



Surname _____

Forename(s) _____

Centre Number _____

Candidate Number _____

Candidate Signature _____

I declare this is my own work.

GCSE MATHEMATICS

F

Foundation Tier Paper 2 Calculator

8300/2F

Thursday 3 November 2022

Morning

Time allowed: 1 hour 30 minutes

At the top of the page, write your surname and forename(s), your centre number, your candidate number and add your signature.

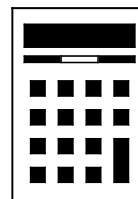
[Turn over]



MATERIALS

For this paper you must have:

- a calculator
- mathematical instruments
- the Formulae Sheet (enclosed).

**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.
- 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.

DO NOT TURN OVER UNTIL TOLD TO DO SO



Answer ALL questions in the spaces provided.

- 1 Circle the number that is a multiple of 25
[1 mark]**

55

65

75

85

- 2 Circle the value of the digit 3 in the number 10.23
[1 mark]**

$\frac{3}{1000}$

$\frac{3}{100}$

$\frac{3}{10}$

3

- 3 Circle the lowest of these temperatures. [1 mark]**

-2.1°C

0.4°C

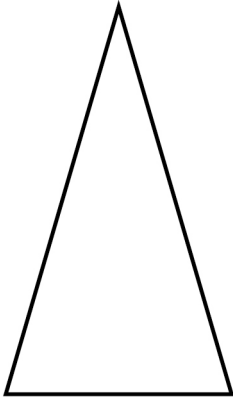
-5°C

1°C



- 4 Circle the letter of the shape that has EXACTLY ONE line of symmetry. [1 mark]

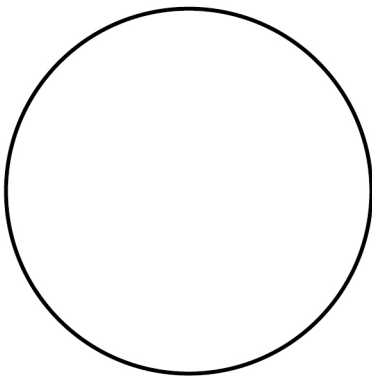
P



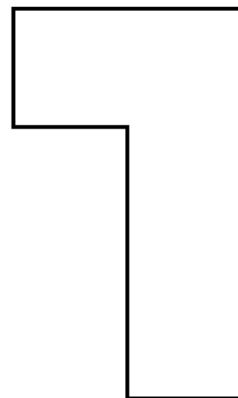
Q



R



S



[Turn over]



5 (a) Simplify fully $d \times d$ [1 mark]

Answer _____

5 (b) Simplify fully $n \div n$ [1 mark]

Answer _____

5 (c) Simplify fully $\frac{1}{3} \times 6t$ [1 mark]

Answer _____



- 6 (a) Write a number in the box to make the calculation correct. [1 mark]

$$16 \div \boxed{} = 0.016$$

- 6 (b) Write a number in the box to make the calculation correct. [1 mark]

$$18.4 + 3.9 + \boxed{} = 27$$

- 6 (c) Write a fraction in the box to make the calculation correct. [1 mark]

$$\frac{1}{2} \times \boxed{} = \frac{1}{8}$$

- 6 (d) Write the SAME number in both boxes to make the calculation correct. [1 mark]

$$\boxed{} \times \boxed{} = 361$$










[Turn over]

7 Three groups of people, A, B and C, have taken driving tests.

7 (a) Here is information about the number of tests taken by the people in A.

GROUP A

KEY:  represents 4 people

One test	  
Two tests	   
Three tests	 

Here is information about the number of tests taken by the people in B.

ONE TEST Half the number in A who have taken one test.

TWO TESTS 4 fewer than the number in A who have taken two tests.

THREE TESTS 10 more than the number in A who have taken three tests.

Complete this pictogram for the people in B.
[3 marks]

GROUP B

KEY:  represents 4 people

One test	
Two tests	
Three tests	

[Turn over]



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7 (b) In group C there are 25 people.

17 of these people have passed a test.

One person is picked at random from C.

Work out the probability that the person has NOT passed a test. [2 marks]

Answer _____

[Turn over]



8 Work out the value of $3r + 4t$

when $r = 13$ and $t = -2$ [2 marks]

Answer

7

9 Hamish has saved 295 coins.

Each one is a 20p coin.

He gives an equal number of 20p coins to each of his 8 grandchildren.

He gives them as many coins as possible.

