

Please write clearly in	า block capitals.	
Centre number	Candidate number	
Surname		
Forename(s)		
Candidate signature	I declare this is my own work.	_

GCSE MATHEMATICS

Foundation Tier Paper 2 Calculator



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			

Time allowed: 1 hour 30 minutes



Answer all questions in the spaces provided.

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]

$$v = 3x$$

$$y = x + 3$$

$$y = x - 3$$

$$y = 3x \qquad \qquad y = x + 3 \qquad \qquad y = x - 3 \qquad \qquad y = \frac{x}{3}$$

3 Circle the value of 0.15 as a fraction.

[1 mark]

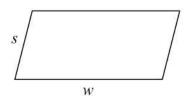
$$\frac{1}{5}$$

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

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

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

Here is a parallelogram. 4



Circle the expression for the **perimeter**.

[1 mark]

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

$$s+w$$

Work out the value of $a^2 - 4a$ when a = 105

[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





6 cakes cost £10.74	
Work out the cost of 11 of these cakes.	[2 marks]
Answer £	
Here is a cuboid.	
6 cm 8 cm	5 cm
Work out the volume.	[1 mark]
Answer	cm ³

7



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	
	Answer miles	



11	Annie spends these amounts in four sh	ops 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 u	[3 marks]	
Number of £20 notes _		
Number of £10 notes _		
Number of £5 notes _		

1



A sports team played 40 games.

Half were home games and half were away games.

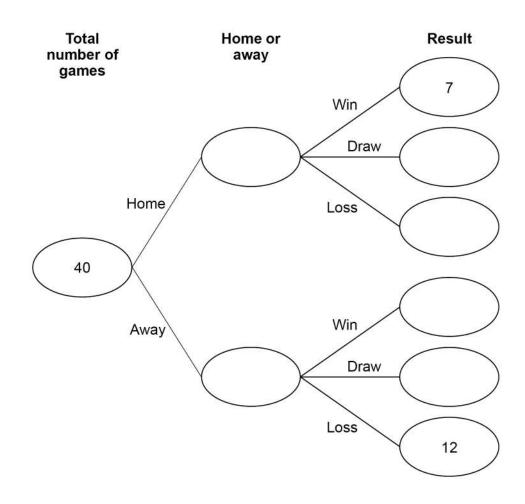
Each game was a win, a draw or a loss.

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					

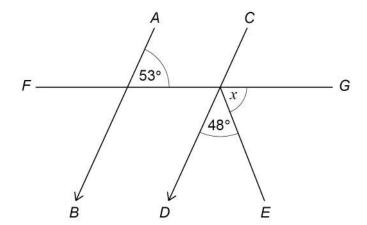


14	Some buttons are re	ed or blue in the ratio	red : blue = 3 : 5		
	What fraction of the	buttons are red?			
	Circle your answer.				
					[1 mark]
	2	2	2	_	
	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{3}{8}$	$\frac{5}{8}$	
	· ·	· ·	· ·	J	
15	Which of these is a	correct statement about	t a cube?		
			1		
	Tick one box.		_		
	TICK OHE DOX.				[1 mark]
		It has 12 edges.			
		It has 12 faces.			
		It has 12 planes.			
		It has 12 vertices.			



AB is parallel to CD.

FG is a straight line.



Not drawn accurately

Work out the size of angle x.

Answer

[3 marks]

5

Turn over ▶

degrees



17	Harry and his sister Jess have some money in the ratio Harry : Jes Harry has £7.35	ss = 1 : 4	
	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 mar	ks]
			_
			_
	Answer £		



18	Solve $10x - 3 = 21$			[2 marks]
19	Work out which of these fraction			
	You must show your working.	5 16	17 25	
				[2 marks]
	Answer			

8

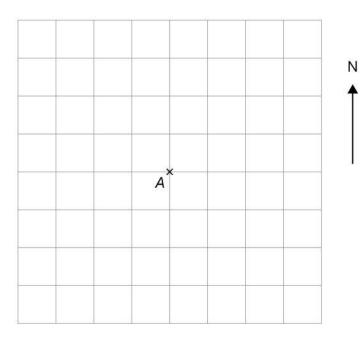


20 (a) Point *B* is 400 metres north east of point *A*.

Mark point B on the centimetre grid.

Use a scale of 1 centimetre represents 100 metres.

[2 marks]

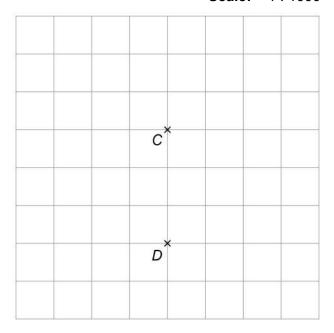




Points C and D are shown on a different centimetre grid.

Scale: 1:1000

N



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

4



Ly	ynn 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.	
Oı	ne week, Lynn was paid £491.40	
In	total, how many hours did she work that week?	
Yo	ou must show your working. [5 marks]
_		
_		
_		
_		
_		
_		
_		
	Answer hours	



Do not write
outside the
L

The square roof	0	f 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]

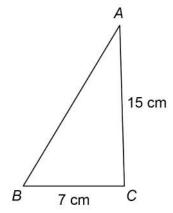
n =				
	p =			

$$q =$$

$$r =$$



24 Here is triangle ABC.



Not drawn accurately

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

VVork	out	the	length	AB.

