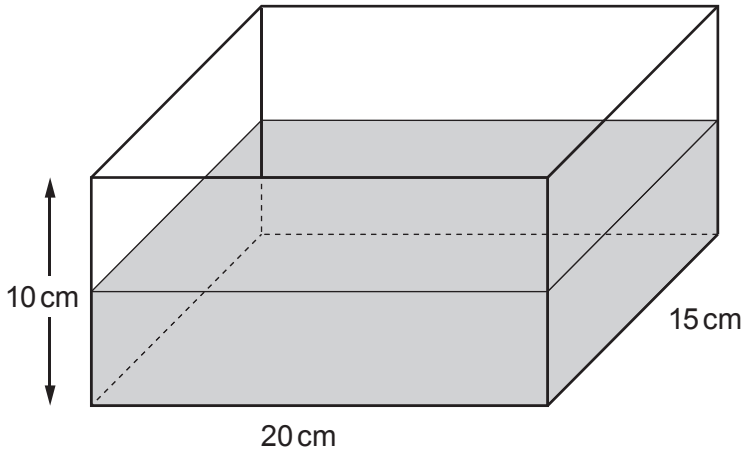



*Diagram not drawn to scale*

.....

.....

.....

.....

.....

.....

.....

4370 030011



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**10.** The table shows typical ranges for fares and journey times for London taxis.

| London Taxis | | Tariff 1 | Tariff 2 | Tariff 3 |
|---|---|---|---|---|
| Distance (up to) | Approximate journey time | Monday to Friday 06:00 to 20:00 | Monday to Friday 20:00 to 22:00 Saturday and Sunday 06:00 to 22:00 | Every night 22:00 to 06:00 |
| 1 mile | 6 - 13 mins | £5.60 - £8.60 | £5.60 - £8.80 | £6.60 - £8.80 |
| 2 miles | 10 - 20 mins | £8.40 - £13.40 | £8.80 - £13.60 | £10.20 - £14.40 |
| 4 miles | 16 - 30 mins | £15 - £21 | £16 - £22 | £17 - £27 |
| 6 miles | 28 - 40 mins | £23 - £28 | £28 - £31 | £28 - £32 |

Example:
A journey of 5 miles at midnight would cost between £28 and £32, depending on the length of time of the journey.

Use the table to answer the following questions.

*(a)* Peter hires a taxi on a Thursday at 10:25 a.m. for a journey of 2 miles.
What is the least amount he should be charged and what would be the earliest time he would get there? [2]

.....

Least amount charged ..... Earliest time .....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(b)* Joanna and her 4 friends are out together on a Friday at 23:30 p.m.

They are staying at the same hotel, which is about $3\frac{1}{2}$ miles away.

They could hire a taxi or they could buy tickets on the underground tube costing £4 each.
For the 5 friends, explain how it is possible that hiring a taxi might

- save money, or
- cost more money.

You must show all your working for both of these possibilities. [4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....





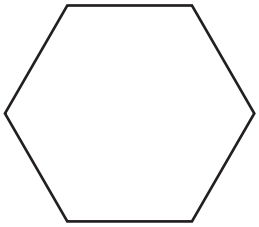
© WJEC CBAC Ltd.



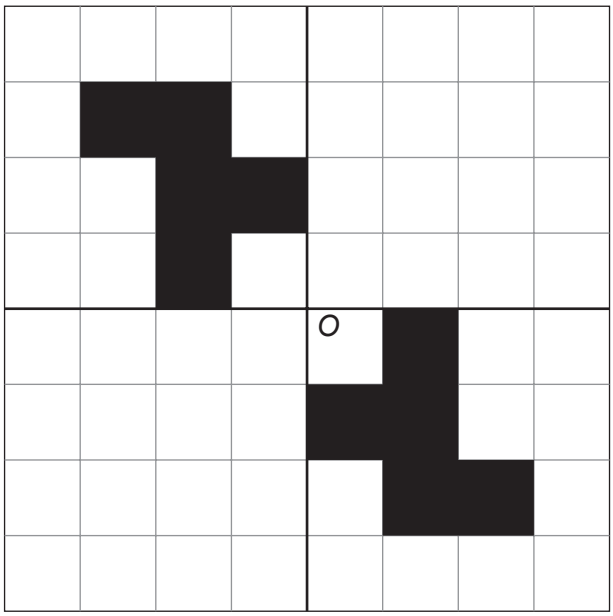
STEMUP.CO.UK

Examiner only

**11.** *(a)* Draw all the lines of symmetry on the following diagram. [2]



*(b)* Draw two more shapes so that the completed pattern has rotational symmetry of order 4 about *O*. [2]






© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**12.** Calculate the value of $\frac{3}{8}$ as a decimal. [2]

.....

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**13.** There are four balls numbered 2, 2, 3 and 4 respectively in machine A and four balls numbered 3, 4, 5 and 6 respectively in machine B.
In a game, both machines A and B select one ball at random.
The score for the game is the 2-digit number whose units digit is the number from machine A and whose tens digit is the number from machine B.

For example, if the number on the ball from machine A is 4 and the number on the ball from machine B is 3, the score is 34.

*(a)* Complete the following table to show all the possible scores. [2]

| Machine B \ Machine A | 2 | 2 | 3 | 4 |
|---|---|---|---|---|
| 6 | 62 | ..... | 63 | ..... |
| 5 | 52 | ..... | ..... | 54 |
| 4 | 42 | 42 | ..... | 44 |
| 3 | 32 | 32 | 33 | ..... |

A player wins a prize by getting a score of 42 or less.

*(b)* (i) Matthew plays the game once. What is the probability that he wins a prize? [2]

.....

.....

(ii) One day 400 people play this game once. Approximately how many would you expect to win a prize? [2]

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**14.** *(a)* Find the size of angle $x$. [2]

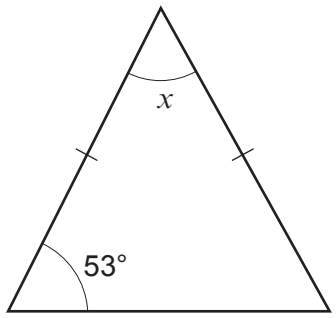



*Diagram not drawn to scale*

.....

.....

.....

$x$ = ..... °

*(b)* Find the size of angle $y$. [3]

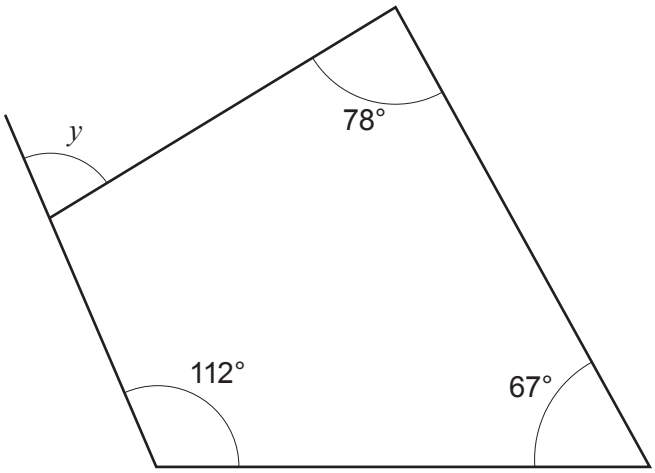



*Diagram not drawn to scale*

.....

.....

.....

.....

$y$ = ..... °



© WJEC CBAC Ltd.



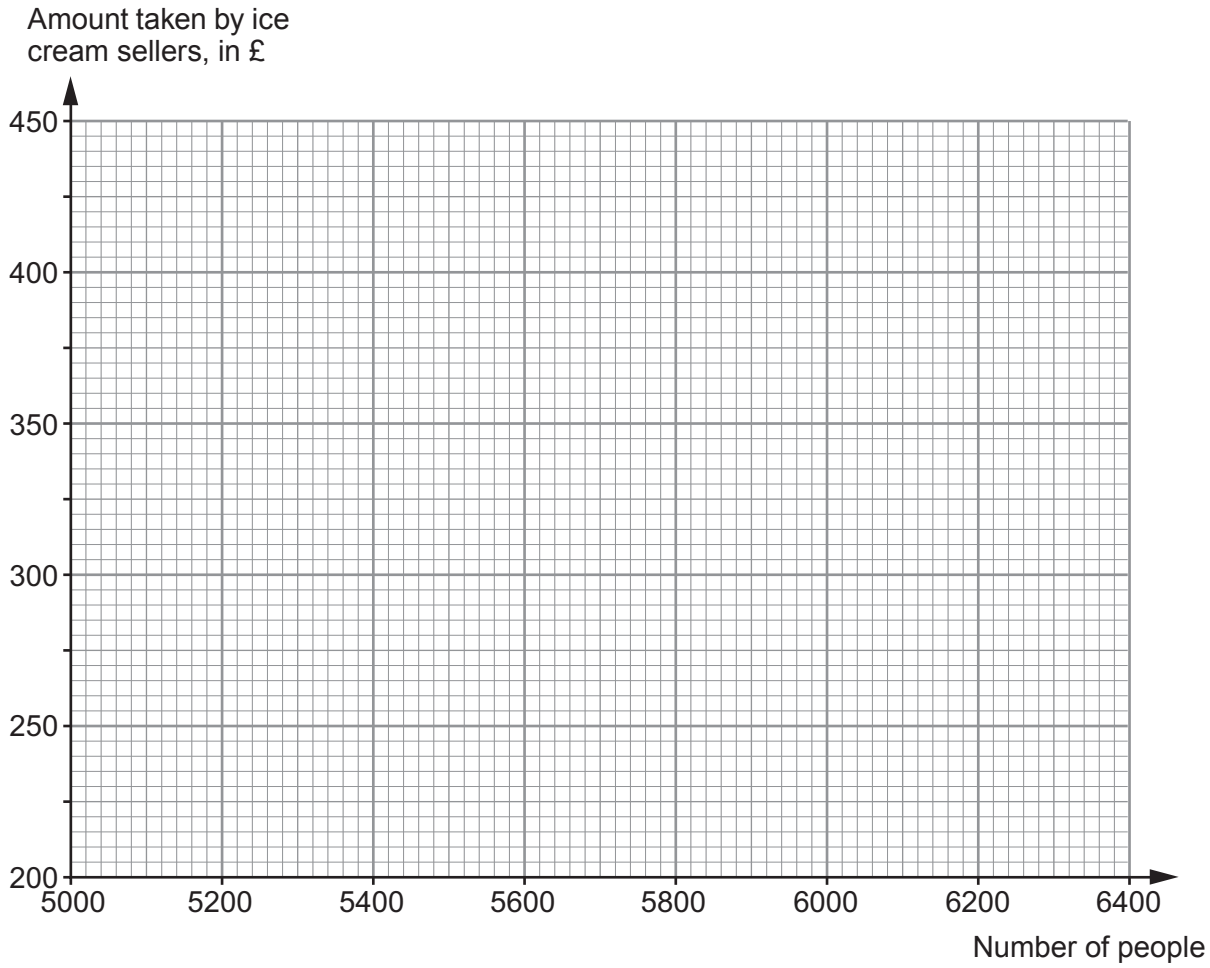
STEMUP.CO.UK

Examiner only

**15.** A festival took place over 7 days in August.
Each day, the number of people at the festival and the amount of money taken by the ice cream sellers were recorded.
The table below shows the results.

| Number of people | 5500 | 6000 | 5600 | 5200 | 5800 | 6400 | 6200 |
|---|---|---|---|---|---|---|---|
| Amount taken by ice cream sellers, in £ | 280 | 400 | 280 | 210 | 320 | 420 | 410 |

*(a)* On the graph paper below, draw a scatter diagram of these results. [2]






© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(b)* Write down the type of correlation that is shown by the scatter diagram. [1]

.....

*(c)* Draw, by eye, a line of best fit on your scatter diagram [1]

*(d)* Estimate the amount of money that may have been taken by ice cream sellers during one day had 6100 people attended the festival on that day. [1]

.....

*(e)* Explain why it is not possible to work out how much a typical ice cream costs at the festival. [1]

.....

.....

.....

.....



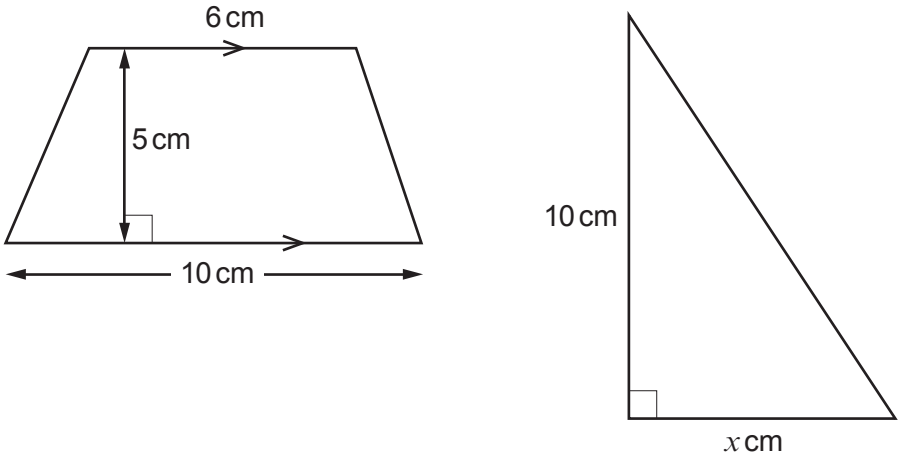
© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**16.** The area of the trapezium is equal to the area of the right-angled triangle.




*Diagrams not drawn to scale*

Calculate the value of $x$. [4]



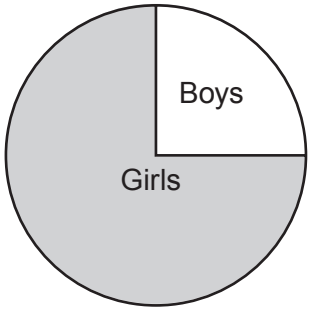
© WJEC CBAC Ltd.



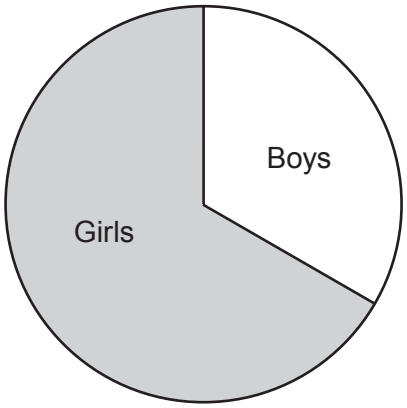
STEMUP.CO.UK

Examiner only

**17.** The pie charts show the proportion of boys to girls in class A and class B.




Class A




Class B

There are more pupils in class B than in class A.
There are 4 boys in class A.
There are $1\frac{1}{2}$ times as many girls in class B than in class A.
How many boys are there in class B? [4]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**18.** *(a)* Solve $\frac{x}{2} + 18 = 26$ . [2]

.....

.....

.....

.....

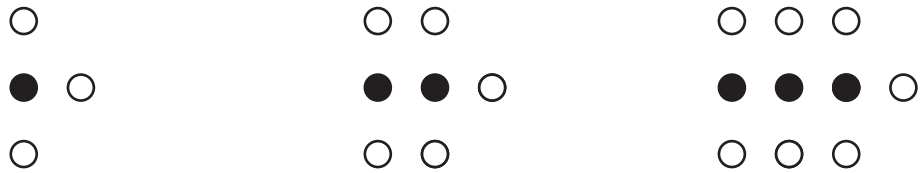
*(b)* Expand $y\left(y^2 + 4\right)$. [2]

.....

.....

**19.** Patterns made with black and white circles are shown below.

Pattern 1 Pattern 2 Pattern 3



Complete the following statements, in terms of $n$. [3]

'There will be ..... black circles in Pattern $n$.'

'There will be ..... white circles in Pattern $n$.'

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**20.** In the diagram, angles $a$, $b$ and $c$ are measured in degrees.

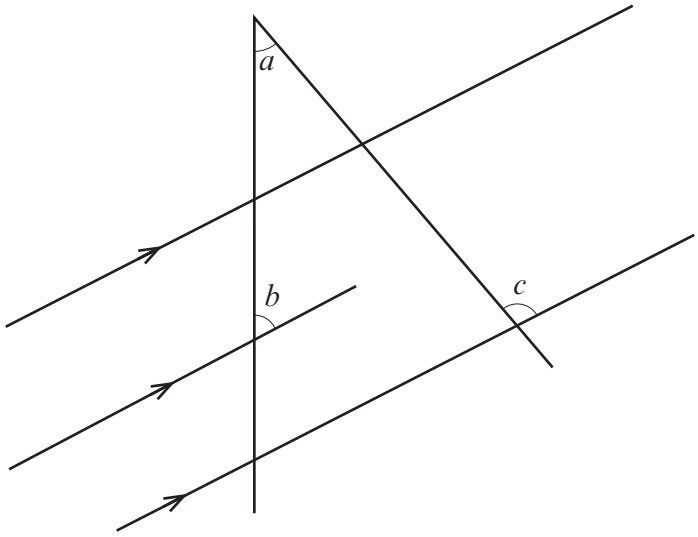



*Diagram not drawn to scale*

Find the size of angle $c$ in terms of $a$ and $b$.
You must show all your working, which may be indicated on the diagram. [3]

.....

.....

.....

.....

.....

.....



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**21.** Maggie has lots of tiles.
All of her tiles are in the shape of regular polygons.
The edges of all the tiles have the same length.

She places two 12-sided tiles to meet edge-to-edge.
Maggie places a different-shaped tile with these two tiles.
She finds that the 3 tiles tessellate.

By calculation, find the number of sides of this third tile.
You must show all your working. [5]

**END OF PAPER**



© WJEC CBAC Ltd.



STEMUP.CO.UK

| Question number | Additional page, if required.<br>Write the question number(s) in the left-hand margin. |
|---|---|
| | |

Examiner only



© WJEC CBAC Ltd.



STEMUP.CO.UK

# BLANK PAGE

# PLEASE DO NOT WRITE ON THIS PAGE



© WJEC CBAC Ltd.



STEMUP.CO.UK

# BLANK PAGE

# PLEASE DO NOT WRITE ON THIS PAGE



© WJEC CBAC Ltd.



STEMUP.CO.UK

# BLANK PAGE

# PLEASE DO NOT WRITE ON THIS PAGE



© WJEC CBAC Ltd.



STEMUP.CO.UK

# GCSE MARKING SCHEME

## MATHEMATICS - LINEAR

## SUMMER 2014

© WJEC CBAC Ltd.

STEMUP.CO.UK

## INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2014 examination in GCSE MATHEMATICS - LINEAR. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.


| | |
|---|---|
| Paper 1 - Foundation Tier | 1 |
| Paper 1 - Higher Tier | 6 |
| Paper 2 - Foundation Tier | 12 |
| Paper 2 - Higher Tier | 17 |


© WJEC CBAC Ltd.

STEMUP.CO.UK

# PAPER 1 - FOUNDATION TIER

| Summer 2014 Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| 1. (a) (i) 3 411 002 | B1 | |
| 1. (a) (ii) seventy two thousand **(no hundreds) (and)** sixty five | B1 | |
| 1. (b) (i) 17 and 63 | B1 | B0 for 40+40. |
| 1. (b) (ii) 39 | B1 | |
| 1. (b) (iii) 63 | B1 | |
| 1. (b) (iv) 6 | B1 | Allow 48/8 = 6, 6×8=48 but B0 for 48/6 = 8 |
| 1. (b) (v) 81 | B1 | |
| 1. (c) 12 or 16 | B1 | For 12, 16 or both. Allow 12×8 OR 16×6<br>**As always, B0 for a choice of answers with at least one answer incorrect** |
| 1. (d) (i) 6570 | B1 | |
| 1. (d) (ii) 6600 | B1 | |
| 2. (a) (i) 7652 | B1 | |
| 2. (a) (ii) 2576 | B1 | |
| 2. (b) (i) **(0)**·06 | B1 | |
| 2. (b) (ii) 2·92 | B1 | |
| 2. (c) 2·9×100 OR 3×98 OR 3×100<br>= 290 OR 294 OR 300 | M1<br>A1 | Only these three estimates.<br>**M1,A1 for unsupported answers of 290, 294 OR 300** |
| 3. Hours = 20 × 15 (minutes) 20 × ¼ (hours)<br>= 300 (minutes) = 5 (hours)<br>Payment = 8 × 5 + 12<br>= (£) 52 | ✓<br>M1<br>A1<br>M1<br>A1 | 'hours' not required at this stage<br>F.T. 'their time' (must be an attempt to convert to hours).<br>**Special cases**<br>Candidates who do 8×20+12 get SC1 for the (£)172<br>**Similarly SC1 for (£)132 from 8×15+12** |
| Look for<br>• spelling<br>• clarity of text explanations,<br>• the use of £s, hours and minutes<br>QWC2: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>AND<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer<br><br>QWC1: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>OR<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer | QWC 2 | QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.<br><br>QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar.<br>OR<br>Evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar.<br><br>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling |

© WJEC CBAC Ltd.



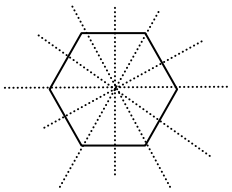
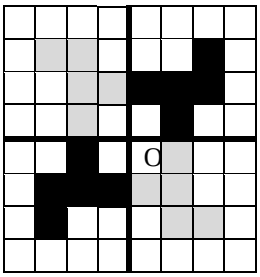
STEMUP.CO.UK

| Summer 2014 Paper 1 (Non calculator) Foundation Tier | Marks | Comments |
|---|---|---|
| 4. (a) certain | B1 | **(Welsh is sicr)** |
| 4. (b) unlikely | B1 | **(Welsh is annhebygol)** |
| 4. (c) even chance | B1 | Do not accept 'even' but B1 for 'evens'.<br>**(Welsh is siawns deg)** |
| 5. (a) (i) 39<br>(ii) 44 | B1<br>B1 | B0 for $6n+9$ |
| 5. (b) Divide the previous term by 4 | B1 | Accept ÷4. Accept × ¼. **Accept quarterly.**<br>**Accept 'halve and halve again'**<br>**B0 for dividing into quarters** B0 for $n/4$ |
| 5. (c) (p= 3×2 + 4×3 – 6×–1 =) 6+12+6<br>= 24 | M1<br>A1 | Award only when a correct substitution is assured<br>Unsupported 24 gets M1,A1. Any other unsupported answer gets M0,A0.<br>SC1 for seeing 6+12–6 = 12 |
| 5. (d) 4$x$ **ISW** | B1 | |
| **All parts (a) – (b) marked at the same time**<br>**To be viewed with diagram**<br>6. (a) Missing inside segment = 2<br>Perimeter = 9+9+8×3+2×2<br><br><br>= 46 (cm)<br>**To be viewed with diagram**<br>(b) Area = 8×3+4×3×3 OR 8×9 – 2×3×2<br>(= 24 + 36) (= 72 – 12)<br>= 60<br>$cm^2$ | ✓<br><br>S1<br>M1<br><br><br>A1<br><br>M1<br><br>A1<br>U1 | **You must also check the diagram for any working.**<br>**Must be seen in part (a).**<br>Attempt to **add all sides** of the shape.<br>**Use 42+2x for M1 where x stands for 'their 2'**<br>**S1, M1 for methods that imply the '2', e.g. 9×2+8×2+4×3**<br>C.A.O.<br><br>Attempt to add all areas of the shape OR difference of areas<br><br>C.A.O.<br>Independent of all other marks. |
| 7. A(−4, 2), B(−1, −5) and C(4, 3) plotted. | B3 | B1 for each. Reversed coordinates get B0.<br>**Condone missing letters or A, B and C used instead of dots, as long as the points are identifiable.**<br>**Ignore triangles joining the points.** |
| 8. (a) **Use overlay**<br>$X\hat{Y}Z$ = 62° (±2°)<br>$X\hat{Z}Y$ = 47° (±2°)<br>Completed triangle. | <br>M1<br>M1<br>A1 | <br><br><br>Dependent on at least one M1.<br>SC2 for a 'reversed' triangle (see overlay). |
| 8. (b) Obtuse (Aflem) | B1 | Accept misspellings. |
| **To be viewed with diagram**<br>9. Volume = 20 × 15 × 10 (× ½)<br>= 1500 ($cm^3$)<br>= 1500/1000<br>= 1·5 litres | ✓<br>M1<br>A1<br>M1<br>A1 | <br>No need for the ½ for the M1.<br>CAO<br>FT 'their 1500'/1000<br>'litres' not required but A0 for incorrect units. |
| **To be viewed with table**<br>10. (a) (£) 8.40 and 10:35 **(a.m.)** | B2 | B1 for each<br>B0 for 10 minutes |
| **To be viewed with table**<br>10. (b) Taxi fare is **(£)**17 - **(£)**27<br>Tube tickets cost **(£)**20<br>Compares (£)17 with (£)20<br>Compares (£)27 with (£)20 | ✓<br>B1<br>B1<br>B1<br>B1 | F.T. their figures<br>Per person solutions<br>**Taxi fare is (£)17 - (£)27 B1**<br>**Divides any taxi fare by 5 B1**<br>**Compares (£)3.40 with (£)4 B1**<br>**Compares (£)5.40 with (£)4 B1**<br>**2 taxis (Maximum 3 marks available)**<br>**Taxi fare is (£)34 - (£)54 B1**<br>**Tube tickets cost (£)20 B1**<br>**Taxi (always) more than tube B1** |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Summer 2014 Paper 1 (Non calculator) Foundation Tier | Marks | Comments | |
|---|---|---|---|
| 11. (a)  | B2 | B1 for 3 or more correct lines drawn AND no incorrect lines. | |
| 11. (b)  | B2 | B1 for each of 1st and 3rd quadrants | |
| 12. (3/8) = 8)3.000<br><br>**(0).375 ISW** | M1<br><br>A1 | Any valid method.<br>Must show a division method being implemented<br>**M0, A0 for unsupported (0).38** | |
| **All parts (a) – (b) marked at the same time**<br>13. (a) (62) **62** (63) **64**<br>(52) **52** **53** (54)<br>(42) (42) **43** (44)<br>(32) (32) (33) **34** | B2 | B1 for at least 3 correct entries | |
| (b) (i) $\frac{6}{16}$ I.S.W. | B2 | F.T. their table<br>B1 for a numerator of 6 in a fraction less than 1.<br>B1 for a denominator of 16 in a fraction less than 1.<br>**Penalise -1 once only for wrong notation, e.g. 6 out of 16 OR 6:16** | |
| (ii) $\frac{6}{16}$ of 400<br><br>= 150 | M1<br><br>A1 | F.T. their (b)**(i)** if a fraction less than 1**.** **(≠1/2)**<br>M1,A0 for 8/16 of 400 if it is F.T. from their table<br>150 out of 400 gets the M1, A1 but 150/400 gets M1, A0.<br>A0 if using an incorrect reduction of the fraction from (b)(i) | |
| **To be viewed with diagram**<br>14. (a) (x =) 180 – 53 – 53<br>= 74(°) | M1<br>A1 | | |
| **To be viewed with diagram**<br>14. (b) 360 – (112 + 67 + 78) OR 360 – 257<br>103(°)<br><br>(y =) 77(°) | M1<br>A1<br><br>B1 | y=103(°) as final answer gets M1,A1,B0<br>FT 180 – 'their 103' | **General principle**<br>**257 –360 = 103 gets M1,A1**<br>**257 –360 ≠ 103 gets M0,A0** |

**Questions 15 – 21 except 19(a) are common with the Higher Tier.**
**This Mark Scheme will be amended to match the Higher Tier throughout the conference.**

© WJEC CBAC Ltd.



