

A



Surname _____

Other Names _____

Centre Number _____

Candidate Number _____

Candidate Signature _____

GCSE

MATHEMATICS

F

Foundation Tier Paper 3 Calculator

8300/3F

Tuesday 12 June 2018 Morning

Time allowed: 1 hour 30 minutes

At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.

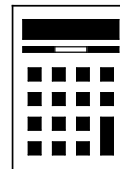
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JUN1883003F01

For this paper you must have:

- **a calculator**
- **mathematical instruments.**



INSTRUCTIONS

- **Use black ink or black ball-point pen. Draw diagrams in pencil.**
- **Answer ALL questions.**
- **You must answer the questions in the spaces provided. Do not write on blank pages.**
- **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.

DO NOT TURN OVER UNTIL TOLD TO DO SO



4

Answer ALL questions in the spaces provided

**1 Circle the value of the digit 7 in 9.17
[1 mark]**

$$\frac{1}{70}$$

$$\frac{1}{7}$$

$$\frac{7}{10}$$

$$\frac{7}{100}$$

2 Solve $3x = 2$

Circle your answer. [1 mark]

$$x = -1$$

$$x = \frac{2}{3}$$

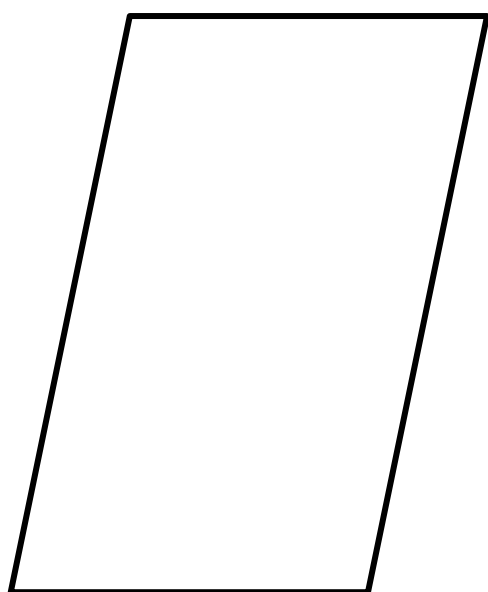
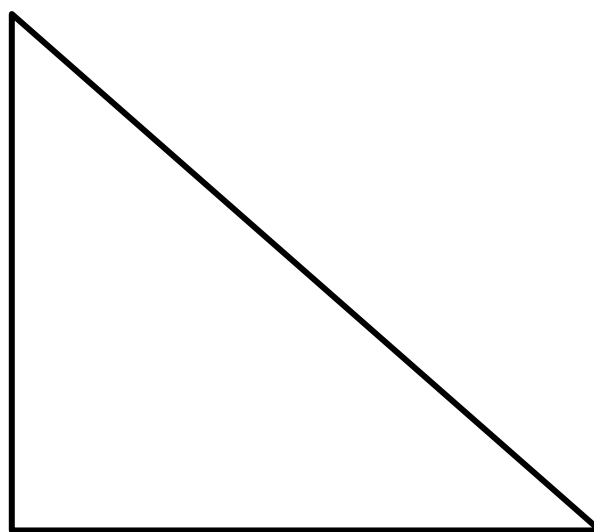
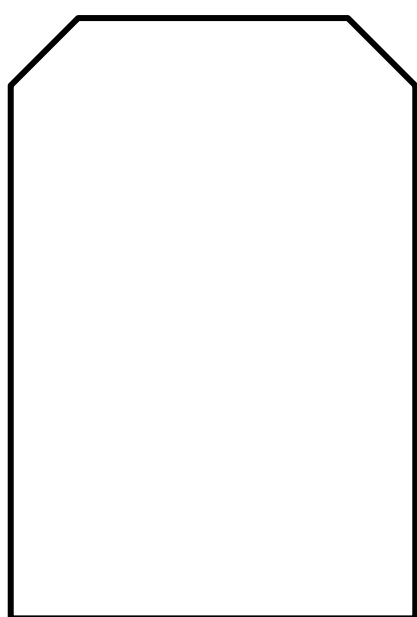
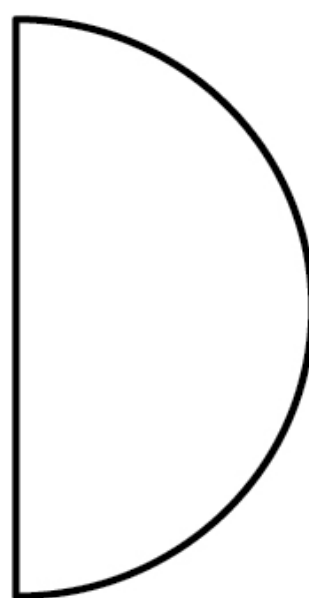
$$x = \frac{3}{2}$$

$$x = 6$$



5

- 3 Which of these shapes has NO lines of symmetry?
Circle the correct letter. [1 mark]**

