AQA

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Surname _____

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I declare this is my own work.

GCSE MATHEMATICS

F

Foundation Tier

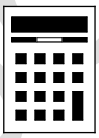
Paper 2 Calculator

Shadow paper based on November 2021 question paper

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments.



Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- 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	
TOTAL	

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

1 Circle the factor of 36

[1 mark]

72 18 5 14

2 y is 5 more than x.

Circle the correct equation.

[1 mark]

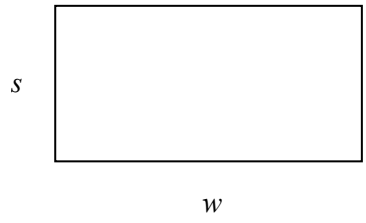
$y = 5x$ $y = x - 5$ $y = x + 5$ $y = \frac{x}{5}$

3 Circle the value of 0.6 as a fraction.

[1 mark]

$\frac{3}{5}$ $\frac{2}{3}$ $\frac{7}{20}$ $\frac{3}{50}$

4 Here is a rectangle.



Circle the expression for the **area**.

[1 mark]

$2s + 2w$ $s + w$ sw $2sw$

5 Work out the value of $a^2 + 3a$ when $a = 4$

[2 marks]

Answer _____

Turn over for the next question

6

6 16 people were asked to name their favourite cake.

Here are the results.

Favourite cake	Frequency
Sponge	7
Fruit	3
Carrot	1
Walnut	5

6 (a) One of the people was picked at random.

Work out the probability that their favourite cake was carrot or walnut.

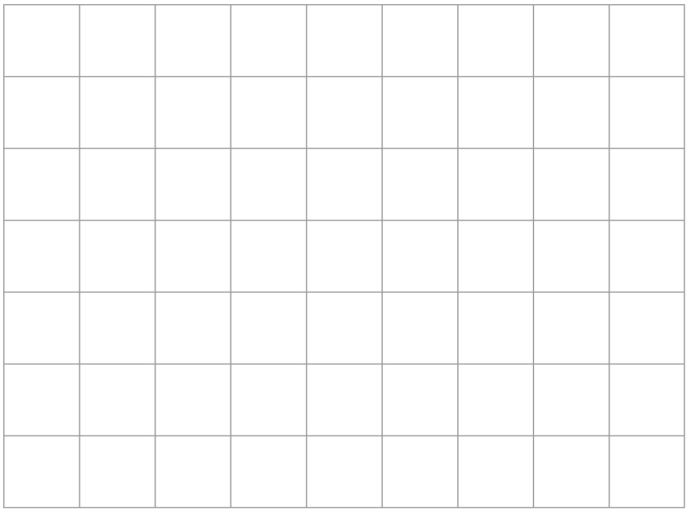
[1 mark]

Answer _____

6 (b) On the grid, draw a bar chart to represent the results.

[3 marks]

Favourite cake



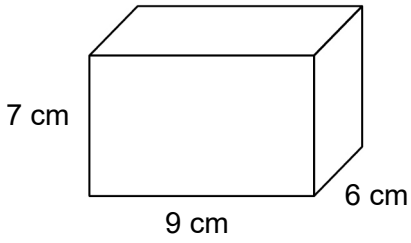
7 8 pies £11.92

Work out the cost of 13 of these pies.

[2 marks]

Answer £ _____

8 Here is a cuboid.



Work out the volume.

[1 mark]

Answer _____ cm^3

7

9 Work out two numbers that

are multiples of 7

and

have a difference of 28

[2 marks]

Answer _____ and _____

10 Convert 20 kilometres into miles.

Use 8 km = 5 miles

[2 marks]

Answer _____ miles

11 Anita spends these amounts in three shops using 50p coins, 20p coins, 10p coins and 5p coins.

Shop A	75p
Shop B	45p
Shop C	£1.35

In each shop she

pays the exact amount

uses the **smallest** possible number of coins.

Work out the total number of each coin she uses.

[3 marks]

Number of 50p coins _____

Number of 20p coins _____

Number of 10p coins _____

Number of 5p coins _____

7

12 A sports team played 42 games.

Half were home games and half were away games.