How much, in £, does he have left? [4 marks]



10 Here are two sets of numbers.

SET A 2 12 13 27

SET B 1 15 16 30

One number from Set A is swapped with one number from Set B.

The total of the numbers in each set is now the same.

Which two numbers are swapped? [2 marks]

Answer _____ and _____



- 11 Rearrange $m = p - 5$ to make p the subject.

Circle your answer. [1 mark]

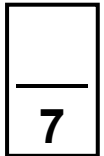
$$p = \frac{m}{5}$$

$$p = m + 5$$

$$p = 5m$$

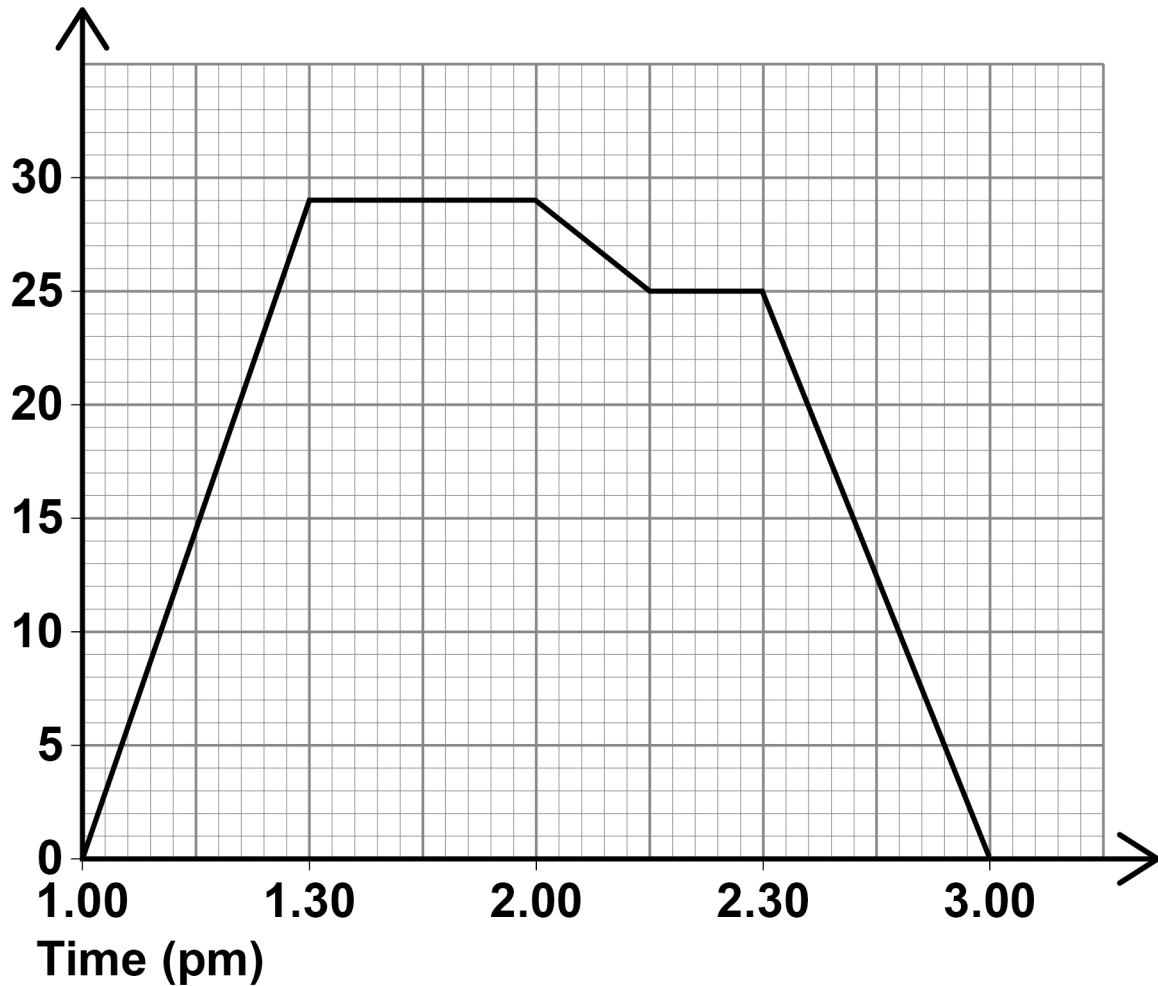
$$p = m - 5$$

[Turn over]