A**B****C****D****[Turn over]**

6

4 Circle the shortest length. [1 mark]

1200 cm

0.13 km

110 m

140 000 mm

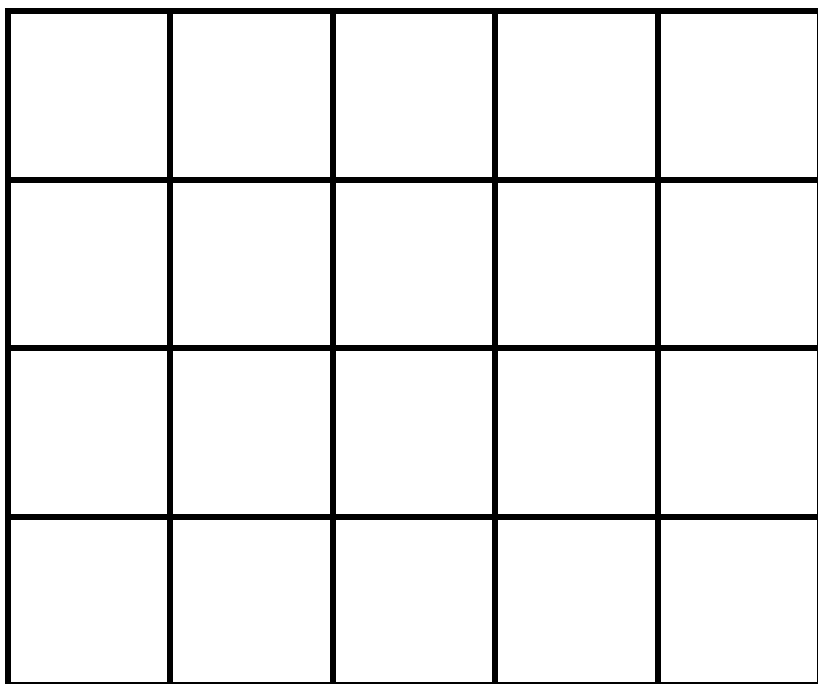
5 (a) Shade $\frac{2}{5}$ of this grid. [1 mark]

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
| | | | | | | | | | |



7

5 (b) Shade 10% of this grid. [1 mark]



[Turn over]

| |
|---|
| |
| 6 |



8

6 Saj wants to go to all 19 home games at a football club.

For each game, a ticket costs £28

A season ticket costs £379

and

gives entry to all 19 home games.

In total, how much does Saj save by buying a season ticket? [3 marks]

Answer £ _____

[Turn over]



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7 Link the algebra to the correct description.

One has been done for you. [3 marks]

$$P = 3x + 4y$$

Identity

$$3x + 6 \equiv 3(x + 2)$$

Equation

$$3x + 2 = 14$$

Formula

$$3x + 2$$

Inequality

$$3x + 2 < 14$$

Expression

[Turn over]

6



12

8 Jim has six banknotes.

The value of each note is £5 or £10 or £20

He CAN make £20 with three notes.

He CAN make £55 with four notes.

He CANNOT make £25 with three notes.

He CANNOT make £25 with four notes.

List the six notes. [2 marks]



£ _____

£ _____

£ _____

£ _____

£ _____

£ _____

[Turn over]



9 A music app has a shuffle play function.

This means that songs are played in a random order WITHOUT REPEAT.

9 (a) Ruth puts 10 songs on shuffle play.

One of them is her favourite song.

Write down the probability that her favourite song plays first. [1 mark]

Answer _____

15

9 (b) Ted puts songs A, B and C on shuffle play.

List all the possible orders of songs A, B and C.