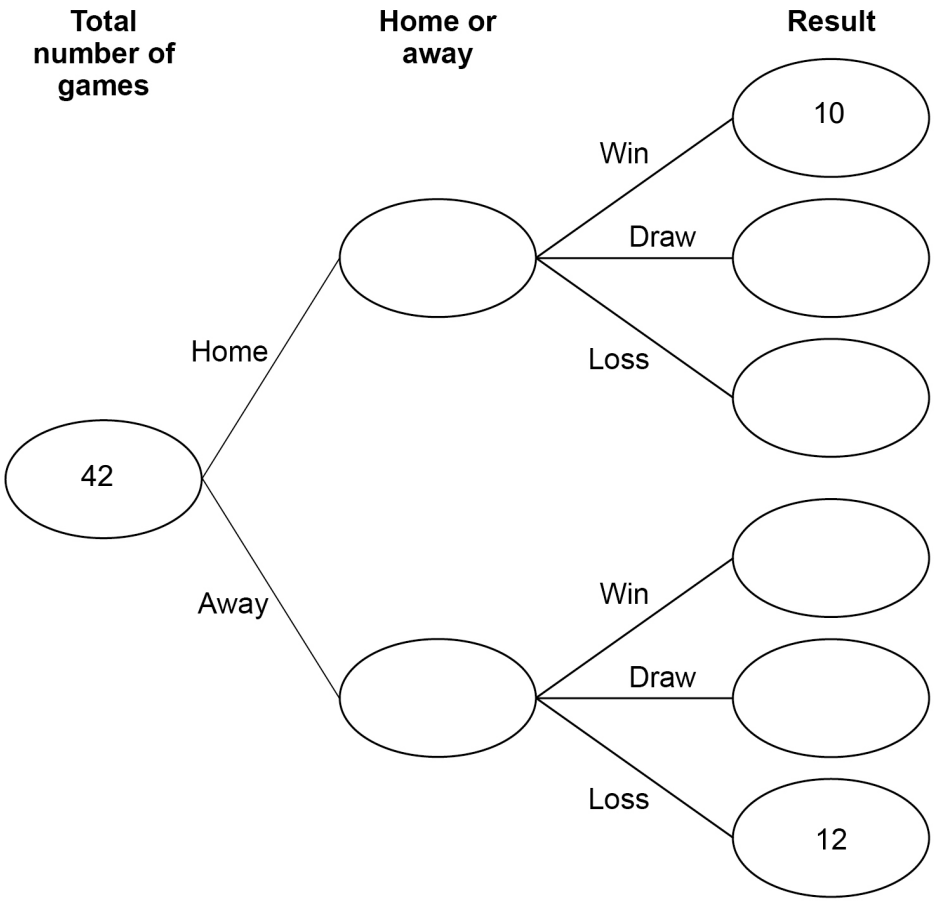
Each game was a win, a draw or a loss.

Of the **home** games, $\frac{1}{3}$ were losses.

Of the **away** games, $\frac{1}{7}$ were wins.

12 (a) Complete the frequency tree.

[4 marks]



12 (b) The team gets

3 points for a win

1 point for a draw

0 points for a loss.

Work out the **total** number of points that the team got.

[2 marks]

Answer _____

13 Factorise fully $4x + 12$

[2 marks]

Answer _____

8

Turn over ►

14 Some sweets are yellow or orange in the ratio yellow : orange = 2 : 7

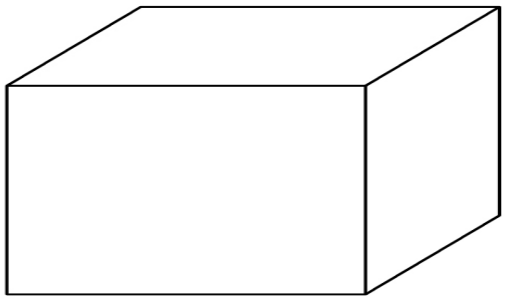
What fraction of the sweets are yellow?

Circle your answer.

[1 mark]

$\frac{5}{7}$ $\frac{2}{7}$ $\frac{2}{9}$ $\frac{7}{9}$

15 Which of these is a correct statement about a cuboid?



Tick **one** box.

[1 mark]

☐ It has 4 edges.

