AQA Mock Test Papers

Paper2 - Test2

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE Mathematics

Higher tier - Paper 2 - Calculator

H

Time allowed: 1 hour 30 minutes

Materials

For this paper youmust have:
- a calculator
- mathematical instruments
- the Formulae Sheet (enclosed).

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil. Fill in the
- boxes at the top of this page. Answer allquestions. You must answer the
- questions in the spaces provided. Do not write outside the box around each
- page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets. The maximum mark
- for this paper is 80. You may ask for more answer paper, graph
- paper and tracing paper. These must be tagged securely to this answer book.

Advice

In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
24–25	
26	
TOTAL	

Answer all questions in the spaces provided.

Do not write outside the box

1 Write 40 : 8 in the form n : 1

[1 mark]

Answer _____ : 1

2 Four consecutive triangular numbers are 10, 15, 21, 28.

Write down the next triangular number.

[1 mark]

Answer _____

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Do not write outside the box

3 Write down the reciprocal of $\frac{5}{9}$

[1 mark]

Answer _____

4 The price of a bag increases by 10% to £33.00.

Work out the original price of the bag.

[2 marks]

_____

_____

_____

_____

Answer £ _____

Turn over for the next question

5

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5 Alex saves 1p, 2p, and 5p coins.

He has:

- 60 5p coins
- 6 times as many 1p coins as 5p coins
- £10.80 in total.

Work out the total value of 1p coins : total value of 2p coins.
Give your answer in its simplest form.

[4 marks]

Answer _____ : _____

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6 (a) Part of a regular polygon is shown.

Not drawn accurately

Assume that the polygon is a decagon .

Work out the size of an exterior angle.

[2 marks]

Answer _____ °

6 (b) In fact, the polygon has more sides than a decagon.

What does this mean about the size of an exterior angle?

Tick onebox.

[1 mark]

- ☐ It is more than the answer to part (a)
- ☐ It is the same as the answer to part (a)
- ☐ It is less than the answer to part (a)
- ☐ It could be any of the above

7

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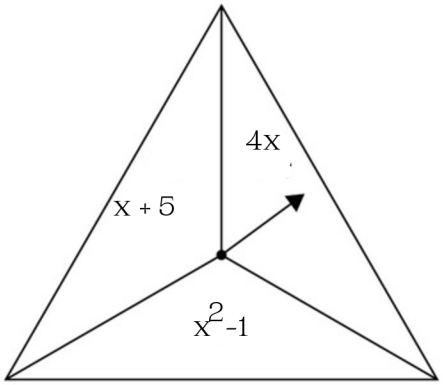
7 In a game,

- an ordinary fair six-sided dice is rolled
- the fair spinner shown is spun.



The score is the dice number substituted into the spinner expression.

7 (a) Complete the table to show all of the possible scores.

[2 marks]

	1	2	3	4	5	6
4x				16		
x + 5		7				
x^2-1					24	

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7 (b) A player wins the game if their score is 10 or more.

Work out the probability that they win the game.

[1 mark]

Answer _____

7 (c) The game is played 900 times.

Estimate the number of games that are won.

[2 marks]

Answer _____

8 $(a + 4)x^2 + 3b \quad 7x^2 + 15$

Work out the values of a and b

[2 marks]