**One has been done for you.
[2 marks]**

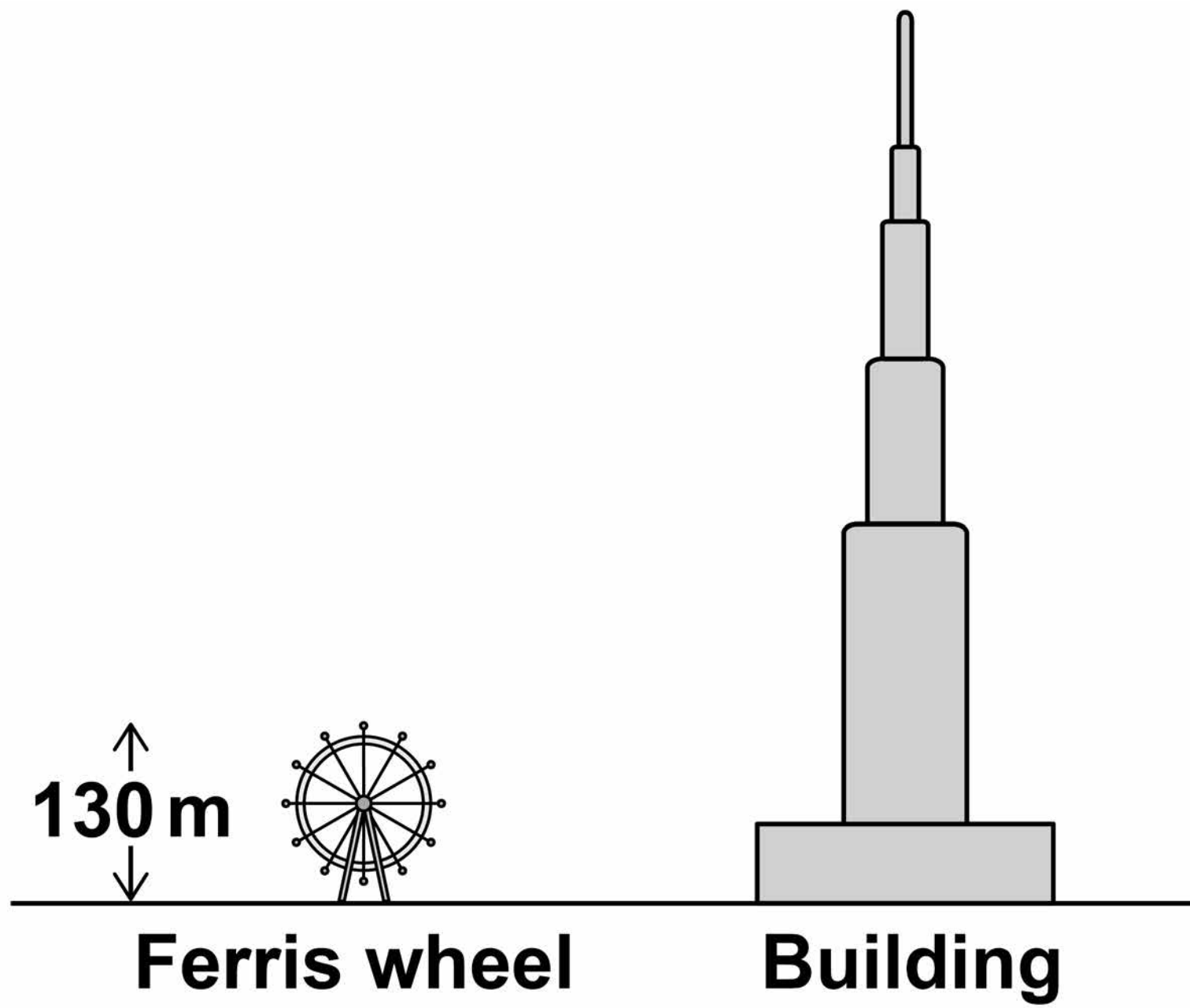
A B C

[Turn over]

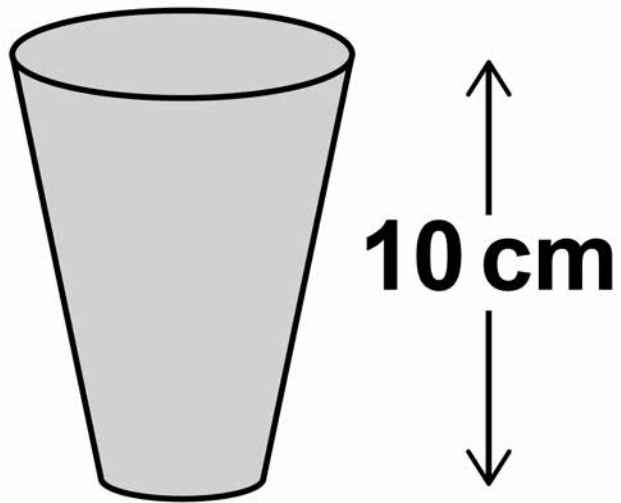
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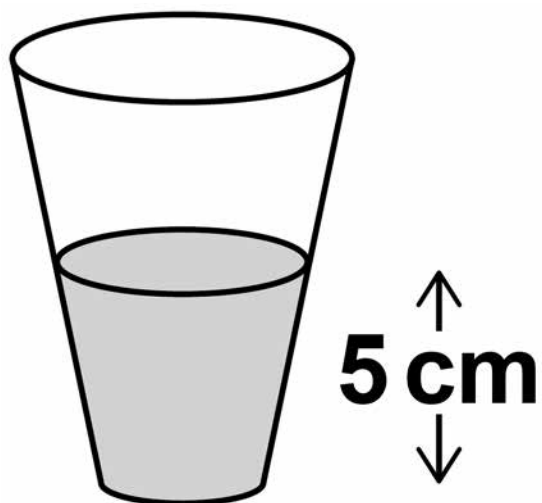
10 Here is a scale drawing.



11 Jo has a full cup of coffee.



She drinks some of it.



She says,

**“Half of the coffee is still in the cup,
because 5 cm is half of 10 cm”**

Is she correct?

Tick a box.