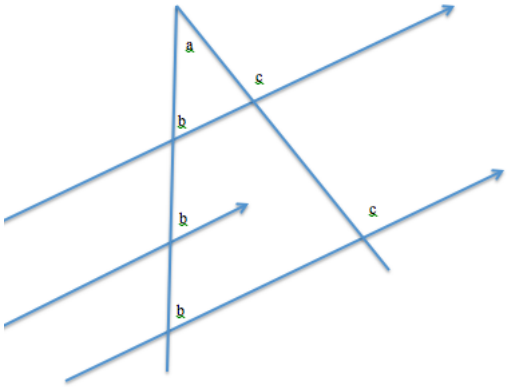
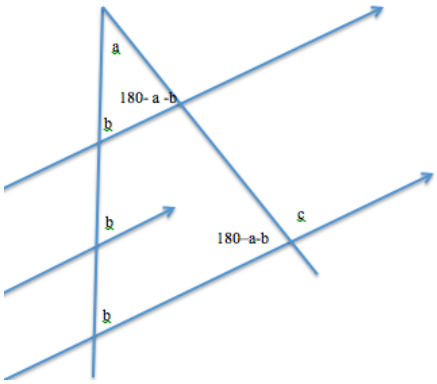
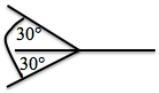
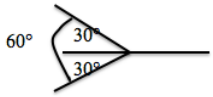
STEMUP.CO.UK

| Summer 2014 Paper 1 (Non calculator)<br>Foundation Tier | Marks | Comments |
|---|---|---|
| **All parts (a) – (e) marked at the same time**<br>15.(a) All points **plotted** correctly | B2 | Intention: closer to the correct intersection than to any others<br>B1 for indication of at least 3 correct points<br>*Penalise joining point to point -1* |
| (b) Positive | B1 | Do not accept descriptions |
| **To be viewed with graph**<br>(c) Line of best fit with points above and below | B1 | The line must be fit for purpose, it should not pass through the intersection of the axes<br>*Ignore also joining point to point* |
| **To be viewed with graph**<br>(d) Their estimate, from use of their line of best fit, or an answer in inclusive interval 390 ≤ 'their estimate' ≤ 410 | B1 | Accuracy to the nearest £10<br>FT for their incorrect line of best fit with accuracy to the nearest £10 |
| (e) Explanation, that it doesn't tell you, e.g. 'only know how many attend, not how many spent money on ice cream', or 'don't know how many ice creams were sold' | E1 | Ignore incorrect statements given with a correct response.<br>Accept answers that state or imply, don't know:<br>• how many ice cream sold, or<br>• how many people bought ice cream<br>Allow answers that state or imply, don't know:<br>• different costs of ice cream (days or ice creams)<br>e.g. accept 'different ice creams cost different amounts', 'don't know who bought what', 'sellers change prices on different days' |
| **To be viewed with diagram**<br>16. Area trapezium = ½ × 5 × (6 + 10)<br>= 40 ($cm^2$)<br>Triangle: ½ × 10 × x = 40<br>(x = ) 8 (cm) | ✓<br>M1<br>A1<br>M1<br>A1 | For equating 'their 40' (any value) with ½ × 10 × x<br>FT correct evaluation from 'their 40' (their value)<br>*SC2 for an answer 8(cm) from* ***area of trapezium = 5 × (6 + 10) = 80*** *followed by* ***area of triangle =10 × x = 80,*** *or*<br>*SC1 for a 2 stage method equating 10 × x with 5 × (6 + 10) with error in calculating x*<br>*A full one stage method 10 × x = 5 × (6 + 10)* ***or equivalent*** *is correct* ***for 3 marks****.* |
| **To be viewed with diagram**<br>17. Class A has 12 girls<br>Class B has 18 girls<br><br>There are twice as many girls as boys in class B, or ⅓ of class B boys, or ⅔ of class B girls<br><br>Class B has 9 boys | ✓<br>B1<br>B1<br><br>B1<br><br>B1 | FT 1½ × 'their 12' **correctly evaluated** (but NOT 1½ × 4)<br>*Sight of 18 implies first B1, B1*<br>OR Class B: Angle girls 240°±2° and angle boys 120°±2°<br>This may be implied from their numbers of girls and boys in class B.<br>*Note: ⅓ of 18 does not imply ⅓ of class B boys, hence B0*<br>*'18 is ⅔', implies B1*<br>CAO |
| 18.(a) x/2 = 26 – 18 OR x + 18×2 = 26×2<br>x = 16 | **M1**<br>**A1** | OR alternative full correct method<br>Mark final answer .<br>*Accept embedded answer, e.g. 16/2 + 18 = 26* |
| 18. (b) $y^3 + 4y$ | B2 | B1 for a correct term.<br>**Mark final answer for B2.** |
| 19.<br>n (black)<br>2n + 1 or equivalent (white) | <br>B1<br>B2 | Accept use of N<br><br>B1 for 2n or equivalent<br>*Penalise use of other letters -1 only* |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Summer 2014 Paper 1 (Non calculator)<br>Foundation Tier | Marks | Comments |
|---|---|---|
| **To be viewed with diagram**<br>20. An appropriate angle 180 – a – b or 180 –(a+b), or an appropriate b or c angle indicated on the diagram<br><br><br>**(c =)** 180 – ( 180 – a – b )<br>**(c =)** a + b | B1<br><br><br><br><br><br>M1<br>A1 | Must be shown or stated<br><br>OR<br><br><br>Or equivalent rearrangement, e.g. a + b + 180 – c = 180<br><br>For answer only (c =) a + b without working or indication of any appropriate b or c angles award B0, M1 and A1.<br>For answer (c =) a + b with working or indication of any appropriate b or c angles award B1, M1 and A1. |
| 21. 12 sided shape: exterior angle 360/12 (= 30°)<br>interior angle (180° - 30° = ) 150(°) OR sketch showing one 30° exterior angles, e.g.<br><br><br>Gap is 360 – 150 – 150 OR sketch implying the sum of the 2 angles of 30° is the remaining exterior angle, e.g.<br><br><br>Appropriate 60(°) or sketch showing 60° e.g.<br><br><br>Third shape: 3 (sides) | B1<br>B1<br><br><br>M1<br><br><br>A1<br><br><br>A1 | OR M1 Interior 10× 180 ÷ 12<br>A1 = 150(°)<br>OR B2 for interior angle found to be 150(°)<br><br><br>FT for use of 'their 150'<br><br><br><br>CAO. Allow (equilateral) triangle<br><br>***<u>If correct answer with sight of angles:</u>***<br><u>Sight of 150(°) or 30(°) AND 60° followed by an answer 3 (sides) or triangle is awarded 5 marks</u><br><br>or<br><u>Sight of 150(°) or 30(°) followed by an answer 3 (sides) or triangle is awarded 4 marks only (as working is incomplete)</u><br><br>or<br><u>Sight of 360(°)/12 followed by an answer 3 (sides) or triangle is awarded 3 marks only (as working is incomplete)</u><br><br>***<u>OR if no working or errors in calculations</u>:***<br>*Award SC2 for an answer of **3 sides** or(equilateral) **triangle**.*<br>*OR*<br>*Award SC2 for a diagram of **a tessellation** of a number of sides of two 12-sided polygons showing a triangle.*<br><br>*Award SC1 for a diagram of **an attempt at a tessellation** of a number of sides of two 12-sided polygons showing a triangle.* |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Surname | Centre Number | Candidate Number |
|---|---|---|
| Other Names | | 0 |

# GCSE

4370/03

# MATHEMATICS – LINEAR
## PAPER 1
## FOUNDATION TIER

A.M. WEDNESDAY, 6 November 2013

1 hour 45 minutes

**CALCULATORS ARE NOT TO BE USED FOR THIS PAPER**

### ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

### INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take $\pi$ as 3·14.

### INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **2***(e)*.

| For Examiner's use only | | |
|---|---|---|
| **Question** | **Maximum Mark** | **Mark Awarded** |
| **1.** | **9** | |
| **2.** | **10** | |
| **3.** | **9** | |
| **4.** | **4** | |
| **5.** | **6** | |
| **6.** | **4** | |
| **7.** | **6** | |
| **8.** | **4** | |
| **9.** | **6** | |
| **10.** | **8** | |
| **11.** | **5** | |
| **12.** | **5** | |
| **13.** | **4** | |
| **14.** | **4** | |
| **15.** | **8** | |
| **16.** | **5** | |
| **17.** | **3** | |
| **Total** | **100** | |

4370 030001

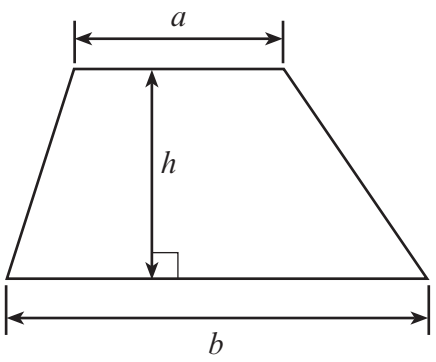
© WJEC CBAC Ltd.



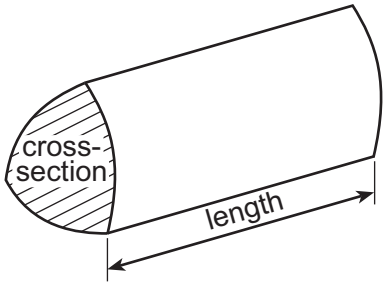
STEMUP.CO.UK

## Formula List

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




**Volume of prism** = area of cross-section × length




© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**1.** *(a)* (i) The annual profit made by a company was two million, twenty five thousand, three hundred and ten pounds.
Write this number in figures. [1]

.....

(ii) The number of litres of petrol sold at a filling station last week was 23 008.
Write this number in words. [1]

.....

*(b)* Using only the numbers in the following list,

38 34 46 47 32 42 57

write down

(i) two numbers that add up to 70, [1]

.....

(ii) the number which must be added to 37 to make 83, [1]

.....

(iii) a multiple of 6. [1]

.....

*(c)* Find the difference between 347 and 228. [1]

.....

.....

.....

*(d)* Write down a square number that is between 80 and 90. [1]

.....

*(e)* Write down all the factors of 28. [2]

.....

.....

.....



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**2.** *(a)* Write down the value of the 7 in the number 47 361. [1]

.....

*(b)* Write down a prime number that has a tens digit of 5. [1]

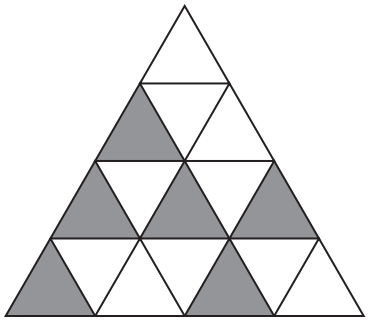
.....

*(c)* Calculate 84 ÷ 6. [1]

.....

.....

*(d)* What fraction of the shape is shaded? Give your answer in its simplest form. [2]



.....

.....

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(e) You will be assessed on the quality of your written communication in this part of the question.*

Megan has £8.
She buys some pens at 60p each and has 80p left over.
How many pens did she buy? [5]



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**3.** Thirty-five pupils were asked to choose which one of tennis (T), football (F), cricket (C) or hockey (H) they preferred.
The table shows the results.

| | | | | | | |
|---|---|---|---|---|---|---|
| C | F | H | H | C | T | H |
| T | H | F | C | H | T | C |
| H | C | T | T | T | C | F |
| C | H | C | F | H | F | H |
| T | H | H | C | T | F | C |

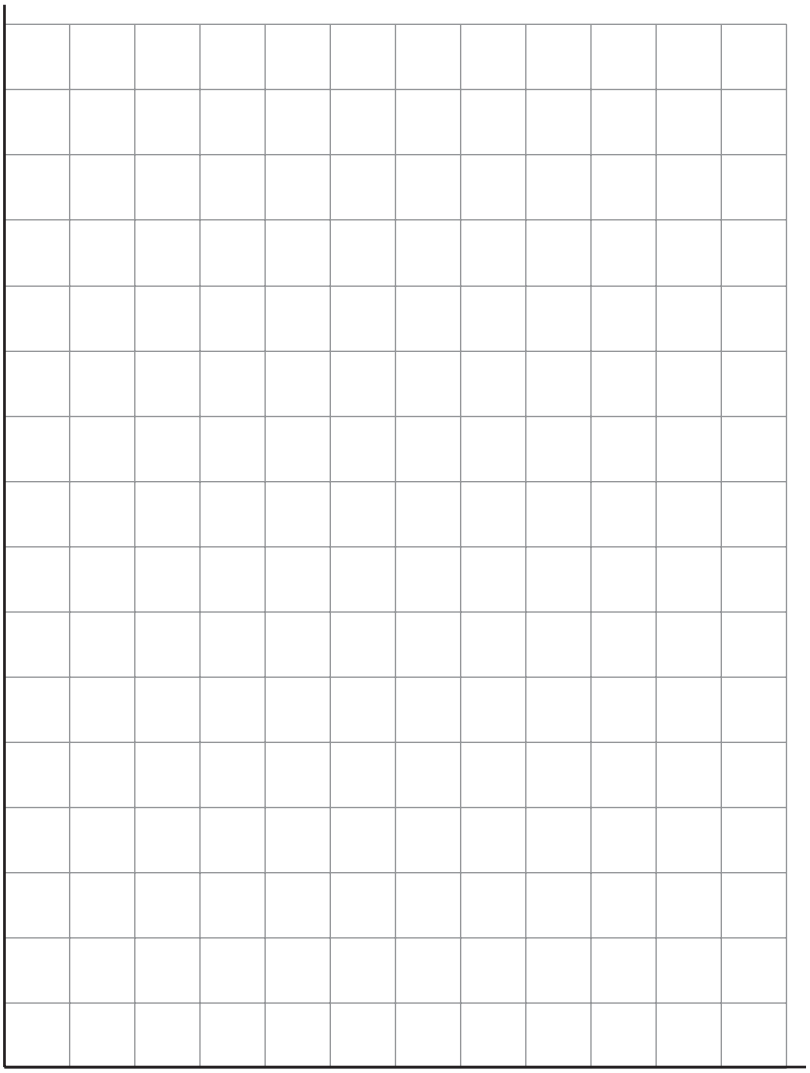
*(a)* Using the centimetre squared grid on the opposite page, draw a bar chart for the data given. [6]

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**For use with question 3**



*(b)* Write down the mode. [1]

.....

*(c)* Find the probability that a child chosen at random from this group prefers cricket. [2]

.....

.....

.....



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**4.** The formula for the speed of a stone thrown from the top of a building is

$$\textbf{speed of the stone} = \textbf{time} \times 10 + \textbf{starting speed}$$

*(a)* Find the **speed of the stone** when the **starting speed** is 15 and the **time** is 4. [2]

*(b)* Find the **time** when the **starting speed** is 20 and the **speed of the stone** is 45. [2]

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**5.** Two identical rectangles, each measuring 8 cm by 3 cm, are placed with two identical squares to make the shape shown in the diagram.

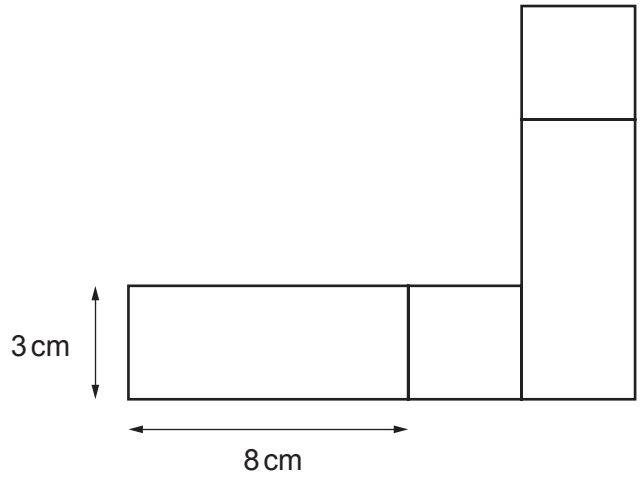



*Diagram not drawn to scale*

*(a)* Calculate the perimeter of the shape. [3]

.....

.....

.....

*(b)* Calculate the area of the shape.
Write down the units of your answer. [3]

.....

.....

.....

.....

4370 030009



**Turn over.**

STEMUP.CO.UK

Examiner only

**6.** Complete the following table so that each row will show equivalent fractions, decimals and percentages. [4]

| Fraction | Decimal | Percentage |
|---|---|---|
| $\frac{1}{4}$ | 0·25 | 25% |
| | | 40% |
| | 0·3 | |

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**7.** In a game, a person scores

- 3 points for a win,
- 1 point for a draw,
- –2 points for a loss.

*(a)* Geraint plays the game **four times**.
He wins twice, draws once and loses once.
What is Geraint's score? [2]

.....

.....

*(b)* Mary plays the game **four times** and has a final score of 0.
Write down the number of wins, draws and losses Mary had and justify your answer. [2]

.....

.....

.....

.....

*(c)* John plays the game **five times** and has a final score of –4.
Write down the number of wins, draws and losses John had and justify your answer. [2]

.....

.....

.....

.....

4370 030011

© WJEC CBAC Ltd.

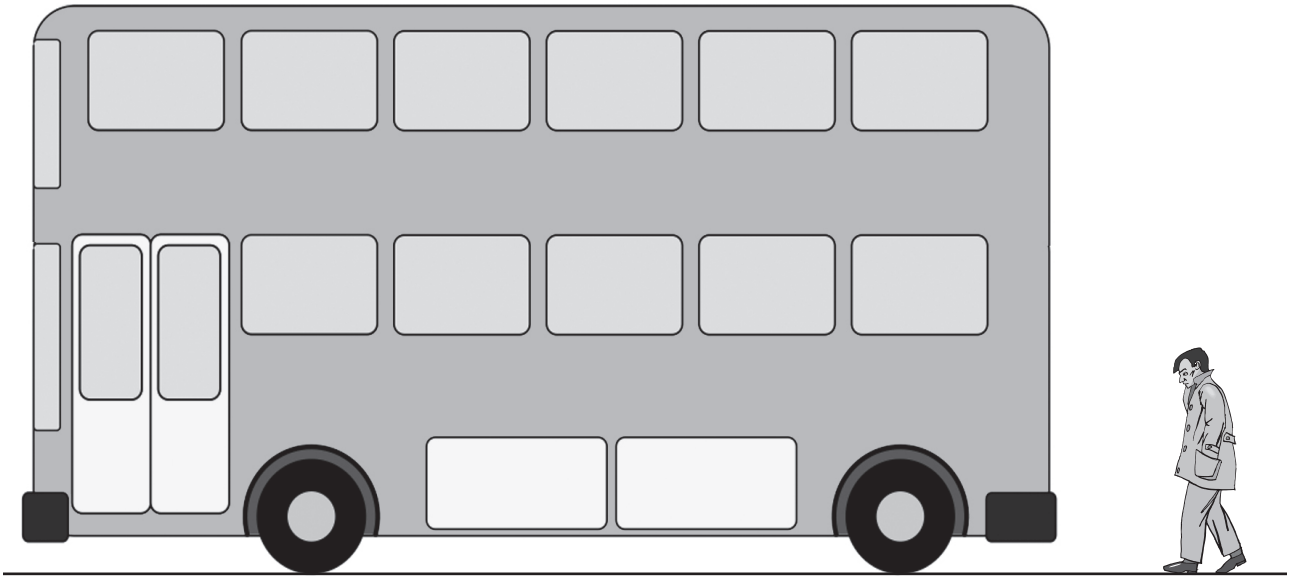


**Turn over.**

STEMUP.CO.UK

Examiner only

**8.**



The above diagram shows a bus and a man.

Write down an **estimate** for the **actual height** of the man. .....

Using this estimate for the height of the man, estimate the **actual height** of the top of the bus above ground level. [4]

.....

.....

.....

.....

.....

.....

.....

.....

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**9.** *(a)* *ABCD* is a rhombus with $A\hat{D}B = 37°$.
Find the size of angle $x$. [3]

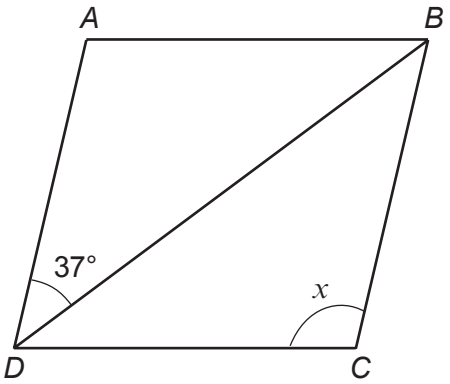



*Diagram not drawn to scale*

.....

.....

.....

$x =$ ..... °

*(b)* Find the size of angle $y$. [3]

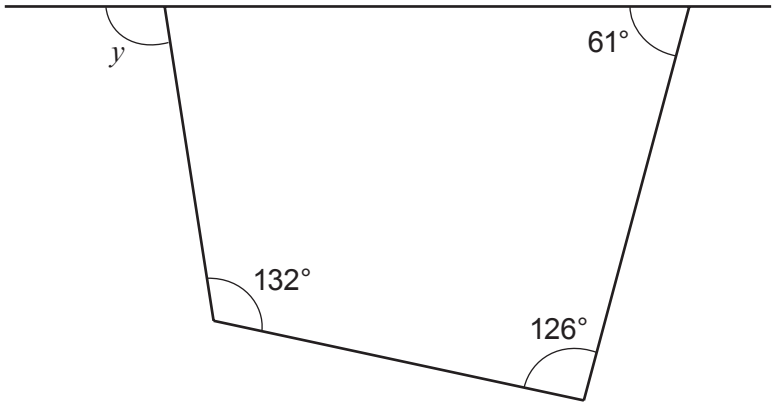



*Diagram not drawn to scale*

.....

.....

.....

.....

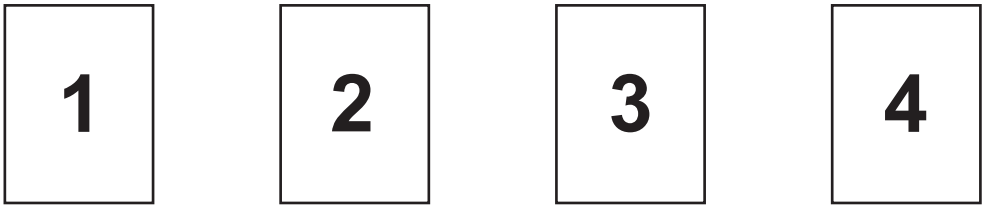
$y =$ ..... °

Examiner only

**10.** There are two packs of cards. One pack is coloured blue and the other pack is coloured red. The blue pack has three cards numbered




The red pack has four cards numbered




In a game, a player chooses one card from the blue pack and one card from the red pack. The player's score is the product of the two numbers.

For example, if the number on the blue card is 1 and the number on the red card is 3, the player works out 1 × 3 = 3 and the player scores 3.

*(a)* Complete the following table to show all the possible scores. [2]

| Red pack \ Blue pack | 1 | 4 | 5 |
|---|---|---|---|
| 4 | 4 | ..... | ..... |
| 3 | 3 | ..... | ..... |
| 2 | 2 | ..... | ..... |
| 1 | 1 | ..... | ..... |

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(b)* A player wins a prize by getting a score of 10 or more.

(i) What is the probability of a player winning a prize? [2]

.....

.....

(ii) 60 people each play the game once.
Approximately how many would you expect to win a prize? [2]

.....

.....

(iii) It costs 80p to play the game once. The prize for getting a score of 10 or more is £1.50.
If the 60 people each play the game once, approximately how much profit do you expect the game to make? [2]

.....

.....

.....

.....

.....

.....

© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**11.** *(a)* Simplify $5a + 3b - 6a - b$. [2]

.....

.....

.....

*(b)* Solve each of the following equations.

(i) $\frac{x}{5} = 10$ [1]

.....

.....

.....

(ii) $3x + 7 = 19$ [2]

.....

.....

.....

.....

.....

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**12.** *(a)* For each of the following statements, circle whether it is true or false.
You **must** give an explanation for your choice.

