Ma

KEY STAGE
3

TIER
4–6

2007

Mathematics test

Paper 2

Calculator allowed

First name _____

Last name _____

School _____

Remember

- The test is 1 hour long.
- You may use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler, an angle measurer or protractor, tracing paper and mirror (optional) and a calculator.
- Some formulae you might need are on page 2.
- This test starts with easier questions.
- Try to answer all the questions.
- Write all your answers and working on the test paper – do not use any rough paper. Marks may be awarded for working.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.

For marker's use only

TOTAL MARKS	
Borderline check	

Instructions

Answers



This means write down your answer or show your working and write down your answer.

Calculators



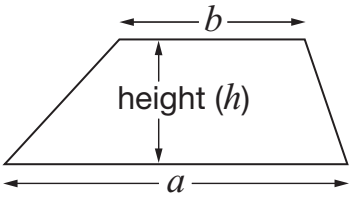
You **may** use a calculator to answer any question in this test.

Formulae

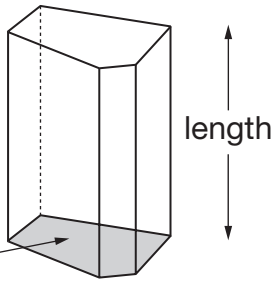
You might need to use these formulae

Trapezium

Area $= \frac{1}{2}(a + b)h$

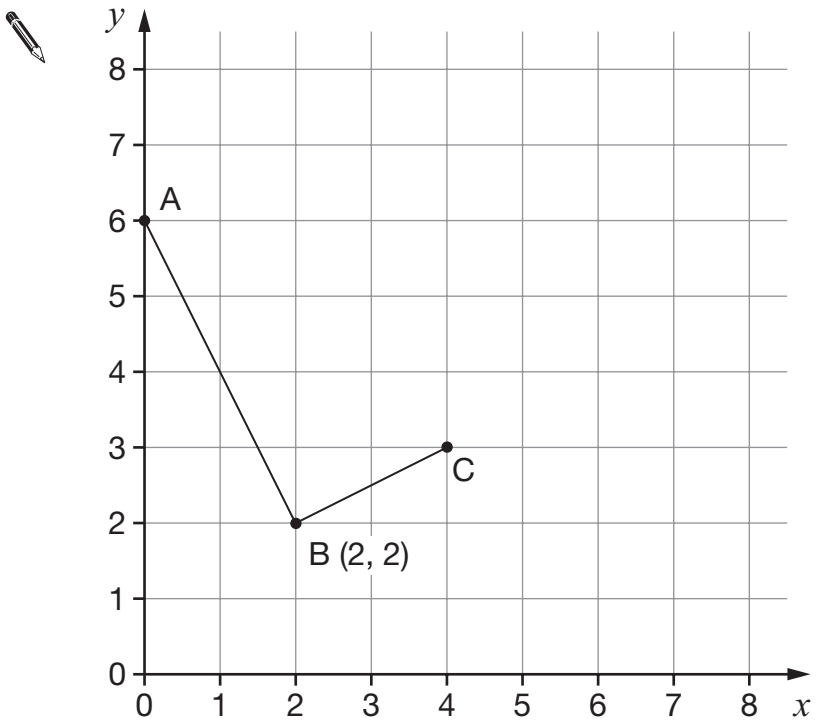


Prism



Volume = area of cross-section × length

1. Look at the graph.



(a) Write down the coordinates of points A and C.

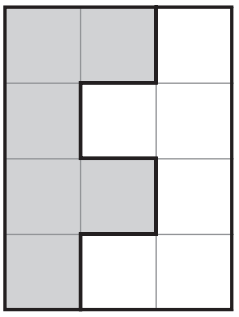
A is (_____ , _____) _____ 1 mark

C is (_____ , _____) _____ 1 mark

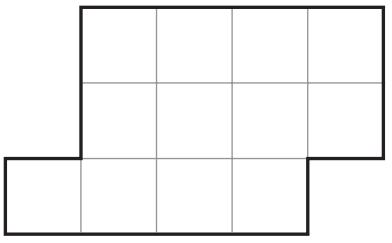
(b) Point D can be marked so that ABCD is a **rectangle**.