- 12 Here is the distance-time graph for a car between 1 pm and 3 pm

Distance from
home (miles)



- 12 (a) Work out the TOTAL time that the car is NOT moving between 1 pm and 3 pm**

State the units of your answer. [2 marks]

Answer _____

- 12 (b) Work out the TOTAL distance the car travels between 1 pm and 3 pm [2 marks]**

Answer _____ **miles**

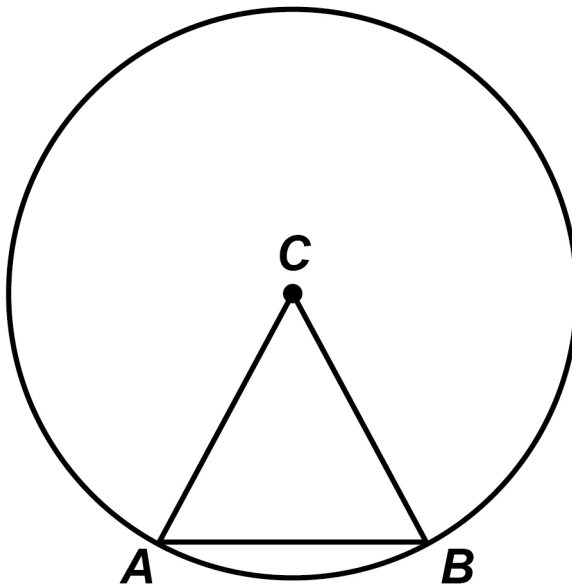
[Turn over]



13 *A* and *B* are points on a circle.

C is the centre of the circle.

The diagram is not drawn accurately.



Tick **ONE** box for each statement. [3 marks]

	Definitely true	Might be true	Cannot be true
Line <i>AB</i> is a tangent to the circle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>AC</i> is an arc of the circle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Triangle <i>ABC</i> is equilateral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[Turn over]

7



- 14 To travel to a festival, a group of people will hire a minibus.**

This formula has all costs in £

Cost per person =

$$\frac{165 + \text{cost of the minibus}}{\text{number of people in the group}}$$

- 14 (a) With 12 people in the group, the cost of the minibus will be £567**

Work out the cost per person. [2 marks]

Answer £ _____



- 14 (b) With 15 people in the group, they will hire a different minibus.

The cost per person will be £50

Work out the cost of this minibus. [3 marks]

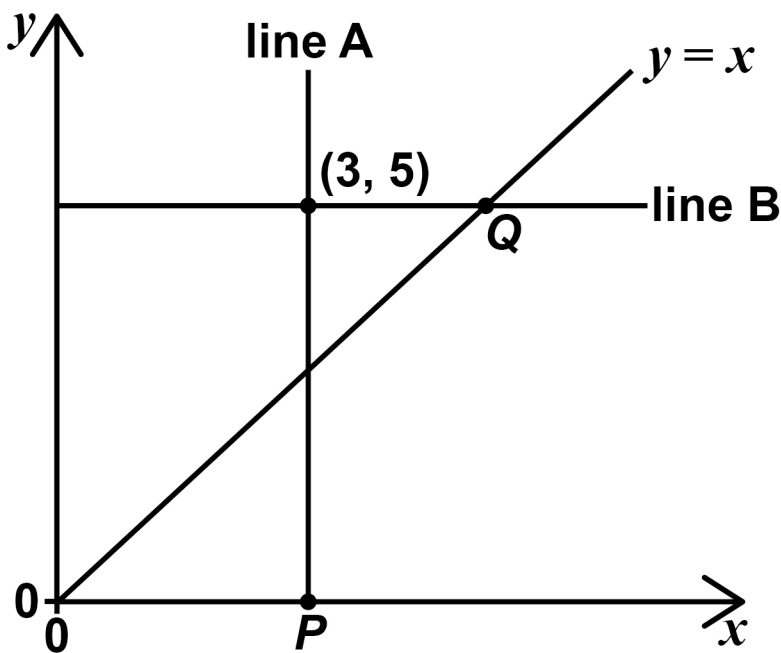
Answer £ _____

[Turn over]



- 15 The sketch shows
the line $y = x$
line A, which is vertical
line B, which is horizontal.

The point $(3, 5)$ is on both line A and line B.