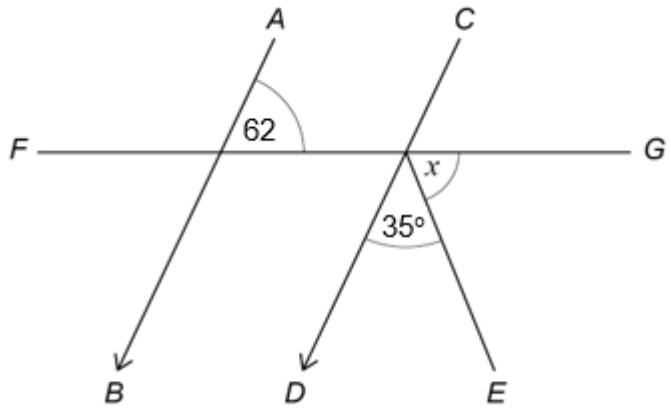
☐ It has 6 faces.

☐ It has 8 planes.

☐ It has 12 vertices.

16 *AB* is parallel to *CD*.

FG is a straight line.



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Work out the size of angle x.

[3 marks]

Answer _____ degrees

5

Turn over ►

17 Clara and Justine have some money in the ratio Clara : Justine = 1 : 2

Clara has £4.20

They pay £6.50 for some food to share.

Clara uses $\frac{1}{3}$ of her money.

Justine pays the rest.

How much money does Justine have left?

[4 marks]

Answer £ _____

18 Solve $5x - 2 = 11$

[2 marks]

$x =$ _____

19 Work out which of these fractions is closer in value to 1

$$\frac{7}{16} \qquad \frac{39}{25}$$

You **must** show your working.

[2 marks]

Answer _____

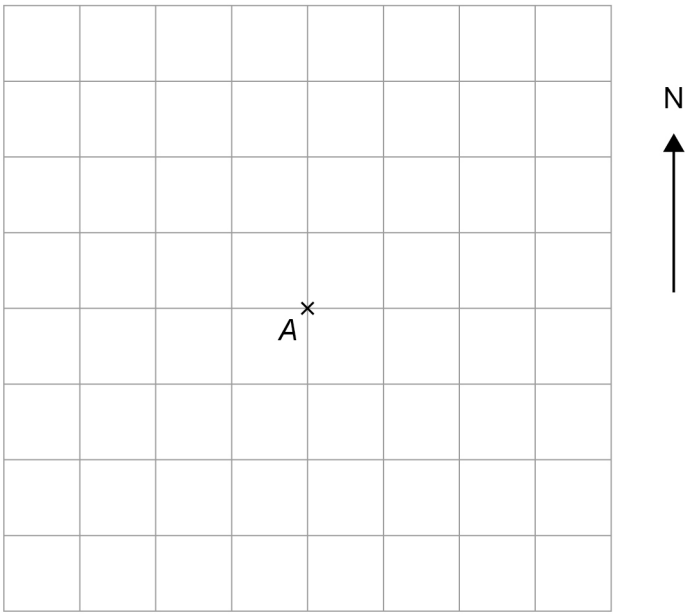
8

20 (a) Point *B* is 600 metres south west of point *A*.

Mark point *B* on the centimetre grid.

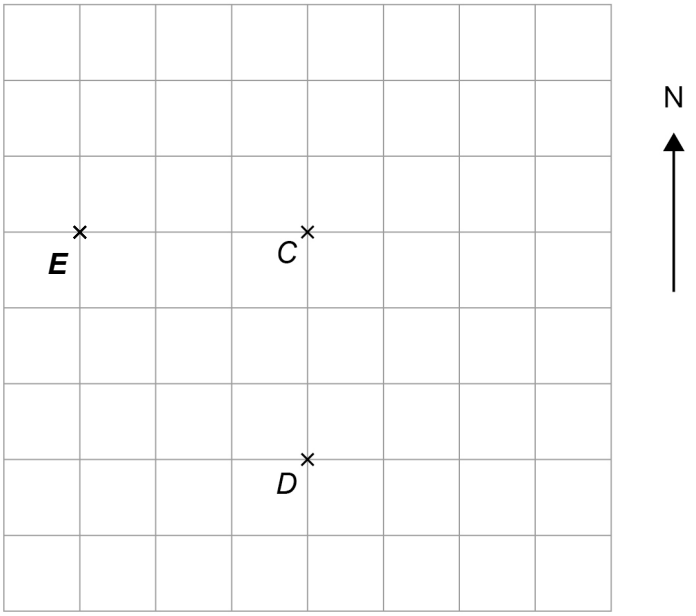
Use a scale of 1 centimetre represents 200 metres.

