

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

I declare this is my own work.

GCSE MATHEMATICS

F

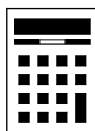
Foundation Tier Paper 2 Calculator

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.

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	

Advice

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



J U N 2 1 8 3 0 0 2 F 0 1

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

Do not write
outside the
box

1 Circle the factor of 32

[1 mark]

16

12

3

64

2 y is 3 more than x .

Circle the correct equation.

[1 mark]

$$y = 3x$$

$$y = x + 3$$

$$y = x - 3$$

$$y = \frac{x}{3}$$

3 Circle the value of 0.15 as a fraction.

[1 mark]

$$\frac{1}{5}$$

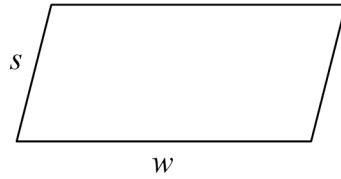
$$\frac{1}{6}$$

$$\frac{3}{20}$$

$$\frac{3}{50}$$



- 4 Here is a parallelogram.



Circle the expression for the **perimeter**.

[1 mark]

$2s + 2w$

$s + w$

sw

$2sw$

- 5 Work out the value of $a^2 - 4a$ when $a = 10$

[2 marks]

Answer _____

Turn over for the next question



- 6** 16 people were asked to name their favourite fruit juice.
Here are the results.

Favourite juice	Frequency
Apple	6
Grapefruit	1
Orange	4
Mango	5

- 6 (a)** One of the people was picked at random.
Work out the probability that their favourite juice was orange **or** mango.

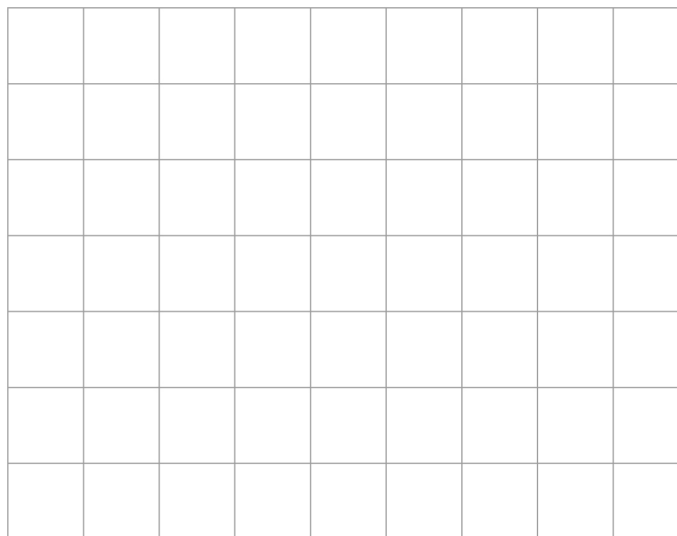
[1 mark]

Answer _____

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

[3 marks]

Favourite juice



7

6 cakes cost £10.74

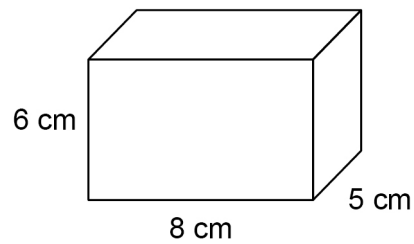
Work out the cost of 11 of these cakes.

[2 marks]

Answer £ _____

8

Here is a cuboid.



Work out the volume.

[1 mark]

Answer _____ cm^3 

9

Work out two numbers that
are multiples of 9
and
have a difference of 54

[2 marks]

Answer _____ and _____

10

Convert 11.2 kilometres into miles.

Use 8 km = 5 miles

[2 marks]

Answer _____ miles



11

Annie spends these amounts in four shops using £20 notes, £10 notes and £5 notes.

Shop A	£65
Shop B	£40
Shop C	£115
Shop D	£75

In each shop she

pays the exact amount

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

Work out the total number of each note she uses.