(i) All prime numbers are odd. [1]

**true / false**

.....

.....

(ii) If you halve a whole number ending in 8 you will always get a number ending in 4. [2]

**true / false**

.....

.....

*(b)* Eleanor says

"When you multiply any whole number by the one before it, the result is always an even number."

Explain why she is correct. [2]

.....

.....

**13.** *(a)* Express 150 as a product of prime numbers in index form. [3]

.....

.....

.....

.....

.....

.....

.....

*(b)* What is the smallest positive whole number that 150 can be multiplied by to make a perfect square? [1]

.....

.....

© WJEC CBAC Ltd.

**Turn over.**
STEMUP.CO.UK

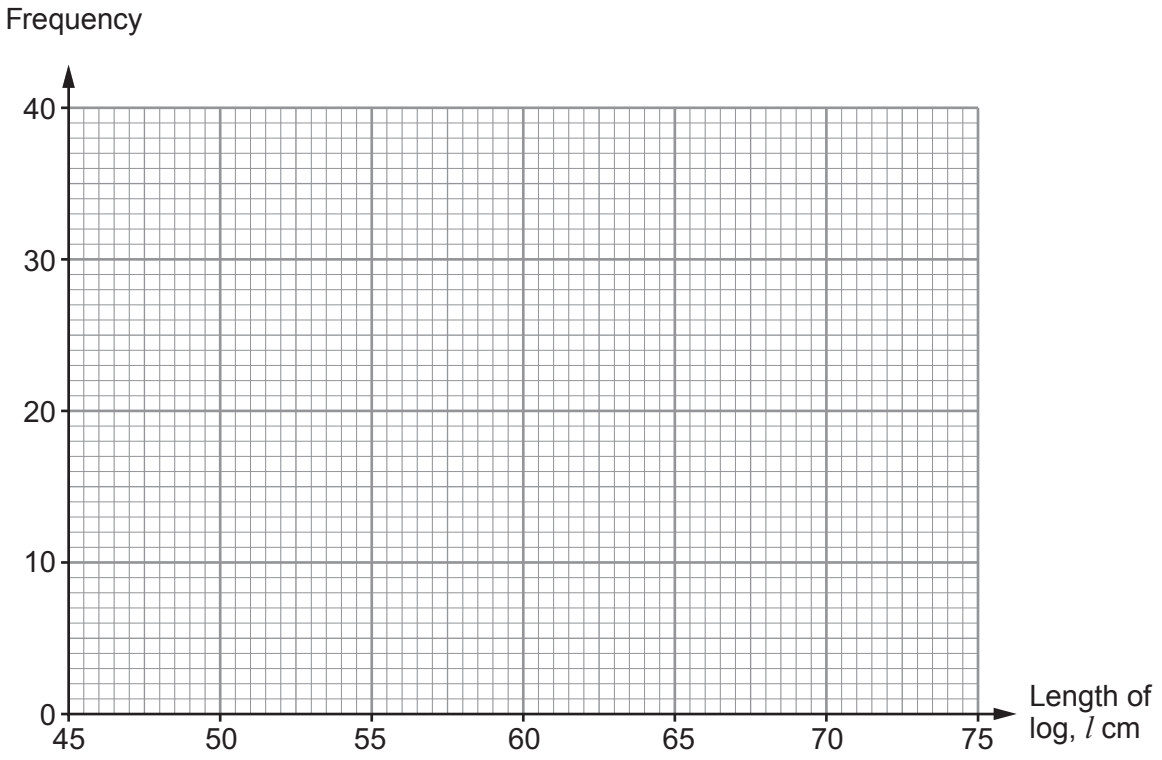
Examiner only

**14.** Tom collected 100 logs and measured their lengths in centimetres.

The table below shows a grouped frequency distribution of his results.

| Length of log, $l$ cm | $50 < l \leqslant 55$ | $55 < l \leqslant 60$ | $60 < l \leqslant 65$ | $65 < l \leqslant 70$ | $70 < l \leqslant 75$ |
|---|---|---|---|---|---|
| Frequency | 4 | 18 | 38 | 30 | 10 |

*(a)* On the graph paper below, draw a grouped frequency diagram to show this data. [2]

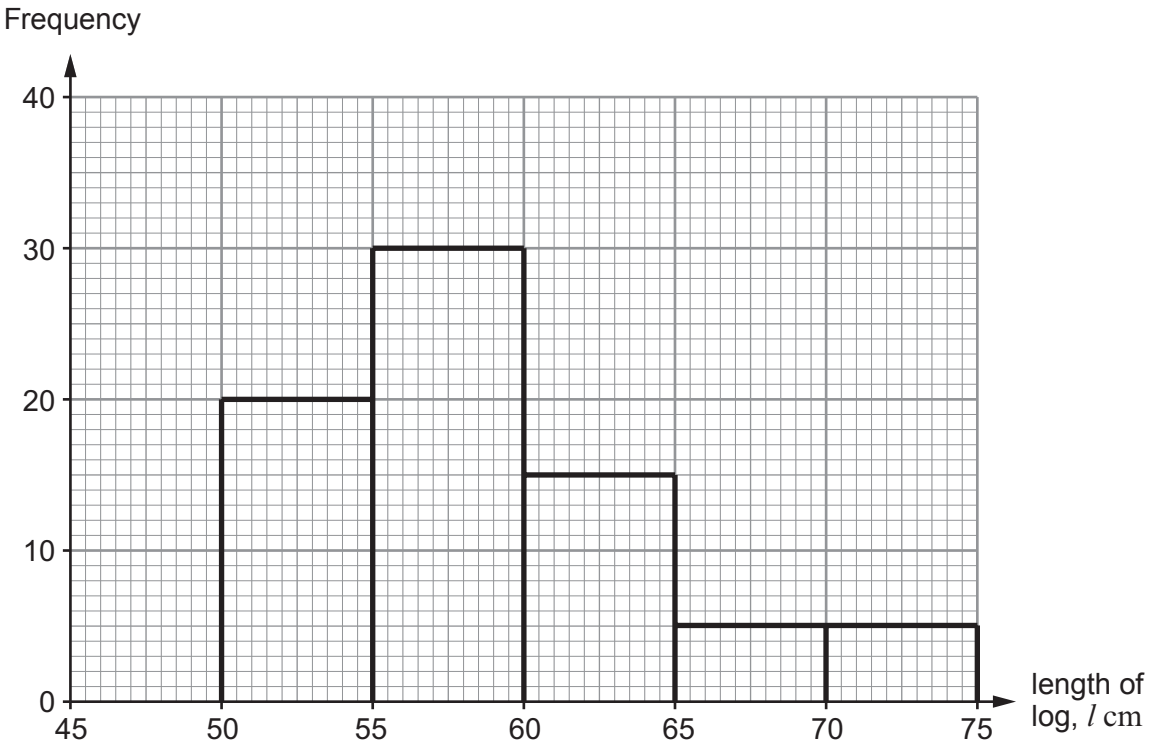



© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

*(b)* Billy also collected and measured the lengths of some logs.
The grouped frequency diagram of his results is shown below.




(i) How many logs did Billy collect and measure? [1]

.....

.....

(ii) Was it Tom or Billy who collected the longer logs, on average? [1]

.....

Explain how the grouped frequency diagrams help you to decide.

.....

.....

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**15.**

## Pasta with cheese and asparagus sauce

Serves **4** people

Ingredients:

4 ounces Butter

8 ounces Asparagus

12 ounces Pasta

1 Onion

2 tablespoons Stock

$\frac{2}{3}$ cup Cream

3 ounces Cheese

The recipe in Tamara's cookery book for pasta with cheese and asparagus sauce is shown above.

Information to convert units is also given, as follows:

- 1 cup is approximately 240 ml
- 4 ounces is approximately 115 g
- 1 tablespoon is 15 ml

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

*(a)* Complete the recipe for serving **8 people** using **ml** and **g**. [4]

.....

.....

.....

.....

.....

.....

.....

## Pasta with cheese and asparagus sauce

Serves **8** people

Ingredients:

..... g Butter

..... g Asparagus

..... g Pasta

..... Onions

..... ml Stock

..... ml Cream

..... g Cheese

*(b)* Tamara has a $\frac{1}{2}$ litre carton of cream.
She has large quantities of all the other ingredients.
Calculate the largest number of portions of pasta with cheese and asparagus sauce that Tamara can make using as much of the cream as possible. [4]

.....

.....

.....

.....

.....

.....

.....

© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**16.** Martha is laying out a new design for a flowerbed in her garden, as shown in the diagram below.

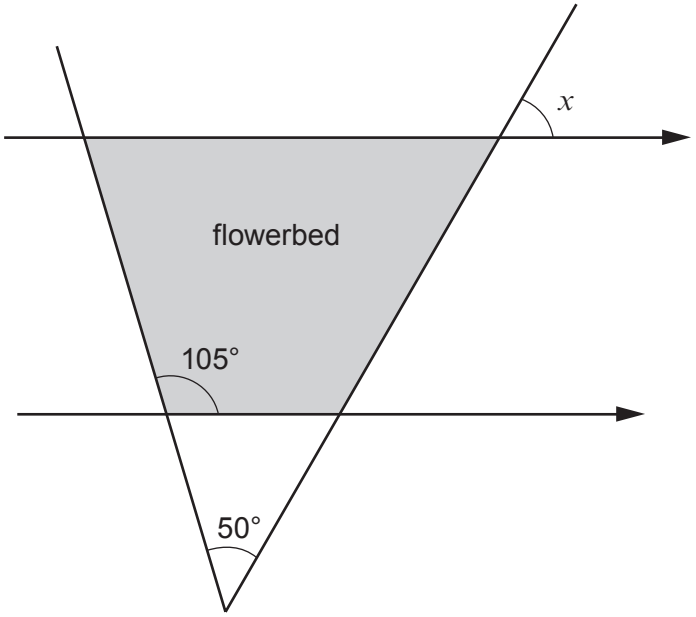



*Diagram not drawn to scale*

*(a)* Calculate the size of angle $x$. [2]

.....

.....

.....

.....

$x =$ ..... °

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

*(b)* Martha has another flowerbed in the shape of a parallelogram.

The longer sides measure twice the length of the shorter sides of the parallelogram.
The perimeter of this flowerbed is 24 metres.

Let the length of one of the shorter sides of the flowerbed be $z$ metres.
**Form an equation in terms of** $z$.
Solve your equation to find the length of one of the shorter sides of the parallelogram.
[3]

.....

.....

.....

.....

.....

.....

.....

.....

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**17.** Manilo won some money.

He gave each of his close friends $\frac{1}{24}$ of the money he won.

He kept the remaining $\frac{2}{3}$ of the money for himself.

How many close friends does Manilo have? [3]

**END OF PAPER**

© WJEC CBAC Ltd.



STEMUP.CO.UK

# GCSE MARKING SCHEME

## MATHEMATICS - LINEAR

## NOVEMBER 2013

© WJEC CBAC Ltd.

## INTRODUCTION

The marking schemes which follow were those used by WJEC for the November 2013 examination in GCSE Mathematics - Linear. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

© WJEC CBAC Ltd.

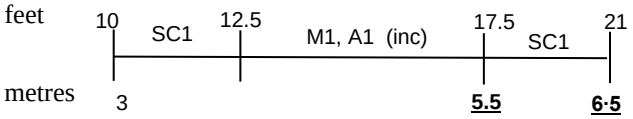
**PAPER 1 – FOUNDATION TIER**

| PAPER 1 (Non calculator)<br>Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 1. (a) (i) (£) 2,025,310 | B1 | |
| (ii) twenty three thousand and eight (litres) | B1 | B0 for twenty three thousand zero hundreds and eight (litres) |
| (b) (i) 38 and 32 | B1 | |
| (ii) 46 | B1 | **Accept embedded answers, e.g.37 + 46 = 83.** |
| (iii) 42 | B1 | |
| (c) 119 | B1 | B0 for –119 |
| (d) 81 | B1 | Accept $9^2$ **OR 9×9** |
| (e) 1, 2, 4, 7, 14, 28 | B2 | B1 for at least 4 correct factors with at most 1 incorrect number. Ignore repeats. |
| | 9 | |
| 2. (a) 7 thousand(s) OR 7000 OR thousand(s) | B1 | |
| (b) 53 OR 59 OR 151, 251 etc | B1 | |
| (c) 14 | B1 | |
| (d) 3/8 | B2 | B1 for 6/16. Mark their final answer for the B2 |
| (e) (Megan spends) £7.20 on pens | B1 | C.A.O. |
| (Number of pens) = 720/60 | M1 | For 'their £7.20'/60. B0,M0,A0 for £8/60. Unsupported 12 gets the 3 marks. |
| = 12 (pens) | A1 | F.T. |
| | | Those who use equal additions of 60(p) must either get to £7.20 OR if there are arithmetical error(s) must show that they have added as far as they can. |
| Look for<br>• spelling<br>• clarity of text explanations<br>• the use of notation (watch for the use of '=', £, p)<br>QWC2: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>AND<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer<br>QWC1: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>OR<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer | QWC 2<br><br>10 | QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.<br><br>QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar<br>OR<br>evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar.<br><br>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation or grammar |
| 3. (a) Cricket (C) 10, Football (F) 6, Hockey (H) 11<br>Tennis (T) 8, | B2 | May be inferred from their bar chart.<br>B1 for any two/three correct frequencies<br>If frequencies score 0, then give B1 for all 4 correct tallies. |
| Both axes labelled, e.g. frequency along one axis and Tennis (T), Football (F), Cricket (C), Hockey (H) along other axis - anywhere within the base (inc.) of the corresponding bar.<br>AND uniform scale for the frequency axis starting at 0 and labelled 'frequency' OR 'number of pupils'. | B2 | B1 if no scale, but allow one square to represent 1<br>OR B1 if not labelled as 'frequency' or similar.<br>If frequency scale starts with 1 at the top of the first square the starting at 0 will be implied for this axis.<br>**Accept 'Number of pupils' but NOT 'pupils'** |
| Four bars at correct heights (bars must be of equal width) | B2 | F.T. their frequencies throughout.<br>B1 for any 2 or 3 correct bars on F.T.<br>If no frequencies given in their working, penalise -1 for each incorrect frequency on their bars up to -4 (First and third B2s) |
| (b) Hockey (H) | B1 | Accept 11 and Hockey (H), but B0 for 11 only<br>F.T. their figures. |
| (c) 10/35 I.S.W. OR 2/7 | B2 | B1 for the 10 (in a fraction < 1) OR B1 for a denominator of 35(in a fraction < 1). **F.T. 'their 10' but must be 35.** |
| | 9 | Penalise -1 for incorrect notation, e.g. '10 out of 35', '10:35' |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| PAPER 1 (Non calculator)<br>Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 4. (a) Speed of stone = 4 × 10 + 15<br>= 55 ISW<br><br>(b) time = (45 – 20)/10<br><br>= 2.5 OR 2½ ISW | M1<br>A1<br><br>M1<br><br>A1<br><br>4 | Correctly substituted shown by correct attempt to evaluate.<br><br><br>For correct substitution with subtraction<br>**For example, 45 – 20/10 = 2 gets M0,A0**<br>Allow embedded references to the correct answer.<br>**2 r5 gets A0** |
| 5. (a) Missing side segments = **(3 and)** 5<br>Perimeter = 3+8+3+5+3+3+3+8+3+3+8<br><br>= 50 (cm)<br><br>(b) Area = 3 × 8 × 2 + 3 × 3 × 2<br><br>= 66<br>$cm^2$ | S1<br>M1<br><br><br>A1<br><br>M1<br><br>A1<br>U1<br>6 | <br>Attempt to add ALL the correct sides of the shape<br>**Seven 3s, three 8s and a 5 (F.T. the 5 from their diagram but not 3 or 8). Watch out for implied values, e.g. 11**<br>C.A.O. **50 should imply S1,M1,A1**<br><br>F.T. their length of square from (a)<br>**Alternatively could be 2×11×3 OR 11×14 – 11×8**<br><br>Independent of all other marks. |
| 6. any fraction equiv. to 2/5 (0).4 (40%)<br><br>any fraction equiv. to 3/10 (0.3) **30(%)** | B1, B1<br><br>B1, B1<br><br>4 | First and second values<br><br>First and third values |
| 7. (a) 3 + 3 + 1 – 2<br>= 5<br>(b) 1 win, 1 draw and 2 losses OR WDLL<br>3 + 1 – 2– 2 (= 0)<br>(c) (0 wins) 2 draws and 3 losses OR DDLLL<br>1 + 1 – 2– 2 – 2 (= – 4) | M1<br>A1<br>B1<br>B1<br>B1<br>B1<br>6 | <br><br>In any order<br>**Allow 'running totals' , e.g. win 3, draw 4, 2 losses =0.**<br>In any order<br>**Answers must only use 5 games.** |
| 8. Man 5 to 7 ft OR 1·5 **to 2·2 metres ( both inclusive)**<br>(Man 3cm Bus = 7½cm)<br>Scale factor = 2.5 **(OR the use of 2.5 in their working)**<br><br>Estimate height of bus = estimate × factor<br>F.T. their estimates × their SF (2 − 3 inc.)<br>= *correct answer for their figures*<br>SC1 for answers which:<br>(a) only give man's height as3cm and bus's as 7.5cm ± 2mm OR (b) a proper attempt at 'dividing' the bus's height into 'man height' parts | B1<br><br>B1<br><br>M1<br><br>A1<br><br><br><br><br>4 | <br>**Unsupported answers marked as follows:**<br><br><br>F.T. their man's height estimate AND scale factors 2–3 inc.<br>Correct units must be seen at least once to get the final A1 |
| 9. (a) ∠ABD = 37 (°) OR ∠DBC = 37 (°)<br>∠A = 106(°) ∠ABD = 37(°) **OR ∠BDC=37(°)**<br>∠C = *x* = 106 (°) ∠C = *x* = 106 (°) | B1<br>B1<br>B1 | Look at diagram also<br><br>C.A.O. |
| 9. (b) 360 – 132 – 126 – 61<br>= 41 (º)<br><br>y = 139 (º) | M1<br>A1<br><br><br>B1<br>6 | Angle sum of quadrilateral. Note that 180 – (360 – 126 – 132 – 61) is equivalent, that is 126 + 132 + 61 – 180<br>For finding 4th angle. Also look in their diagram.<br>41 on its own gets this A1, even as y = 41<br>F.T. 'their 41' |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| PAPER 1 (Non calculator)<br>Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 10. (a) (4) 16 20<br>(3) 12 15<br>(2) 8 10<br>(1) 4 5 | B2 | B1 for at least 4 correct entries |
| (b) (i) 5/12 | B2 | F.T. their table<br>B1 for a numerator of 5 in a fraction less than 1.<br>B1 for a denominator of 12 in a fraction less than 1.<br>**Penalise incorrect notation –1 e.g. 5 out of 12, 5:12**<br>**Do not penalise if correct notation also given.** |
| (ii) $\frac{5}{12}$ of 60 | M1 | F.T. their (b)(i) if a fraction less than 1 **(but not ½)** |
| = 25 | A1 | This 25 may appear in later working<br>**25 out of 60 gets M1,A1 but 25/60 gets M1,A0.** |
| (iii) 60 × 80p − 25 × 150 OR £48 − £37.5(0) | M1 | F.T. full method of<br>60 × 80p – 'their 25' × 150p<br>OR Profit = 35 x 80p – 25 x 70p = £28 – £17.5(0) |
| = £10.50 OR 1050p | A1<br>8 | = £10.50 OR 1050p. |
| 11. (a) –a + 2b | B2 | B1 for the –a OR + 2b in an expression with *a* and *b*<br>OR B1 for both correct, but not in an expression. |
| (b) (i) (x=) 50 | B1 | Accept embedded answers such as 50/5 = 10 |
| (ii) 3x = 12 | B1 | F.T. ax = b (a≠1) |
| x = 4 | B1<br>5 | Accept embedded answers such as 3×4 + 7 = 19 |
| 12. (a) (i) 2 **(is a prime number)** (and even) | B1 | Needs the statement. Ignore true/false. |
| (ii) For example, halving 18 ends up as 9 | B2 | SC1 for explanations like '18 divides into 2 to make 9 rather than '18 divided by 2 makes 9'<br>For a correct counter example. *B0 for false only*. |
| (b) One of 2 consecutive numbers is even so the product will be even. | B2<br>5 | **B2 for 'even × odd = even' AND 'odd × even = even'**<br>B1 for 'even × odd = even'.<br>OR B1 for 'one of 2 consecutive numbers is even'<br>B0 for example(s) only. |
| 13. (a) | M1 | For a method that produces 2 prime factors from the set {2, 3, 5, 5} before their second error. If their 2nd prime and 2nd error occurs at the same 'level' then allow M1. |
| 2, 3, 5, 5 | A1 | C.A.O. for the **four** correct factors. (Ignore 1s). |
| $2 \times 3 \times 5^2$ | B1 | F.T. their answer if at least one index form used with at least a square. Ignore prime number requirement for this B mark.<br>Use of brackets (2)(3)($5^2$) OR dot $2.3.5^2$ gets the B1.<br>The inclusion of any 1s as factors, for example, $2 \times 3 \times 1 \times 5^2$ in their index form gets B0. Note that $2 \times 3^1 \times 5^2$ gets B1. |
| (b) 2 × 3 OR 6 | B1<br>4 | F.T. their (a) if the M1 awarded. |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| PAPER 1 (Non calculator)<br>Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 14. (a) Correct frequency diagram | B2 | B1 if translated OR for at least 3 bars correct OR if height correct but slight gaps between the bars<br>**If frequency polygon drawn, or indication of points at correct heights only, B0 in all cases.** |
| (b)(i) 75 | B1 | Accept reference to heights. |
| (ii) Tom AND a reason, e.g. 'more bars on left for Billy', 'more bars right for Tom', 'Tom collected **more** longer logs' 'Tom has higher number 70 – 75cm logs', 'Tom's mode higher than Billy's' | E1 | Accept comparison of modal groups<br>Do not accept Tom with statement 'longer logs'. **'Tom has** 10 logs with length 70-75cm', 'Tom has highest frequency (38, Billy has 30)' |
| **H2** | 4 | |
| 15.(a) 230(g) and 460(g) and 690(g) | B1 | CAO |
| 2 and 60(ml) | B1 | CAO |
| 320(ml) | B1 | CAO |
| 172.5(g) | B1 | CAO (1oz = 28.75g)<br>If recipe for 4, treat as MR-1<br>(115, 230, 345: 1, 30: 160: 86.25) |
| (b) **Use of** 1 litre = 1000 ml or ½ litre = 500ml | B1 | May be implied in calculation, e.g. in working towards (2cups) 480 (ml) |
| 8 people needs 320ml so need 320 ÷ 8 ml per person | M1 | FT 'their 320'. throughout<br>OR 4 people 2/3 ×240 (ml) so 2/3 ×240 ÷4<br>OR 500÷320 considered or shown as repeated addition or multiplication trials **towards** 500 |
| 40 ml per person or 12.5 people | M1 | Allow for an answer of 13 from appropriate working<br>OR if trials or repeated addition has been used, must work to consider 'their 320' can be broken down into a smaller quantity per person |
| 12 portions | A1 | (Note: FT from cream 160ml gives 25 people)<br>Unsupported answer of 12 (people) is awarded all 4 marks |
| **H3** | 8 | |
| 16. (a) 55 | B2 | B1 for evidence of 180 – ( 75 + 50) **or equivalent, e.g. 360 –(105 + 125+75) incorrectly calculated, accept without brackets as intention, e.g.180 - 75 + 50, OR for sight of 55(°) or 125(°) from appropriate working or on the diagram** |
| (b) 2z + z + 2z + z = 24 (or 6z = 24 or 3z = 12 or 2z=24/3) | M1 | **Must be evidence of a correct equation** , not z = 4<br>Do not penalise change of letter from z |
| 6z = 24 (or z = 24/6 or z = 12/3) | A1 | An answer only of **(z =)** 4 without an introductory equation is M0, A0, B1. Accept answer 4 (metres) without equation<br>*SC1 for z+z+z+z=24 or 4z=24 leading to z=6, or 2z+2z+2z+2z=24 or 8z=24 leading to z=3,* ***or similar*** |
| z=4 | B1 | **z+2z = 24 leading to z = 8 or similar** |
| **H8** | 5 | |
| 17.Realising that 1/3 of the winnings is given away AND considers equivalent fractions in …/24 | S1 | Or sight of 1/3 = …/24 or realising ⅔ is 16/24<br>OR accept appropriate working with an amount of money |
| 8 (close friends) | B2 | B1 for an appropriate calculation that could lead to 8 people or 16 (left) OR sight of 16/24 or 8/24<br>Examples of calculations: 24-16, or 2×24/3 (=16 left)<br>An unsupported correct answer is awarded all 3 marks. |
| **H6** | 3 | |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Surname | Centre Number | Candidate Number |
|---|---|---|
| Other Names | | 0 |

WJEC CBAC

# GCSE

4370/03

# MATHEMATICS – LINEAR
## PAPER 1
## FOUNDATION TIER

A.M. TUESDAY, 11 June 2013

$1\frac{3}{4}$ hours

**CALCULATORS ARE NOT TO BE USED FOR THIS PAPER**

### ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

### INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

Take $\pi$ as 3·14.

### INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **15**.

| For Examiner's use only | | |
|---|---|---|
| **Question** | **Maximum Mark** | **Mark Awarded** |
| **1** | **11** | |
| **2** | **8** | |
| **3** | **4** | |
| **4** | **7** | |
| **5** | **6** | |
| **6** | **3** | |
| **7** | **3** | |
| **8** | **8** | |
| **9** | **4** | |
| **10** | **4** | |
| **11** | **8** | |
| **12** | **3** | |
| **13** | **5** | |
| **14** | **7** | |
| **15** | **9** | |
| **16** | **4** | |
| **17** | **6** | |
| **TOTAL MARK** | | |

4370 030001



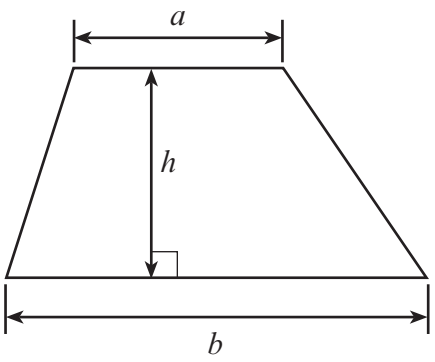
© WJEC CBAC Ltd.



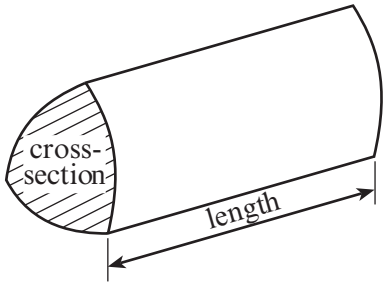
STEMUP.CO.UK

## Formula List

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




**Volume of prism** = area of cross-section × length






© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**1.** *(a)* (i) Write down, in figures, the number thirty two thousand and fifty six. [1]

.....

(ii) Write down, in words, the number 10 102. [1]

.....

*(b)* Using only the numbers in the following list,

44 48 13 12 36 23 41

write down

(i) two numbers that have a sum of 67, [1]

.....

(ii) two numbers that have a difference of 29, [1]

.....

(iii) a square number. [1]

.....

*(c)* Write 6518

(i) correct to the nearest 10, [1]

.....

(ii) correct to the nearest 1000. [1]

.....

*(d)* Write down all the factors of 18. [2]

.....

.....

*(e)* Each of the digits 6, 1, 3 and 4 is used once to make a four-digit number.

(i) What is the smallest number that can be made? [1]

.....

(ii) What is the largest **even number** that can be made? [1]

.....



© WJEC CBAC Ltd.





STEMUP.CO.UK

4370 030003

Examiner only

**2.** *(a)* Write down the next term in **each** of the following sequences.

(i) 35, 29, 23, 17, .....

(ii) 12, 16, 21, 27, .....

.....

.....

[2]

*(b)* What is the value of the 8 in the number 78 431?

.....

[1]

*(c)* Write $\frac{3}{4}$ as a decimal .....

Write 77% as a decimal .....

Write $\frac{3}{4}$, 77% and 0·73 in ascending order.

.....

.....

[3]

*(d)* Showing all your working, find an **estimate** for the value of 98·6 × 19·2.

.....

.....

.....

[2]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**3.** The formula for finding the value of any term in a sequence is

**value of the term = 7 × number of the term + 4**

*(a)* Find the **value of the term** when the **number of the term** is 9.

.....

.....

.....

.....

[2]

*(b)* Find the **number of the term** when the **value of the term** is 88.

.....

.....

.....

.....

.....

.....

[2]

4370 030005



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**4.** Fifty pupils were asked to choose one sport from Rugby (R), Soccer (S), Hockey (H) or Tennis (T).
Here are the results of the survey.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| R | H | R | H | T | S | S | R | H | S |
| T | R | H | R | S | R | T | H | T | H |
| S | T | R | S | H | T | R | H | R | H |
| H | R | S | R | H | S | T | S | R | S |
| R | S | H | R | T | R | H | H | R | S |

*(a)* Using the centimetre squared grid on the opposite page, draw a bar chart for the data given.

.....

.....

.....

.....

.....

.....

.....

.....

.....

[6]



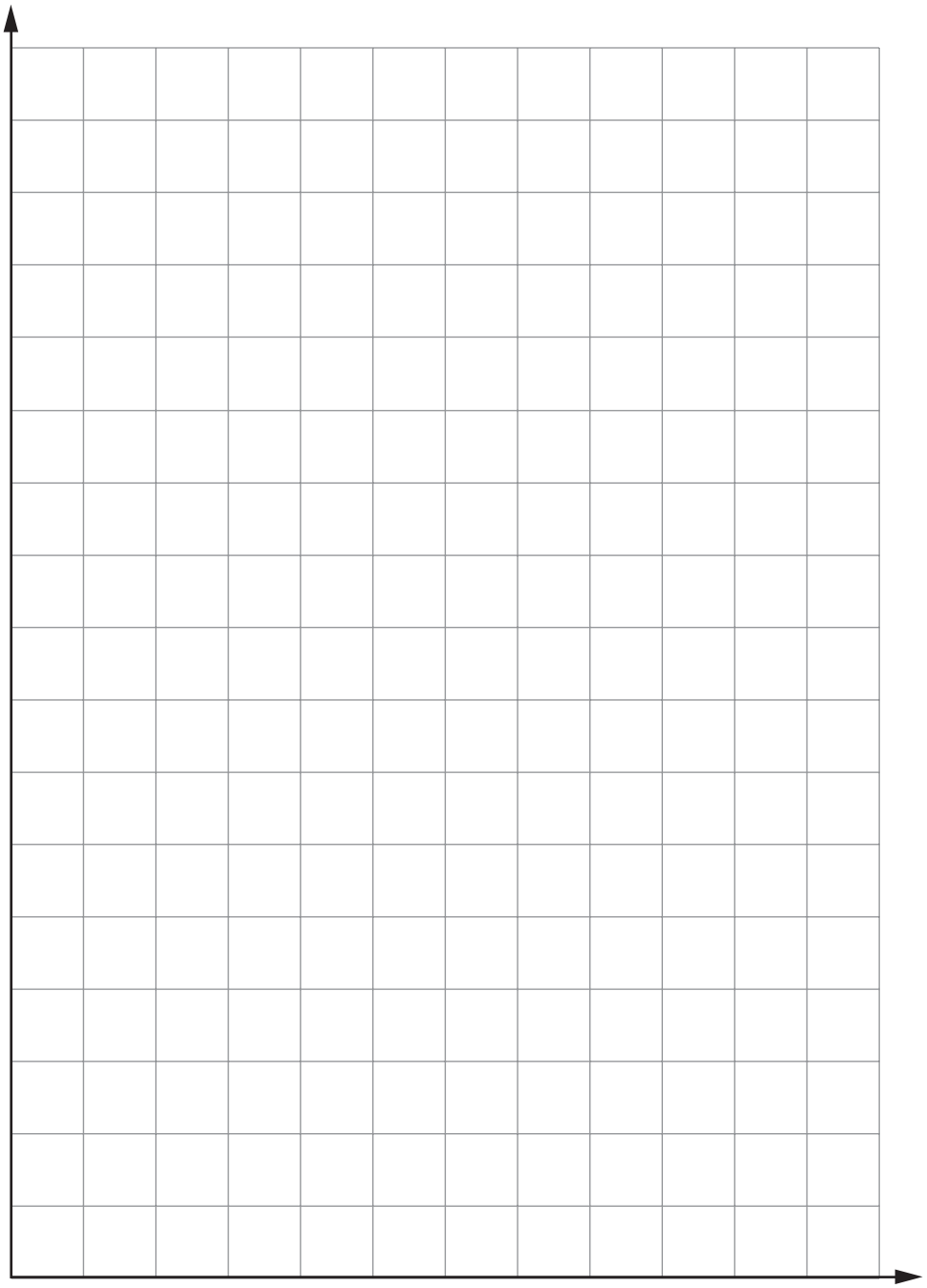
© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**For use with question 4**



*(b)* Write down the mode.

.....

[1]



© WJEC CBAC Ltd.





STEMUP.CO.UK

4370 030007

Examiner only

**5.** Three overlapping rectangles, each 8 cm by 3 cm, are placed so as to make the shape shown in the diagram.

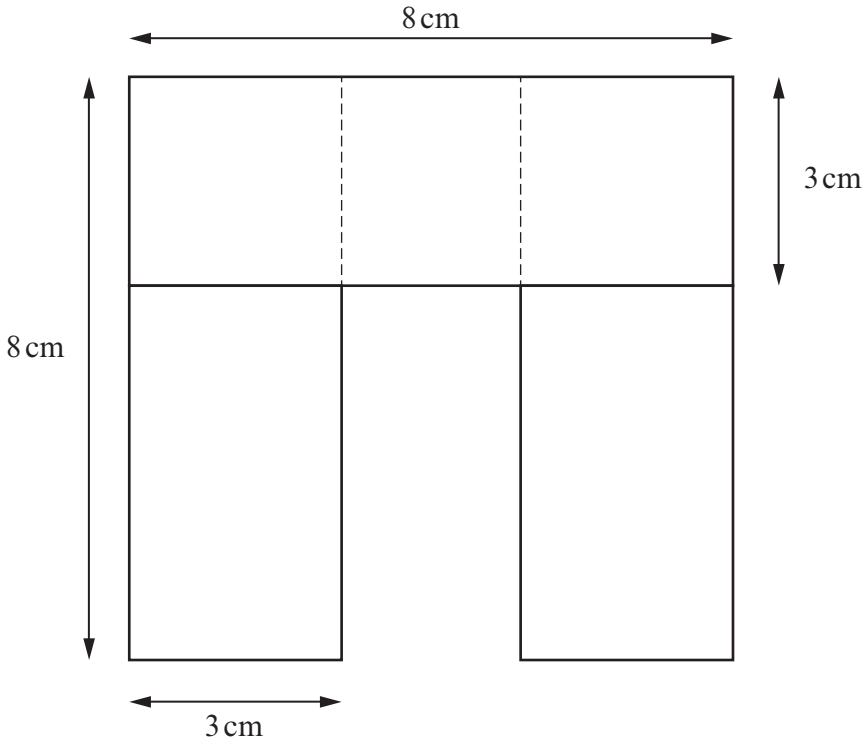



*Diagram not drawn to scale*

*(a)* Calculate the perimeter of the shape.

.....

.....

.....

[3]

*(b)* Calculate the area of the shape.
Write down the units of your answer.

.....

.....

.....

.....

[3]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**6.** *(a)* Simplify $3x + 4x - x$.

.....

.....

[1]

*(b)* Use the formula $P = 6T + 4H$ to find the value of $P$ when $T = 5$ and $H = 9$.

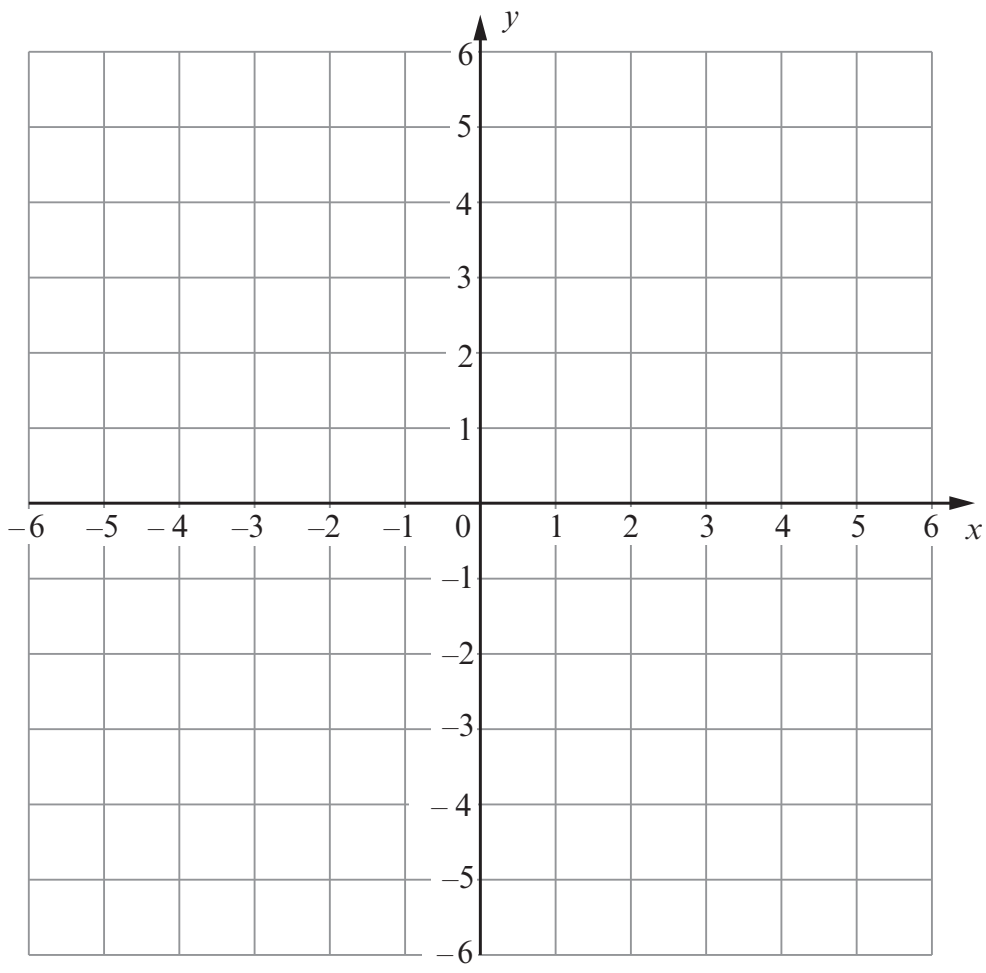
.....

.....

.....

[2]

**7.** On the squared paper below, plot the points $A(6, -5)$, $B(-2, -4)$ and $C(-3, 3)$.




[3]



© WJEC CBAC Ltd.



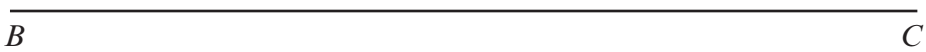


STEMUP.CO.UK

4370 030009

Examiner only

**8.** *(a)* Complete an accurate drawing of triangle $ABC$, in which $BC = 12\,\text{cm}$, $A\hat{B}C = 54°$ and $BA = 9\,\text{cm}$.
The side $BC$ has been drawn for you.




[3]

*(b)* Write down the special name given to angles which are greater than 180°, but less than 360°.

.....

[1]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(c)* Two litres of water are poured into an empty rectangular tank of length 25 cm and width 20 cm.
The water completely fills the tank, without it overflowing.
Calculate the depth of the tank.

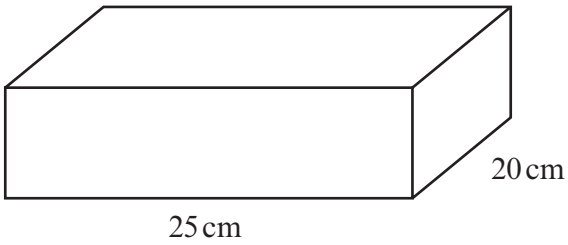



*Diagram not drawn to scale*

.....

.....

.....

.....

.....

[4]



© WJEC CBAC Ltd.

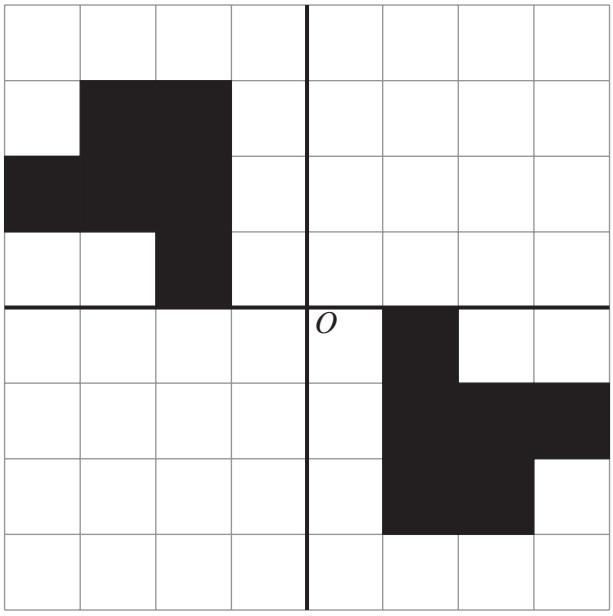




STEMUP.CO.UK

Examiner only

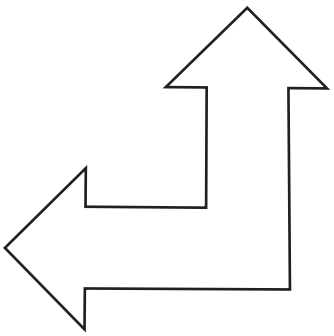
**9.** *(a)* Draw two more shapes so that the completed pattern has rotational symmetry of order 4 about *O*.



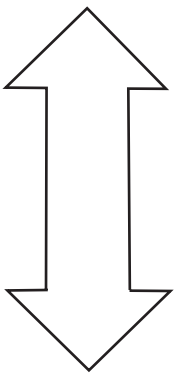

[2]

*(b)* Draw all the lines of symmetry on the following two diagrams.

(i)



(ii)



[2]



© WJEC CBAC Ltd.



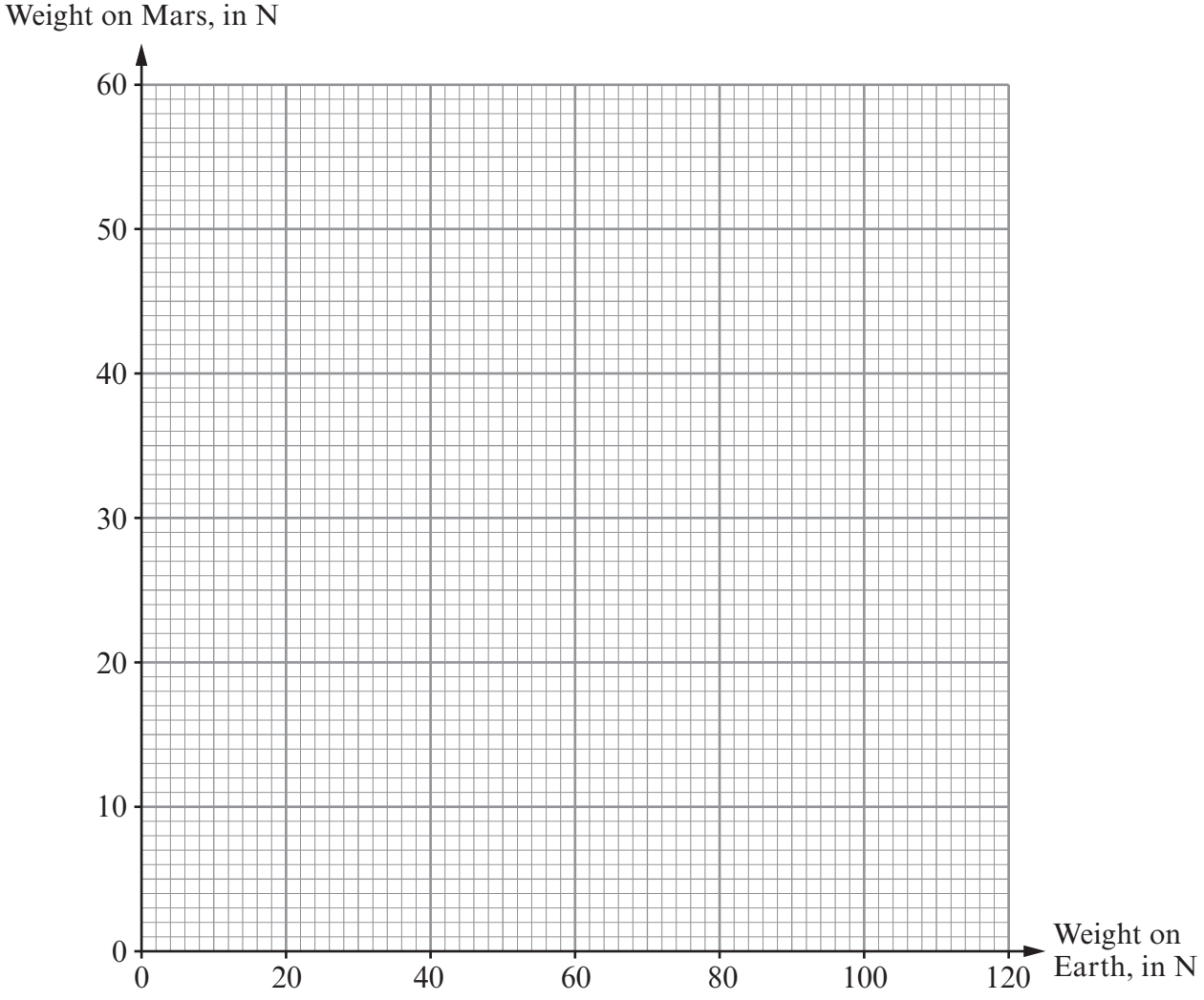
STEMUP.CO.UK

Examiner only

**10.** *(a)* The weight of an object on the planet Mars is different from the object's weight on Earth. The table shows the weight in newtons (N) of three different objects on Earth and on Mars.

| | | | |
|---|---|---|---|
| Weight on Earth (N) | 114 | 85 | 24 |
| Weight on Mars (N) | 43 | 32 | 9 |

Use the data in the table to draw a conversion graph between weights on Earth and weights on Mars.




[2]

*(b)* A rock weighs 370 N on Mars.
Find an estimate for the weight of this rock on Earth.

.....

.....

.....

[2]



© WJEC CBAC Ltd.

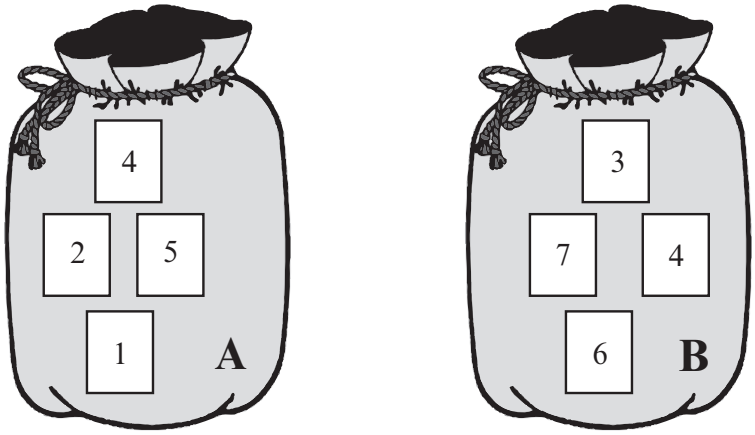


**Turn over.**

STEMUP.CO.UK

Examiner only

**11.** In bag A, there are four cards numbered 1, 2, 4 and 5 respectively. In bag B, there are four cards numbered 3, 4, 6 and 7 respectively.




In a game, one card is chosen at random from bag A and one from bag B.
The score for the game is the positive difference between these two numbers.
For example, if the number on the card from bag A is 1 and the number on the card from bag B is 3, the score is 3 – 1 = 2.

*(a)* Complete the following table to show all the possible scores.

| Bag A \ Bag B | 3 | 4 | 6 | 7 |
|---|---|---|---|---|
| 5 | 2 | ..... | 1 | ..... |
| 4 | 1 | ..... | 2 | ..... |
| 2 | 1 | ..... | 4 | ..... |
| 1 | 2 | ..... | 5 | ..... |

[2]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(b)* A player wins a prize by getting a score of 2 or less.

(i) What is the probability of a player winning a prize?

.....

.....

[2]

(ii) 80 people each play the game once.
Approximately how many would you expect to win a prize?

.....

.....

.....

[2]

(iii) It costs 90p to play the game once. The prize for getting a score of 2 or less is £1.20.
If the 80 people each play the game once, approximately how much profit do you expect the game to make?

.....

.....

.....

.....

.....

.....

.....

.....

.....

[2]



© WJEC CBAC Ltd.





STEMUP.CO.UK

Examiner only

**12.** A bucket when full of water weighs 18 kg.
Half of the water is poured away.
The bucket and water now weigh 11 kg.
What is the weight of the empty bucket?

.....

.....

.....

.....

.....

.....

.....

[3]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**13.** *(a)* Find the size of angle $x$.

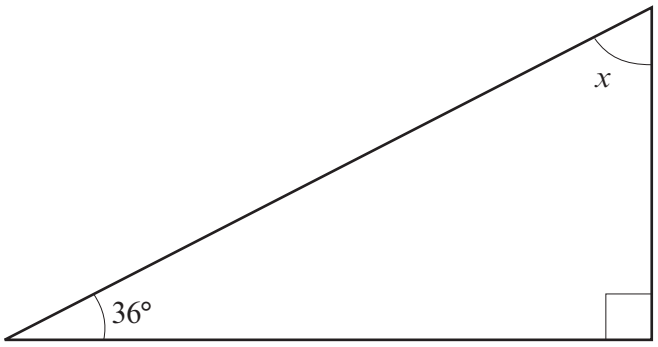



*Diagram not drawn to scale*

.....

.....

.....

$x =$ ..... °

[2]

*(b)* Find the size of angle $y$.

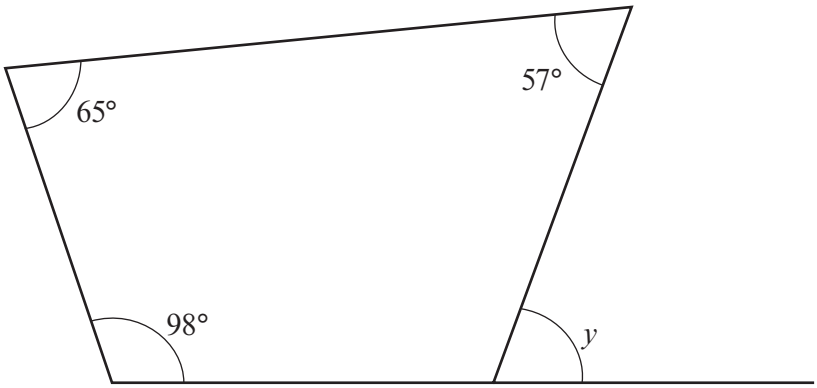



*Diagram not drawn to scale*

.....

.....

.....

.....

$y =$ ..... °

[3]



© WJEC CBAC Ltd.





