Rewarding Learning

General Certificate of Secondary Education

Centre Number

Candidate Number

Mathematics

StemUp Model Solution

Unit M6 Paper 2
(With calculator)
Foundation Tier



GMC62

[GMC62]
Assessment

Assessment Level of Control:
Tick the relevant box (✓)

Controlled Conditions	
Other	

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided.
Do not write outside the boxed area on each page, on blank pages or tracing paper.
Complete in black ink only. **Do not write with a gel pen.**
Answer **all seventeen** questions.
All working should be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions.
You **may** use a calculator for this paper.

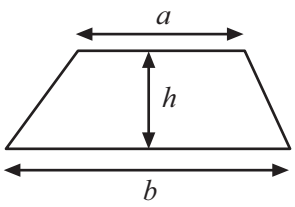
INFORMATION FOR CANDIDATES

The total mark for this paper is 50.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is on page 2.

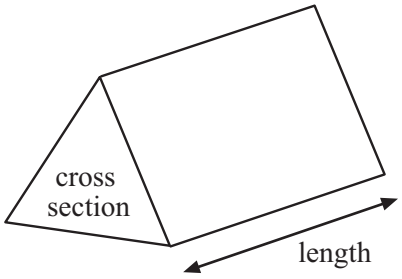
12375

Formula Sheet

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



Volume of prism = area of cross section × length



12375

1 Ella needs 176 tiles for her new bathroom.



The tiles come in boxes of 12

(a) Calculate the least number of boxes that she will need.

176 ÷ 12 = 14.6666...
14 boxes is not enough, so 15 boxes

Answer 15 [2]

(b) How many tiles will she have left over?

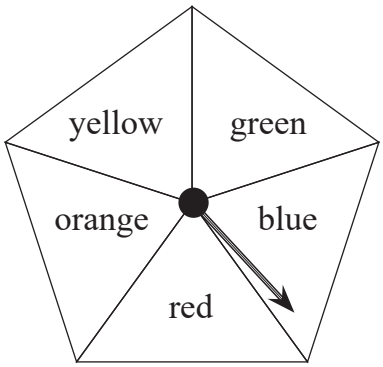
15 × 12 = 180 tiles
180 − 176 = 4

Answer 4 [2]

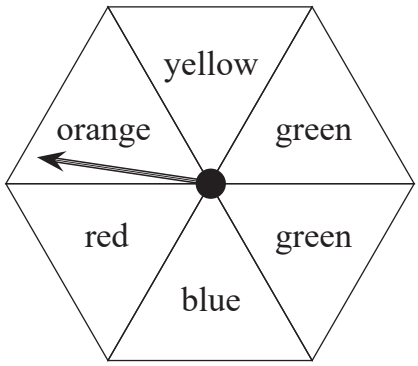
[Turn over

2 Two different spinners are shown.

Spinner A



Spinner B



Each spinner is spun once.

(a) Which spinner gives the best chance of landing on **red**?

Circle your answer.

(Spinner A) Spinner B Both the same [1]

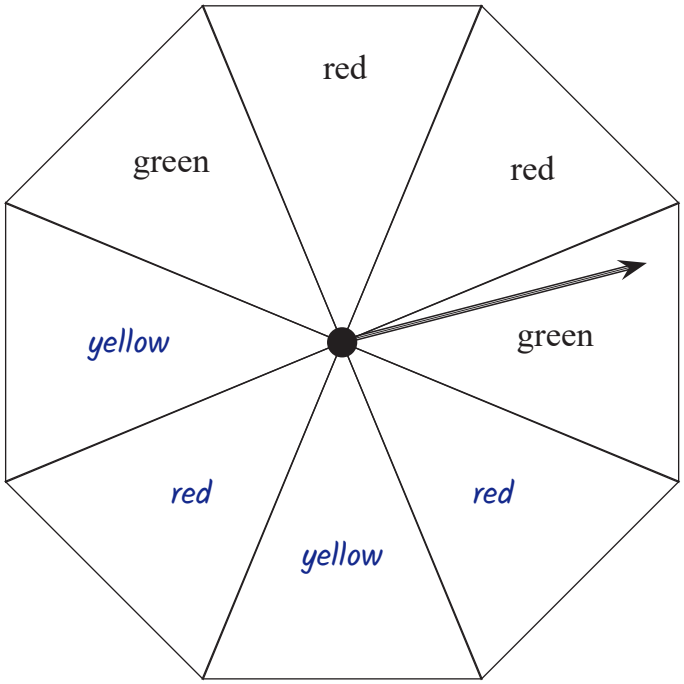
P(red) on A = $\frac{1}{5}$ P(red) on B = $\frac{1}{6}$ 1/5 > 1/6

(b) Another spinner is shown.