[3 marks]

Number of £20 notes _____

Number of £10 notes _____

Number of £5 notes _____



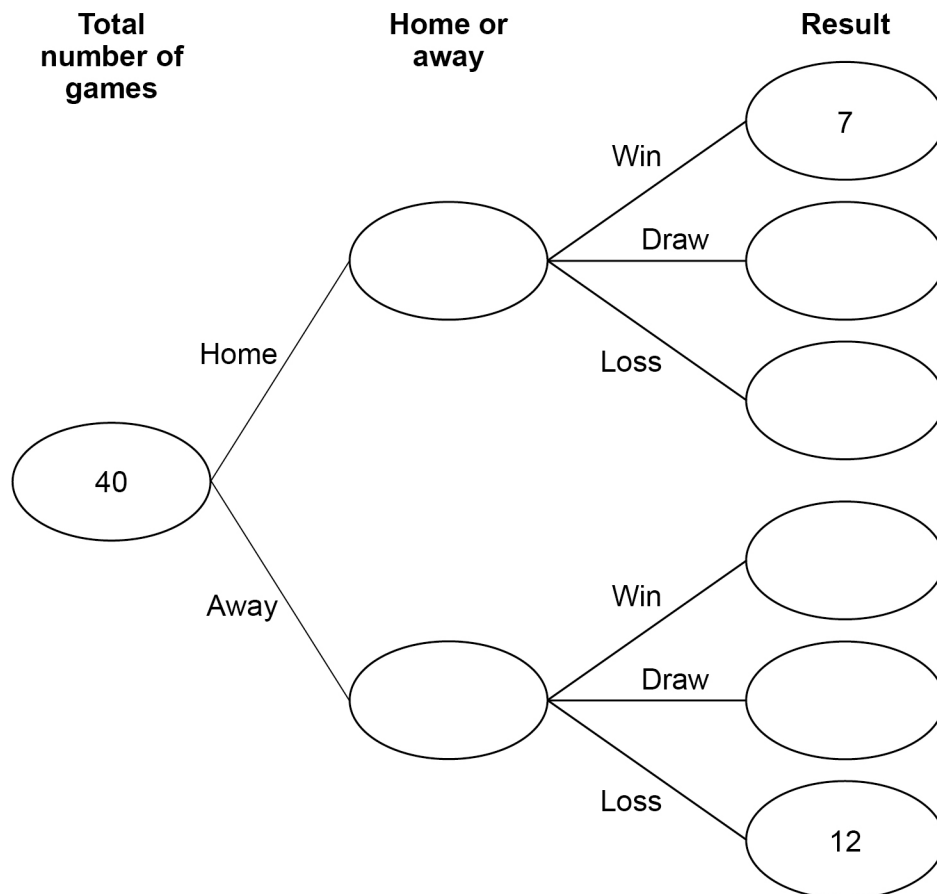
- 12** A sports team played 40 games.
Half were home games and half were away games.
Each game was a win, a draw or a loss.

Of the **home** games, $\frac{2}{5}$ were losses.

Of the **away** games, $\frac{1}{10}$ were wins.

- 12 (a)** Complete the frequency tree.

[4 marks]



- 12 (b)** The team gets
- 6 points for a win
 - 3 points 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 $50x + 100$

[2 marks]

Answer _____



- 14 Some buttons are red or blue in the ratio red : blue = 3 : 5

What fraction of the buttons are red?

Circle your answer.

[1 mark]

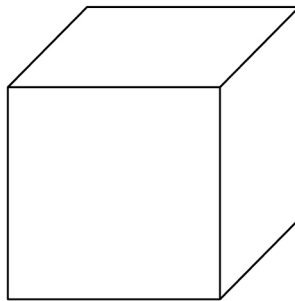
$$\frac{2}{5}$$

$$\frac{3}{5}$$

$$\frac{3}{8}$$

$$\frac{5}{8}$$

- 15 Which of these is a correct statement about a cube?



Tick **one** box.

[1 mark]

☐

It has 12 edges.

☐

It has 12 faces.