Mark point D accurately on the graph. _____ 1 mark

2. (a) The diagram shows how two congruent 'F-tiles' fit together to make a rectangle.



Show how the two congruent 'F-tiles' can fit together to make this shape.



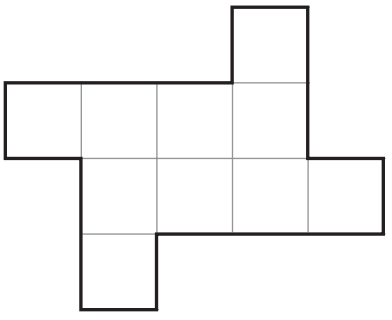
1 mark

(b) Two other tiles fit together to make a different shape.

The two tiles are congruent but they are **not 'F-tiles'**.

What shape could the tiles be?

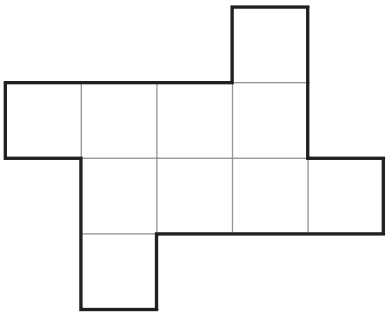
Show them on the diagram.



1 mark

What **other** shape could the tiles be?

Show them on the diagram.



1 mark

3. These are the names of the twelve people who work for a company.

Ali	Claire	Kiki	Suki
Brian	Claire	Lucy	Tom
Claire	James	Ryan	Tom

(a) What name is the **mode**?



_____

1 mark

(b) One person leaves the company. A different person joins the company.

Now the name that is the **mode** is **Tom**.

Write the missing names in the sentences below.



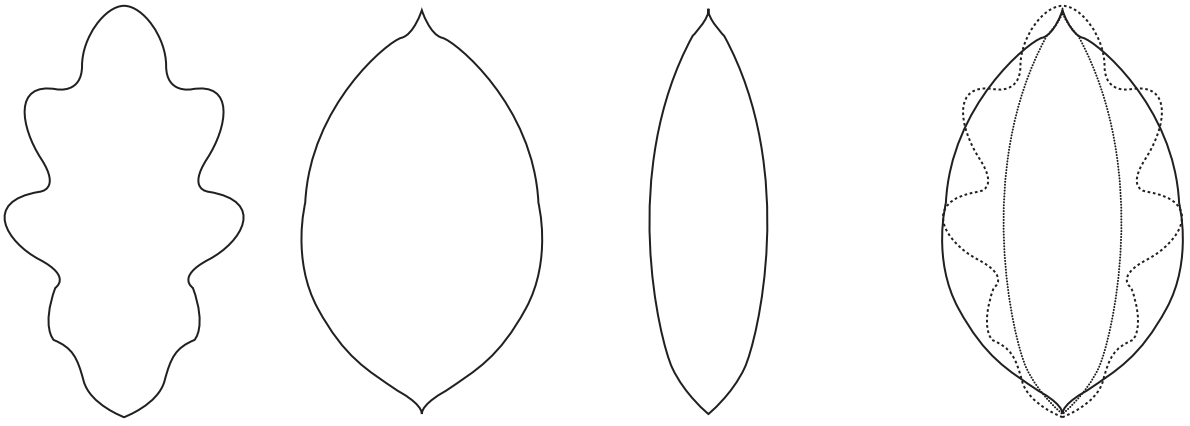
The name of the person who **leaves** is _____

The name of the person who **joins** is _____

1 mark

4. The scale drawing shows three leaves from different trees.

The drawing on the right shows the leaves drawn on top of each other.



Oak Beech Willow

(a) Compare the **areas** of the leaves.

Write the leaves in order, **smallest area first**.



_____ _____ _____ _____ 1 mark

smallest area — largest area

(b) Now compare the **perimeters** of the leaves.

Write the leaves in order, **smallest perimeter first**.



_____ _____ _____ _____ 1 mark

smallest perimeter — largest perimeter

5. Here is information about some bags of marbles.

> Altogether, there are 10 bags.
>
> Each bag contains 12 marbles.
>
> Each marble weighs 7 grams.

Use the information to match each question with the correct calculation.