Write the missing colours on the spinner so that the statements below are true.

Landing on red is twice as likely as landing on green.

Landing on green is the same likelihood as landing on yellow.



[1]

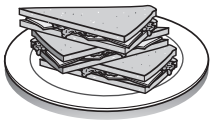
3 Circle the cube number below.

3 9 (27) 81

[1]

[Turn over

4 Sandwiches contain



Ham (H), Beef (B) or Chicken (C)

Each sandwich has **either**

Sauce (S) or Mayonnaise (M)

added to them.

(a) List all the possible types of sandwich.

HS HM BS BM CS CM

[2]

(b) 120 sandwiches are made using the types in part **(a)**.

Equal numbers of each type are made.

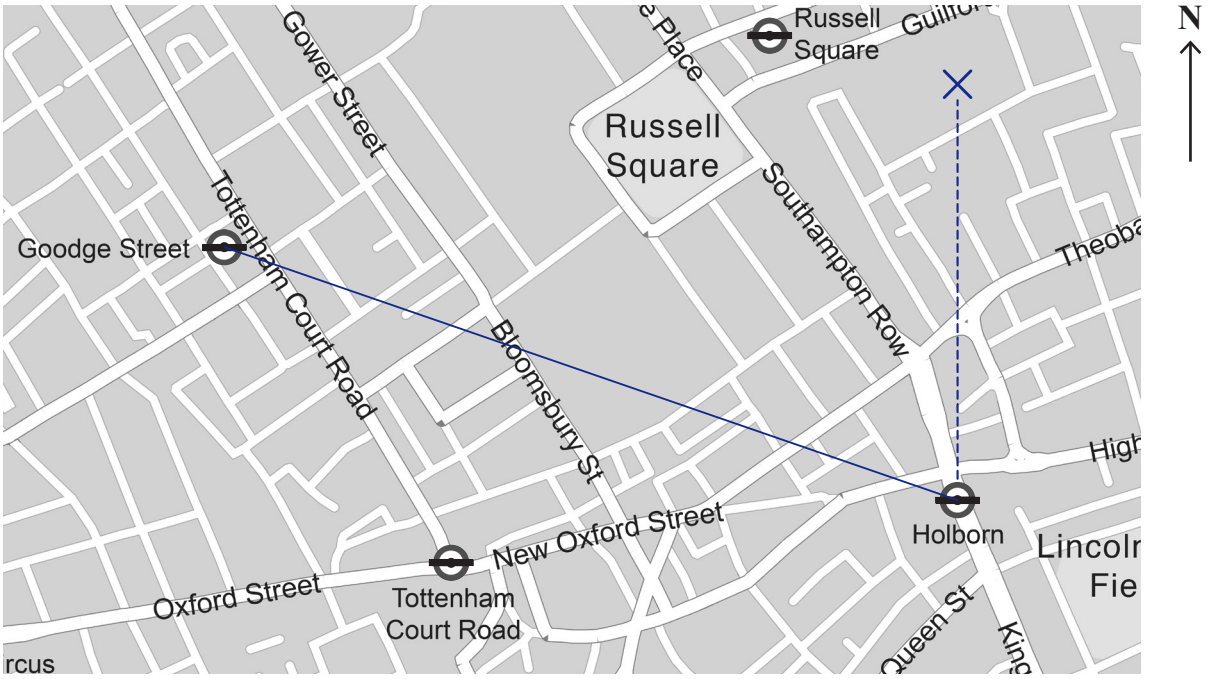
How many sandwiches contain beef?

3 × 2 = 6 types, so 120 ÷ 6 = 20 of each type
Beef: BS and BM = 2 types
20 × 2 = 40

Answer 40 [2]

5 The map shows the position of four Underground Stations in London.

The symbol for an underground station is



Map Scale 1 cm = 100 m

(a) Calculate the **actual distance** between Goodge Street Underground Station and Holborn Underground Station.

Show your working clearly.

