AQA Mock Test Papers

Paper2 - Test3

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	
TOTAL	

Answer all questions in the spaces provided.

Do not write outside the box

1 Circle the factor of $x^2 + 7x$

[1 mark]

$x - 1$ $\quad -7x$ $\quad x + 7$ $\quad 7x$

2 C is one-third of D.
Work out the ratio C:D
Circle your answer.

[1 mark]

1 : 2 $\quad$ 2 : 1 $\quad$ 1 : 3 $\quad$ 3 : 1

3 The first three terms of a geometric progression are $\frac{3}{4}$ $\frac{9}{8}$ $\frac{27}{16}$

Circle the fourth term.

[1 mark]

$\frac{81}{10}$ $\quad \frac{81}{14}$ $\quad \frac{16}{81}$ $\quad \frac{81}{32}$

Do not write outside the box

4 The equation of a line is $y=-2x+4$.

Circle the coordinates of the y-intercept.

[1 mark]

$(0, 4)$ $(4, 0)$ $(-4, 0)$ $(0, -4)$

5 Solve $10x = 48.2 - 2x$

[2 marks]

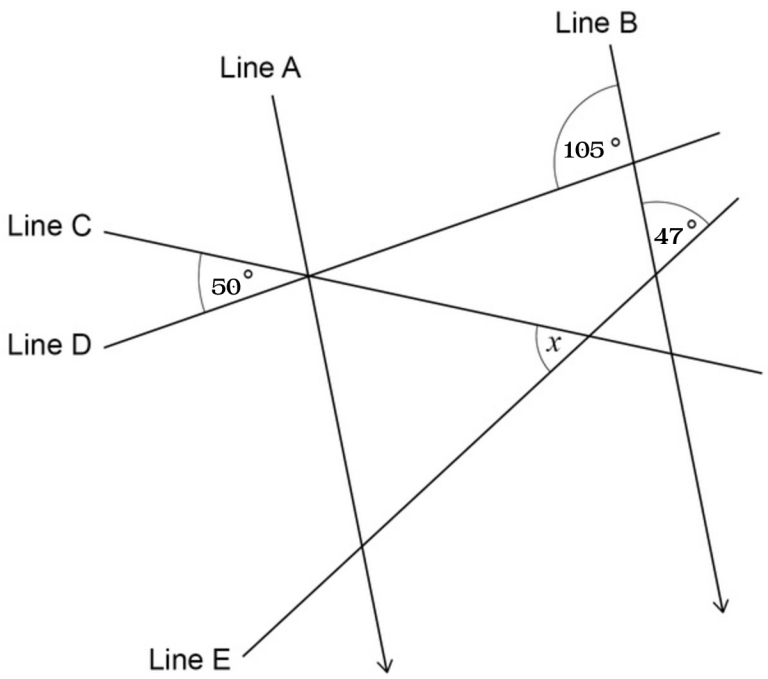
$x =$ _____

6

Do not write outside the box

6 Lines A, B, C, D and E intersect as shown.

Lines A and B are parallel.



Not drawn accurately

Work out the size of angle x.

[3 marks]

Answer _____ degrees

Do not write outside the box

7 Here is an identity.

$a(2x - 20) \equiv 24x + 5b$

Work out the values of a and b.

[3 marks]

a = ..., b= .....

6

Do not write outside the box

8 A car journey is in two stages:

- Stage 1: The car travels 120 miles in 3 hours.
- Stage 2: The car travels 60 miles at the same average speed as Stage 1.

Work out the time for Stage 2.
Give your answer in minutes.

.

[3 marks]

Answer ..... minutes

Do not write outside the box

9 A balloon contains 3000 cm^3 of air.

More air is pumped into the balloon at a rate of 120 cm^3 per second.
The balloon is full when it becomes a sphere with a radius of 12 cm.

Volume of a sphere = $\frac{4}{3}\pi r^3$ where r is the radius

Does it take less than 1 minute to fill the balloon?

You must show your working.

[4 marks]

7

Do not write outside the box

10 p is an even number. n is an odd number.

For each statement, tick the correct box.