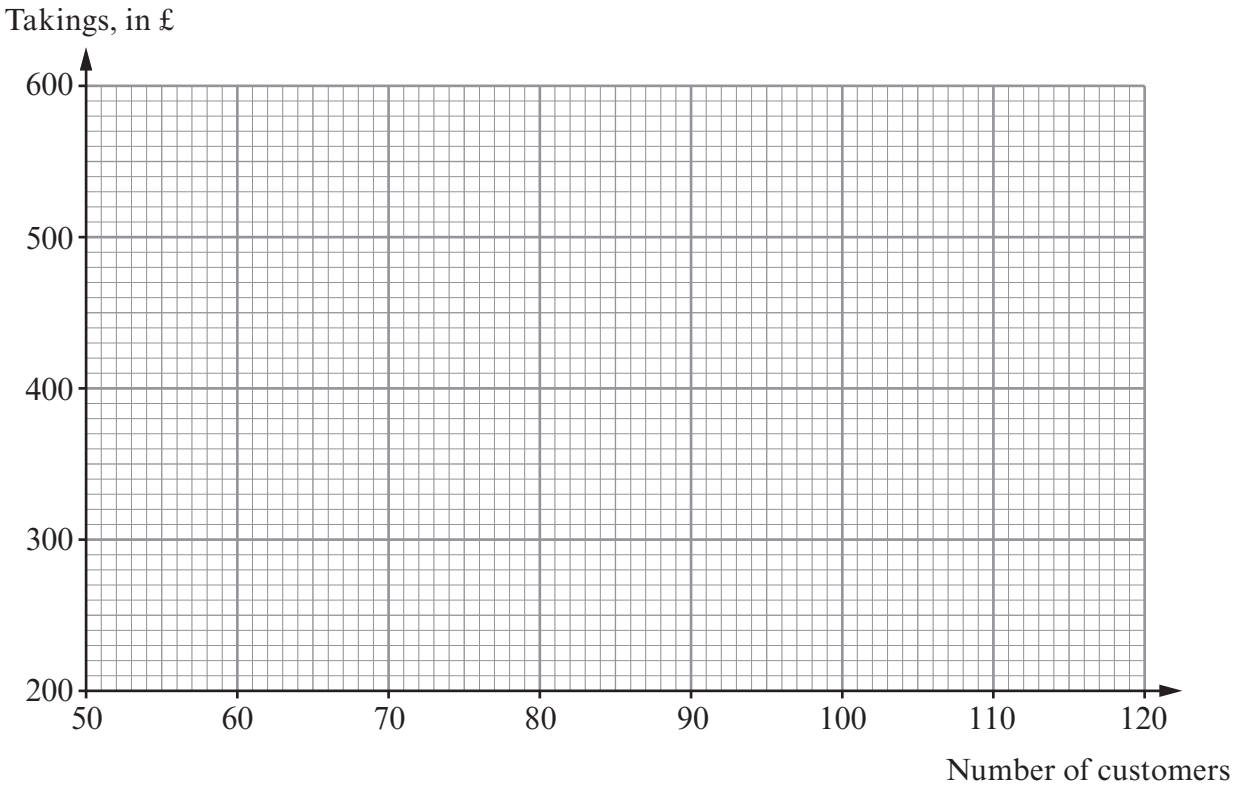
STEMUP.CO.UK

Examiner only

**14.** Every Friday for 6 weeks, the number of customers entering a sandwich shop and the takings of the shop were recorded.
The takings were recorded correct to the nearest £10.
The table below shows the results.

| Number of customers | 104 | 82 | 120 | 64 | 70 | 118 |
|---|---|---|---|---|---|---|
| Takings, in £ | 510 | 420 | 590 | 320 | 340 | 560 |

*(a)* On the graph paper below, draw a scatter diagram of these results.




[2]

*(b)* Write down the type of correlation that is shown by the scatter diagram.

.....

[1]

*(c)* Draw, by eye, a line of best fit on your scatter diagram.

[1]

*(d)* Estimate the takings for a Friday when there are 90 customers.

.....

[1]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(e)* Approximately how much does a customer spend, on average, in the sandwich shop on a Friday?

.....

.....

.....

[2]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**15.** *You will be assessed on the quality of your written communication in this question.*

Pedro has just moved to live on an island in Europe.
There is a choice of two different water companies.

**Manana Water**

No Standing Charge

Pay €0.06 per $m^3$ of water used

**Channel Water**

Standing Charge: €30 every 3 months
+
€0.02 per $m^3$ of water used

*Special offer*: 20% off your **first** bill

Pedro estimates that he uses 700 $m^3$ of water every three months.
He wants to spend as little as possible on water.
Which company should Pedro buy his water from?
You must justify your answer by showing all possible costs.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[9]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**16.** *(a)* Express 936 as a product of prime numbers in index form.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[3]

*(b)* Explain why 50 is not a perfect square number.

.....

.....

.....

[1]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**17.** The four vertices of parallelogram $ABCD$ lie on the sides of triangle $PQR$ as shown in the diagram.

The sides $PD$, $AD$, $BC$ and $CR$ are equal.

Given that $A\hat{D}C = 50°$, find the value of $x$.

**You must show full details of how you obtained your answer.**

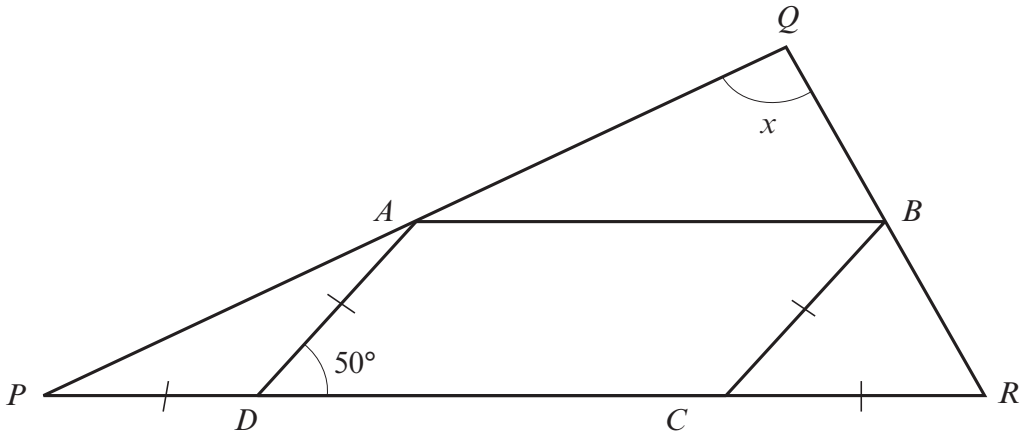



*Diagram not drawn to scale*

.....

.....

.....

.....

.....

.....

.....

.....

.....

[6]



© WJEC CBAC Ltd.



STEMUP.CO.UK

| Question number | Additional page, if required.<br>Write the question numbers in the left-hand margin. |
|---|---|

Examiner only



© WJEC CBAC Ltd.



STEMUP.CO.UK

# GCSE MARKING SCHEME

## MATHEMATICS - LINEAR

## SUMMER 2013

© WJEC CBAC Ltd.

## INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2013 examination in GCSE MATHEMATICS - LINEAR. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.


| | Page |
|---|---|
| Paper 1 - Foundation Tier | 1 |
| Paper 1 - Higher Tier | 5 |
| Paper 2 - Foundation Tier | 9 |
| Paper 2 - Higher Tier | 12 |


© WJEC CBAC Ltd.

STEMUP.CO.UK

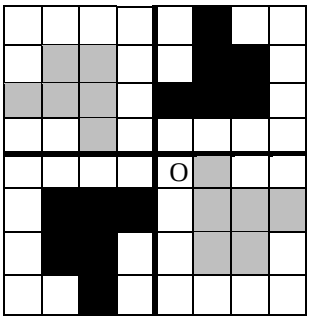
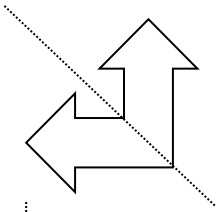
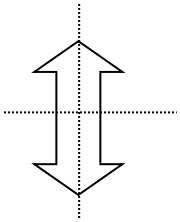
# PAPER 1 - FOUNDATION TIER

| 2013 Summer Linear Paper 1 (Non calculator) Foundation Tier | Marks | FINAL MARK SCHEME Comments |
|---|---|---|
| 1. (a) (i) 32 056 | B1 | |
| 1. (a) (ii) ten thousand (and) one hundred and two | B1 | |
| 1. (b) (i) 44 and 23 | B1 | |
| 1. (b) (ii) 12 and 41 | B1 | |
| 1. (b) (iii) 36 | B1 | Accept $6^2$, 6×6 but NOT 6 |
| 1. (c) (i) 6520 | B1 | |
| 1. (c) (ii) 7000 | B1 | |
| 1. (d) 1, 2, 3, 6, 9, 18 | B2 | B1 for any 4 correct factors and up to 1 incorrect |
| 1. (e) (i) 1346 | B1 | |
| 1. (e) (ii) 6314 | B1 | |
| **Parts (i) and (ii) marked together**<br>2. (a) (i) 11<br>(ii) 34 | <br>B1<br>B1 | |
| 2. (b) 8000 OR 8 thousand OR thousand (s) | B1 | B0 for 1 thousand OR 1000 |
| 2. (c) (0) ·75<br>(0) ·77<br>(0) ·73 , ¾ , 77% | B1<br>B1<br>B1 | Accept (0) ·73 , (0) ·75 , (0) ·77 or equivalent<br>For the third B1, F.T. incorrect decimals **less than 1**.<br>**B0 if given vertically.** |
| 2. (d) 100 × 19 or 100 × 19.2 OR 100 × 20 OR 99 × 20 OR 98 × 20 OR 98.6 × 20 OR **90 × 20**<br>= 1900 OR 1920 OR 2000 OR 1980 OR1960 **OR 1800** | M1<br>A1 | Good estimates<br>F.T their estimates for simple calculations<br>**SC1 for unsupported 2000**<br>**Penalise extraneous working (towards actual answer) M0A0** |
| 3. (a) Value = 7×9 +4<br>= 67 | M1<br>A1 | Correctly substituted and correct attempt to evaluate.<br>e.g. 7×9 +4 = 7×13 (=91) gets M0, A0.<br>**OR 7×9 +4 = 66 gets M0, A0.** |
| 3. (b) number of the term = (88 – 4) /7<br>= 12 | M1<br>A1 | For correct substitution with subtraction and division<br>Allow embedded references to the correct answer. |
| **All parts (a) – (b) marked at the same time**<br>4. (a) Rugby 16, Soccer 12, Hockey 14, Tennis 8<br><br>Both axes labelled, e.g. frequency along one axis and R(ugby), S(occer), H(ockey),T(ennis) along other axis<br>Anywhere within the base (inc.) of the corres. bar.<br>Uniform scale for the frequency axis starting at 0.<br><br>Four bars at correct heights (bars must be of equal width). Can be in any order.<br><br>(b) Rugby OR 'R' | ✓<br>B2<br><br>B2<br><br><br><br><br><br>B2<br><br><br><br>B1 | Part (a) only ✓<br>B1 for any two/three correct frequencies<br>If frequencies score 0, then give B1 for all 4 correct tallies.<br>B1 if no scale but allow one square to represent 1 OR B1 if not labelled as 'frequency'<br>If frequency scale starts with 1 at the top of the first square the starting at 0 will be implied for this axis.<br>Condone frequency numbers alongside squares instead of at the top of squares.<br>F.T. their table of frequencies<br>B1 for any 2 or 3 correct bars on F.T.<br>If no frequencies given in their working, penalise -1 for each incorrect frequency on their bars up to -4 (First and third B2s)<br>Accept 16 and Rugby, but B0 for 16 only<br>**F.T. their frequencies** |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| 2013 Summer Linear Paper 1 (Non calculator)<br>Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 5. (a) Missing inside segments = 5, (5) and 2<br>Perimeter = 8+8+8+3+3+5+5+2<br><br>= 42 (cm) | S1<br>M1<br><br><br><br>A1 | One 5 with the 2 in correct places gets S1<br>Attempt to add all sides of the shape<br>**FT 'their 2' for possible M1**<br>**If the 5 and 2 are not shown on diagram but both 5s and 2 are in the sum of sides for the perimeter then award S1 here.**<br>C.A.O. |
| 5. (b) Area = 8×3+5×3+5×3 OR 8×8 – 5×2<br>= 54<br>$cm^2$ | M1<br>A1<br>U1 | Attempt to add all areas of the shape OR difference of areas<br>F.T. if missing sides (even incorrect) are clearly indicated<br>Independent of all other marks. |
| 6. (a) 6x | B1 | |
| 6. (b) ($P$ = ) 66 | B2 | B1 for either 30 OR 36<br>**B0 for 30T and/or 36H** |
| 7. A(6, −5), B (−2, −4) and C(−3, 3) plotted. | B3 | B1 for each. Reversed coordinates get B0.<br>**Letters A,B,C not needed.** |
| 8. (a) **Use overlay**<br>$A\hat{B}C$ = 54° (±2°)<br>$BA$ = 9 cm (±2 mm)<br>Completed triangle. | <br>M1<br>M1<br>A1 | <br><br><br>Dependent on at least one M1 |
| 8. (b) Reflex | B1 | |
| 8. (c) 2 litres = 2000 **($cm^3$)**<br>Height = 2000/(20×25)<br>(Area of base =) 500 ($cm^2$)<br>Height = 4 (cm) | ✓<br>B1<br>M1<br><br>B1<br>A1 | <br><br>FT their 2000<br><br>OR correct one stage of calculation. E.g. 2000/20 = 100 or 2000/25 = 80 |
| 9. (a)<br><br>**Parts (i) and (ii) marked together**<br>(b) (i)<br><br>(ii)<br> | B2<br><br><br><br><br><br><br><br>B1<br><br><br><br>B1 | B1 for each of 1st and 3rd quadrants<br><br><br><br><br><br><br><br>Only the correct line drawn<br>**The line gets B1 even if only the part that is in the shape**<br><br><br><br>Only the correct two lines drawn<br>'Horizontal' line (and vertical line should look as if they are bisecting the shape |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| 2013 Summer Linear Paper 1 (Non calculator) Foundation Tier | Marks | FINAL MARK SCHEME Comments |
|---|---|---|
| **Both parts (a) & (b) marked at the same time**<br>10. (a) **Overlay (viewed with diagram)**<br>Plots<br>Line | <br><br>P1<br>G1 | <br><br>Allow ONE error within a small square.<br>If the points are plotted incorrectly, allow a curve through points, line segments or line of best fit. |
| 10. (b) Any correct strategy, e.g. 10 times value at 37<br>980 (N) | M1<br>A1 | Any correct method using graph or table.<br>F.T. their graph.<br>Unsupported answers in the range 970 – 1000 **inclusive** get M1, A1. |
| **All parts (a) – (b) marked at the same time**<br>11. (a) (2) 1 (1) 2<br>(1) 0 (2) 3<br>(1) 2 (4) 5<br>(2) 3 (5) 6 | <br>B2 | <br>B1 for at least 4 correct entries from 2nd and 4th columns |
| (b) (i) $\frac{10}{16}$ I.S.W. | B2 | F.T. their table<br>B1 for a numerator of 10 in a fraction less than 1.<br>B1 for a denominator of 16 in a fraction less than 1.<br>**Penalise -1 once only for wrong notation, e.g. 10 out of 16** |
| (ii) $\frac{10}{16}$ of 80 OR $\frac{10}{16} \times 80$<br>= 50 | M1<br>A1 | F.T. their (b)(i) if a fraction less than 1 **and ≠ ½.**<br>Penalise incorrect cancelling of 10/16 here.<br>**50 out of 80 gets the M1, A1 but 50/80 gets M1, A0.** |
| (iii) 80 × 90(p) − 50 × (£)1.20 OR<br>OR 7200(p) − 6000(p) OR (£)72 − (£)60<br>= (£)12 or 1200(p) | M1<br><br>A1 | F.T. full method of<br>80 × 90p – 'their 50' × £1.20<br>rounded up or down figure if their 50 is not a whole number<br>OR 30×90 –50×30 (=2700–1500)<br>=1200 |
| 12. (Weight of half the water) = 18 – 11 = 7 (kg)<br>(Weight of bucket) = 18 – 2×7 OR 11 – 7<br>= 4 (kg) | B1<br>M1<br>A1 | **Weight of water = 14(kg) gets B1**<br>**FT 'their 7'** |
| 13. (a) (x =) 180 – 90 – 36 OR 90 – 36<br>= 54(°) | M1<br>A1 | |
| 13. (b) 65 + 57 + 98 = 220<br>360 – 220 OR sight of 140(°)<br>(y =) 40(°) | B1<br>M1<br>A1 | <br>F.T. 'their 220'<br>**Condone mathematical reversals, e.g. 220 –360 if correct answer follows i.e. 140 in this case.** |
| 14. (a) All points plotted correctly | B2 | B1 for at least 3 correct plots<br>Ignore line of best fit |
| 14. (b) Positive | B1 | Do not accept descriptions. |
| 14. (c) Line of best fit with points above and below | B1 | Line of best fit must be appropriate for the trend of points<br>Do not accept a line drawn corner-to-corner of graph paper |
| 14.(d) Their estimate, from their line of best fit | B1 | FT for their incorrect line of best fit<br>OR only if **no line** shown then accept answers in the range (£)430 to (£)460 **inclusive** |
| 14. (e) Evidence of takings / number of customers<br>Approximately (**£**)5 (Accept £4.40 to £5.50 **inclusive**) | M1<br>A1 | Accept for any pair of values in proportion or any pair of values on the line of best fit, or using the gradient of the line of best fit. For the idea of proportion of takings/customers, which candidates may find from one set of values or summations<br>**Accept unsupported answers in the range** |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| 2013 Summer Linear Paper 1 (Non calculator) Foundation Tier | Marks | FINAL MARK SCHEME Comments |
|---|---|---|
| 15.<br>(Manana Water cost for 700m$^3$ of water)<br>0.06×700 OR 6×700<br>42(€) 4200(cents)<br>(Channel Water cost for 700m$^3$ of water)<br>30 + 0.02×700<br>= 44(€)<br><br>(But, for Channel Water first bill cost is)<br>44×0.8 OR 44 – 0.2×44 (= 44 – 8.8(0))<br><br>35.2(0 €)<br><br>Choice, with any valid reason, e.g.<br>'Manana because after 1st 3 months change',<br>'Channel first 3 months (then change to Manana)',<br>'In the long run Manana',<br><br>Look for<br>• spelling<br>• clarity of text explanations,<br>• the use of notation (watch for the use of '=', € being appropriate)<br><br>QWC2: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>AND<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer<br>QWC1: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>OR<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer | <br><br>M1<br>A1<br><br>M1<br>A1<br><br>M1<br><br><br>A1<br><br><br>E1<br><br><br><br><br>QWC 2 | *Award equivalent seen within looking at a fixed time period, e.g. 1 year, 2 years*<br><br>Do not accept 4200€<br><br>Or equivalent. Must be consistent units for M1<br><br>FT 'their 44' provided previous M1 awarded or sight of 30 +(0.0)2×700 (or 1430) used in calculation or similar calculation with place value error<br>*If M0, A0, due to working with only 1/3 of 44 reduced by 20%, then SC1 for an answer of 41.06(..) or 41.07*<br><br>FT provided 1st two M1 marks awarded for each Water Company. Do not FT from 1430 or similar mixed unit error<br>Accept answers based on a fixed time period, e.g. considering 3 years<br>*Ignore any further incorrect calculation*<br><br>QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.<br><br>QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar .<br>OR<br>Evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar.<br><br>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation and grammar. |
| 16.(a) Method with at least 2 correct prime factors<br>Sight of correct factors (2, 2, 2, 3, 3, 13)<br>$2^3$ x $3^2$ x 13 or $2^3$ . $3^2$. 13 | M1<br>A1<br>B1 | 2 correct primes before 2nd error<br>Ignore 1s seen<br>FT their factors (with at least one index >1 used).<br>Do not ignore 1s. |
| 16. (b) E.g. '2 x $5^2$ not even powers', or '2 x 25 but not square'<br>Or '7x7=49 and 8x8=64 (so 50 not square)' | E1 | *Do not accept "even powers" without relevant working, nor "no number times itself gives 50". But do accept "no <u>whole</u> number times itself gives 50"* |
| 17. $A\hat{D}P = 130°$<br>$A\hat{P}D = 25°$ OR $P\hat{A}D = 25°$<br><br>$B\hat{R}C =$ OR $C\hat{B}R = (180° - 50°)/2$ OR 130/2<br>= 65°<br>x = 180° – 25° – 65°<br>= 90° | ✓<br>B1<br>B1<br><br>M1<br>A1<br>m1<br>A1 | Look at diagram throughout and award appropriate credit.<br>Some answers will imply preceding ones, e.g. B2 if only 25 given<br><br>F.T. 'their 50' using the isosceles triangle property correctly<br>C.A.O.<br>Dependent on the M1<br>Unsupported answers of x = 90° get 0. |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Surname | Centre Number | Candidate Number |
|---|---|---|
| Other Names | | 0 |

# GCSE

4370/03

# MATHEMATICS – LINEAR
## PAPER 1
## FOUNDATION TIER

A.M. TUESDAY, 6 November 2012

$1\frac{3}{4}$ hours

**CALCULATORS ARE NOT TO BE USED FOR THIS PAPER**

### INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take $\pi$ as 3·14.

### INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **6**.

| For Examiner's use only | | |
|---|---|---|
| **Question** | **Maximum Mark** | **Mark Awarded** |
| **1** | **9** | |
| **2** | **9** | |
| **3** | **4** | |
| **4** | **9** | |
| **5** | **6** | |
| **6** | **7** | |
| **7** | **4** | |
| **8** | **4** | |
| **9** | **8** | |
| **10** | **6** | |
| **11** | **6** | |
| **12** | **5** | |
| **13** | **9** | |
| **14** | **7** | |
| **15** | **3** | |
| **16** | **4** | |
| **TOTAL MARK** | | |

4370 030001

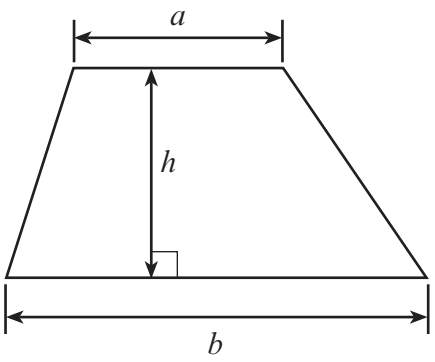
© WJEC CBAC Ltd.



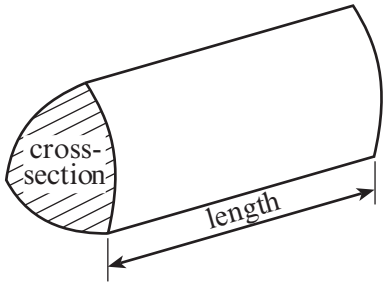
STEMUP.CO.UK

## Formula List

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




**Volume of prism** = area of cross-section × length




© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**1.** *(a)* (i) A car manufacturer sells six thousand, five hundred and eighty three cars. Write down this number in figures.

.....

[1]

(ii) The weekly sales for a local newspaper is 13 406.
Write down this number in words.

.....

.....

[1]

*(b)* Add together 85 and 97.

.....

.....

.....

[1]

*(c)* Find 428 – 119.

.....

.....

.....

[1]

*(d)* Write down a multiple of 8 that is between 70 and 79.

.....

[1]

*(e)* Write 8736

(i) correct to the nearest 10,

.....

[1]

(ii) correct to the nearest 100.

.....

[1]

*(f)* Write down all the factors of 16.

.....

.....

.....

[2]



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**2.** *(a)* Write down the value of the 8 in the number 18 623.

.....

[1]

*(b)* Write down a square number that is less than 100 and has a tens digit of 8.

.....

[1]

*(c)* Tom has a £10 note and a £5 note.
He buys 10 packs of cards and has £1 left over.
What is the cost of 1 pack of cards?

.....

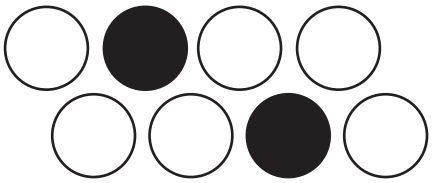
.....

.....

.....

[3]

*(d)* What percentage of the discs are black?



.....

[1]

*(e)* **Showing all your working**, find an **estimate** for the value of 74·6 × 99·7.

.....

.....

.....

[2]

*(f)* Write down the smallest prime number that is greater than 20.

.....

[1]

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**3.** The formula for the profit (in £) made by selling printers is

**profit = number sold × 24 – outlay**

*(a)* Find the **profit** when the **number sold** is 20 and the **outlay** is £150.

.....

.....

.....

.....

[2]

*(b)* On another occasion, a **profit** of £180 is made when the **number sold** is 10. Find the **outlay**.

.....

.....

.....

.....

[2]



© WJEC CBAC Ltd.



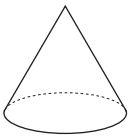
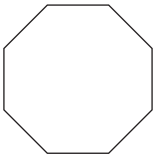
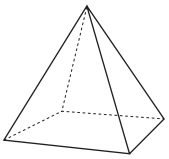


STEMUP.CO.UK

Examiner only

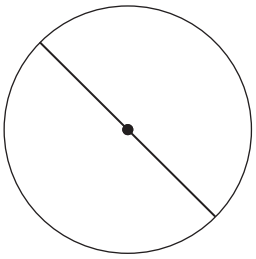
**4.** *(a)* Write down the special name of each of the following figures.