a = _____ b = _____

7

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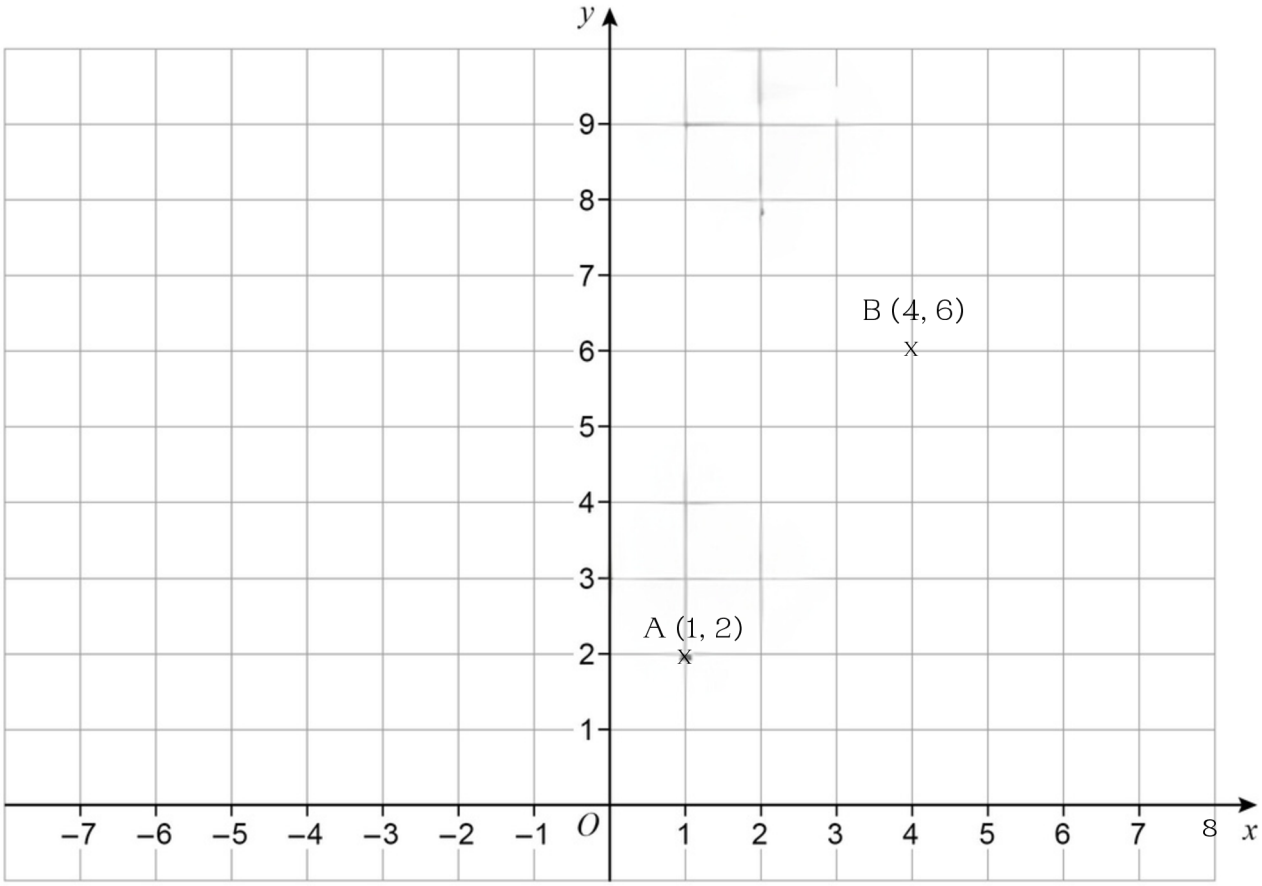
9 A (1 , 2) and B (4, 6) are points on a centimetre grid.



ABCD is a parallelogram.

AD and BC are horizontal and each has length 4 cm .

The diagonals of ABCD cross at E.

Work out the two possible pairs of coordinates of E.

[4 marks]

Answer (_____ , _____)and (_____ , _____)