The first one is done for you.

Question	Calculation
How many **bags** are there altogether?	10
How many **marbles** are there altogether?	10 × 7
How much does **each** bag of marbles weigh?	10 × 12
How much do **all 10** bags of marbles weigh altogether?	12 × 7
	10 × 12 × 7
	10 + 12 + 7

2 marks

6. Look at this equation.

$$4 + a = b$$

Write a pair of numbers for a and b to make the equation true.



$a =$ _____ $b =$ _____

1 mark

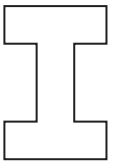
Now write a **different** pair of numbers for a and b to make the equation true.



$a =$ _____ $b =$ _____

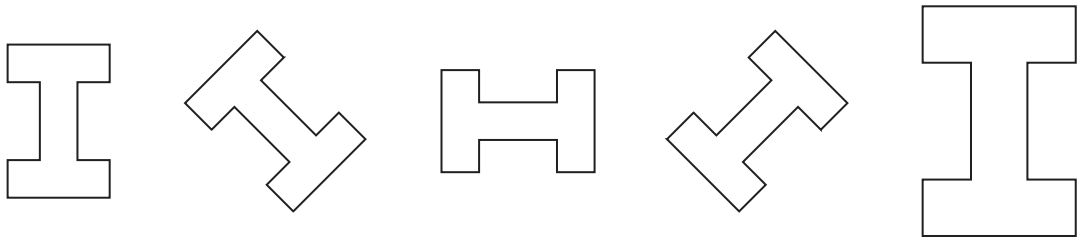
1 mark

7. Here is a shape.



I turn the shape through **45° clockwise**.

Tick (✓) the diagram that shows the shape **after** the turn.



1 mark

8. Leena buys balloons, hats and masks for a party.

Write the missing numbers in the table.

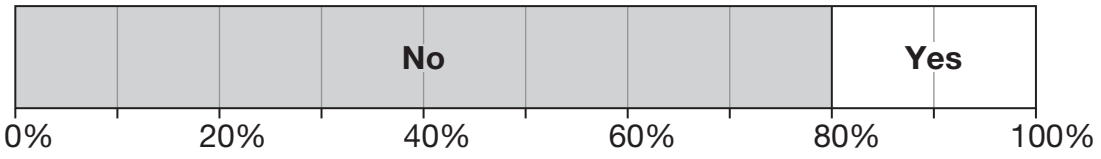
	Cost of each (£)	Number bought	Total cost (£)
Packets of balloons	4.95	5	_____
Hats	3.20	_____	41.60
Masks	_____	10	19.50
			Total: _____

2 marks

9. Carlos and Mary each did a survey.

(a) Carlos asked people: 'Have you ever been to North America?'

The percentage bar chart shows his results.



40 people said **No**.

How many people said **Yes**?

_____ people

1 mark

(b) Mary asked **10 people**: 'Would you like to go to South America?'

Results: 5 of the 10 people said 'No'.

4 of the 10 people said 'Don't know'.