Yes

No

**Give a reason for your answer.
[1 mark]**

[Turn over]

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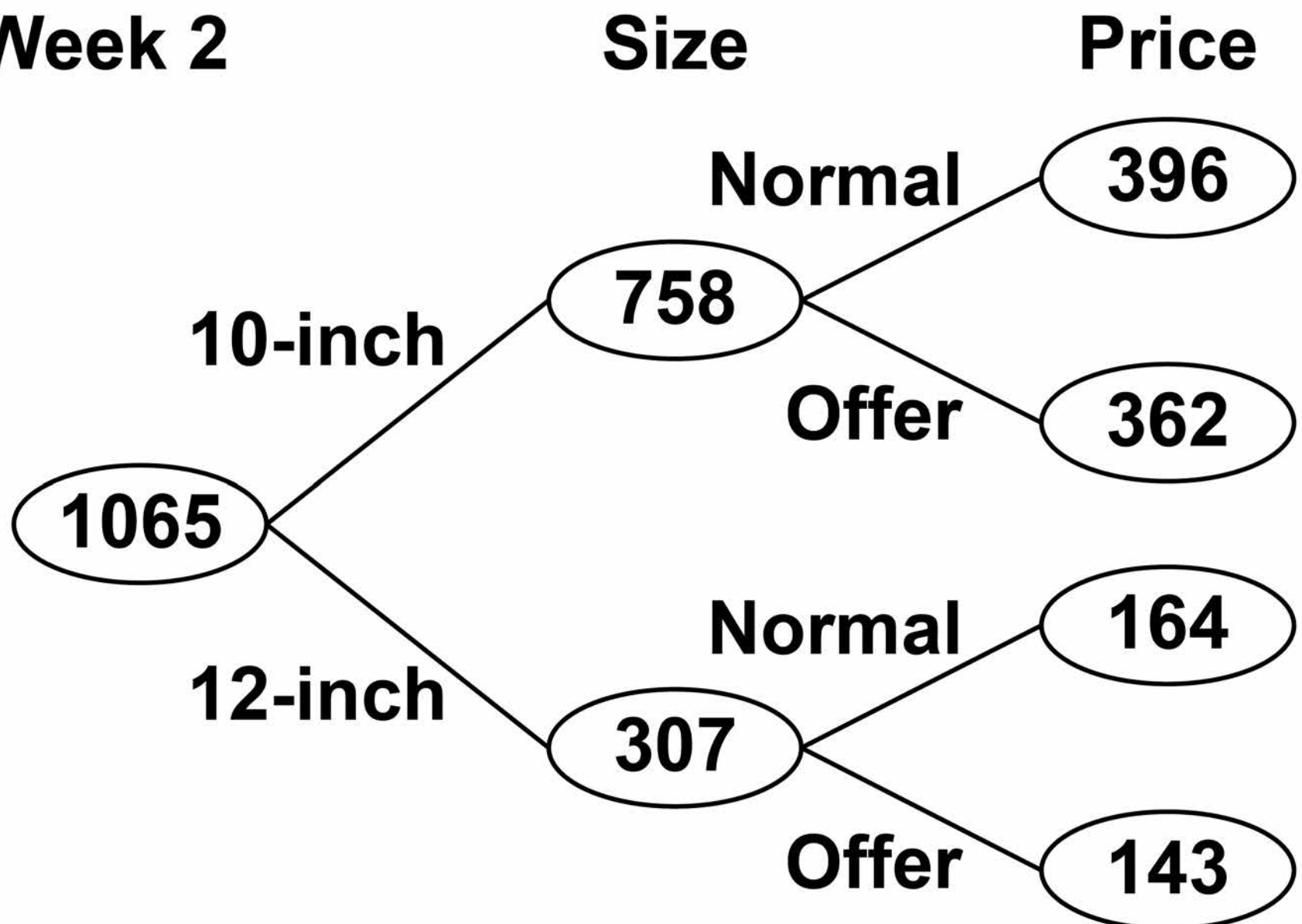
12 A takeaway sells 10-inch pizzas and 12-inch pizzas.

Here is some information about the numbers sold in two weeks.

Week 1

| | |
|----------------|------------|
| 10-inch | 512 |
| 12-inch | 231 |
| Total | 743 |

Week 2



12 (a) In each week a proportion of the pizzas sold were 10-inch.

In which week was this proportion greater?

Show working to support your answer. [2 marks]

Answer _____

[Turn over]



12 (b) The table shows the profit or loss the takeaway makes on each pizza.

| | Normal price | Offer price |
|----------------|---------------------|--------------------|
| 10-inch | £3.74 profit | 51p loss |
| 12-inch | £5.29 profit | 4p loss |

In week 1 the total profit was £1895.55

At the end of week 1 the takeaway spent £175 on adverts.

Was the INCREASE in profit in week 2 more than the cost of the adverts?