[3]

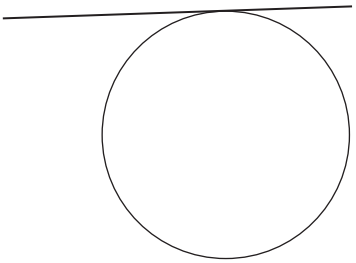
| | |
|---|---|
|  | ..... |
|  | ..... |
|  | ..... |

*(b)* Write down the special name of the straight line shown in each of the following diagrams.

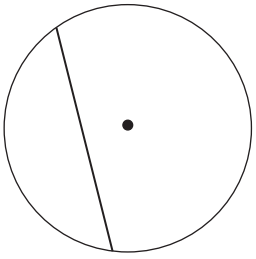
[3]



.....



.....



.....

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

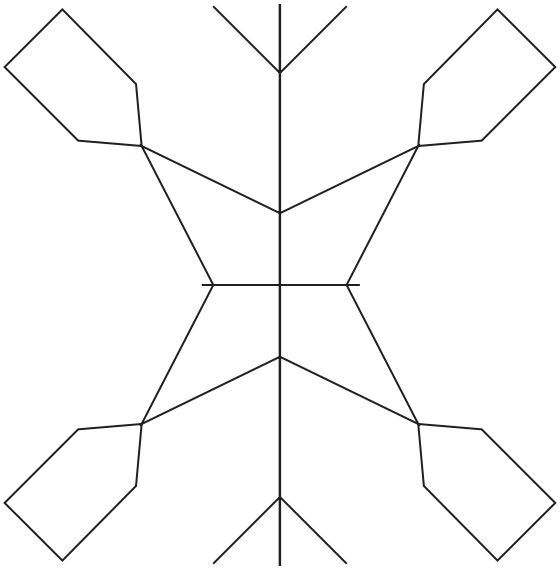
*(c)* Draw **all** the lines of symmetry on each of the following patterns.

[3]

(i)



(ii)





© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**5.** Three identical rectangles, each 10 cm by 2 cm, are placed to make the shape shown in the diagram.

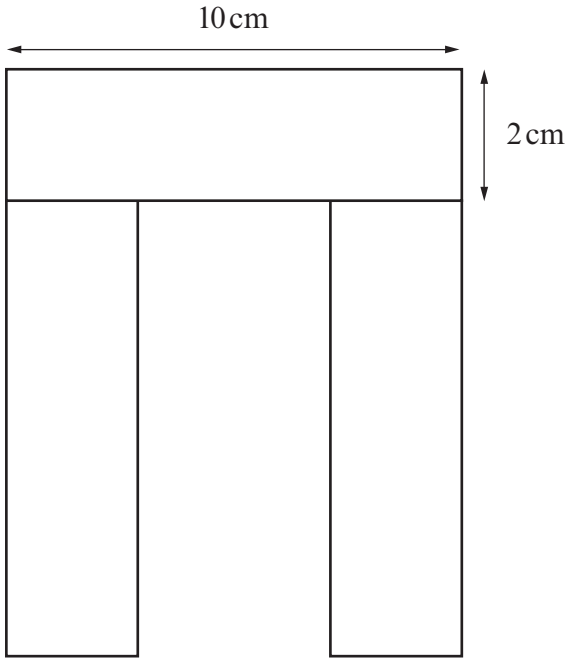



*Diagram not drawn to scale*

*(a)* Calculate the perimeter of the shape.

.....

.....

.....

[3]

*(b)* Calculate the area of the shape.
Write down the units of your answer.

.....

.....

.....

.....

[3]

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**6.** *You will be assessed on the quality of your written communication in this question.*

Year 11 pupils have been asked to estimate the cost for each pupil to go to a concert.

There are 98 pupils in Year 11.
A packed lunch for each pupil costs £3.95.
The total cost of tickets to the concert is £915.
The buses cost £290.

**ESTIMATE** the cost per pupil of the trip, to the nearest pound.
You must show all your working.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[7]



© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**7.** The following table shows, for five different places,
- the temperatures at midday on 2 different days,
- the change of temperature between the 2 days.

Complete the table.

| Place | Temperature on day 1 | Temperature on day 2 | Change in temperature |
|---|---|---|---|
| Bangor | –4 | 2 | up 6 |
| Toronto | 3 | –2 | |
| Glasgow | –1 | | down 3 |
| Moscow | –2 | –6 | |
| Reykjavik | | –5 | up 2 |

[4]

© WJEC CBAC Ltd.

STEMUP.CO.UK

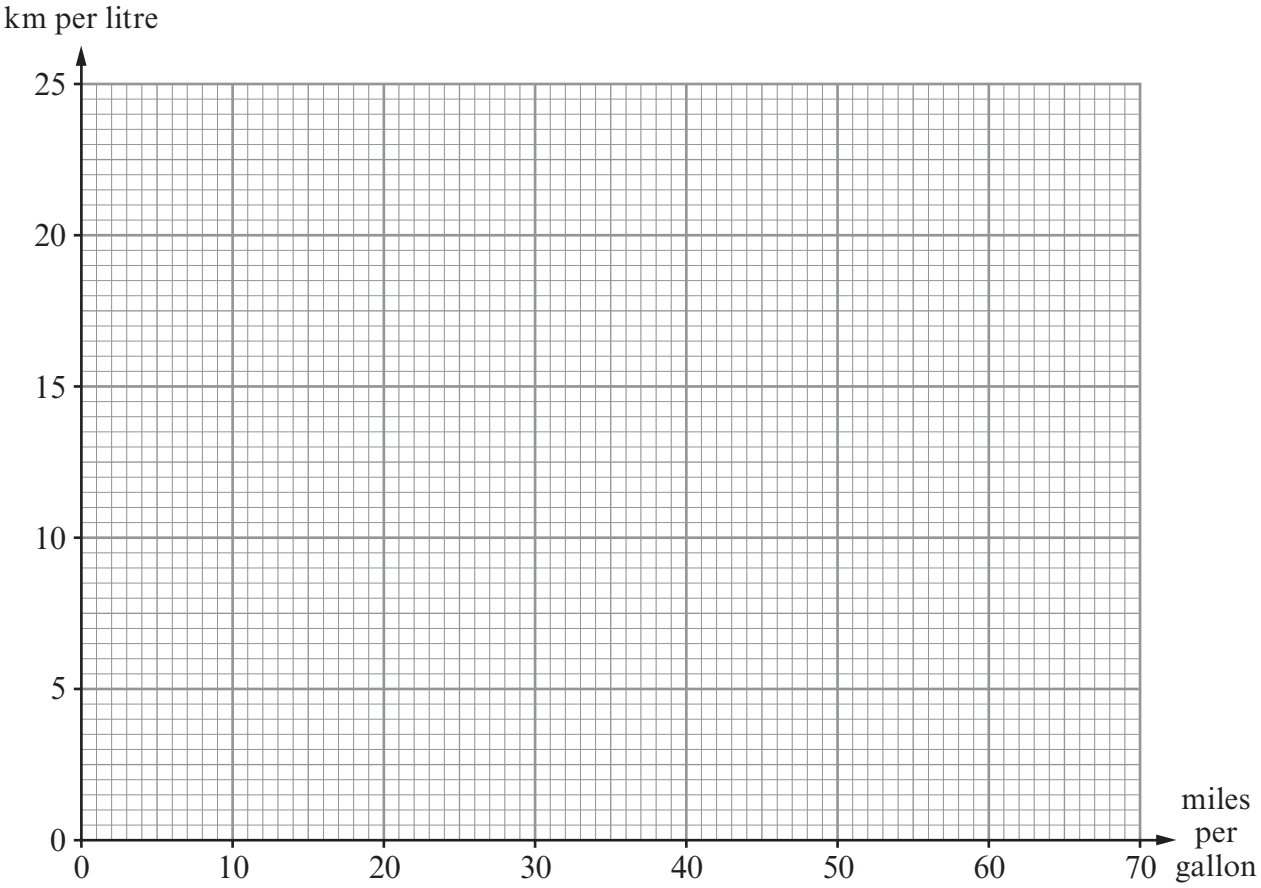
Examiner only

**8.** *(a)* The fuel consumption of vehicles can be measured in miles per gallon or in kilometres per litre.
The table shows 3 different values for the consumption in miles per gallon and the corresponding 3 values in kilometres per litre.

| | | | |
|---|---|---|---|
| Miles per gallon | 13 | 35 | 60 |
| Kilometres per litre | 4·6 | 12·4 | 21·2 |

Use the data in the table to draw a conversion graph between miles per gallon and kilometres per litre.

[2]




*(b)* Find an estimate, in miles per gallon, for 40 kilometres per litre.

.....

.....

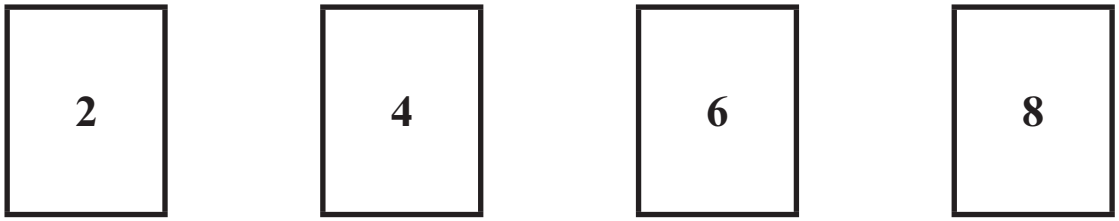
[2]

© WJEC CBAC Ltd.

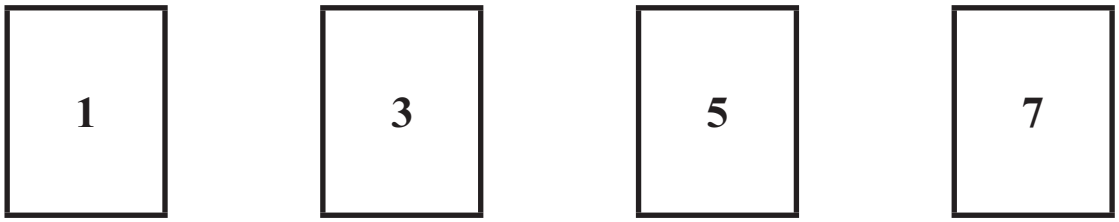
STEMUP.CO.UK

Examiner only

**9.** There are two packs of cards. One pack is coloured red and the other pack is coloured blue. The red pack has four cards numbered




The blue pack has four cards numbered




In a game, a player chooses one card at random from the red pack and one card at random from the blue pack. The player's score is the difference between the two numbers.

For example, if the number on the red card is 8 and the number on the blue card is 5, the player works out 8 – 5 = 3 and the player scores 3.
Similarly, if the number on the red card is 2 and the number on the blue card is 3, the player works out 3 – 2 = 1 and the player scores 1.

*(a)* Complete the following table to show all the possible scores.

| Blue pack \ Red pack | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| 7 | ..... | ..... | 1 | 1 |
| 5 | ..... | ..... | 1 | 3 |
| 3 | 1 | 1 | ..... | ..... |
| 1 | 1 | 3 | ..... | ..... |

[2]

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

*(b)* A player wins a prize by getting a score of 1.
It costs 50p to play the game once.
The prize for winning the game is 80p.
When 320 people play the game once, find the expected profit.

[6]

© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**10.** *(a)* Find the size of the angle marked $x$.

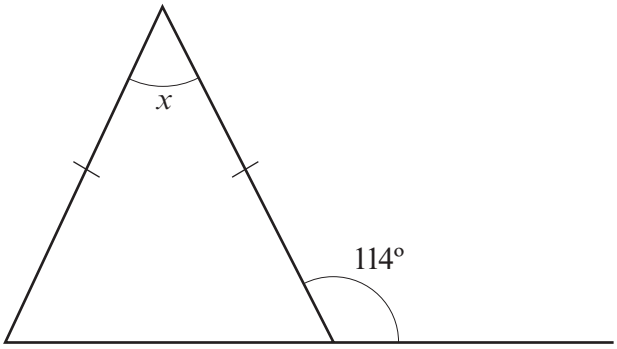



*Diagram not drawn to scale*

.....

.....

.....

$x =$ ..... °

[3]

*(b)* Find the size of the angle marked $y$.

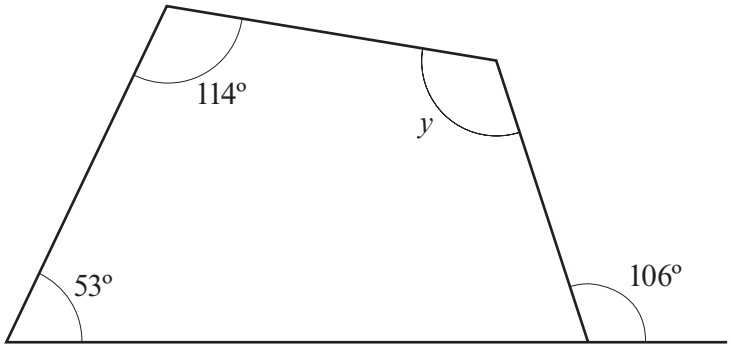



*Diagram not drawn to scale*

.....

.....

.....

.....

$y =$ ..... °

[3]

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**11.** The diagram shows 2 identical rectangles and 2 identical parallelograms.
The coordinates of four vertices are shown on the diagram.

Find the coordinates of the vertices marked $A$, $B$ and $C$.

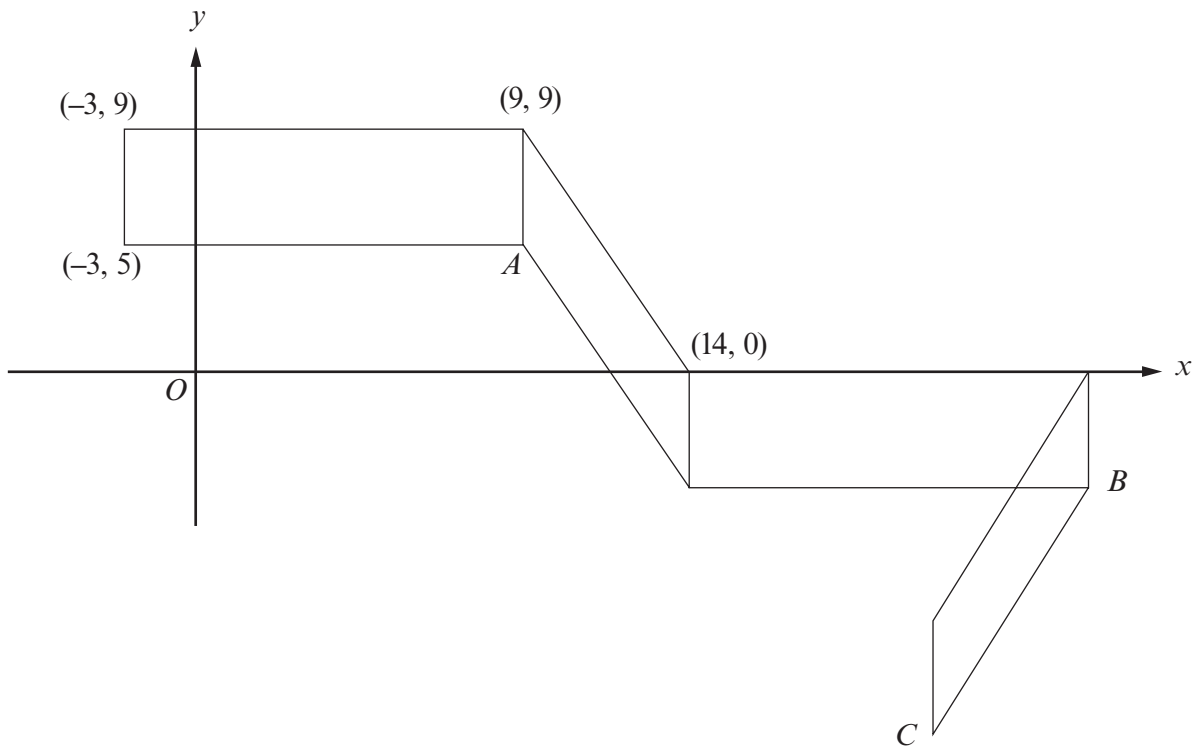



*Diagram not drawn to scale*

.....

.....

.....

$A$ ( ..... , ..... ) $B$ ( ..... , ..... ) $C$ ( ..... , ..... )

[6]

© WJEC CBAC Ltd.

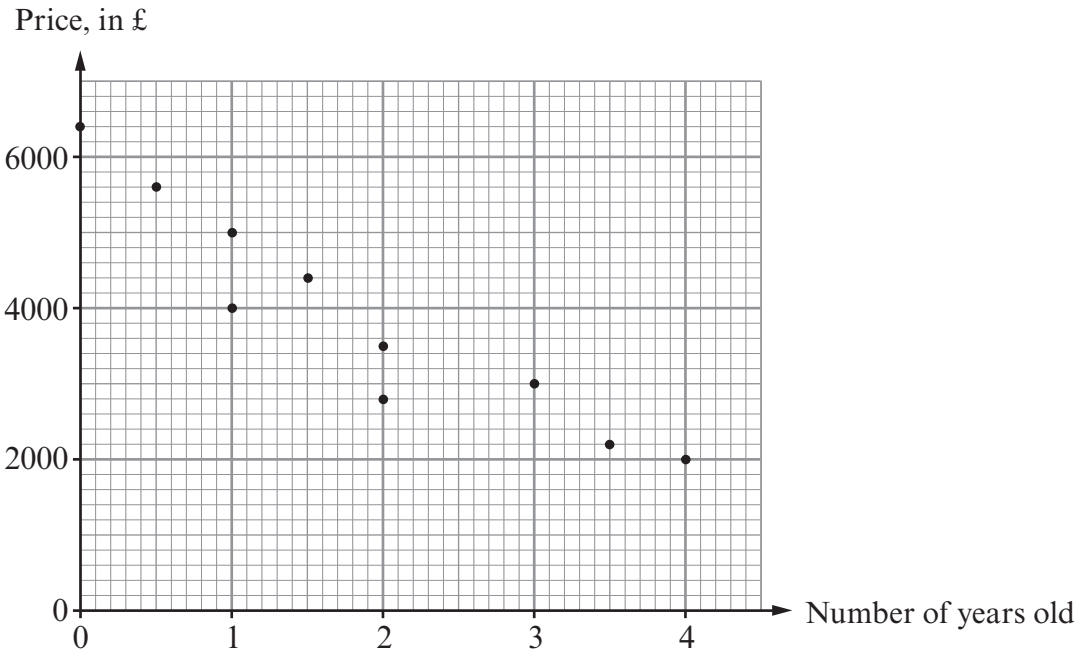


**Turn over.**

STEMUP.CO.UK

Examiner only

**12.** The scatter diagram shows the price and age for each of 10 cars of the same make and model.




*(a)* Write down the price of the new car.

.....

[1]

*(b)* Write down the price of the oldest car.

.....

[1]

*(c)* Draw, by eye, a line of best fit on the scatter diagram.

[1]

*(d)* Write down the type of correlation shown by the scatter diagram.

.....

[1]

*(e)* Estimate the price of a $2\frac{1}{2}$ year old car of the same make and model.

.....

[1]

© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**13.** *(a)* Factorise $24x + 3$.

.....

[1]

*(b)* Factorise $x^2 - 6x$.

.....

[1]

*(c)* Expand $2x(x^3 + 6)$.

.....

.....

[2]

*(d)* Solve $\frac{x}{3} + 15 = 25$.

.....

.....

.....

.....

[2]

*(e)* Solve $5x - 7 = 3(x + 2)$.

.....

.....

.....

.....

[3]

© WJEC CBAC Ltd.



**Turn over.**

STEMUP.CO.UK

Examiner only

**14.** A community hall has a large number of rectangular tables and a large number of chairs.
The tables can seat up to 3 people along each of the longer sides and 1 person at each end.

A street party is being organised using the community hall's tables and chairs.
Tables are joined and placed in a long straight line.
Tables meet edge to edge to form the line.

*(a)* What is the least number of tables needed to seat 164 people?

[4]

*(b)* There are $n$ people sitting around a straight line of tables.
There are no empty seats.
Write an expression in terms of $n$ for the least number of tables needed to seat these people.

[3]

© WJEC CBAC Ltd.

STEMUP.CO.UK

Examiner only

**15.** Roz and Simon each throw a fair dice.
Calculate the probability that the sum of the two numbers obtained is 4.

.....

.....

.....

.....

.....

.....

[3]

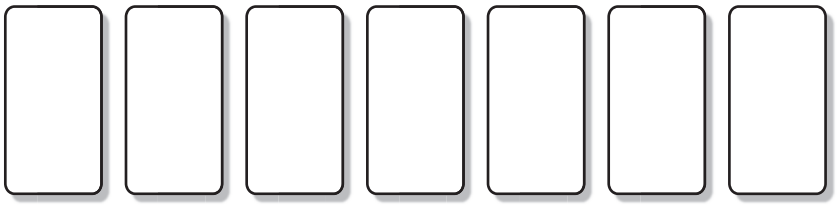
**16.** Seven **single digit numbers** have a median of 6 and a range of 8.
The mode of the seven numbers is 3.
Find the seven numbers.
Write your single digit numbers in order in the boxes.

.....

.....

.....

.....



[4]

© WJEC CBAC Ltd.



STEMUP.CO.UK

# GCSE MARKING SCHEME

## MATHEMATICS - LINEAR

## NOVEMBER 2012

© WJEC CBAC Ltd.

## INTRODUCTION

The marking schemes which follow were those used by WJEC for the November 2012 examination in GCSE MATHEMATICS - LINEAR. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

© WJEC CBAC Ltd.