Write down the coordinates of P and Q .
[2 marks]

P (_____ , _____) Q (_____ , _____)



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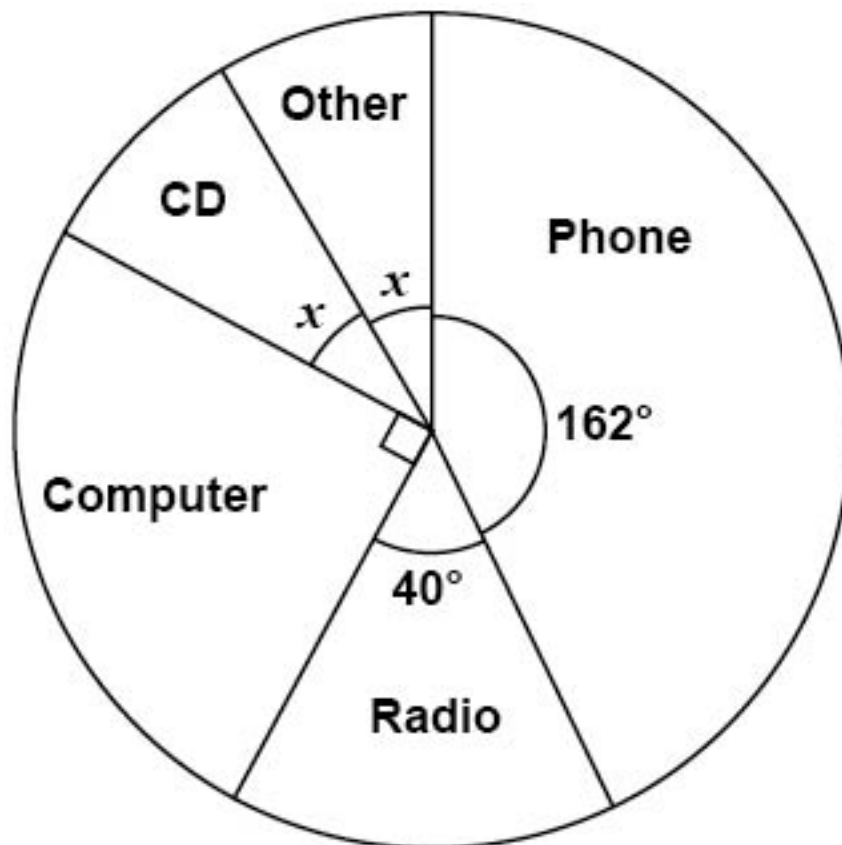
[Turn over]



- 16 Some people were asked for the main way they listen to music.

A pie chart is drawn to represent their answers.

The diagram is not drawn accurately.



- 16 (a) Work out the size of angle x . [2 marks]

Answer _____ degrees

16 (b) 135 people said Computer.

How many people said Phone? [3 marks]

Answer _____

[Turn over]



17 Complete this statement. [1 mark]

$10^8 =$ _____ million

6

18 A football team plays two matches.

18 (a) For the first match, 40 000 tickets are sold.

Assume that each ticket costs £38.50

Work out the total amount of money from ticket sales for this match. [2 marks]

Answer £ _____



- 18 (b) In fact, for the first match,**
some of the tickets cost less than £38.50
and
some of the tickets cost more than £38.50

What does this mean about the total amount of money from ticket sales for this match?

Tick ONE box. [1 mark]

☐

It will be more than the answer to part (a)

☐

It will be the same as the answer to part (a)

☐

It will be less than the answer to part (a)

☐

It is not possible to tell

[Turn over]



- 18 (c) For the second match, the number of tickets sold increases from 40 000 to 55 000

Is the increase in tickets sold **MORE** than 35% ?

You MUST show your working. [3 marks]

19 On a train, there are between 60 and 70 people.

The ratio of adults to children is 5 : 4

Work out the TOTAL number of people on the train. [2 marks]

Answer _____

[Turn over]