**You MUST show your working.
[4 marks]**



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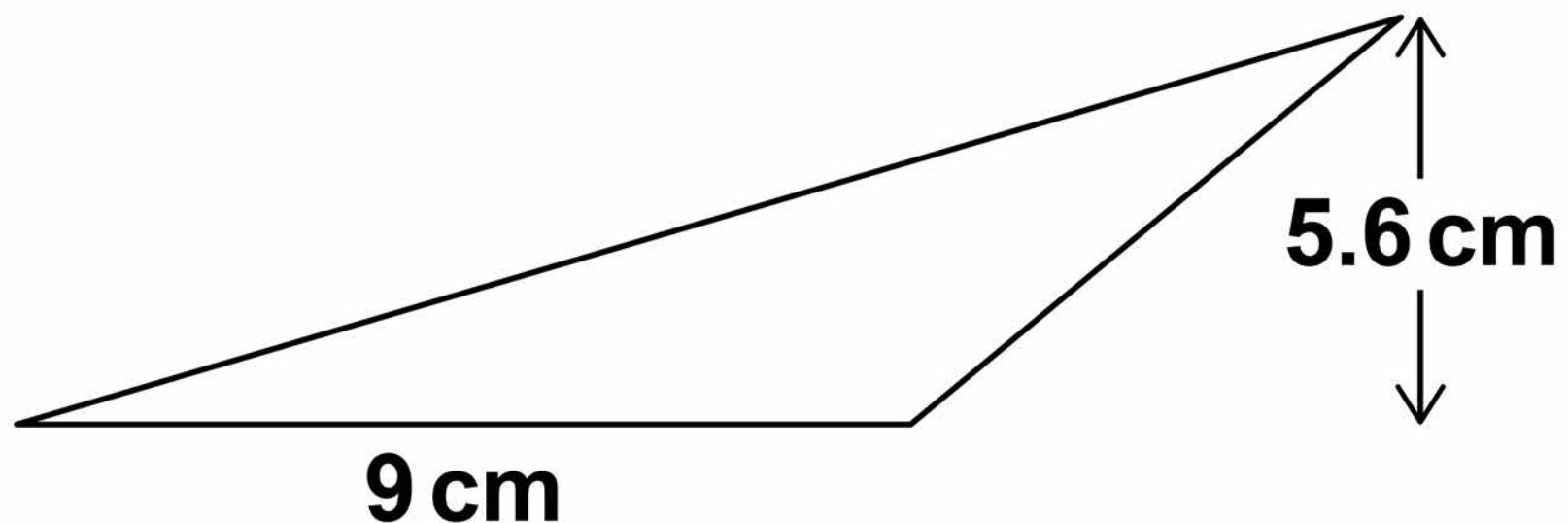
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27

- 14 A triangle has base 9 cm and perpendicular height 5.6 cm

The diagram is not drawn accurately.



Work out the area of the triangle.
[2 marks]

Answer _____ cm^2

[Turn over]



Answer _____

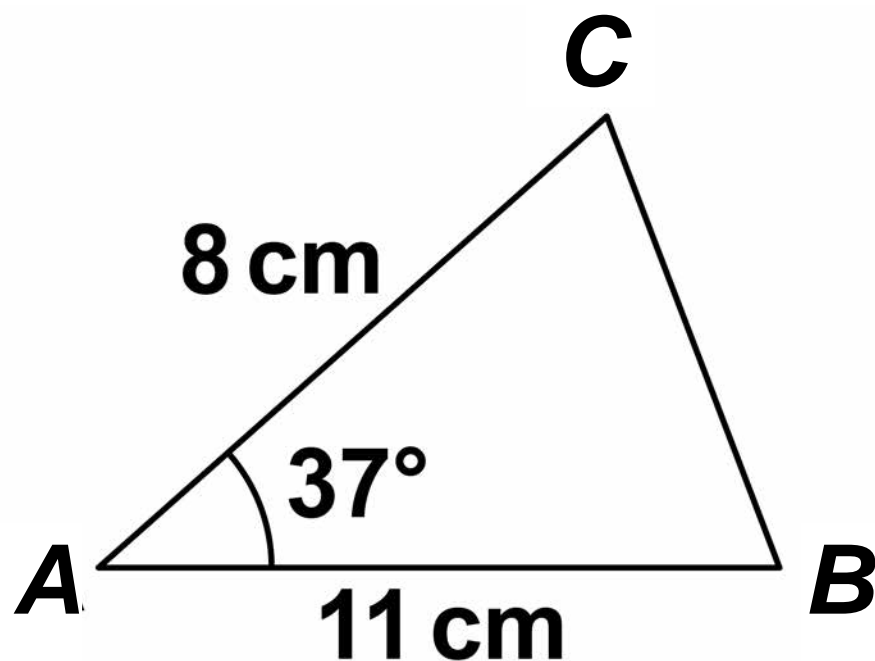
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30

- 16 A sketch of triangle ABC is shown.
The diagram is not drawn accurately.