## PAPER 1 - FOUNDATION TIER

| PAPER 1 (Non calculator)<br>Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 1. (a) (i) 6 583<br>(ii) thirteen thousand four hundred and six | B1<br>B1 | |
| 1. (b) 182 | B1 | |
| 1. (c) 309 | B1 | |
| 1. (d) 72 | B1 | |
| 1. (e) (i) 8740<br>(ii) 8700 | B1<br>B1 | |
| 1. (f) 1, 2, 4, 8, 16 | B2<br><br>9 | B1 for any 3 correct factors with at most 1 incorrect number. **Allow 1×16, 2×8, 4×4 or repeats in a list.** |
| 2. (a) 8 thousand(s) OR 8000 OR thousand(s) | B1 | **B0 for 1000** |
| 2. (b) 81 | B1 | **Accept 9×9 OR $9^2$ , but 9 gets B0** |
| 2. (c) Tom spends £14 on cards<br>Each pack costs (£)14/10<br>= (£)1.4(0) OR 140 (p) | M1<br>M1<br><br>A1 | Allow this M1 only for (£)15/10.<br>**Unsupported (£)1.50 gets 0**<br>C.A.O. |
| 2. (d) 25 (%) | B1 | **¼ OR .25 get B0.** |
| 2. (e) (74 OR 75 OR 74.6 OR 70 **OR 80**) × 100<br>= 7400 OR 7500 OR 7460 OR 7000 **OR 8000** | M1<br>A1 | Good estimates<br>F.T their estimates for simple calculations<br>Answers only get M0, A0. |
| 2. (f) 23 | B1<br>9 | |
| 3. (a) Profit = 20 × 24 − 150<br>= (£) 330 | M1<br>A1 | Correctly substituted shown by correct attempt to evaluate.<br>**Must show that the substitution is 20 × 24 then − 150** |
| 3. (b) Outlay = 10× 24 − 180<br>= (£) 60 | M1<br>A1<br>4 | For correct substitution with subtraction<br>Allow embedded references to the correct answer. |
| 4. (a) cone<br>octagon<br>(square based) pyramid OR **rectagular based pyramid** | B1<br>B1<br>B1 | **Circular based pyramid gets B0**<br><br>Triangular pyramid gets B0, but pyramid gets B1 |
| 4. (b) diameter<br>tangent<br>chord | B1<br>B1<br>B1 | |
| 4. (c) (i) All 3 lines of symmetry<br>(ii) BOTH lines of symmetry | B2<br>B1<br>9 | B1 any one of them and no incorrect lines<br>OR 2 correct lines and up to 1 incorrect line.<br>B0 if any incorrect lines are drawn |
| 5. (a) Missing side segment = 6<br>Perimeter = 10+2+10+2+10+6+10+2+10+2<br>= 64 (cm) | S1<br>M1<br>A1 | **This may be implied by some correct methods**<br>Attempt to add all sides of the shape<br>C.A.O. |
| 5. (b) Area = 3 × 10 ×2<br>= 60<br>$cm^2$ | M1<br>A1<br>U1<br>6 | OR equivalent<br>C.A.O.<br>Independent of all other marks.<br>**Watch out as the area of the 'gap' is also 60.** |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| PAPER 1 (Non calculator)<br>Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 6. **Finding the costs per pupil of tickets, bus and lunch**<br>Cost of ticket per pupil = 915/98 = (OR 900/100)<br>= (£)9<br><br>Cost of bus per pupil = 290/98 = (OR 300/100)<br>= (£)3<br><br>Total cost per pupil = £9 + £3 + £3.95 = £15.95<br>= **(£)**16 (to nearest £) | M1<br>A1<br><br>M1<br>A1<br><br>A1 | Allow any method that implies estimating<br>**Allow unsupported answers in the range 7-11 incl.**<br>**But if working shown then mark it.**<br>Allow any method that implies estimating<br>**Allow unsupported answers in the range 2-4 incl.**<br>**But if working shown then mark it.**<br><br>F.T. if both Ms awarded<br>**Must be rounded to the nearest £** |
| **OR**<br>**Finding the TOTAL cost of tickets, bus and lunches /98**<br>Total cost of lunches = (£)3.95 × 98 = (OR £4 × 100)<br>= (£)400<br>Total for the trip = 400 + 915 + 290 = (OR 400+900+300)<br>=(£) 1600<br><br>Cost per pupil = (1605 OR 1600)/100<br>= **(£)**16 (to nearest £)<br><br>**NOTE:**<br>98 ~ 100 (£)3.95 ~ (£)4 (£)915 ~ (£) 900 (£)290 ~ (£)300 | <br><br>M1<br>A1<br><br>A1<br><br>M1<br>A1 | <br><br>Allow any method that implies estimating<br>**Allow estimated answers**<br><br>F.T. if M awarded<br><br>Allow any method that implies estimating<br><br><br>**If no marks then SC1 for any 3 of these estimates** |
| **QWC**<br>Look for<br>• Spelling<br>• Clarity of text explanations<br>• The use of notation – watch for '=','£', 'p' being used appropriately.<br>QWC2: Candidates will be expected to<br>• present work clearly, with words explaining their processes or steps<br>AND<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer<br>QWC1: Candidates will be expected to<br>• present work clearly, with words explaining their processes or steps<br>OR<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer | QWC<br>2<br><br>7 | QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.<br><br>QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar.<br>OR<br>Evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar.<br><br>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation and grammar. |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| PAPER 1 (Non calculator)<br>Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 7. Toronto down 5<br><br>Glasgow −4<br>Moscow down 4<br>Reykjavik −7 | B1<br><br>B1<br>B1<br>B1<br>4 | **If given as –5 then B0, but allow B1 if Moscow is given as –4** |
| 8. (a) **Overlay**<br>Plots<br>Line<br><br>8. (b) Any correct strategy, e.g. 2 times value at 20 kilometres per litre<br>56 × 2 = 112 | <br>P1<br>L1<br><br>M1<br><br>A1<br><br>4 | <br><br>**A valid attempt at drawing a line/curve through the points**<br><br>Any correct method using graph or table.<br><br>F.T. their graph.<br>Unsupported answers in the range 108 – 116 **inclusive** get M1, A1. |
| 9. (a) 5 3 (1 1)<br>3 1 (1 3)<br>(1 1) 3 5<br>(1 3) 5 7<br><br>(b) $\frac{7}{16}$ (of 320)<br>= 140<br><br>Cost = 320 × 50**(p)** OR Prizes = 140 × 80 (p)<br>(£) 160 or 16000 (p) OR (£)112 or 11200 (p)<br><br>**320 × 50(p) – their 140 × 80 (p)**<br>= £48 OR 4800p | B2<br><br><br><br><br>M1<br><br>A1<br><br><br>M1<br>A1<br><br>M1<br>A1<br><br>8 | B1 for at least 4 correct entries<br>**Negative numbers are errors in this table, but follow through, if needed in part (b)**<br><br><br>F.T. their table. F.T. 'their 7/16' if a fraction less than 1<br>Sight of bone fide 140 in later working OR 140/320 gets M1, A1. Accept words '7 out of 16', or '70 out of 160' here.<br><br>For either method and accuracy for cost OR prizes.<br>F.T. 'their 140' provided it is clearly identifiable.<br>**A0 for £16000 OR 160p OR 112p OR £11200**<br>F.T. full method (ignore units for the M1).<br>Rounded up or down figure if **their 140** is not a whole number |
| 10. (a) Base angle = 66<br>x = 180 – 66 – 66 **OR 114 – 66**<br>= 48<br><br>10. (b) (180 – 106) = 74<br><br>360 – 114 – 53 – 74<br><br>= 119 (º) | B1<br>M1<br>A1<br><br>B1<br><br>M1<br><br>A1<br>6 | **x = 66 with no working gets B1M0A0**<br>F.T. their 180 – 114<br><br><br>For finding 4th angle. Also look in their diagram.<br>74 on its own gets this B1, even as y = 74<br>Angle sum of quadrilateral. Note that 180 – 167 + 106 is equivalent (114 + 53)<br>F.T. 'their 74' |
| 11. A (9, 5)<br>B ( 26, −4)<br>C (21, −13) | B2<br>B2<br>B2<br><br>6 | B1 for each ordinate<br>B1 for each ordinate<br>B1 for each ordinate. **F.T. 'their B + (–5 , –9)'** |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| PAPER 1 (Non calculator)<br>Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 12.(a) (£)6400<br>(b) (£)2000<br>(c) Reasonable straight line of best fit<br><br><br>(d) Negative (correlation)<br>(e) FT from a line of best fit (reading accurate to small square) (curved line or straight line, not dot-to-dot)<br>**H1** | B1<br>B1<br>B1<br><br><br>B1<br>B1<br><br>5 | <br><br>Some points above and some points below<br>**Do not accept from 'corner' to 'corner' of the graph paper**<br><br><br>OR an answer between (£)2600 and (£)3600 inclusive if no line of best fit. |
| 13. (a) 3(8x +1)<br>(b) x(x – 6)<br>(c) $2x^4 + 12x$<br>(d) x/3 = 25 – 15<br>x = 30<br>**F13 parts (a) to (d) are H4 parts (b) to (e)**<br><br>(e) 5x – 7 = 3x + 6<br>2x = 13<br>x = 6.5 OR 6½ | B1<br>B1<br>B2<br>M1<br>A1<br><br><br>B1<br>B1<br>B1<br>9 | CAO<br>CAO<br>B1 for each term. If B2 penalise further wrong work -1.<br>Or alternate correct first step<br>CAO. Accept embedded answers. **Mark final answer.**<br>SC1 for x=120 from x/3 = 40, OR<br>SC1 for 'ladder method' showing -15, ×3<br>FT until 2nd error<br>OR x = 13/2<br>Must be simplified<br>**SC1 for 'ladder method'** |
| 14.(a) Strategy, shorter edges meeting (accept a diagram)<br>(Showing) 6 on longer sides (2 lots of 3) and 1 on each end<br>OR idea end tables seat 7 people and middle table seat 6 people<br>(Number of tables is) (164 – 2) ÷ 6<br>OR 2 correct trials with equivalent "×6 + 2"<br>27 (tables)<br><br><br><br><br><br><br><br><br><br>(b) (n – 2)÷6 OR (n – 2)/6<br><br><br><br><br>**H5** | S1<br>M1<br><br>M1<br><br>A1<br><br><br><br><br><br><br><br><br><br>B3<br><br><br><br><br>7 | May be implied in later working that this is the arrangement<br><br>Accept intention, not about notation<br>**SC2 for 79 or SC1 for (164 – 6)/2**<br><br>***Alternative:***<br>***Any 3 multiples of 6 shown or3 terms of a sequence going up in 6s, or 164/6 or 164÷6 S1***<br>***27×6 = 162 OR 27 remainder 2 OR 27.3(3..) M1 (this implies S1 also)***<br>***162 + 2 = 164 (seen or implied) M1***<br>***27 (tables) A1***<br>***An answer of 27 from working '27 remainder 2' or '27.3(3..)' must be confirmed in order to award the final M1, A1 ( i.e. remainder justified), otherwise SC1 instead***<br>***An answer of 27 (tables) without working is awarded SC3***<br><br>***FT misunderstanding longer edges joined leading to (n-6)÷2***<br>***B2 for n-2 ÷6 or n – 2/6 or -2 ÷ 6***<br>***B1 for -2 or ÷6 in an expression***<br>***or n = 6×tables + 2, or n = 6×t + 2***<br>***B0 for ×6 + 2 or n×6 + 2*** |
| 15. Realising could be 2+2, 1+3, 3+1<br><br><br>Realising 36 different outcomes OR sight of 1/6 ×1/6<br>**OR product of 2 terms both with denominators of 6 seen**<br>OR sight of a denominator of 36<br>3/36 or equivalent<br>**H6** | B1<br><br><br>B1<br><br><br>B1<br>3 | May be within a sample space diagram, e.g. sight of two-way table with three 4s shown, or the appropriate additions<br><br>**Maybe shown in a sample space diagram with indication of 36, must be stated not implied**<br><br><br>Ignore incorrect cancelling |
| 16.<br>Middle card 6<br>Two cards (or three cards) 3 **as the mode for their cards**<br>First card 1 and last card 9 (or in reverse)<br><br>**Correct answer 1 3 3 6 7 8 9 or in reverse**<br>**H7** | <br>B1<br>B1<br>B1<br><br>B1<br>4 | **If boxes are blank, mark the working**<br>**Smaller numbers to one side and larger to the other**<br>**3 is the distinct mode for their cards**<br>**OR any pair of single digit numbers (including negatives) with a difference of 8**<br>**CAO** |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Surname | Centre Number | Candidate Number |
|---|---|---|
| Other Names | | 0 |

# GCSE

4370/03

# MATHEMATICS – LINEAR
## PAPER 1
## FOUNDATION TIER

P.M. MONDAY, 11 June 2012

$1\frac{3}{4}$ hours

**CALCULATORS ARE NOT TO BE USED FOR THIS PAPER**

### INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

Take $\pi$ as 3·14.

### INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **6**.

| For Examiner's use only | | |
|---|---|---|
| **Question** | **Maximum Mark** | **Mark Awarded** |
| **1** | **11** | |
| **2** | **7** | |
| **3** | **4** | |
| **4** | **9** | |
| **5** | **6** | |
| **6** | **6** | |
| **7** | **6** | |
| **8** | **3** | |
| **9** | **8** | |
| **10** | **4** | |
| **11** | **6** | |
| **12** | **6** | |
| **13** | **4** | |
| **14** | **6** | |
| **15** | **5** | |
| **16** | **6** | |
| **17** | **3** | |
| **TOTAL MARK** | | |

4370 030001

JUN124370030 1

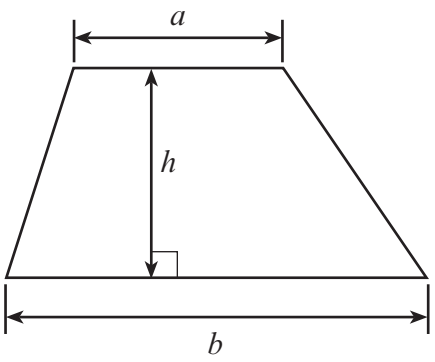
© WJEC CBAC Ltd



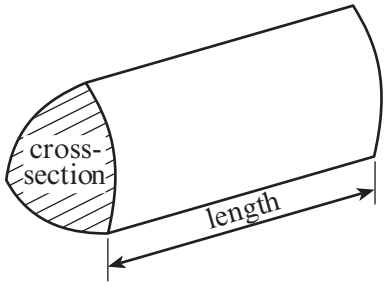
STEMUP.CO.UK

## Formula List

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




**Volume of prism** = area of cross-section × length






© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**1.** *(a)* (i) Write down, in figures, the number fifty thousand, two hundred and forty four.

.....

[1]

(ii) Write down, in words, the number 67 304.

.....

[1]

*(b)* Using only the numbers in the following list,

34 41 76 12 37 32 21

write down

(i) two numbers that add up to 46,

.....

[1]

(ii) two numbers which differ by 39,

.....

[1]

(iii) a multiple of 7.

.....

[1]

*(c)* Write 7629

(i) correct to the nearest 100,

.....

[1]

(ii) correct to the nearest 1000.

.....

[1]

*(d)* Write down all the factors of 25.

.....

.....

[2]

*(e)* Michelle uses each of the digits 4, 7, 3 and 8 once to make a four-digit number.

(i) What is the largest number that she can make?

.....

[1]

(ii) What is the smallest odd number that she can make?

.....

[1]



© WJEC CBAC Ltd





STEMUP.CO.UK

4370 030003

Examiner only

**2.** *(a)* Write down the value of the 7 in the number 35 741.

.....

[1]

*(b)* Subtract 156 from 384.

.....

.....

.....

.....

.....

[1]

*(c)* Kate has a £20 note.
A notebook costs £1.60.
She buys as many notebooks as she can.
How much money will she have left over?

.....

.....

.....

.....

.....

.....

[3]

*(d)* **Showing all your working**, find an **estimate** for the value of 51·8 × 10·2.

.....

.....

.....

[2]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**3.**



The formula for the cost of buying a bicycle on credit is

**cost = monthly payment × 9 + deposit**

*(a)* Find the **cost** of a bicycle, when the **monthly payment** is £15 and the **deposit** is £30.

.....

.....

.....

.....

[2]

*(b)* The **cost** of another bicycle is £220.
Find the **monthly payment** when the **deposit** is £40.

.....

.....

.....

.....

[2]

4370 030005



© WJEC CBAC Ltd





STEMUP.CO.UK

Examiner only

**4.** Gethin has put some coloured discs into a bag. The discs are identical in shape, but some are coloured red (R), others black (B), yellow (Y) or green (G).
He shakes the bag and pulls a disc out of the bag without looking.
He writes down its colour and puts the disc back into the bag.
He does this 40 times and here are his results.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| B | B | G | R | G | B | Y | G | B | R |
| R | R | Y | B | R | Y | R | B | G | B |
| Y | G | B | R | B | B | Y | B | Y | B |
| G | B | G | B | Y | B | R | Y | B | R |

*(a)* Using the squared paper grid on the opposite page, draw a bar chart for the data given.

.....

.....

.....

.....

.....

.....

.....

.....

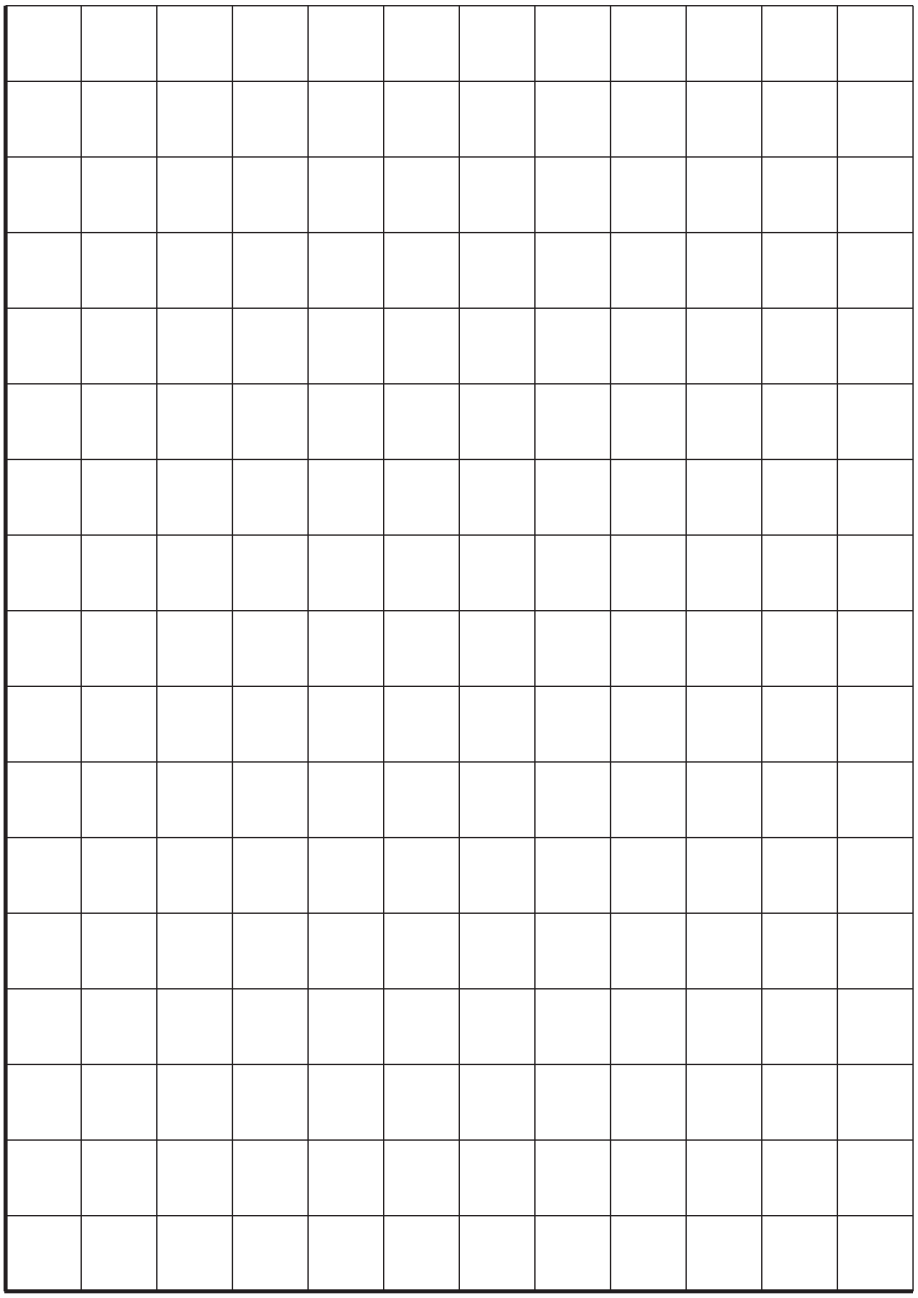
.....



© WJEC CBAC Ltd.



STEMUP.CO.UK



[6]

*(b)* Write down the mode.

.....

[1]

*(c)* Using these results, write down an estimate for the probability of choosing a red disc.

.....

.....

.....

[2]



© WJEC CBAC Ltd





STEMUP.CO.UK

4370 030007

Examiner only

**5.** Two overlapping rectangles, each 9 cm by 3 cm, are placed so as to make an L shape as shown in the diagram.

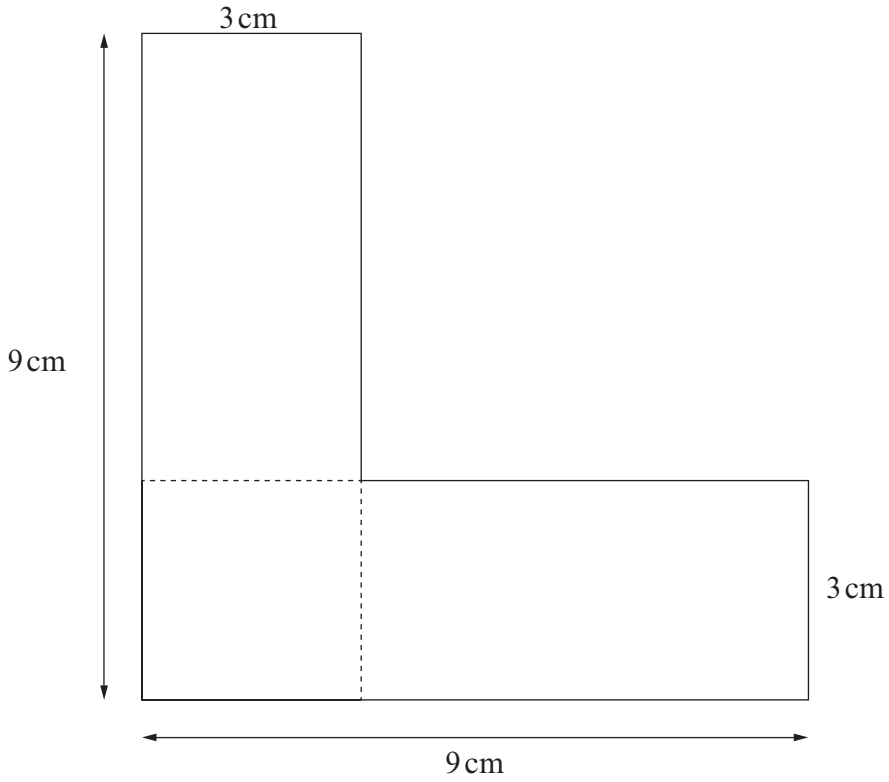



*Diagram not drawn to scale*

*(a)* Calculate the perimeter of the shape.

.....

.....

.....

[3]

*(b)* Calculate the area of the shape.
Write down the units of your answer.

.....

.....

.....

[3]



© WJEC CBAC Ltd.

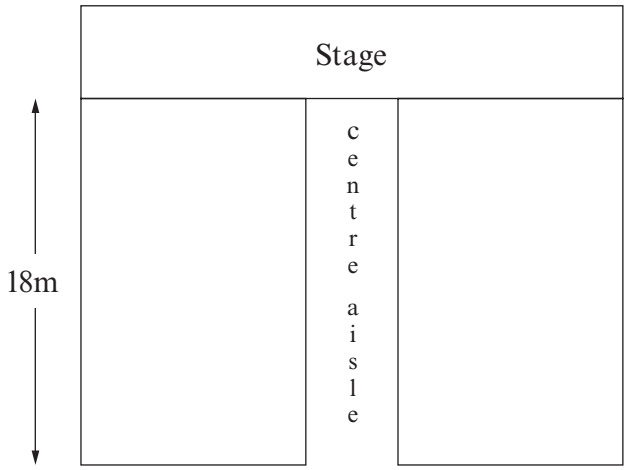


STEMUP.CO.UK

Examiner only

**6.** *You will be assessed on the quality of your written communication in this question.*

Year 10 pupils have been asked to arrange the seating for a concert in the school hall.
They work out that each row will have 12 seats on each side of the centre aisle.
Each row will take up 2 metres of the 18 metre length of the hall.
Showing all your working, decide whether or not there will be enough seats for 200 people.




.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[6]



© WJEC CBAC Ltd





STEMUP.CO.UK

4370 030009

**7.** *(a)* Complete an accurate drawing of triangle $PQR$ in which $PQ = 10\,\text{cm}$, $R\hat{P}Q = 36°$ and $R\hat{Q}P = 112°$.

The side $PQ$ has been drawn for you.

[3]




*(b)* Write down the special name given to angles which are greater than 90°, but less than 180°.

.....

[1]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

*(c)* Calculate the height of a cuboid of length 4 cm, width 3 cm and volume 84 $cm^3$.

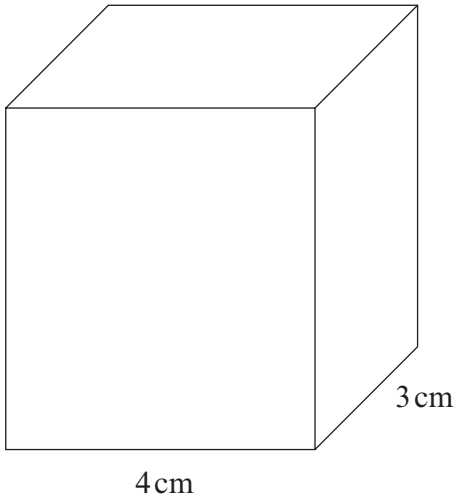



*Diagram not drawn to scale*

.....

.....

.....

.....

.....

[2]



© WJEC CBAC Ltd



**Turn over.**

STEMUP.CO.UK

Examiner only

**8.** The following table shows four places and their height above sea level.

| Place | Height above sea level (in metres) |
|---|---|
| Llyn Cowlyd, Wales | 355 |
| Chott Melrhir, Algeria | –40 |
| Lake Eyre, Australia | –15 |
| The Fens, England | –4 |

*(a)* Explain what it means to write the height of Lake Eyre above sea level as –15.

.....

.....

[1]

*(b)* Which place is the lowest of the four?

.....

[1]

*(c)* How much higher than Chott Melrhir is Llyn Cowlyd?

.....

[1]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**9.** There are four balls numbered 1, 3, 5 and 7 respectively in machine A and four balls numbered 2, 4, 6 and 8 respectively in machine B. In a game, both machines A and B select one ball at random.
The score for the game is the product of these two numbers.
For example, if the number on the ball from machine A is 3 and the number on the ball from machine B is 4, the score is $3 \times 4$ which is 12.

*(a)* Complete the following table to show all the possible scores.

| Machine A \ Machine B | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| 7 | 14 | 28 | ..... | ..... |
| 5 | 10 | 20 | ..... | ..... |
| 3 | 6 | 12 | ..... | ..... |
| 1 | 2 | 4 | 6 | 8 |

[2]

*(b)* A player wins a prize by getting a score of 12 or less.
It costs 80p to play the game once.
The prize for winning the game is £1.50.
If 160 people play the game once, find the expected profit.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[6]



© WJEC CBAC Ltd





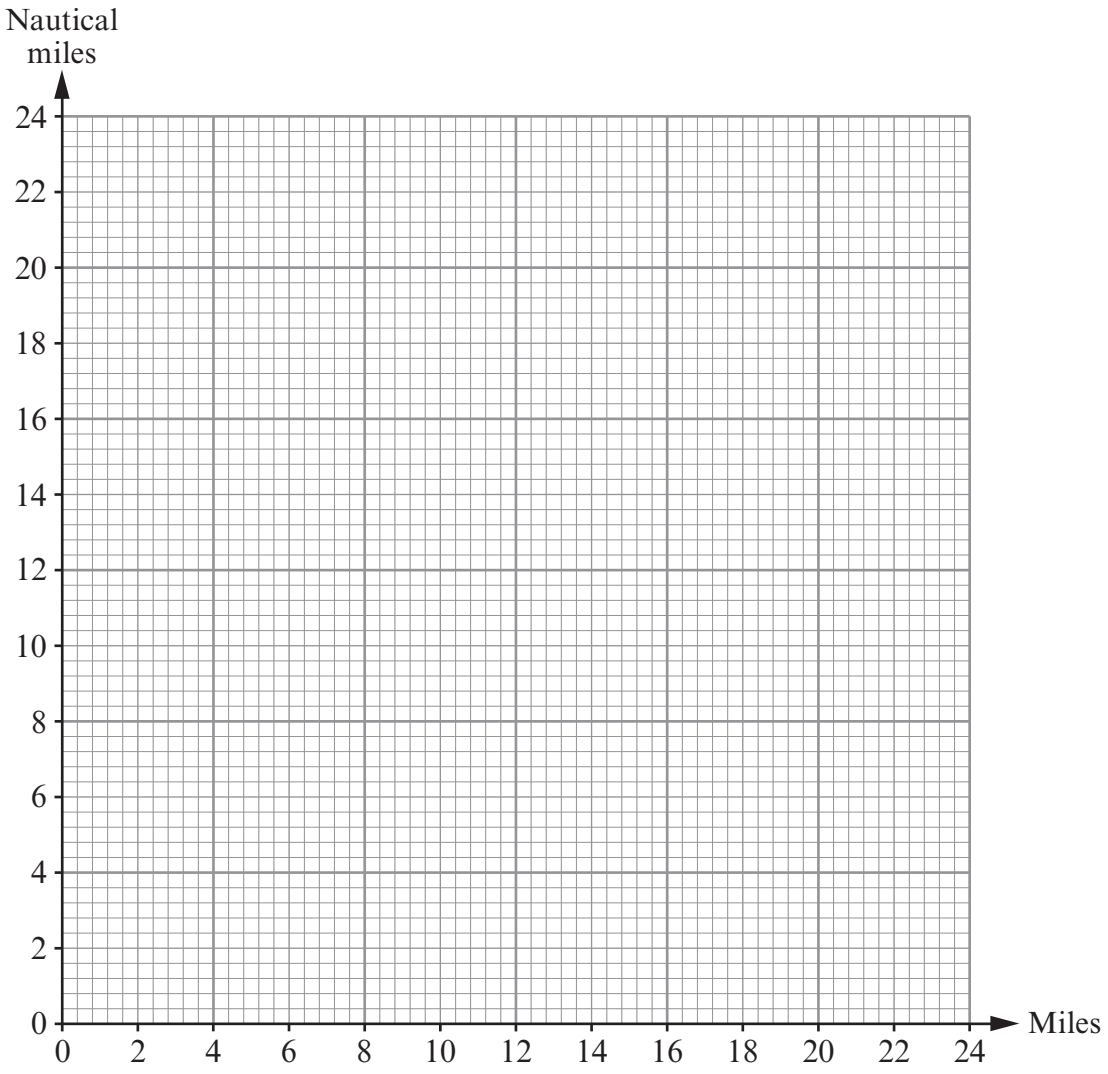
STEMUP.CO.UK

**10.** *(a)* At sea, the distance travelled by ships is measured in nautical miles rather than miles. The table shows the number of miles and the number of nautical miles for each of three distances.

| | | | |
|---|---|---|---|
| Miles | 8 | 16 | 23 |
| Nautical miles | 7 | 14 | 20 |

Use the data in the table to draw a conversion graph between miles and nautical miles.