8

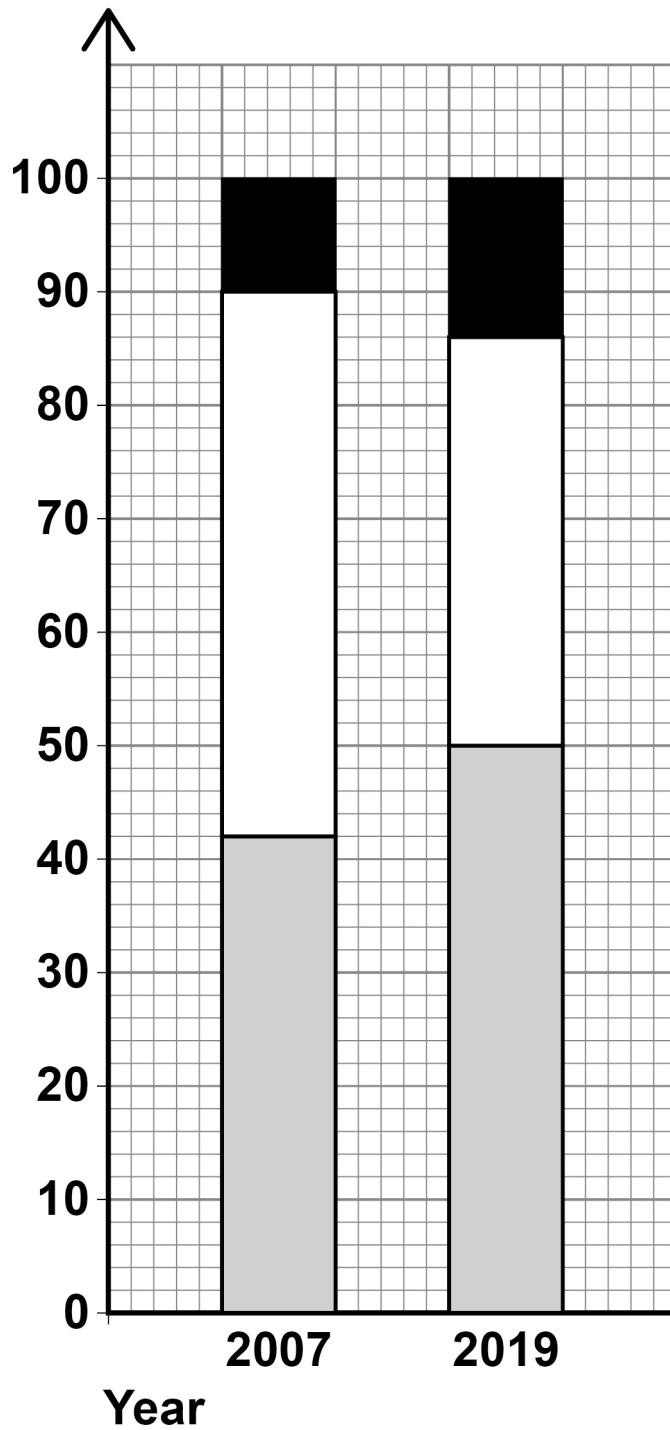


20 The composite bar chart, on the opposite page, shows information about the **PERCENTAGE** of drinks sold by a café in 2007 and 2019

20 (a) In 2007 the café sold a total of 24 000 drinks.

How many MORE teas than coffees were sold?
[2 marks]

Answer _____

KEY:**Coffee****Tea****Other****Percentage of
drinks sold****[Turn over]**

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20 (b) Were more coffees sold at the café in 2019 than in 2007 ?

Tick a box.

☐

Yes

☐

No

☐

Cannot tell

Give a reason for your answer. [1 mark]

[Turn over]



21 (a) k is a whole number between 40 and 50

The cube root of k is 3, to the nearest whole number.

Work out the **LARGEST** possible value of k .
[2 marks]

Answer _____

21 (b) Fay tries to solve $x^2 = 100$

She says,

“The only possible value of x is 10”

Give a reason why she is NOT correct. [1 mark]

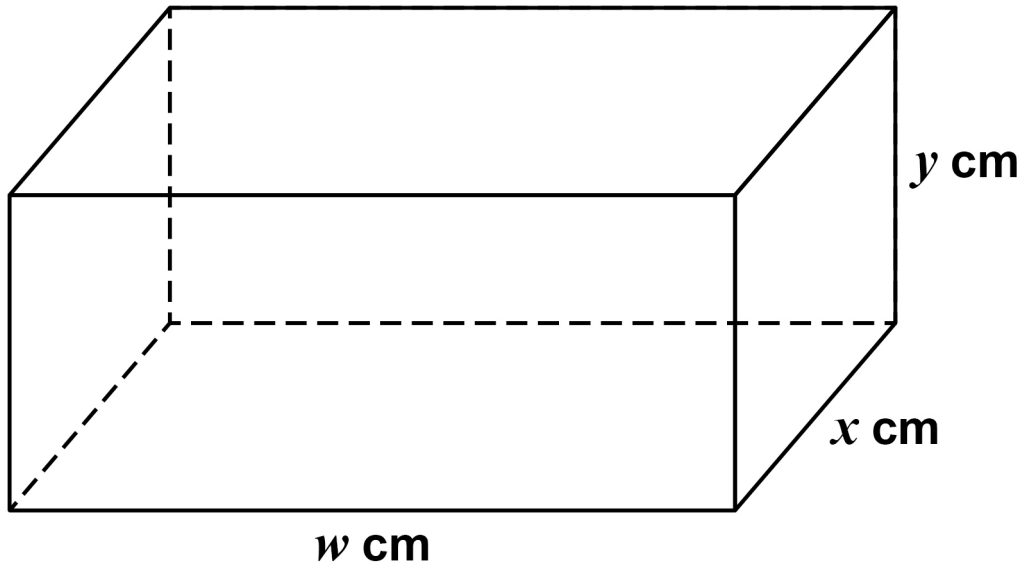
[Turn over]