In the space below, complete an accurate drawing of triangle ABC .
[2 marks]

A _____ B



31

17 Simplify $7x - (3x - 2x)$

Circle your answer. [1 mark]

 $7x - 1$ $2x$ $6x$ $8x$

18 A competition
took place in 1983
takes place every six years.

Circle the year in which it will also
take place. [1 mark]

2083

2036

2049

2023

[Turn over]

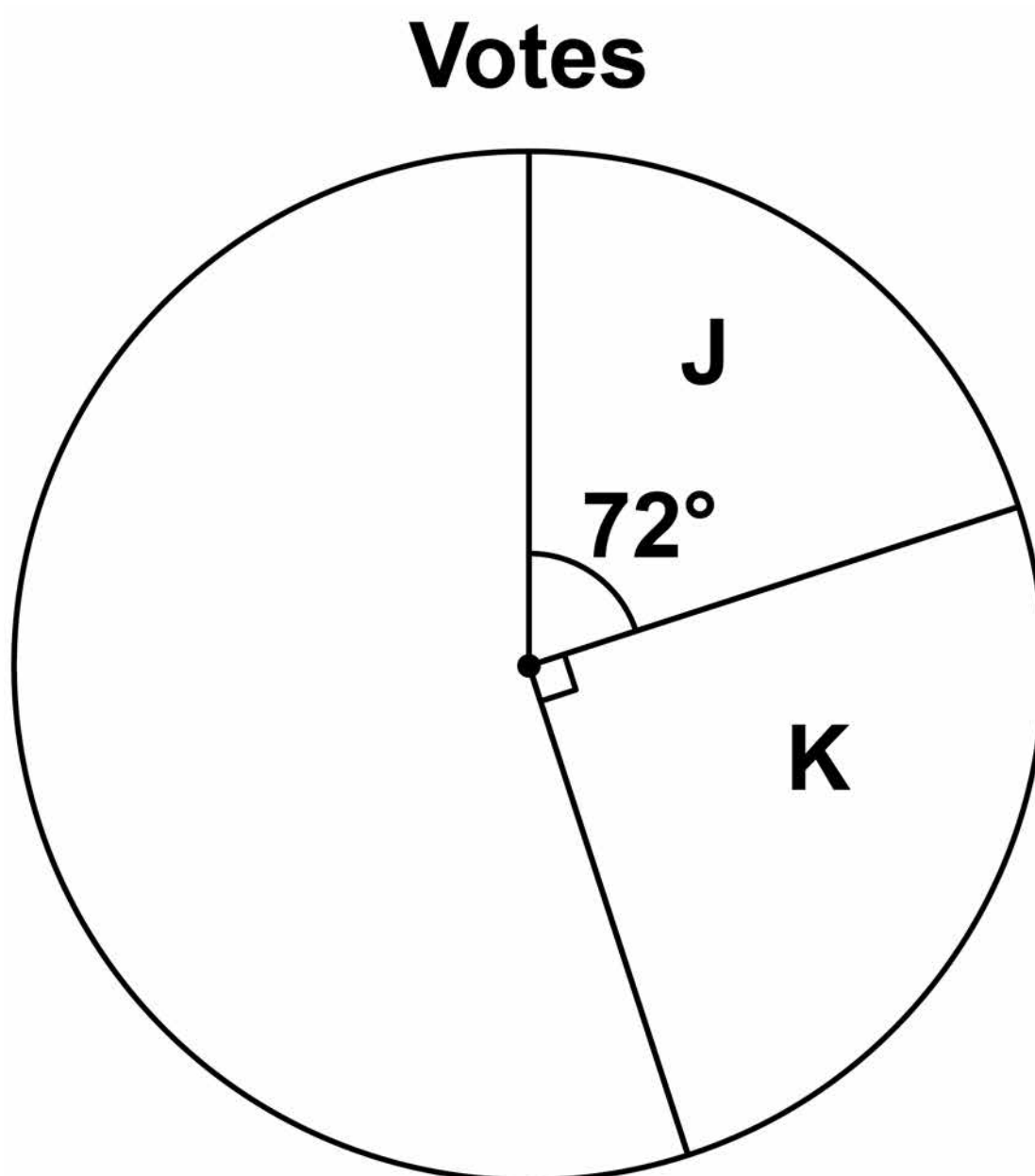
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19 In an election there were four candidates, J, K, L and M.

Fran is drawing a pie chart to show the results.

The sectors for J and K have been drawn.



19 (a) Twice as many people voted for L as voted for M.

Complete the pie chart. [3 marks]

[Turn over]



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**19 (b) Altogether, 16 200 people voted.
How many voted for J? [2 marks]**

Answer _____

[Turn over]



20 The probability that A is the outcome of an experiment is 0.2

Circle the probability that A is NOT the outcome. [1 mark]

0

0.2

0.5

0.8

21 Rearrange $e = 2f$ to make f the subject.

Circle your answer. [1 mark]

$$f = 2e$$

$$f = \frac{2}{e}$$

$$f = e - 2$$

$$f = \frac{e}{2}$$



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[Turn over]



22 Here is a rule for a sequence.

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

22 (a) Here is a sequence that follows this rule.

2 10 6 _____ _____ _____

**Show that the 6th term is the first one that is NOT a whole number.
[3 marks]**



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41

22 (b) A different sequence follows the same rule.