Distance on map = 10.3 cm

10.3 × 100 = 1030 m

Answer *1030* m [2]

(b) Great Ormond Street Children's Hospital is 550 m due North of Holborn Underground Station.

Mark the exact position of the hospital with an X. [2]

550 ÷ 100 = 5.5 cm north of Holborn

[Turn over

6 Jenny's height is given as 156 cm, correct to the nearest cm.

Between what limits does Jenny's height lie?

Complete the following:



155.5 ⩽ Jenny's height < 156.5 [2]

7 Laura paid for meals, while on holiday in Spain, with her credit card.

The cost was €91.48

£1 = €1.12

(a) What was the cost in £?

91.48 ÷ 1.12 = 81.6785714...
= £81.68

Answer £ 81.68 [2]

(b) Laura's bank charged her 2.7% of this cost in £ for a non-sterling transaction.

How much was this charge in £?

2.7% of 81.68 = 0.027 × 81.68
= 2.20536 = £2.21

Answer £ 2.21 [2]

8 In a herd of 40 goats there are

8 brown 9 white 13 without horns



A goat is taken at random from the herd.

What is the probability that this goat

(a) has horns,

40 − 13 = 27 goats have horns

Answer $\frac{27}{40}$ [1]

(b) is brown or white,

8 + 9 = 17

Answer $\frac{17}{40}$ [1]

(c) is not brown or white?

40 − 17 = 23

Answer $\frac{23}{40}$ [1]

[Turn over

9

	Pancake mix for four people	Pancake mix for ten people
Flour	200g	500 g
Milk	350ml	875 ml
Eggs	2	5
Vegetable oil	1 tablespoon	2.5 tablespoons

The table above shows the ingredients required to make pancakes for four people.

Complete the table to show how much of each ingredient would be required for ten people. [2]

10 ÷ 4 = 2.5, so multiply by 2.5

10 **(a)** Fill in the next term in the following sequence.

2, 3, 5, 8, 13, 21, 34 [1]

(b) What rule did you use to find this term?

Answer Add the two previous terms together (13 + 21 = 34) [1]

11 A box contains sweets.

The sweets are strawberry, lime, orange or blackcurrant flavour.

A sweet is taken at random from the box.

The table below shows some of the probabilities.

Flavour	strawberry	lime	orange	blackcurrant
Probability	0.45	0.15	0.15	0.25

(a) The box has an equal number of lime and orange sweets.

Work out the probability that an orange sweet will be taken.

$1 - 0.45 - 0.25 = 0.3$
lime and orange are equal:
$0.3 \div 2 = 0.15$

Answer 0.15 [2]

(b) The box contains a total of 120 sweets.