6



22 (a) Here is a cuboid.

w , x and y are DIFFERENT whole numbers.



The total length of ALL the edges of the cuboid is 80 cm

The volume is GREATER than 200 cm^3

Work out one possible set of values for w , x and y . [2 marks]

$w =$ _____

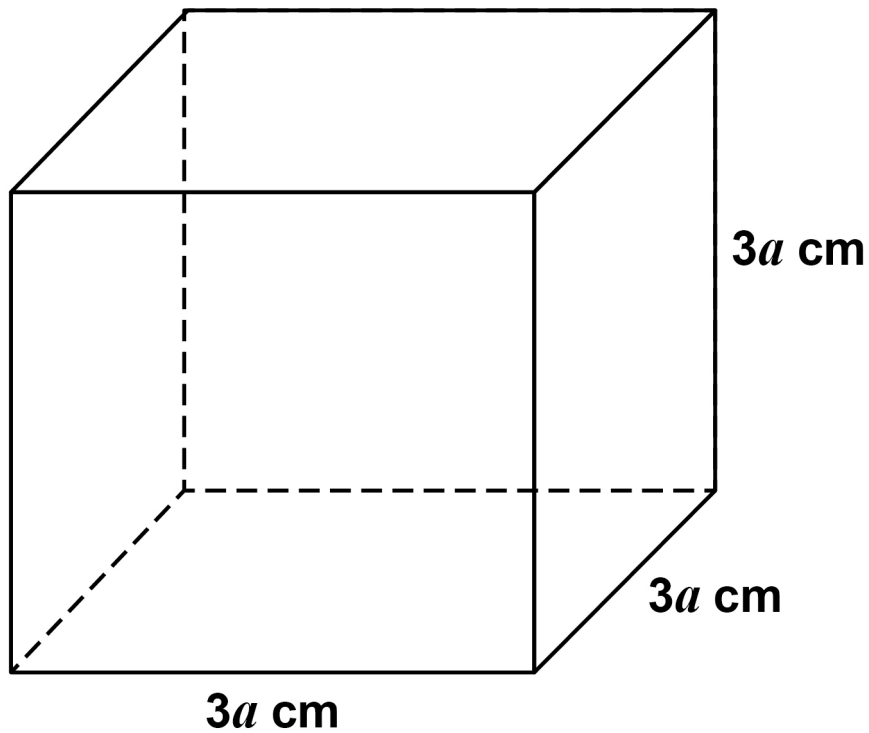
$x =$ _____

$y =$ _____

[Turn over]



22 (b) Here is a solid cube.



Circle the expression for the TOTAL surface area in cm^2 [1 mark]

$36a$

$54a$

$36a^2$

$54a^2$

23 The equation of a line is $y = 3x - 6$

Circle the coordinates of the y -intercept.
[1 mark]

$(0, -6)$

$(-6, 0)$

$(0, 3)$

$(3, 0)$

[Turn over]

4



24 (a) Work out $2.8^4 + \sqrt{158.76}$

Give your answer as a decimal. [2 marks]

Answer _____

24 (b) Work out $\frac{6.09 \times 10^{14}}{4.2 \times 10^9}$

Give your answer in standard form. [2 marks]

Answer _____



25 A tank contains 40 litres of water.

25 (a) Water leaks out of the tank at a rate of 1.2 litres per minute.

The leak is stopped after 20 minutes.