☐

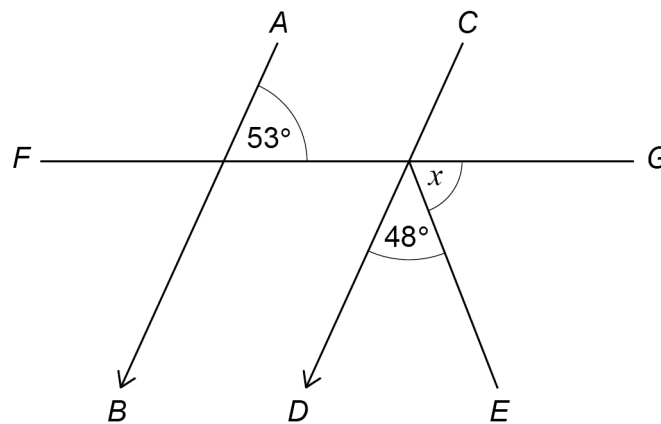
It has 12 planes.

☐

It has 12 vertices.



16

 AB is parallel to CD . FG is a straight line.Not drawn
accuratelyWork out the size of angle x .

[3 marks]

Answer _____ degrees



17 Harry and his sister Jess have some money in the ratio Harry : Jess = 1 : 4

Harry has £7.35

They pay £16.99 for a present for a friend.

Harry uses $\frac{1}{3}$ of his money.

Jess pays the rest.

How much money does Jess have left?

[4 marks]

Answer £ _____



18 Solve $10x - 3 = 21$

[2 marks]

$x =$ _____

19 Work out which of these fractions is closer in value to 0.5

$$\frac{5}{16} \qquad \frac{17}{25}$$

You **must** show your working.

[2 marks]

Answer _____

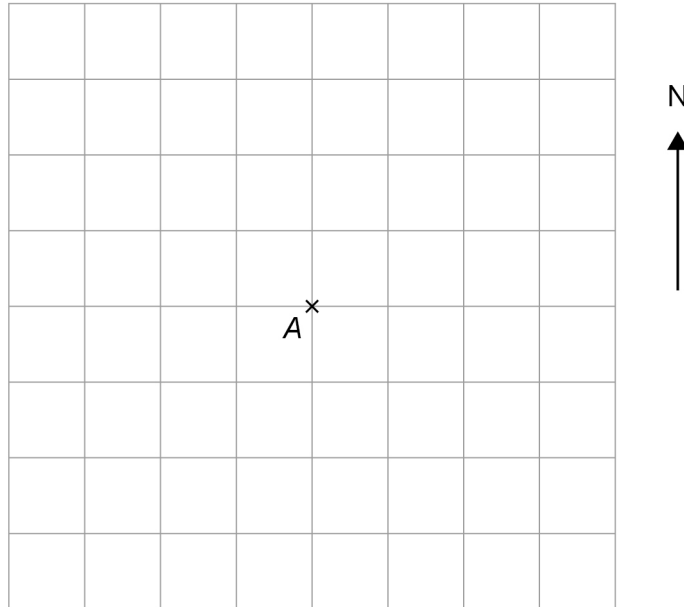


20 (a) Point B is 400 metres north east of point A .

Mark point B on the centimetre grid.

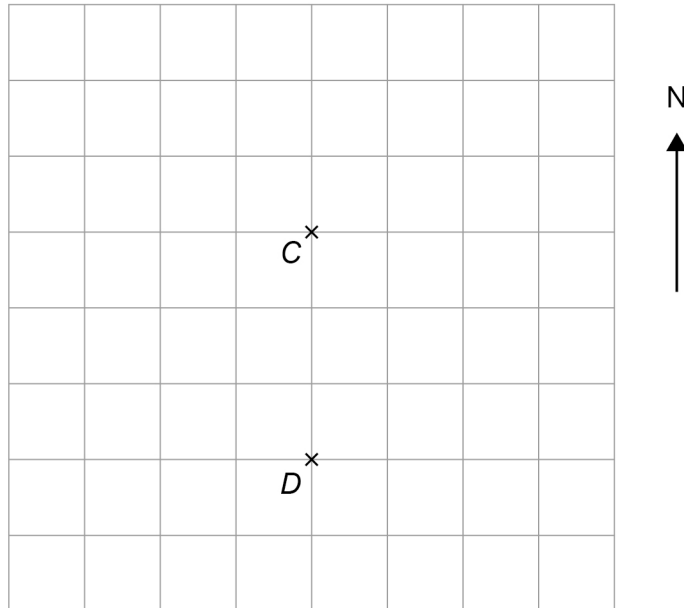
Use a scale of 1 centimetre represents 100 metres.