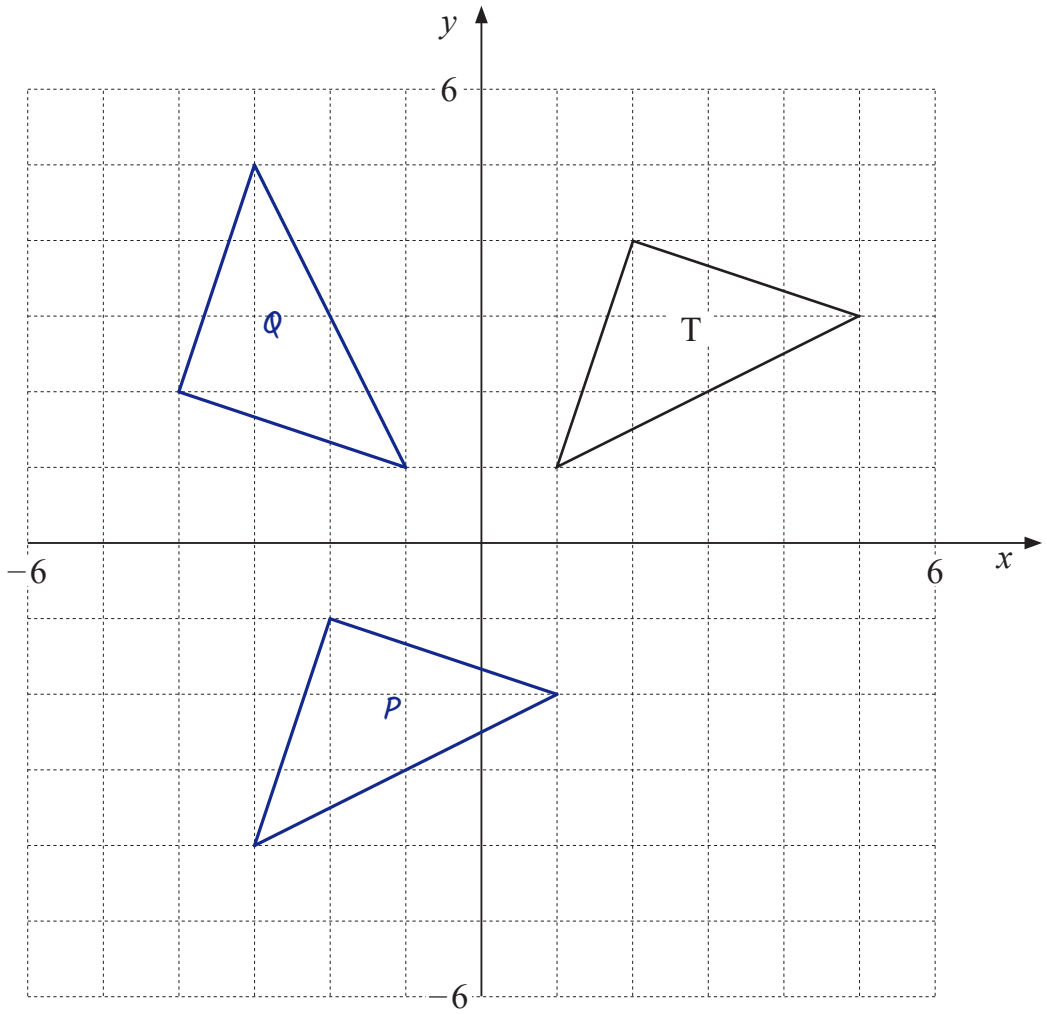
How many strawberry sweets should it contain?

$120 \times 0.45 = 54$

Answer 54 [2]

[Turn over

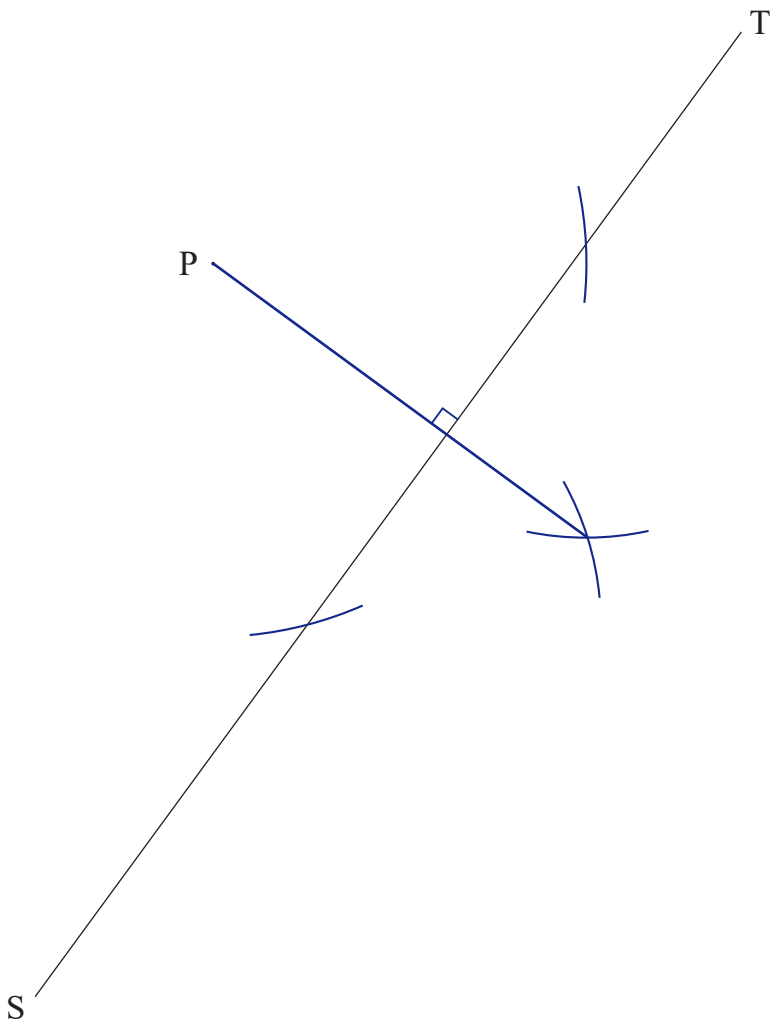
12



(a) Draw the image of the triangle, T, after a translation of 4 units to the left and 5 units down.
Label the image P. [1]