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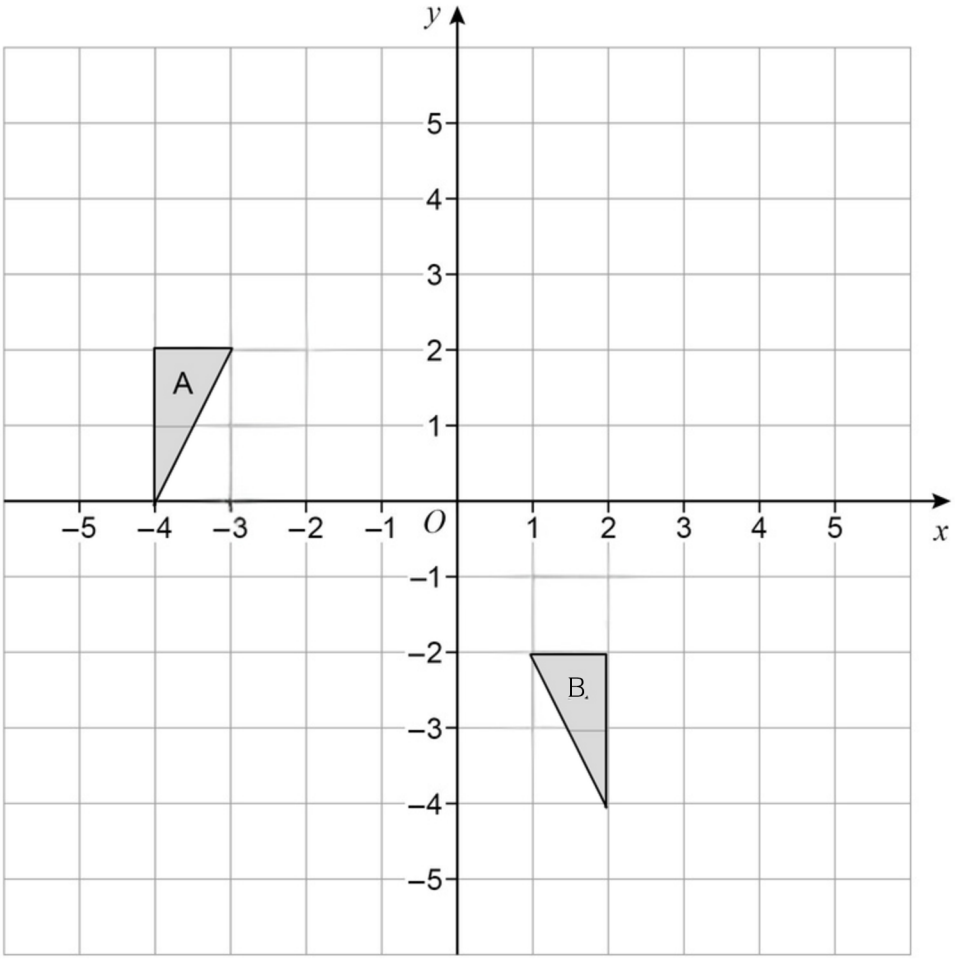
10 Write down the translation vector that maps shape A onto shape B.

[2 marks]



Answer _____

6

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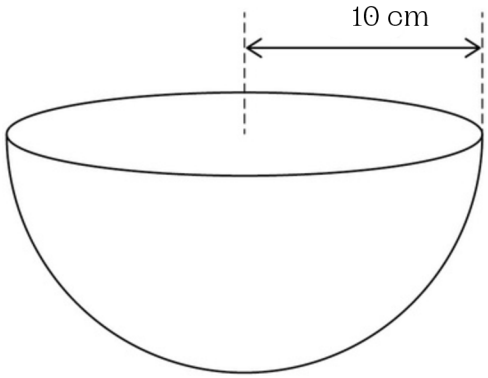
11

Volume of a sphere	$= \frac{4}{3}\pi r^3$

A bowl is a hemisphere with radius 10 cm



Water is poured into the bowl
at a rate of 250 cm^3 per second
for 10 seconds.

Does the water fill more than 60% of the bowl?
You must show your working.

[4 marks]

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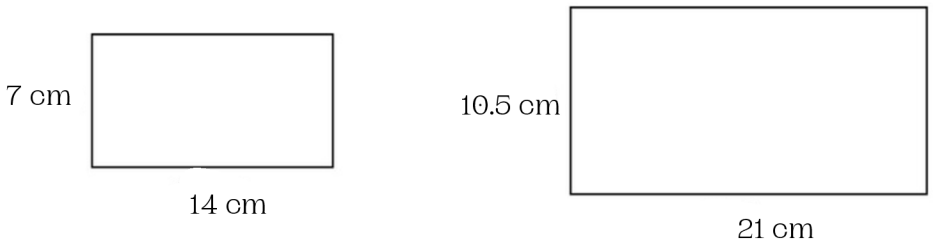
Do not write outside the box

12 Show that these two rectangles are similar.

[2 marks]

Not drawn accurately



13 A factory packs y boxes of biscuits per hour.

Each box contains 24 biscuits.

Show that the factory packs $\frac{2y}{5}$ biscuits per minute.

[2 marks]

Turn over for the next question

8

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14 (a) Oranges weighing 150 grams or less cost 45p each.

Oranges weighing more than 150 grams cost 52p each.

Estimate the total cost of 300 oranges.

[3 marks]

Answer .....