Show that, when the leak is stopped, the tank contains 16 litres of water. [1 mark]

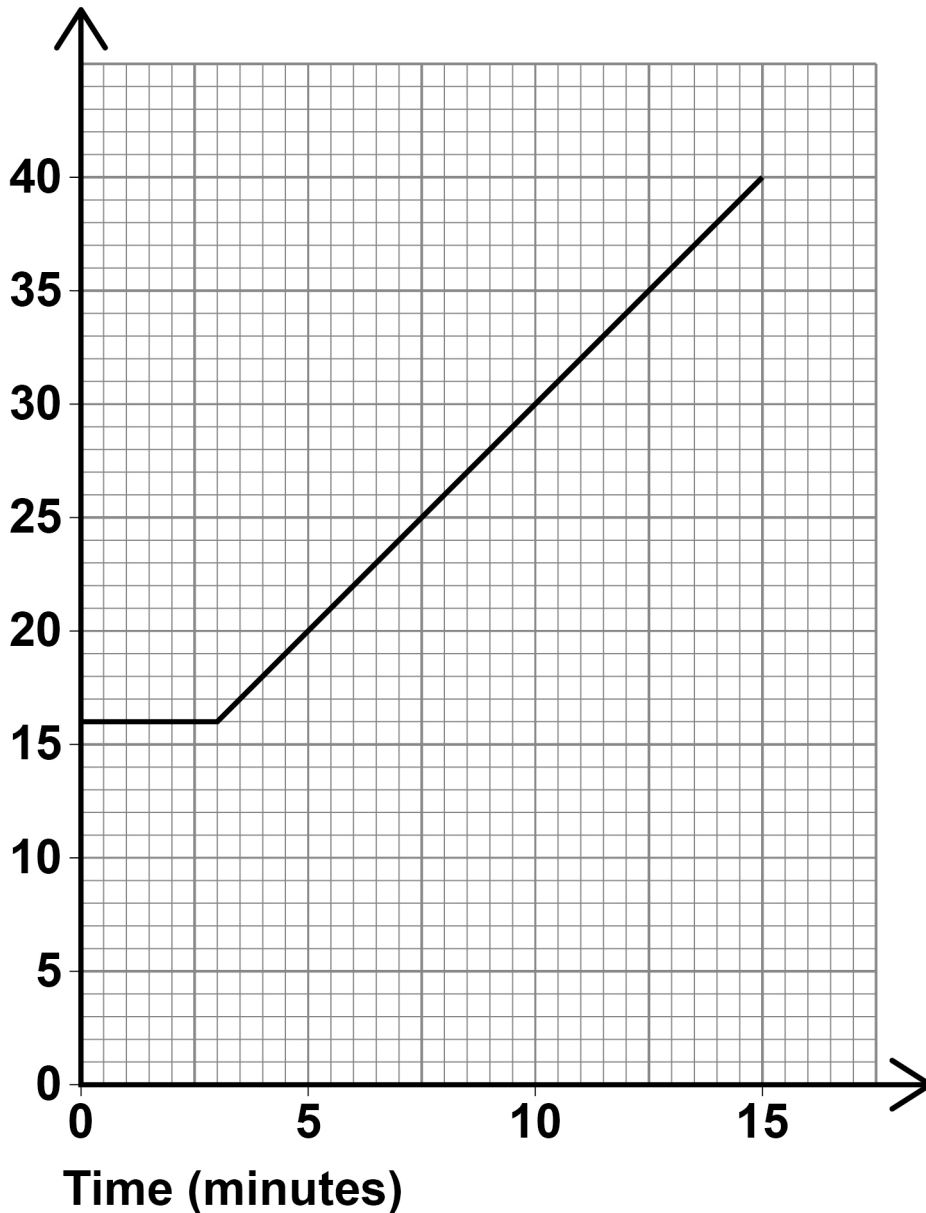
[Turn over]



25 (b) The tank is refilled with water from a tap.

The graph shows the amount of water in the tank AFTER the leak is stopped.

**Water in tank
(litres)**



Complete this report by writing a number in each answer space. [3 marks]

REPORT

_____ minutes after the leak is
stopped, the tap starts to refill the tank.

The rate at which the tank refills is
_____ litres per minute.