[2 marks]



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

Scale: 1 : 1000



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

[1 mark]

Answer _____ °

- 20 (c)** Work out the actual distance, in metres, of D from C .
Use the scale 1 : 1000

[1 mark]

Answer _____ metres



Lynn works as a bus driver.

She is paid £10.80 per hour for the first 38 hours she works each week.

She is paid 25% **more** per hour for each extra hour she works.

One week, Lynn was paid £491.40

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

You **must** show your working.

[5 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Answer hours



22 The square root of x is 4

Circle the value of x^2

[1 mark]

256

2

16

8

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 p 23 q 57 r

Work out the values of p , q and r .

[2 marks]

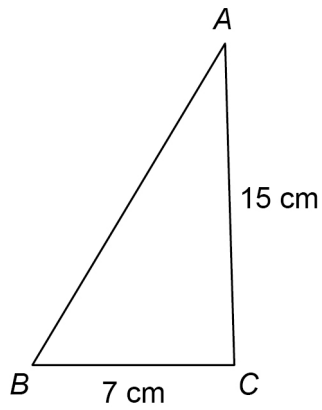
$p =$ _____

$q =$ _____

$r =$ _____



24 Here is triangle ABC .



Not drawn
accurately

24 (a) Assume that angle $ACB = 90^\circ$

Work out the length AB .

[3 marks]

Answer _____ cm



24 (b) The actual length AB is greater than the answer to part (a).

What does this mean about angle ACB ?

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.

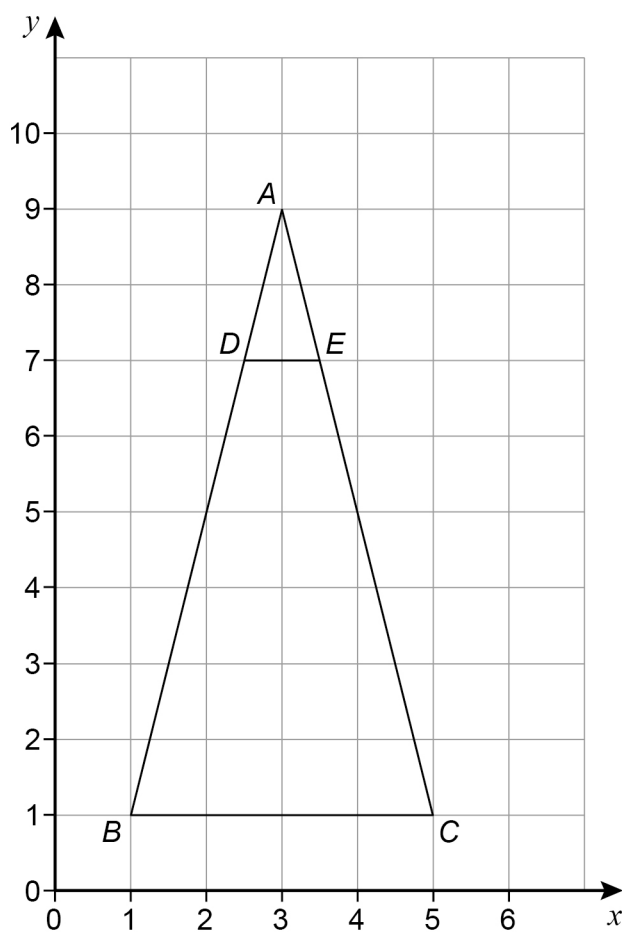
25 Rearrange $g = 3h - 1$ to make h the subject.