[2 marks]



Points *C*, *D* and *E* are shown on a different centimetre grid.

Scale: 1 : 1000



20 (b) Work out the bearing of *E* from *C*.

[1 mark]

Answer _____ °

20 (c) Work out the actual distance, in metres, of *C* from *D*.

Use the scale 1 : 1000

[1 mark]

_____

_____

_____

Answer _____ metres

4

Turn over ►

21 Jade works as a decorator.

She is paid £22.80 per hour for the first 35 hours she works each week.

She is paid 15% **more** per hour for each extra hour she works.

One week, Jade was paid £981.54

In total, how many hours did she work that week?

You **must** show your working.

[5 marks]

Answer _____ hours

22 The cube of x is 125

Circle the value of x^2

[1 mark]

625 5 25 250

23 Here is a rule for a sequence.

> After the first two terms, each term is the sum of the previous two terms.

The first five terms are a 19 b 45 c

Work out the values of a, b and c.

[2 marks]

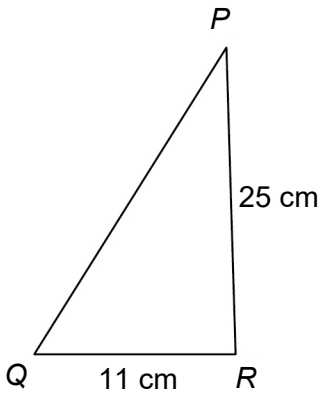
$a =$ _____

$b =$ _____

$c =$ _____

8

24 Here is triangle *PQR*.



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24 (a) Assume that angle $PRQ = 90°$

Work out the length *PQ*.

[3 marks]

Answer _____ cm

24 (b) The actual length *PQ* is less than the answer to part **(a)**.

What does this mean about angle *PRQ*?

Tick **one** box.

[1 mark]

- ☐ It is 90°
- ☐ It is less than 90°
- ☐ It is more than 90°
- ☐ It could be any of the above.

25 Rearrange $s = 7t + 3$ to make t the subject.

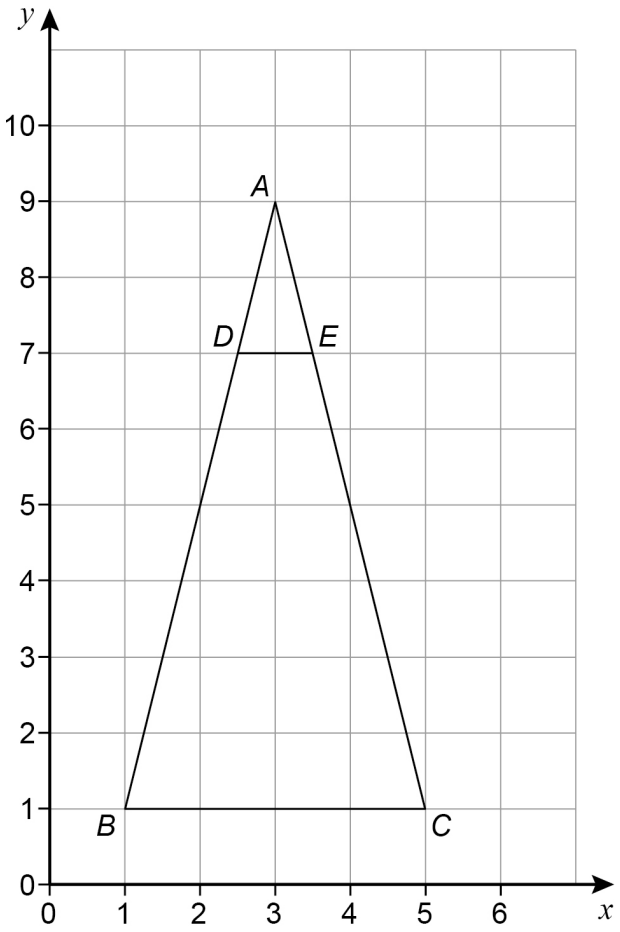
[2 marks]

Answer _____

6

Turn over ►

26



Describe fully the **single** transformation that maps triangle *ADE* to triangle *ABC*.

[3 marks]

27 A ball contains 3000 cm^3 of air.

More air is pumped into the ball at a rate of 500 cm^3 per second.

The ball is full of air when it becomes a sphere with radius 20 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 ball?

You **must** show your working.