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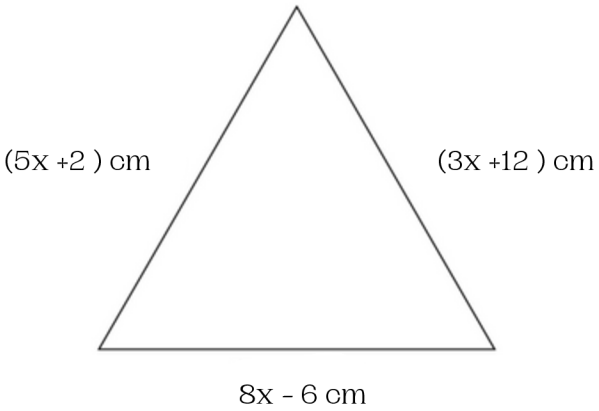
14 (b) This triangle is equilateral.



[5 marks]

Is the perimeter of the triangle greater than one metre?
You must show your working.

8

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15 Expand $(x^2+4xy)(3x+6y)$

[2 marks]

Answer _____

16 Line P

has equation $y = bx + 3$

passes through the point (4, 11)

Line Q has equation $4y - 5x = 12$

Show that line P has a greater gradient than line Q.

[3 marks]

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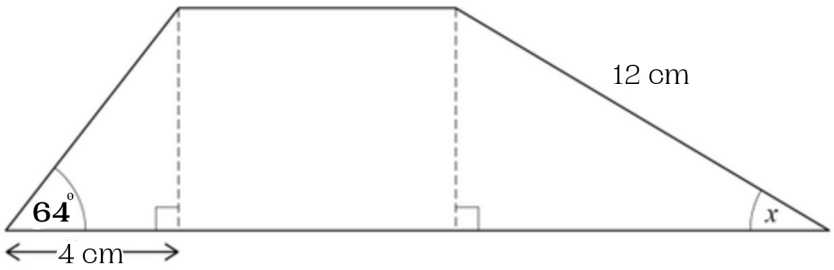
17 This shape is made from two right-angled triangles and a rectangle.

Not drawn accurately



Work out the size of angle x

[4 marks]

x = _____ °

9

Turn over ▶

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Do not write outside the box

18 Rearrange $y = \frac{x+9}{x}$ to make x the subject.

[3 marks]

Answer _____

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Do not write outside the box

19 Here are the first four terms of a quadratic sequence.

5 14 25 38

Work out an expression for the nth term of the sequence.

[4 marks]

Answer _____

7

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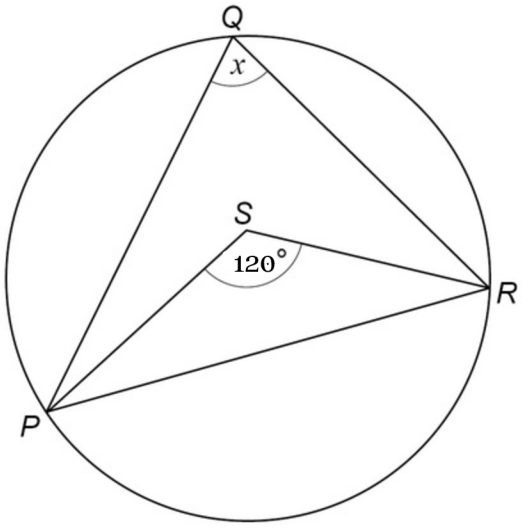
Do not write outside the box

20 (a) P Q and R are points on a circle.

S is a point inside triangle PQR.

Not drawn accurately



Assume that S is the centre of the circle.

Work out the size of angle x.

[1 mark]

x = _____ °

20 (b) In fact, the centre of the circle is on PS but not at S.

What does this mean about the size of angle x ?

Tick onebox.

[1 mark]

☐ It is the same as the answer to part (a)

☐ It is greater than the answer to part (a)

☐ It is smaller than the answer to part (a)

☐ It is impossible to tell

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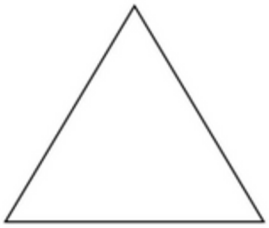
Do not write outside the box

20 (c) Circle the letter of the shape that has rotational symmetry of order 2

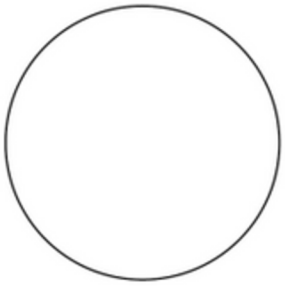
[1 mark]

P

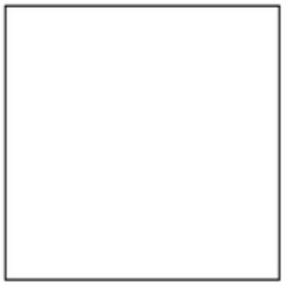


Q

R



S



3

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21 Jack deposits £800 into a savings account that earns compound interest.