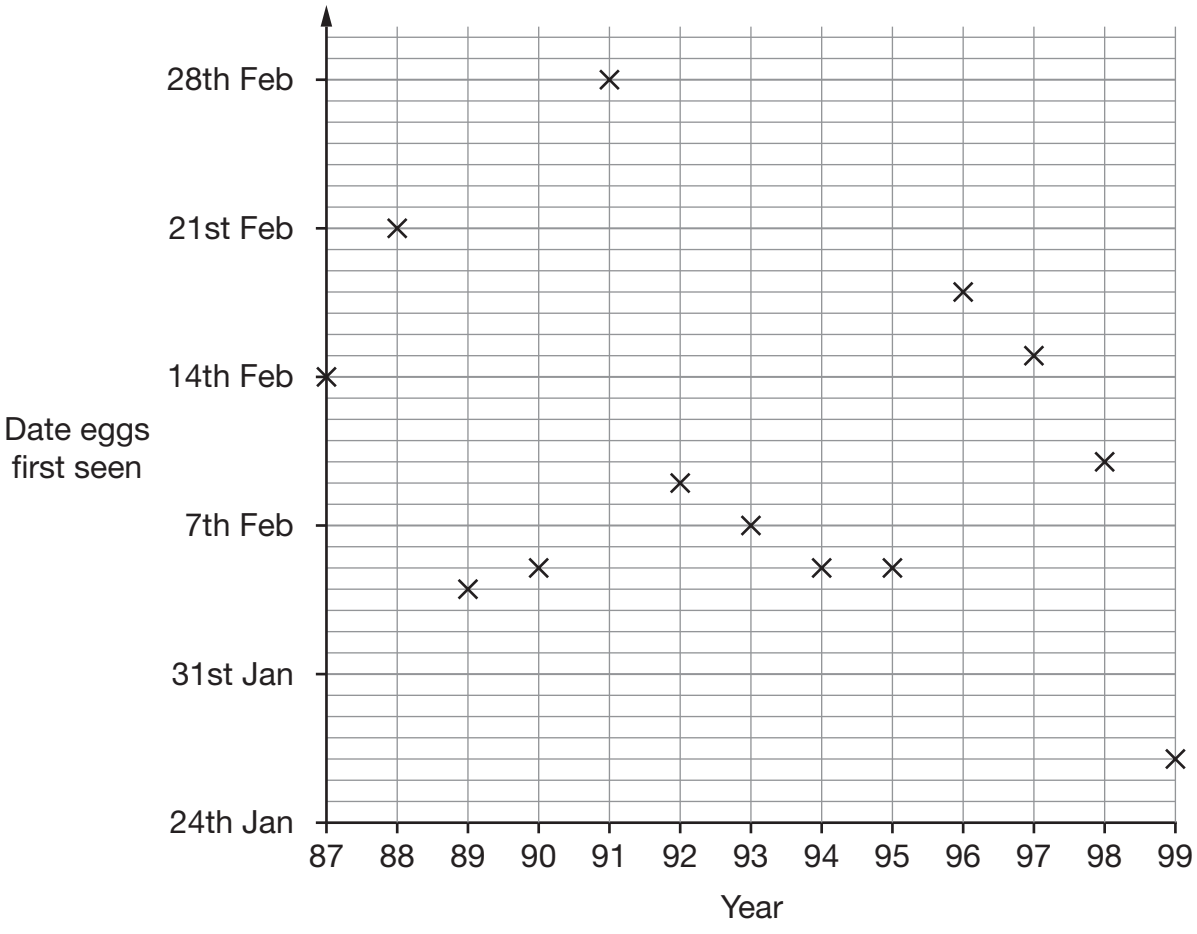
1 of the 10 people said 'Yes'.

Complete the percentage bar chart to show these results.



2 marks

10. The graph shows the date each year that frogs' eggs were first seen.



(a) On what date in **1997** were frogs' eggs first seen?

_____

1 mark

(b) At the beginning of each year, the warmer the weather, the earlier frogs' eggs are first seen.

What can you say about the weather at the beginning of **1991**?

1 mark

11. (a) Here is an expression.

$2a + 3 + 2a$

Which expression below shows it written as simply as possible?

Put a ring round the correct one.



$7a$ $\quad$ $7 + a$ $\quad$ $2a + 5$

$4a + 3$ $\quad$ $4(a + 3)$

1 mark

(b) Here is a different expression.

$3b + 4 + 5b - 1$

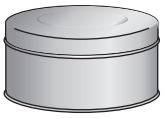
Write this expression as simply as possible.



1 mark

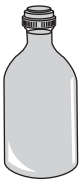
12. Here are two containers and the amounts they hold.

A



750 millilitres

B



0.5 litre

Not drawn accurately

Which container holds the greater amount?

☐ A ☐ B

How much **more** does it hold?

Give your answer in millilitres.

_____ millilitres

1 mark

---

13. (a) A triangle has **three equal sides**.

Write the sizes of the **angles** in this triangle.

_____ ° , _____ ° , _____ °

1 mark

(b) A **right-angled triangle** has **two equal sides**.

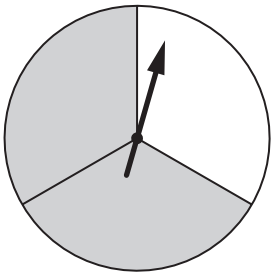
Write the sizes of the **angles** in this triangle.