[3 marks]

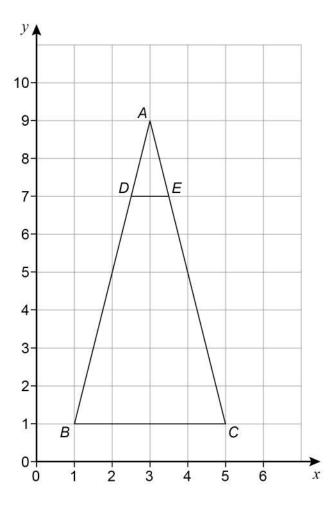
Answer _____ cm



24 (b)	The actual length <i>AB</i> is greater than the answer to part (a).		Do not write outside the box
, ,	What does this mean about angle <i>ACB</i> ?		
	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		
			<u> </u>



26



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



[3 marks]

A ball contains 5000 cm³ of air. **27**

> More air is pumped into the ball at a rate of 160 cm³ 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]



28	p is a positive number.			
	n is a negative number.			
	For each statement, tick the c	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			



29 250 trains arrived at a station.

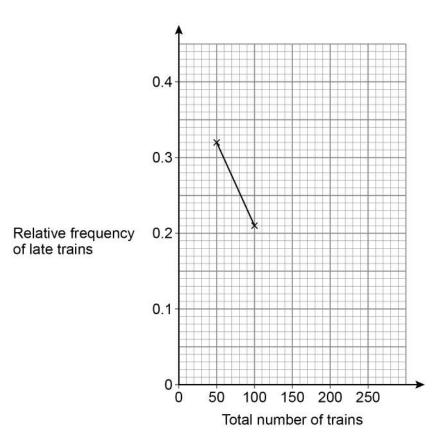
The number of trains that were late was recorded after every 50 trains.

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]

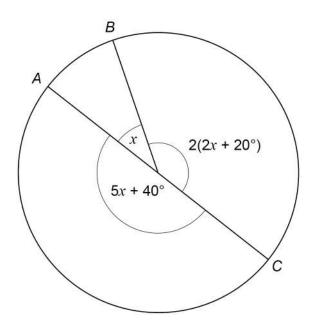
Answer		

8



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 \boldsymbol{must} show your working.

,		[3 marks]

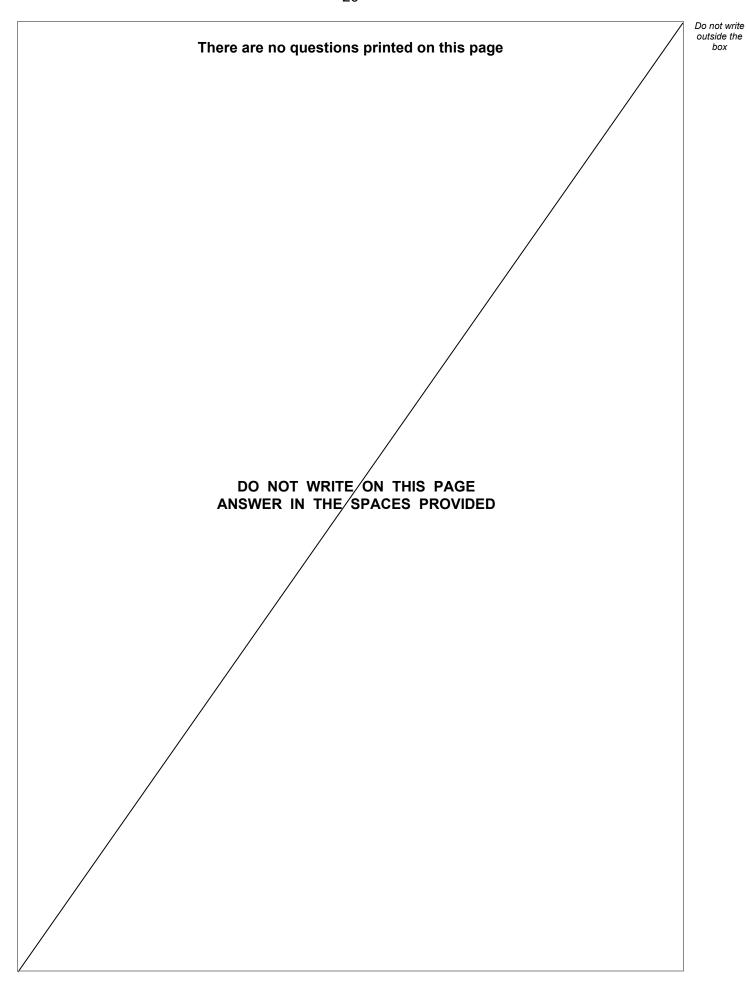


Do not write outside the box 31 A straight line has gradient 6 and passes through the point (3, 19) Work out the equation of the line. Give your answer in the form y = mx + c[3 marks] Answer

END OF QUESTIONS

6







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



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