[2]




*(b)* Find an estimate, in miles, for 50 nautical miles.

.....

.....

.....

[2]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**11.** The diagram shows 2 identical parallelograms and the coordinates of four vertices. Find the coordinates of the vertices marked *A, B* and *C*.

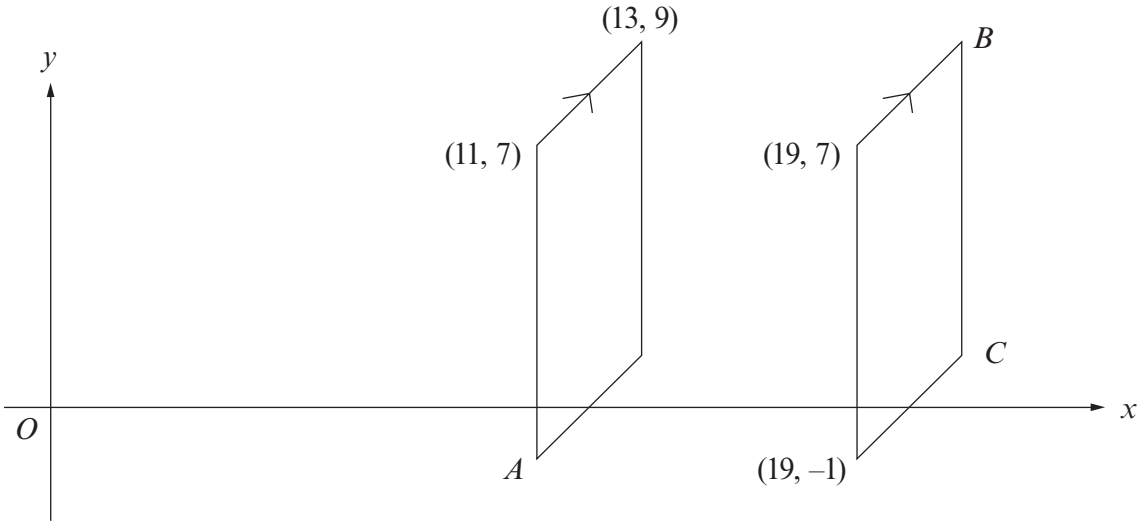



*Diagram not drawn to scale*

.....

.....

.....

*A* (..... , .....) *B* (..... , .....) *C* (..... , .....)

[6]



© WJEC CBAC Ltd



STEMUP.CO.UK

Examiner only

**12.** Below are parts of two train time-tables.

Swansea to Bristol Parkway

| | | | | |
|---|---|---|---|---|
| Swansea | 10:28 | 10:55 | 11:28 | 11:55 |
| Neath | 10:39 | 11:05 | 11:39 | 12:05 |
| Port Talbot | 10:47 | 11:12 | 11:47 | 12:12 |
| Bridgend | 10:59 | 11:25 | 11:59 | 12:25 |
| Cardiff | 11:22 | 11:47 | 12:22 | 12:47 |
| Newport | 11:39 | 12:08 | 12:39 | 13:08 |
| Bristol Parkway | 11:59 | 12:30 | 12:59 | 13:30 |

Bristol Parkway to Sheffield

| | | | | |
|---|---|---|---|---|
| Bristol Parkway | 11:40 | 12:40 | 13:40 | 14:40 |
| Cheltenham | 12:10 | 13:12 | 14:10 | 15:11 |
| Birmingham | 13:03 | 13:58 | 14:56 | 15:59 |
| Derby | 13:42 | 14:40 | 15:39 | 16:40 |
| Sheffield | 14:17 | 15:18 | 16:17 | 17:19 |

*(a)* Sophie gets on the 10:55 from Swansea at Bridgend and gets off at Newport. How long should her journey take?

.....

.....

[2]

*(b)* David lives in Port Talbot and needs to get to Birmingham by half past three in the afternoon.

(i) What is the latest train he can catch from Port Talbot to do this?

.....

[1]

(ii) How long should he have to wait at Bristol Parkway?

.....

[1]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

(iii) On the day he travelled, owing to signal problems, the Swansea trains were 10 minutes late arriving at Bristol Parkway and the trains to Sheffield were 15 minutes late leaving Bristol Parkway.
Given that the trains kept to their normal speed, at what time did David arrive in Birmingham? Give a full explanation for your answer.

.....

.....

.....

.....

.....

[2]



© WJEC CBAC Ltd





STEMUP.CO.UK

Examiner only

**13.** *(a)* Express 140 as a product of prime numbers in index form.

.....

.....

.....

.....

.....

.....

.....

[3]

*(b)* The number 126 can be expressed as $2 \times 3^2 \times 7$. Using this fact and your answer to *(a)*, write down the Highest Common Factor (HCF) of the numbers 140 and 126.

.....

.....

.....

.....

[1]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**14.** Enzo is given clues to help him solve a problem.

Clues:

- The shape is a polygon
- The shape has an odd number of sides
- The shape is not a triangle
- The shape has fewer than 7 sides
- Three of the interior angles each measure 106°
- All the other angles are marked with the letter $x$

Solve Enzo's problem to find the size of $x$.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[6]



© WJEC CBAC Ltd



STEMUP.CO.UK

Examiner only

**15.**

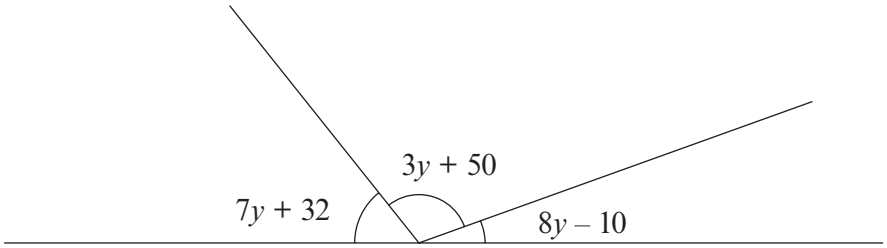



*Diagram not drawn to scale*

All of the angles are measured in degrees.
Find the size of each of the three angles.

.....

.....

.....

.....

.....

.....

.....

.....

$7y + 32 =$ ..... ° $3y + 50 =$ ..... ° $8y - 10 =$ ..... °

[5]



© WJEC CBAC Ltd.



STEMUP.CO.UK

Examiner only

**16.** *(a)* Expand $y(y^3 + 6)$.

.....

.....

[2]

*(b)* Solve $\frac{x}{3} + 54 = 63$.

.....

.....

.....

.....

[2]

*(c)* Write down the $n$th term of the sequence 3, 7, 11, 15, 19, .....

.....

.....

[2]



© WJEC CBAC Ltd



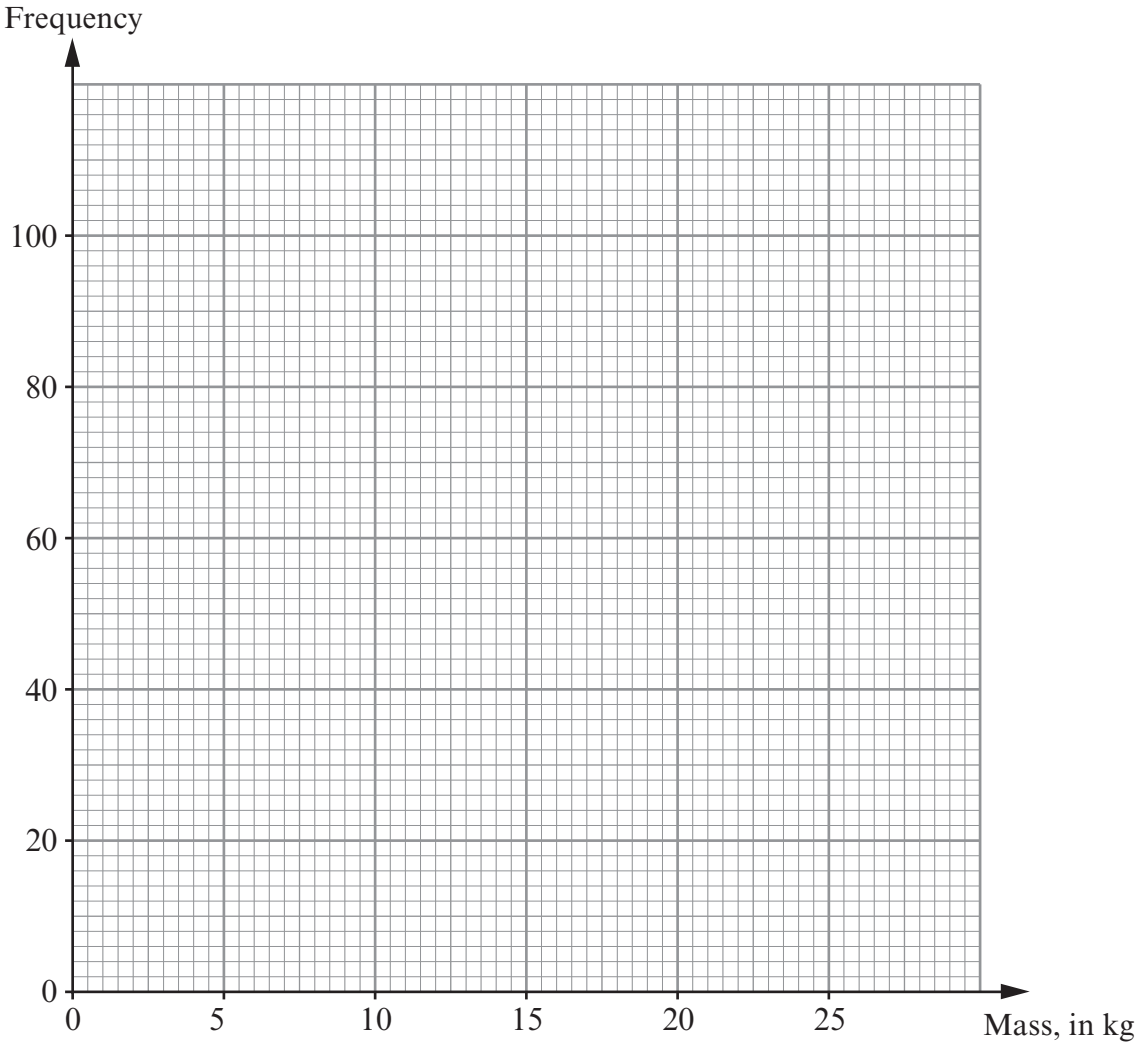
STEMUP.CO.UK

**17.** The total mass of tomatoes, in kg, produced by each of 200 plants in a greenhouse was measured.
The table shows the grouped frequency distribution for the total mass of tomatoes on each of these 200 plants.

| Mass, $x$ kg | $0 < x \leqslant 5$ | $5 < x \leqslant 10$ | $10 < x \leqslant 15$ | $15 < x \leqslant 20$ | $20 < x \leqslant 25$ |
|---|---|---|---|---|---|
| Frequency | 6 | 20 | 70 | 88 | 16 |

*(a)* On the graph paper below, draw a frequency diagram to show this data.

[2]




*(b)* State which class interval contains the median.

.....

[1]



© WJEC CBAC Ltd.



STEMUP.CO.UK

| Question number | Additional page, if required. Write the question numbers in the left-hand margin |
|---|---|
| | |

Examiner only



© WJEC CBAC Ltd



STEMUP.CO.UK

# GCSE MARKING SCHEME

## MATHEMATICS - LINEAR

## SUMMER 2012

© WJEC CBAC Ltd.

## INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2012 examination in GCSE MATHEMATICS - LINEAR. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

© WJEC CBAC Ltd.

# P1 (FOUNDATION TIER)

| Summer 2012<br>Paper 1 (Non calculator) Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 1. (a) (i) 50 244<br>(ii) sixty seven thousand three hundred (and) four | B1<br>B1 | C.A.O. |
| 1. (b) (i) 34 and 12<br>(ii) 76 and 37<br>(iii) 21 | B1<br>B1<br>B1 | C.A.O.<br>C.A.O.<br>C.A.O. |
| 1. (c) (i) 7600<br>(ii) 8000 | B1<br>B1 | C.A.O.<br>C.A.O. |
| 1. (d) 1, 5, 25 | B2 | B1 for any 2 correct factors and up to 1 incorrect<br>Accept 1×5 and/or repeated factors. |
| 1. (e) (i) 8743<br>(ii) 3487 | B1<br>B1 | C.A.O.<br>C.A.O. |
| 2. (a) 7 hundred(s) OR 700 | B1 | Accept hundred(s), but not 100(s) |
| 2. (b) 228 | B1 | C.A.O. |
| 2. (c) Any correct method for finding how many notebooks<br>12 notebooks OR cost (£) 19.2(0)<br>Change = (£) (0).8(0) OR 80 (p) | M1<br><br>A1<br>A1 | For a strategy that finds the maximum number of books<br>3 marks for 80(p) if unsupported OR no wrong method seen.<br>How much they cost<br>F.T. their cost if M1 awarded |
| 2. (d) 50 OR 52 × 10 OR 51(.8) ×10<br>= 500 OR 510 OR 518 OR 520 | M1<br>A1 | Good estimates<br>F.T their estimates for simple calculations<br>M0, A0 for actually calculating 51.8 × 10.2<br>Unsupported answers get M0, A0. |
| 3. (a) Cost = 15 × 9 + 30<br>= (£) 165 ISW | M1<br>A1 | Correctly substituted and correct attempt to evaluate 15 × 9<br>(15 × 39 gets M0, A0) |
| 3. (b) Monthly payment = (220 – 40) /9<br>= (£) 20 ISW | M1<br>A1 | For correct substitution with subtraction and division<br>Allow embedded references to the correct answer. |
| 4. (a) Red 9, Black 16, Yellow 8, Green 7<br><br><u>Both axes labelled</u>, e.g. frequency along one axis and R(ed), B(lack), Y(ellow), G(reen) along other axis Anywhere within the base (inc.) of the corres. bar.<br><u>and uniform scale for the frequency axis starting at 0</u> and labelled 'frequency' OR 'number of discs'.<br><br>Four bars at correct heights (bars must be of equal width)<br><br>(b) B(lack)<br>(c) 9/40 I.S.W. | B2<br><br>B2<br><br><br>B2<br><br><br>B1<br>B2 | May be inferred from their bar chart.<br>B1 for any two/three correct frequencies<br>If frequencies score 0, then give B1 for all 4 correct tallies.<br>B1 if no scale, but allow one square to represent 1<br>OR B1 if not labelled as 'frequency' or similar.<br>If frequency scale starts with 1 at the top of the first square the starting at 0 will be implied for this axis.<br><br>F.T. their frequencies throughout.<br>B1 for any 2 or 3 correct bars on F.T.<br>If no frequencies given in their working, penalise -1 for each incorrect frequency on their bars up to -4 (First and third B2s)<br>Accept 16 and Black, but B0 for 16 only. Condone 'Blue'.<br>F.T. 'their 9' and/or 'their 40'.<br>B1 for the 9 (in a fraction < 1) OR B1 for a denominator of 40 (in a fraction < 1)<br>Penalise -1 for incorrect notation, e.g. '9 out of 40', '9:40' |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Summer 2012<br>Paper 1 (Non calculator) Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 5. (a) At least one of the missing side segments = 6<br>Perimeter = Sum of all sides = 9+3+9+3+6+6<br>= 36 (cm) | S1<br>M1<br>A1 | <br>Attempt to add all sides of the shape (Check their diagram)<br>F.T. 'their 6' |
| 5. (b) Area = Sum of the areas of the shape (= 27+18)<br>= 45<br>$cm^2$ | M1<br>A1<br>U1 | Attempt to add all areas of the shape (accept 9×3 and 6×3)<br>F.T. 'their 6'<br>Independent of all other marks.<br>Watch for other methods e.g. 9×9 - 6×6. |
| 6. Number of rows = 18/2 (9) OR 18/2 (9)<br>Number of people in each row 9 × 12 (108)<br>= 2×12 (24)<br>Total number of people = 24 × 9 × 2<br><br>= 216 and Yes OR > 200<br>Look for<br>• spelling<br>• clarity of text explanations,<br>• the use of notation (watch for the use of rows, people, seats, metres being appropriate)<br>QWC2: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>AND<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer<br>QWC1: Candidates will be expected to<br>• present work clearly, with words explaining process or steps<br>OR<br>• make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer | B1<br>B1<br><br>M1<br><br><br>A1<br><br>QWC<br>2 | Using the 18m aisle appropriately<br>Using the row information correctly<br><br>Any complete correct method for finding the number of people. Allow different orders, e.g. finding how many on 1 side (108) and doubling.<br>C.A.O.<br>Show the marks awarded as 4 (or 3,2,1,0)<br>With the QWC mark underneath 2 (or 1 or 0)<br>QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.<br><br>QWC1 Presents relevant material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar.<br>OR<br>Evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar.<br><br>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling |
| 7. (a) $R\hat{P}Q = 36°$<br>$R\hat{Q}P = 112°$<br>Completed triangle | M1<br>M1<br>A1 | Use overlay ± 2°<br>Use overlay ± 2°<br>If at least M1 awarded |
| 7. (b) Obtuse | B1 | |
| 7. (c) Height = 84/(4×3)<br>= 7 (cm) | M1<br>A1 | (Check their diagram) **Watch for 4 + 3 = 7 !!**<br>Accept embedded answers, e.g. 4×3×7 = 84. |
| 8. (a) It is (15m) below sea level.<br>Accept 'under the sea level'. | B1 | Do not accept 'below zero'.<br>Do not accept 'under the sea'. '-15(m) below' gets B0 |
| 8. (b) Chott Melrhir | B1 | Accept -40 OR Algeria |
| 8. (c) 395 (m) | B1 | |
| 9. (a) 42 56<br>30 40<br>18 24<br>(b) $\frac{7}{16}$ (of 160)<br>= 70<br>Cost = 160 × 80p OR Prizes = 70 × £1.50<br>(£) 128 or 12800 (p) OR (£)105 or 10500 (p)<br>160 × 80(p) − their 70 × (£)1.50<br>= £23 OR 2300p | B2<br><br><br><br>M1<br><br>A1<br>M1<br>A1<br>M1<br>A1 | B1 for at least 3 correct entries<br><br><br><br>F.T. their table. F.T. 'their 7/16' if a fraction less than 1<br>Sight of bone fide 70 in later working OR 70/160 gets M1, A1. Accept words '7 out of 16', or '70 out of 160' here.<br>For either method and accuracy for cost OR prizes.<br>F.T. 'their 70' provided it is clearly identifiable.<br>F.T. full method (ignore units for the M1).<br>Rounded up or down figure if their 70 is not a whole number |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Summer 2012<br>Paper 1 (Non calculator) Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 10. (a)Plots | P1 | **Allow ONE error**<br>**(Accuracy is within ½ square) either side.** |
| Line | L1 | Accept an attempt to link the 3 plotted points. |
| 10. (b) Any correct strategy, e.g. 5 times value at 10 nautical miles | M1 | Any correct method using graph or table. |
| 58 | A1 | F.T. their graph.<br>Unsupported answers in the range 54 – 61 incl. get M1, A1. |
| 11. A (11, −1)<br>B ( 21, 9)<br>C (21, 1) | B2<br>B2<br>B2 | B1 for each ordinate<br>B1 for each ordinate<br>B1 for each ordinate. F.T. 'their 21'<br>If answers missing in expected place check their diagram. |
| 12. (a) 12:08 – 11:25<br>= 43 (minutes) | M1<br>A1 | SC1 (for Swansea to Newport) giving 1 hour 13 minutes OR 73 (minutes). |
| 12. (b) (i) 12:12<br>(ii) 10 (minutes)<br>(iii) Swansea train late does not matter as he has to wait at Bristol.<br>Arrives in Birmingham at 15:11 or 3:11 (pm) | B1<br>B1<br>E1<br><br>B1 | C.A.O.<br>Allow B1 for 41 (minutes) if (i) answer is 11:47.<br>The fact that the '10 mins late' can be ignored must be explicitly given.<br>C.A.O. |
| 13. (a)<br><br><br>2, 2, 5, 7<br>$2^2 \times 5 \times 7$<br><br><br><br><br>(b) HCF = 14 OR $2 \times 7$ | M1<br><br><br>A1<br>B1<br><br><br><br><br><br>B1 | For a method that produces 2 prime factors from the set {2, 2, 5, 7} before their second error. If their 2nd prime and 2nd error occurs at the same 'level' then allow M1.<br>C.A.O. for the four correct factors. (Ignore 1s).<br>F.T. their answer if at least one index form used with at least a square. Ignore prime number requirement for this B mark.<br>Use of brackets $(2^2)(5)(7)$ OR dot $2^2.5.7$ gets the B1.<br>The inclusion of any 1s as factors, for example, $2^2 \times 5 \times 1 \times 7$ in their index form gets B0. Note that $2^2 \times 5^1 \times 7$ gets B1.<br>F.T. their (a) if the M1 awarded. |
| 14. (The shape has) 5 sides or pentagon<br>(Interior) $3 \times 180$ OR (Exterior) $360 \div 5$<br>$= 540$ $= 72$<br>(Total of the other 2 angles or 2x = )<br>$540 - 3 \times 106$ $108 \times 5 - 3 \times 106$<br>(So 1 remaining angle is or x=) $222 \div 2$<br>$= 111(°)$ | S1<br>M1<br>A1<br><br>M1<br>M1<br>A1 | May be implied in working<br><br>Accuracy required, answer only however gains M1, A1<br><br>FT their 540 or 108 (=180-their 72) ). FT 'their pentagon'<br>Realising need to halve, as there are two other angles OR FT 'their pentagon'<br>*Possible marks for candidates incorrectly believing, for example interior is 360° then: possible S1, M0, A0, then M1 for 360 - 3×106, then M1 for 42/2, and A1 for 21.*<br>*Other examples are possible.*<br>*Candidates thinking total of other 3 angles is 106, then for the final 3 marks, M0, possible M1for division by 2 and FT for possible A1 for correct evaluation* |
| 15. $7y + 32 + 3y + 50 + 8y - 10 = 180$<br>$18y + 72 = 180$ OR $18y = 108$ OR $y = 108 \div 18$<br>$y = 6$<br><br><br>74 68 38 | M1<br>A1<br>A1<br><br><br><br>B2 | Idea that all three total 180. Formal notation not required<br>Formal notation not required<br>C.A.O.<br>*Candidates that believe =360 will have y as 16 worth SC1, then FT for B2 for answers of 144, 98 and 118 (or B1 for any 1 correct)*<br>FT their unique 'y' if clearly identifiable.<br>B1 for any one correct entry.<br>Award also previous M1 A2 if any two correct entries seen |

© WJEC CBAC Ltd.



STEMUP.CO.UK

| Summer 2012<br>Paper 1 (Non calculator) Foundation Tier | Marks | FINAL MARK SCHEME<br>Comments |
|---|---|---|
| 16. (a) $y^4 + 6y$ | B2 | B1 for one correct term. If B2 penalise further working -1<br>Do not accept 6×y for 6y, however accept y6 |
| 16. (b) $x/3 = 63 - 54$ OR $x/3 = 9$ OR $x + 3\times54 = 3\times63$ OR $x + 162 = 189$<br>$x = 27$ | M1<br><br>A1 | <br>Award both marks for an embedded answer<br>SC1 for 351 |
| 16. (c) $4n - 1$ OR equivalent, e.g. $3 + 4(n-1)$ | B2 | B1 for sight of 4n. Accept 4×n -1 or n4 -1 for B2.<br>Accept N for n, but penalise other letters – 1.<br>4n – n gets B0 |
| 17. (a) Correct frequency diagram | B2 | **B1 for 3 correct bars**, OR for translated frequency diagram horizontally by one small square.<br>*B0 if both frequency diagram and frequency polygon given* |
| 17. (b) $15 < x \leq 20$ | B1 | Accept any unambiguous indication of this interval. |

© WJEC CBAC Ltd.



STEMUP.CO.UK