(b) Draw the image of the triangle, T, after a rotation of 90° anti-clockwise about the origin.
Label the image Q. [3]

13 Construct the line which represents the shortest distance from point P to the line ST in the diagram below.



[2]

[Turn over

14 A solution to the equation $4x - x^3 - 2 = 0$ lies between $x = 0$ and $x = 1$

Use trial and improvement to find this solution, giving your answer correct to 1 decimal place.

Show all your working clearly.

x	$4x - x^3 - 2$	
0.5	$2 - 0.125 - 2 = -0.125$	too small
0.6	$2.4 - 0.216 - 2 = 0.184$	too big
0.55	$2.2 - 0.166375 - 2 = 0.033625$	too big
	Solution is between 0.5 and 0.55 so x = 0.5 to 1 d.p.	

Answer $x =$ 0.5 [3]

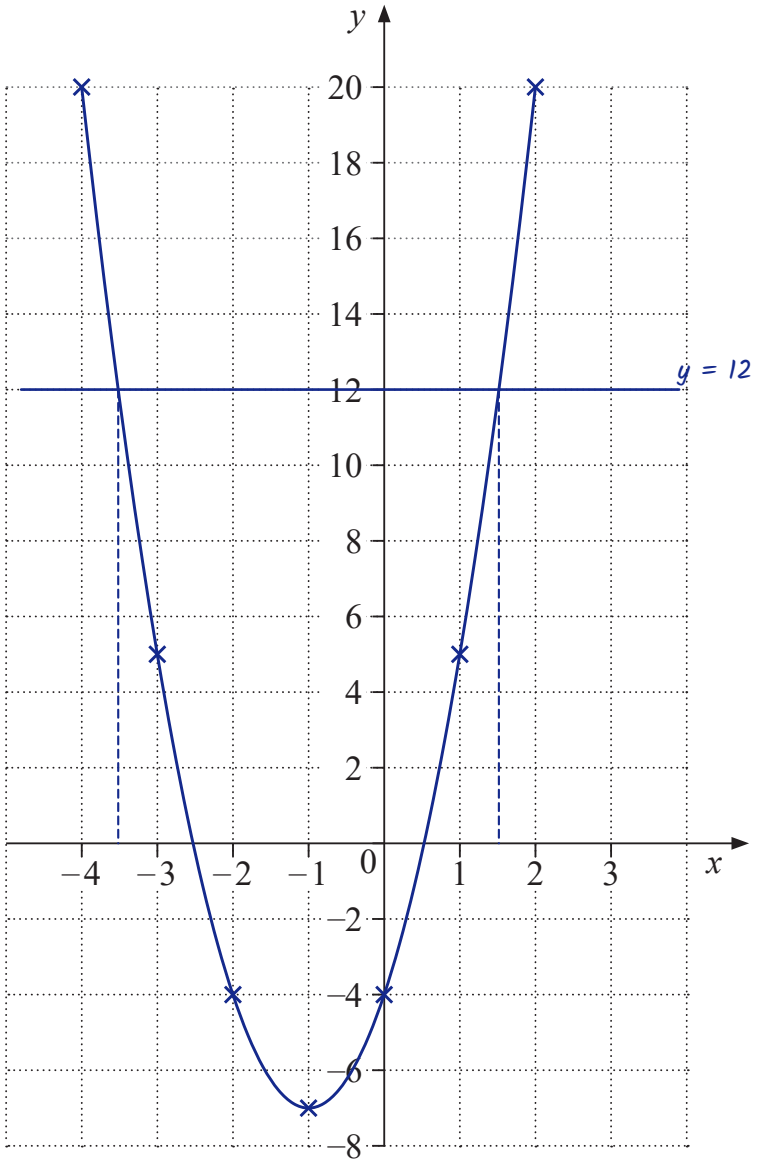
stemup.co.uk

15 **(a)** Complete the table of values for $y = 3x^2 + 6x - 4$

x	−4	−3	−2	−1	0	1	2
y	20	5	−4	−7	−4	5	20

[1]

(b) Hence, draw the graph of $y = 3x^2 + 6x - 4$ on the grid below.