He wants the amount in the account to be at least £1000 after 4 years.

Work out to 1 decimal place the minimum annual interest rate he needs.

[3 marks]

Answer _____ %

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22 120 boys and 95 girls took a test.
The table shows information about the mean marks.

	Boys	Girls
Number of students	120	95
Mean mark	75.2	78.3

The pass mark for the test was 77 [3 marks]
Was the mean mark for all of these students greater than the pass mark?

You must show your working.

6

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23 Sophie is trying to remember a 4-digit pin code.
She knows the following rules:

- The first digit is a prime number.
- The second digit is a multiple of 5.
- The third digit is a square number.
- The fourth digit is an even number.

Sophie tries at random a pin code that matches these rules.
Work out the probability that this is the correct pin code.

[4 marks]

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24 Let $x = 45$ to the nearest integer and $y = 40$ to 1 significant figure.

Work out the upper bound for the expression $3x^2 - y^2$

[3 marks]

7

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25 Show that $\frac{x-4}{x-3} + \frac{x+4}{x+3}$

simplifies to $\frac{ax^2-b}{x^2-4}$ where a and b are integers.

[3 marks]

Answer _____

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Do not write outside the box

26 (a) Complete the table of values for $y = x^2 - 5x - 2$

x	-1	0	1	2	3	4	5	6
y			-6				-2	

[2 marks]

5

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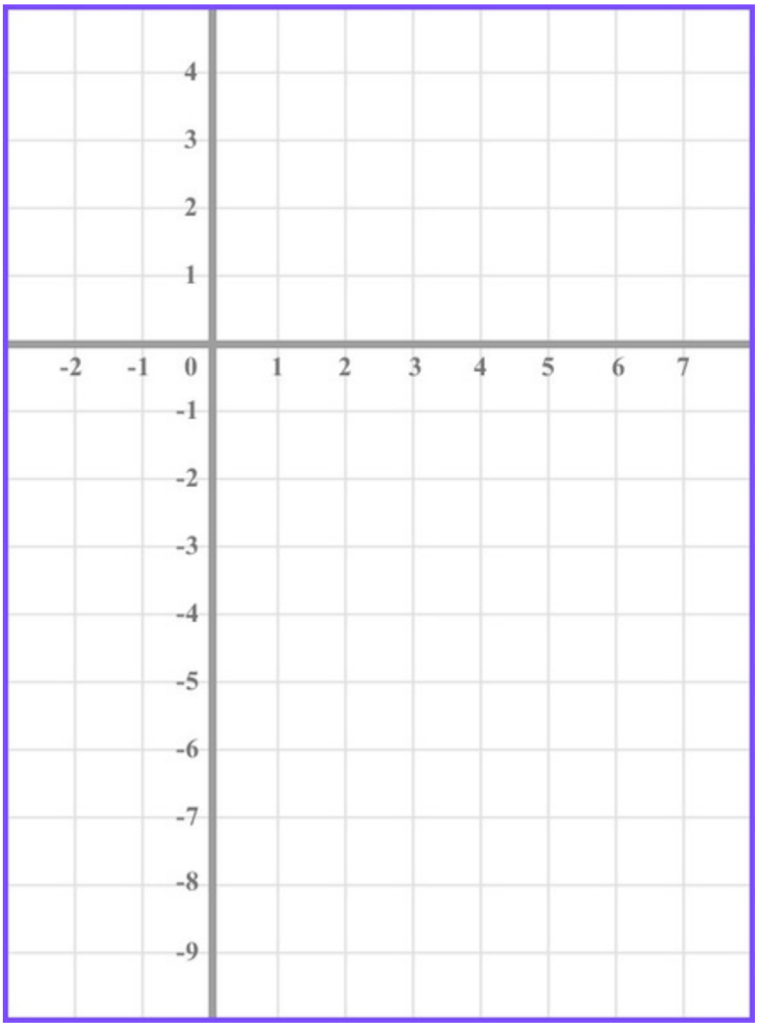
26 (b) On the grid draw the graph of

$y = x^2 - 5x - 2$ for values of x from -1 to 6



[2 marks]

END OF QUESTIONS

2

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