_____ ° , _____ ° , _____ °

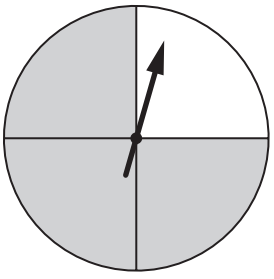
1 mark

14. The diagram shows five fair spinners with grey and white sectors.

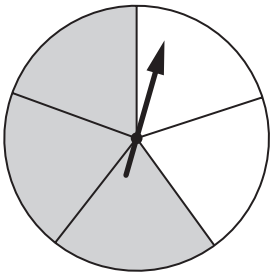
Each spinner is divided into equal sectors.



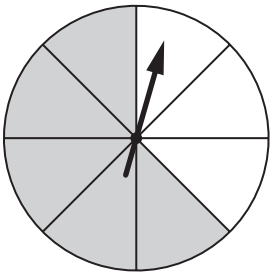
A



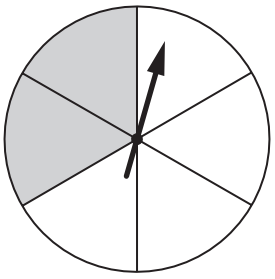
B



C



D



E

I am going to spin all the pointers.

(a) For one of the spinners, the probability of spinning **grey** is $\frac{3}{4}$

Which spinner is this? Write its letter.

_____

1 mark

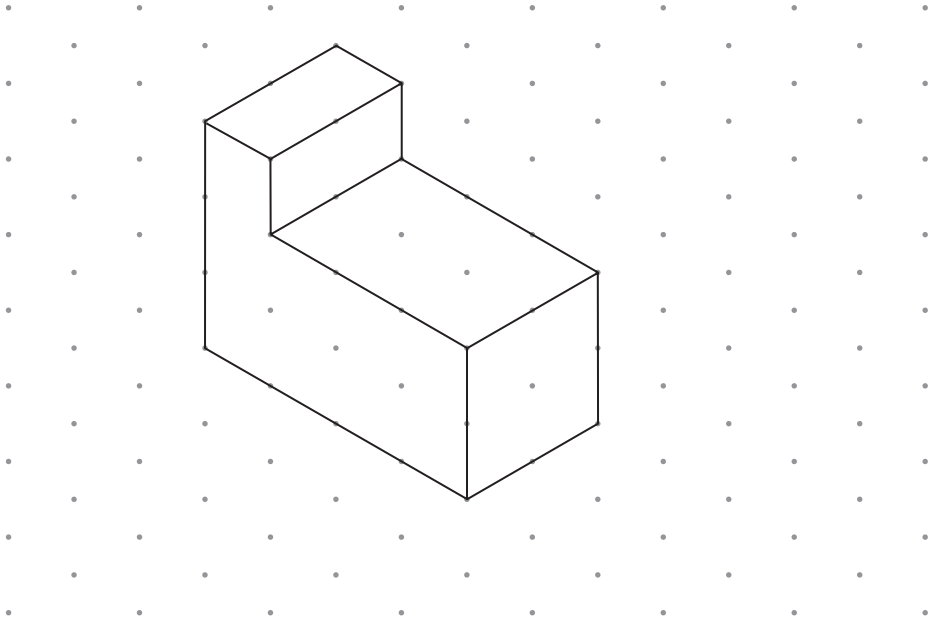
(b) For two of the spinners, the probability of spinning **grey** is **more than 60%** but **less than 70%**

Which two spinners are these? Write their letters.

_____ and _____

1 mark

15. (a) Look at the drawing of a prism on the grid.



Isometric grid

How many **faces** does the prism have?