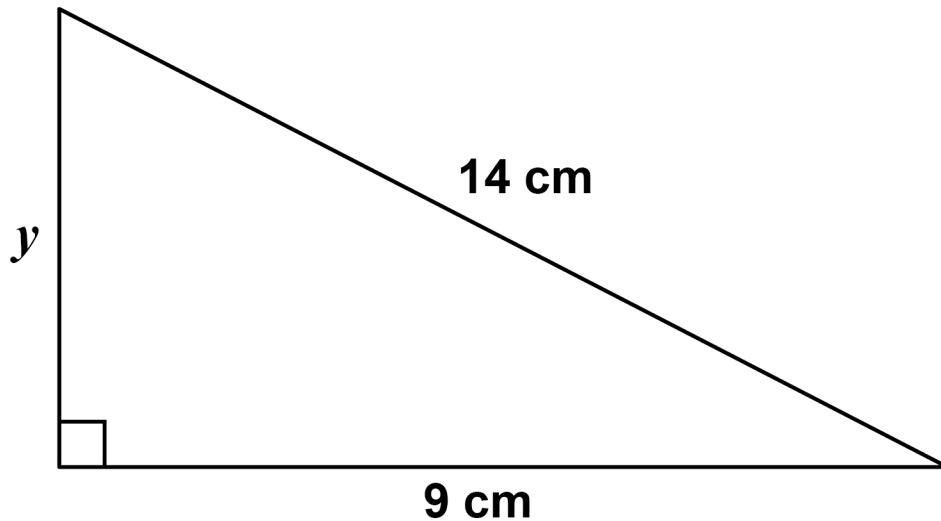
[Turn over]

8



26 Here is a triangle.

The diagram is not drawn accurately.



Use Pythagoras' theorem to work out the value of y .

Give your answer as a decimal. [3 marks]

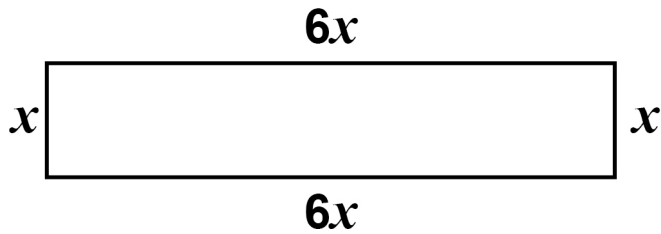
$y =$ _____ cm

[Turn over]



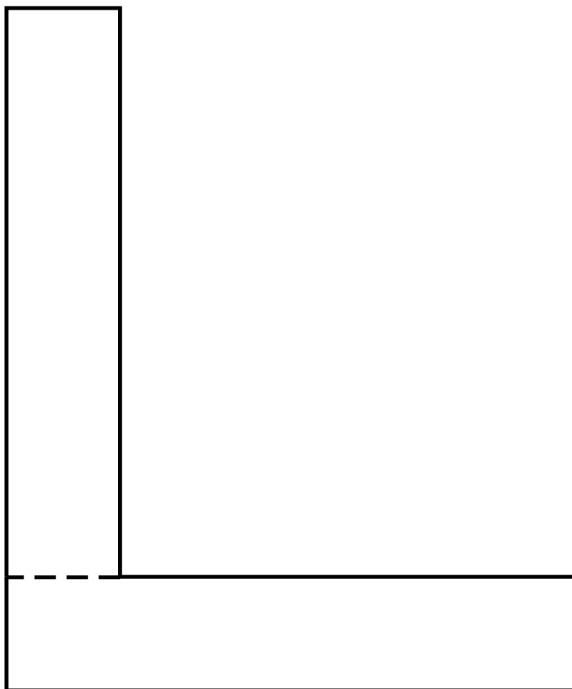
27 The length of this rectangle is 6 times the width.

The diagram is not drawn accurately.



Two of these rectangles are joined, with no overlap, to make this L-shape.

The diagram is not drawn accurately.



The perimeter of the L-shape is 98.8 cm

Work out the value of the perimeter of ONE of the rectangles. [4 marks]

[illegible]

Answer _____ **cm**

[Turn over]

7



28 Written as the product of prime factors,

$$12\,600 = 2^3 \times 3^2 \times 5^2 \times 7$$

and

$$14\,112 = 2^5 \times 3^2 \times 7^2$$

Work out the highest common factor (HCF) of
12 600 and 14 112

Give your answer as an integer. [2 marks]

Answer _____

END OF QUESTIONS

2



Additional page, if required.

Write the question numbers in the left-hand margin.

[illegible]

Additional page, if required.

Write the question numbers in the left-hand margin.

[illegible]

Additional page, if required.

Write the question numbers in the left-hand margin.

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For Examiner's Use	
Pages	Mark
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6–7	
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44–47	
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TOTAL	

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