The 1st term is 4

The 3rd term is 9.5

4 _____ 9.5

Work out the 2nd term. [3 marks]

Answer _____

[Turn over]

| |
|---|
| |
| 6 |



42

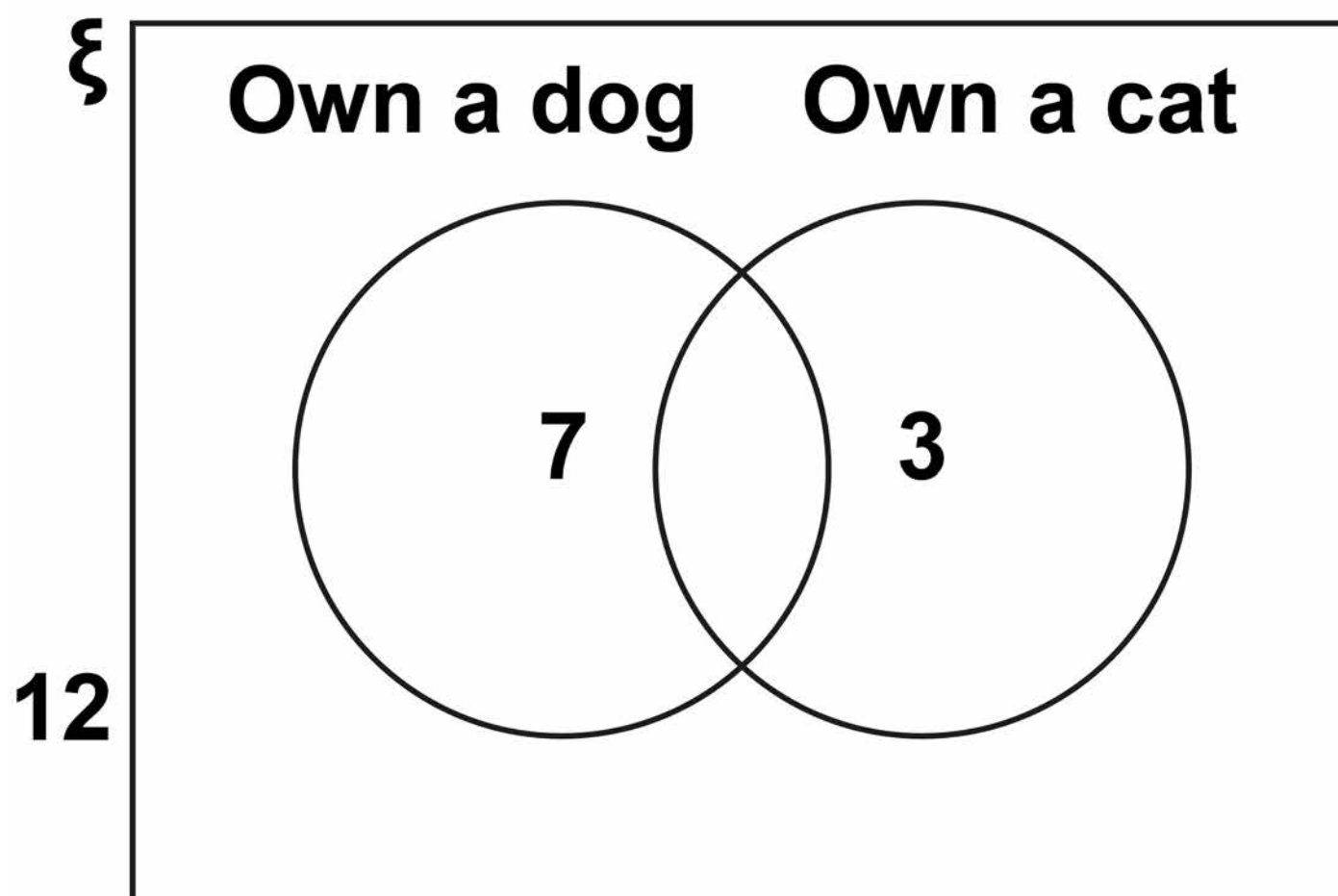
23 In a group of 20 people

7 own a dog

3 own a cat

12 do not own a dog or a cat.

Aidan shows this information on a Venn diagram.



43

Make TWO criticisms of his Venn diagram. [2 marks]

Criticism 1 _____

Criticism 2 _____

[Turn over]



24 a is a common factor of 72 and 120

b is a common multiple of 6 and 9

Work out the highest possible value

of $\frac{a}{b}$ [4 marks]