[4 marks]

	Always true	Sometimes true	Never true
$p + n$ is even	☐	☐	☐
$p \times n$ is even	☐	☐	☐
$p + p$ is even	☐	☐	☐
$n \times n$ is odd	☐	☐	☐

Do not write outside the box

11 A bus station records the number of buses arriving at the station.

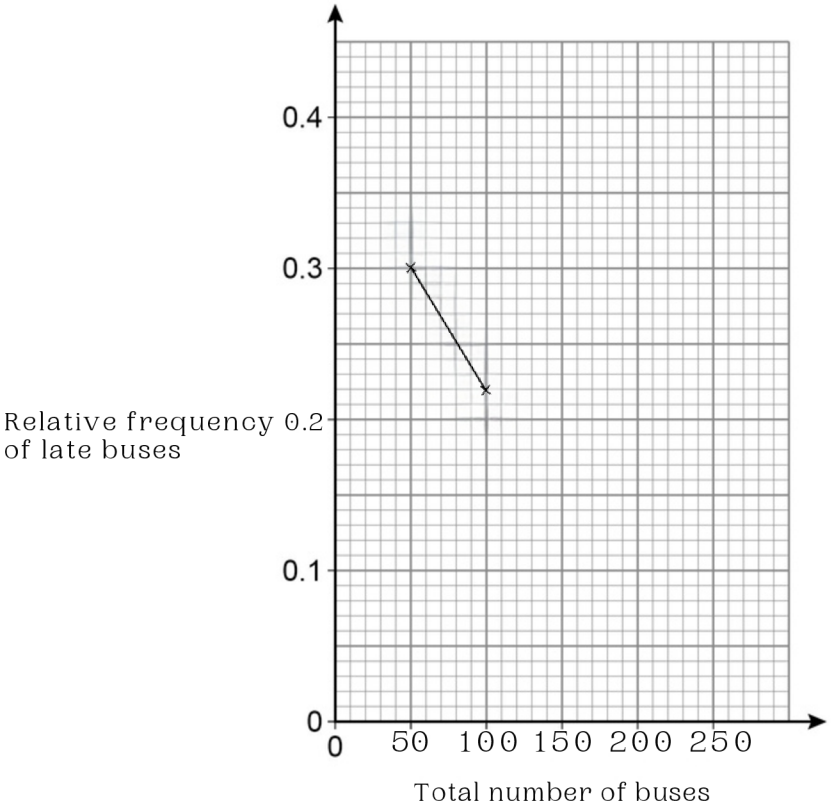
The number of buses that were delayed was recorded after every 50 buses.

The table shows some information about the results.

Total number of buses	50	100	150	200	250
Total number of late buses	15	22			
Relative frequency of late buses	0.30	0.22			

11 (a) Complete the relative frequency graph.

[3 marks]



[1 mark]

11 (b) Write down the best estimate of the probability that a bus arriving at the station is late.

Answer _____

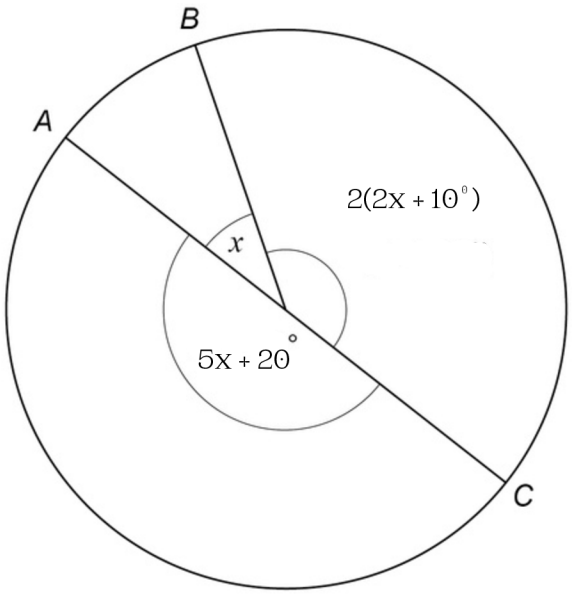
8

Do not write outside the box

12 A, B and C are three points on a circle.

The radii from A, B and C are shown.

Not drawn accurately



Is AC a diameter of the circle?

You must show your working.

[3 marks]

Do not write outside the box

13 The 7th term of a linear sequence is 35.

The 8th term of the sequence is 40.

Work out the 150th term of the sequence.

[3 marks]

Answer _____

6

Do not write outside the box

14 (a) Cameron and Dana sat eight tests, each worth 100 marks.
The table below shows their mean percentages after seven tests:

Cameron	70%
Dana	68%

[4 marks]

After all eight tests, their mean percentages became equal.
In the eighth test, Cameron scored 64 out of 100.
Work out Dana's score, out of 100, in the eighth test.

Answer .....