[2]

(c) Draw the line $y = 12$ on the grid.
Write down the x values of the points of intersection with this line.

Answer ___−3.5___ , ___1.5___ [2]

[Turn over

16 Write the binary number 1011001 as a decimal number.

64	32	16	8	4	2	1
1	0	1	1	0	0	1

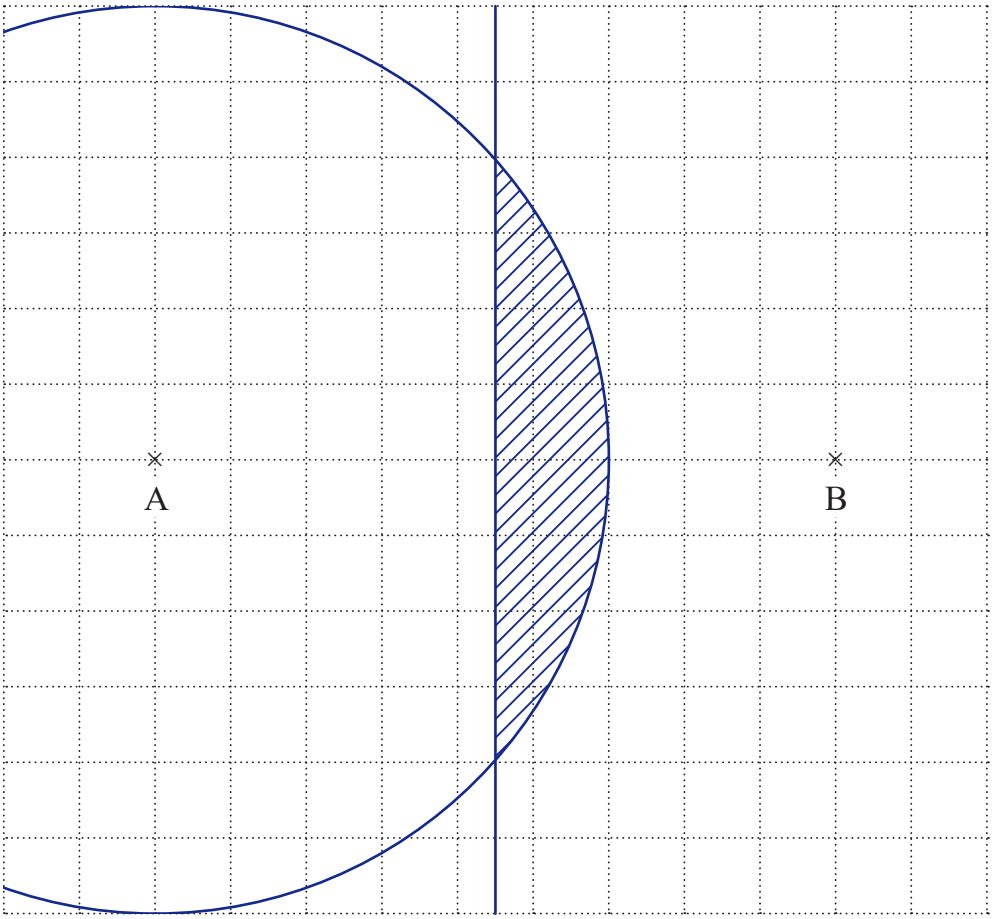
$= 64 + 16 + 8 + 1$
$= 89$

Answer 89 [1]

17 Two transmitters are located at points A and B, 9 metres apart.

The best reception is an area which is less than 6 metres from A and closer to B than to A.

Shade this area on a scale drawing below, using a scale of 1 cm to 1 metre.



[3]

THIS IS THE END OF THE QUESTION PAPER

stemup.co.uk

BLANK PAGE

DO NOT WRITE ON THIS PAGE

stemup.co.uk

BLANK PAGE

DO NOT WRITE ON THIS PAGE

Q3 © Getty Images

DO NOT WRITE ON THIS PAGE

For Examiner's use only	
Question Number	**Marks**
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
Total Marks	

Examiner Number

Permission to reproduce all copyright material has been applied for.
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA will be happy to rectify any omissions of acknowledgement in future if notified.

stemup.co.uk