Answer _____

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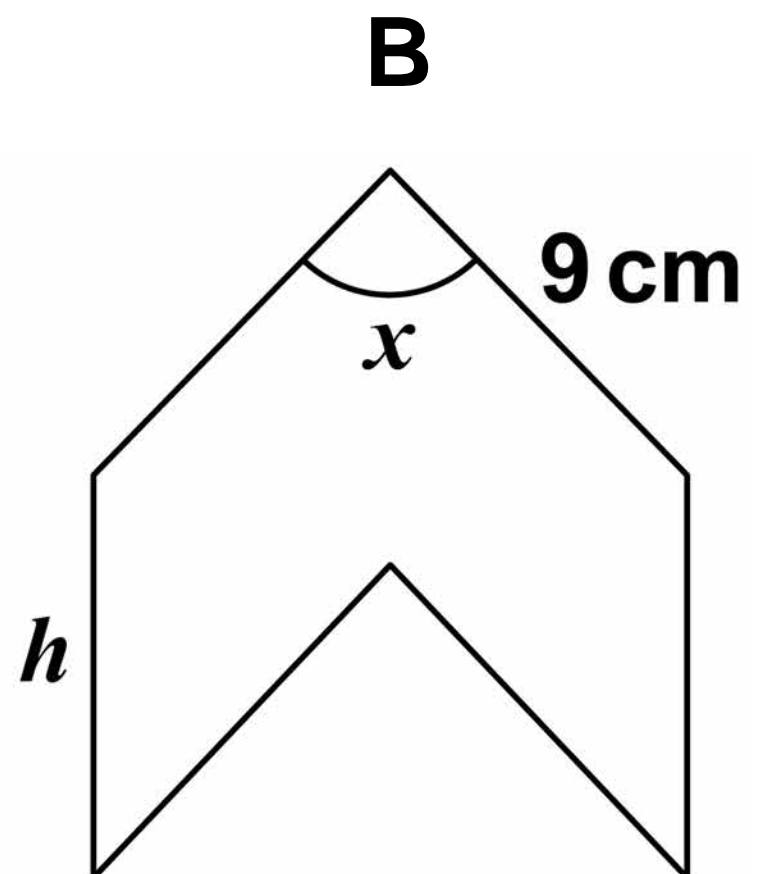
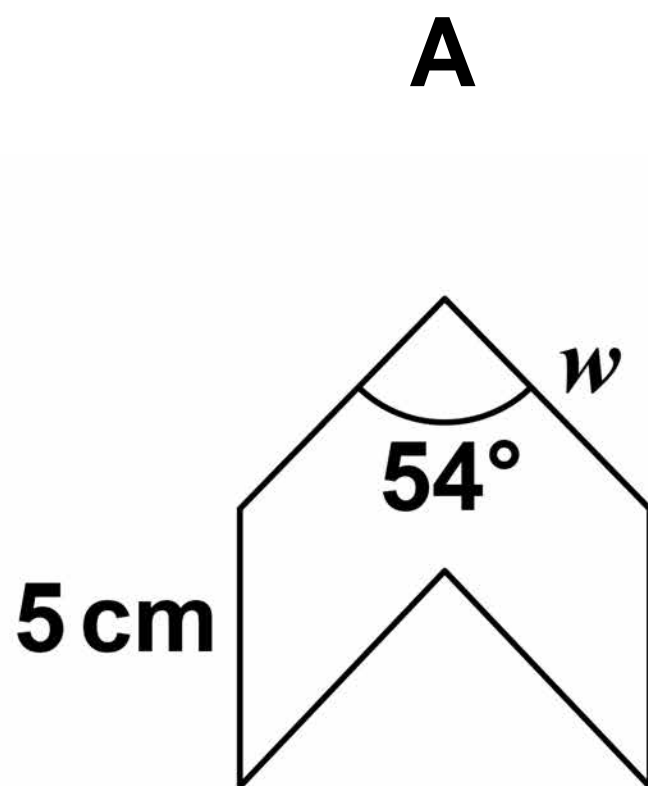
[Turn over]



25 A and B are similar shapes.

B is an enlargement of A with scale factor 1.5

The diagram is not drawn accurately.



47

Work out the values of x , h and w .
[3 marks]

$x =$ _____ **degrees**

$h =$ _____ **cm**

$w =$ _____ **cm**

[Turn over]



26 Investment A

**Save £150 per month for 2 years.
2.5% interest is added to the total
amount saved.**

Investment B

Invest £3500

**Compound interest is added at
3% per year.**

**After 2 years, how much MORE is
investment B worth than
investment A? [4 marks]**



Answer £

| |
|---|
| |
| 7 |

[Turn over]



50

**27 (a) Show that the lines $y = 3x + 7$
and $2y - 6x = 8$ are parallel.**

**Do NOT use a graphical method.
[3 marks]**



51

27 (b) Is the point $(-5, -6)$ above, below or on the line $y = 3x + 7$?

Tick ONE box.

Above

Below

On the line

You **MUST** show your working.

Do **NOT** use a graphical method.
[2 marks]

[Turn over]



52

28 The cost of a ticket increases by 10% to £19.25

Work out the original cost. [3 marks]

Answer £ _____

| |
|---|
| |
| 8 |



53

29 The n th term of a sequence is $12n - 5$

Work out the numbers in the sequence that have two digits and are NOT prime. [3 marks]

Answer _____

[Turn over]



$$30 \quad \mathbf{a} = \begin{pmatrix} 6 \\ -10 \end{pmatrix} \quad \mathbf{b} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$$

$$\mathbf{c} = \begin{pmatrix} -4 \\ 7 \end{pmatrix}$$

30 (a) Work out $\mathbf{a} + \mathbf{b} + \mathbf{c}$ [2 marks]

Answer $\begin{pmatrix} \\ \end{pmatrix}$



55

**30 (b) Show that $a + 2c = kb$,
where k is an integer. [2 marks]**

| |
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| |
| 7 |

END OF QUESTIONS



There are no questions printed on this page

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