Do not write outside the box

14 (b) Tom drives 250 miles in 5 hours.
He drives the first 40 miles at an average speed of 40 mph.
Work out his average speed for the rest of the journey.

[3 marks]

Answer _____

7

Do not write outside the box

15 The amounts spent on books by 50 students (25 boys and 25 girls) in one month were recorded.

The table shows the information about the amounts spent by the boys.

[5 marks]

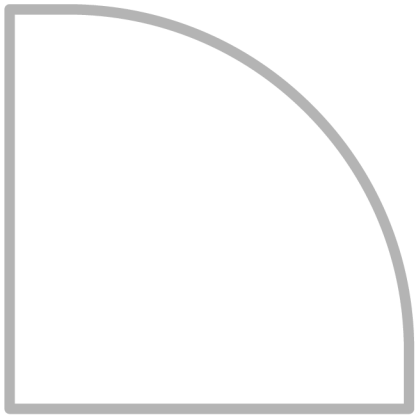
Amount, x (£)	Midpoint	Number of boys	
$0 \leqslant x < 10$		12	
$10 \leqslant x < 20$		6	
$20 \leqslant x < 30$		5	
$30 \leqslant x < 40$		2	
		Total = 25	

The mean for the girls was £18.
Work out the mean for the girls as a percentage of the mean for the boys.

Answer .....

Do not write outside the box

16 Here is a quarter circle of radius 5 cm



5 cm

[2 marks]

Work out the area of the quarter circle.
Give your answer in terms of π.

Answer cm2

7

Do not write outside the box

17 20 students were asked which subject they liked more, Maths or Science.

The table shows the results.

	Maths	Science
Male	3	7
Female	5	5

17 (a) One male and one female are chosen at random.

Work out the probability that exactly one of them liked Maths.

[3 marks]

Answer _____

17 (b) Two females are chosen at random.

Work out the probability that they both liked Science.

[2 marks]

Answer _____

Do not write outside the box

18 Write 64×4^{2x} as a power of 2 in terms of x.

[3 marks]

Answer .....

8

Do not write outside the box

19 There are 15 balls in a bag.

- 10 balls are blue.
- 5 balls are green.

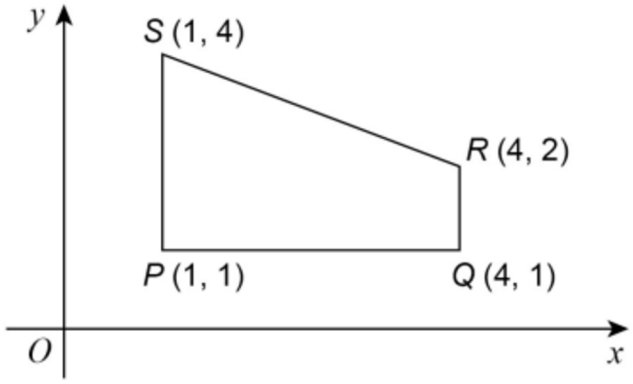
Two balls are taken out at random without replacement.
Work out the probability that both balls are the same colour.

[4 marks]

Answer .....

Do not write outside the box

20 A sketch of a quadrilateral PQRS is shown.



PQRS is reflected in the line y = x
Circle the vertex that is invariant.

[1 mark]

P Q R S

Turn over for the next question

5

Do not write outside the box

21 Solve $3x^2 = 7x + 5$

Give your answers to 2 decimal place

[4 marks]

Answer .....

Do not write outside the box

22 Expressions for consecutive triangular numbers are

$$\frac{n(n+1)}{2} \quad \text{and} \quad \frac{(n+1)(n+2)}{2}$$

Prove that the sum of two consecutive triangular numbers is always a square number.

[4 marks]

8

Do not write outside the box

23 A straight line
is perpendicular to the straight line through points (3,4) and (7,10)
and
passes through the point (0,6) and another point (x,8).

Work out the value of x.

[4 marks]

x = _____

Do not write outside the box

24 (a) Let $f(x)=3x-4$

Show that the expression $4f(x)- 8f^{-1}(x)$ simplifies to an integer.

[4 marks]

[1 mark]

24 (b) Circle the area that is equal to $64\ mm^2$.

0.064cm2 0.64 cm2 6.4 cm2 64 cm2

9

Do not write outside the box

25 $x : y = 5 : 3$
$x + y = 64$

Work out the value of $x - y$

[3 marks]

Answer .....

END OF QUESTIONS

3