_____

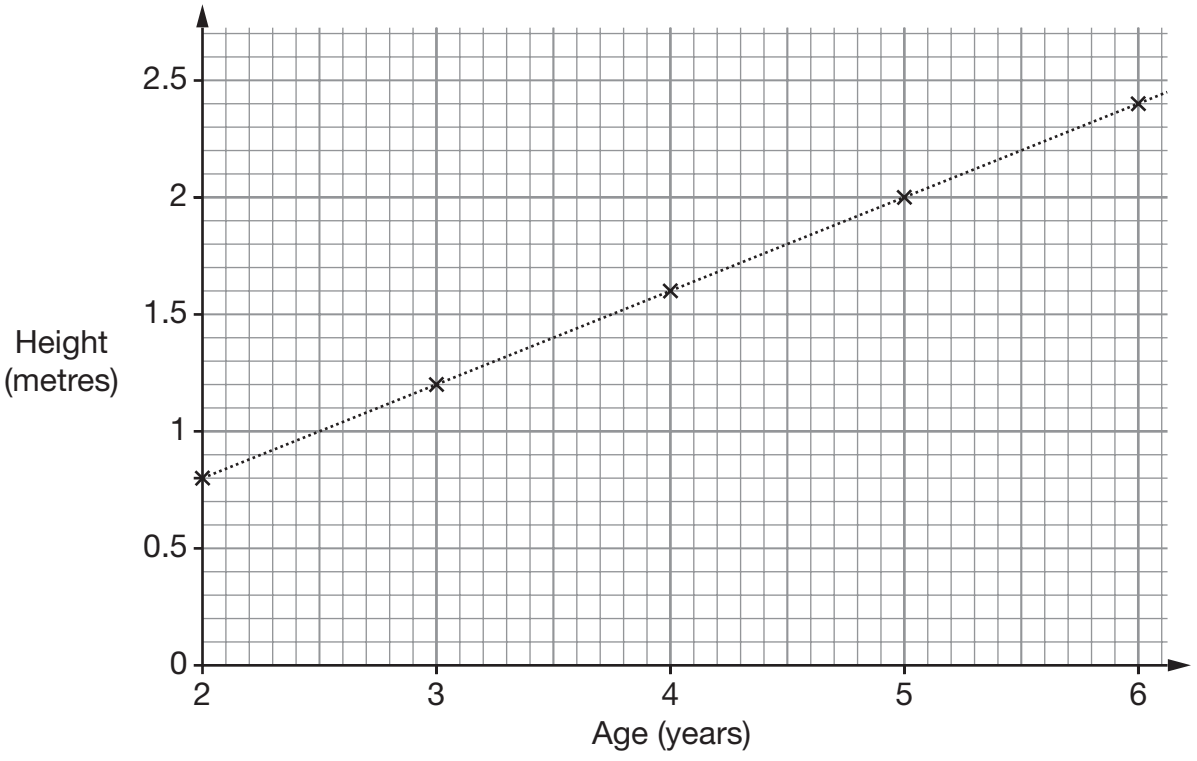
1 mark

(b) Use the grid below to draw a solid with **6 faces**.

Isometric grid

1 mark

16. The graph shows the average heights of fir trees of different ages.



The table shows the cost of fir trees of different heights.

	120 cm to 159 cm	160 cm to 199 cm	200 cm to 239 cm
Cost	£20.00	£25.00	£30.00

(a) One of these fir trees is **$5\frac{1}{2}$ years old**.

How much is it likely to cost?

£ _____

1 mark

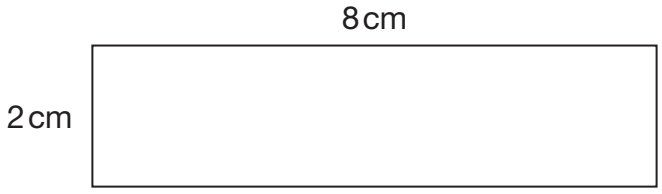
(b) One of these fir trees costs **£25.00**

How old is the tree likely to be?

Between _____ and _____ years old

1 mark

17. Here is a rectangle.



Not drawn accurately

(a) A **square** has the **same area** as this rectangle.

What is the **side length** of this square?

_____ cm

1 mark

(b) A **different square** has the **same perimeter** as this rectangle.

What is the **side length** of this square?

_____ cm

1 mark

18. Kate buys **24 cans** of lemonade.

She buys the cans in **packs of 4**

Each pack costs **£1.20**



Pack of 4
Cost £1.20

Steve buys **24 cans** of lemonade.