[4 marks]

7

Turn over ►

28 a is a negative number.

b is a negative number.

For each statement, tick the correct box.

[4 marks]

	Always true	**Sometimes true**	**Never true**
$a + b$ is positive	☐	☐	☐
$a - b$ is positive	☐	☐	☐
$a^2 + b^2$ is positive	☐	☐	☐
$a^3 \div b^3$ is positive	☐	☐	☐

29 250 trains arrived at a station.

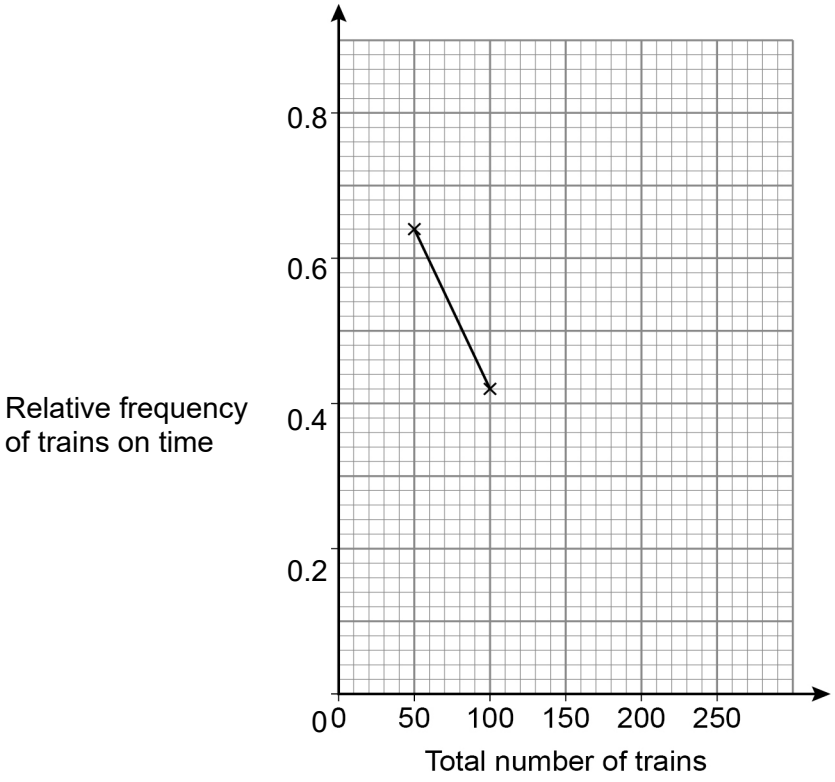
The number of trains that were on time was recorded after every 50 trains.

The table shows some information about the results.

Total number of trains	50	100	150	200	250
Total number of trains on time	32	42	108	160	185
Relative frequency of trains on time	0.64	0.42			

29 (a) Complete the relative frequency graph.

[3 marks]



29 (b) Write down the best estimate of the probability that a train arriving at the station is on time.

[1 mark]

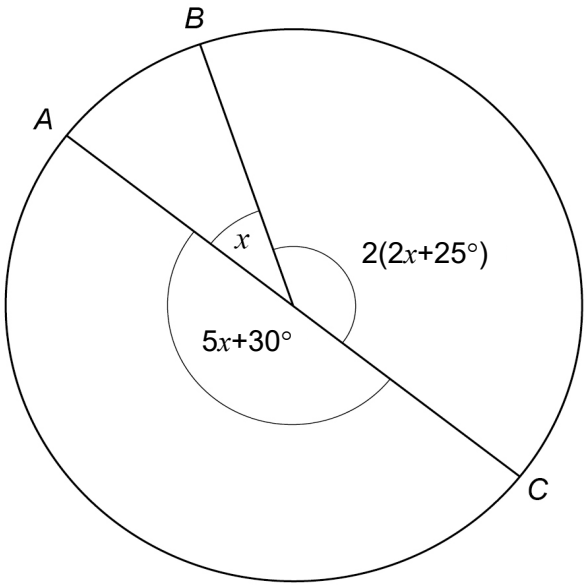
Answer _____

8

30 *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]

31 A straight line

has gradient 5

and

passes through the point (3, 11)

Work out the equation of the line.

Give your answer in the form $y = mx + c$

[3 marks]

Answer _____

END OF QUESTIONS

6

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ANSWER IN THE SPACES PROVIDED

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