[2 marks]

Answer _____



26



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

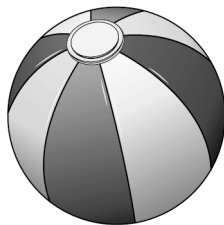
[3 marks]



A ball contains 5000 cm^3 of air.

More air is pumped into the ball at a rate of 160 cm^3 per second.

The ball is full of air when it becomes a sphere with radius 15 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]

[illegible]

28

p is a positive number.

n is a negative number.

For each statement, tick the correct box.

[4 marks]

	Always true	Sometimes true	Never true
$p + n$ is positive	☐	☐	☐
$p - n$ is positive	☐	☐	☐
$p^2 + n^2$ is positive	☐	☐	☐
$p^3 \div n^3$ is positive	☐	☐	☐
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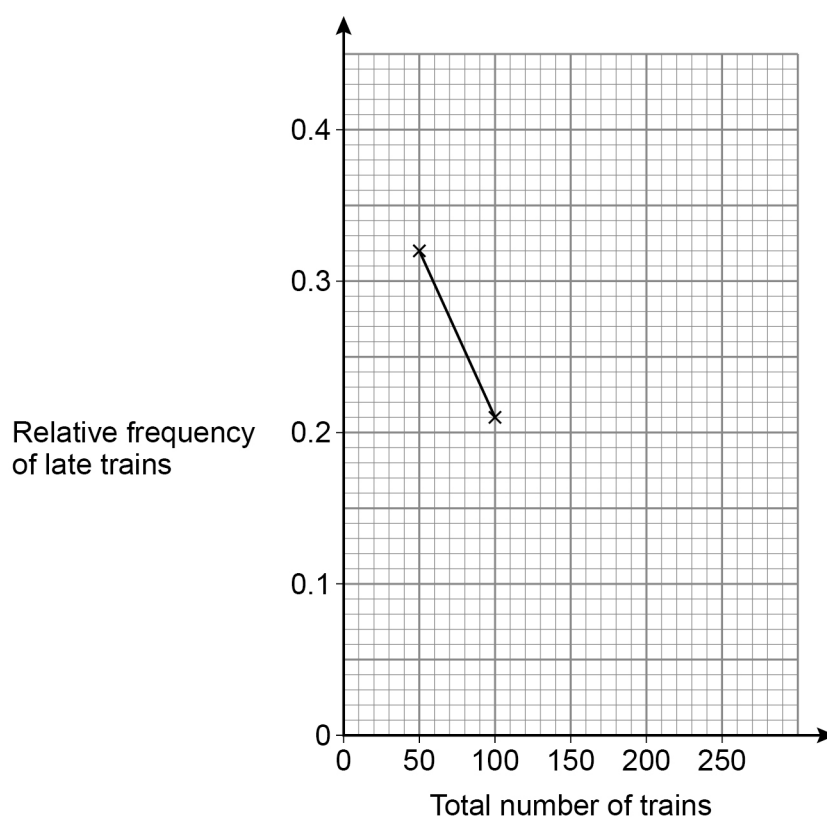


- 29** 250 trains arrived at a station.
The number of trains that were late was recorded after every 50 trains.
The table shows some information about the results.

Total number of trains	50	100	150	200	250
Total number of late trains	16	21	36	38	55
Relative frequency of late trains	0.32	0.21			

- 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 late.

[1 mark]

Answer _____



A , B and C are three points on a circle.
The radii from A , B and C are shown.

You **must** show your working.

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31

A straight line

has gradient 6

and

passes through the point (3, 19)

Work out the equation of the line.

Give your answer in the form $y = mx + c$ **[3 marks]**

Answer _____

END OF QUESTIONS

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outside the
box*

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ANSWER IN THE SPACES PROVIDED**



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



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2 1 6 G 8 3 0 0 / 2 F



2 8