He buys the cans in **packs of 6**

Each pack costs **£1.60**



Pack of 6
Cost £1.60

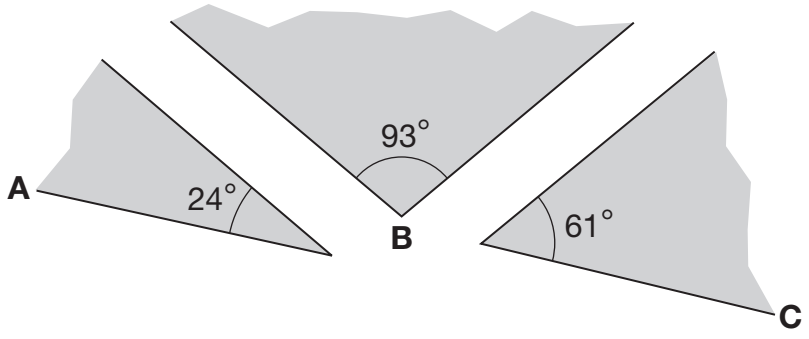
Kate pays more for her 24 cans than Steve pays for his 24 cans.

How much more?

_____ p

2 marks

19. Three shapes fit together at point B.



Not drawn accurately

Will ABC make a straight line?

☐ Yes ☐ No

Explain your answer.

1 mark

20. Solve these equations.

$32x + 53 = 501$

$x =$ _____

1 mark

$375 = 37 + 26y$

$y =$ _____

1 mark

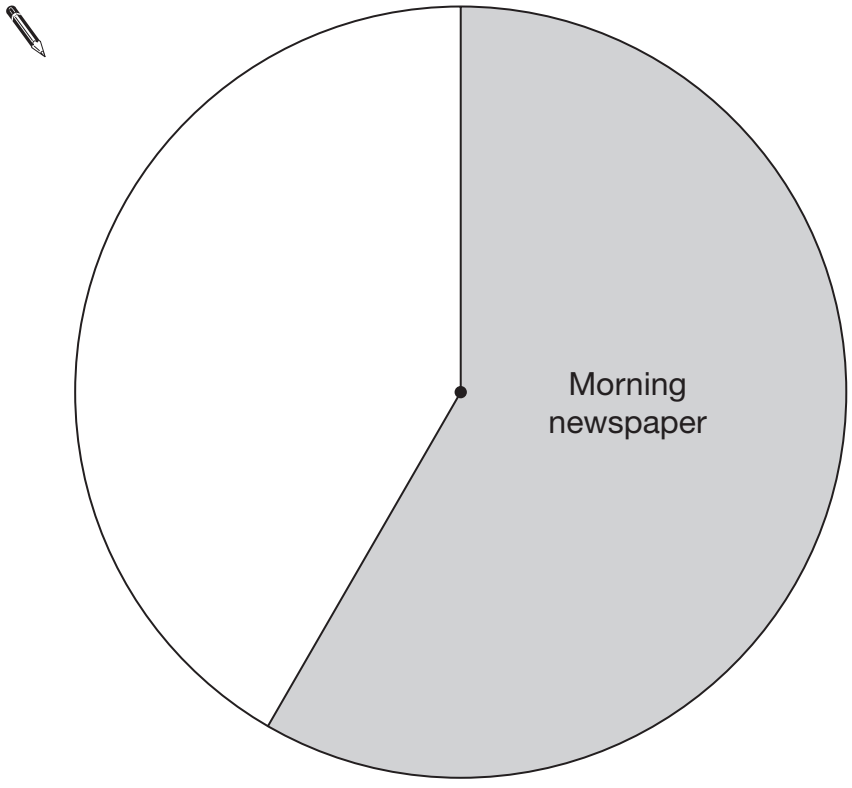
21. In a survey, 60 people were asked:

> What kind of newspaper did you buy today?

Here are the results.

Type of newspaper	Number of people
Morning newspaper	35
Evening newspaper	10
No newspaper	15

Complete the pie chart to show this information.



2 marks

22. Look at the information.

$x = 4$	$y = 13$

Complete the rules below to show **different** ways to get y using x

The first one is done for you.

To get y, **multiply** x by *2* and **add** *5*

This can be written as $y =$ *2x + 5*

To get y, **multiply** x by _____ and **add** _____

This can be written as $y =$ _____

1 mark

To get y, **multiply** x by _____ and **subtract** _____

This can be written as $y =$ _____

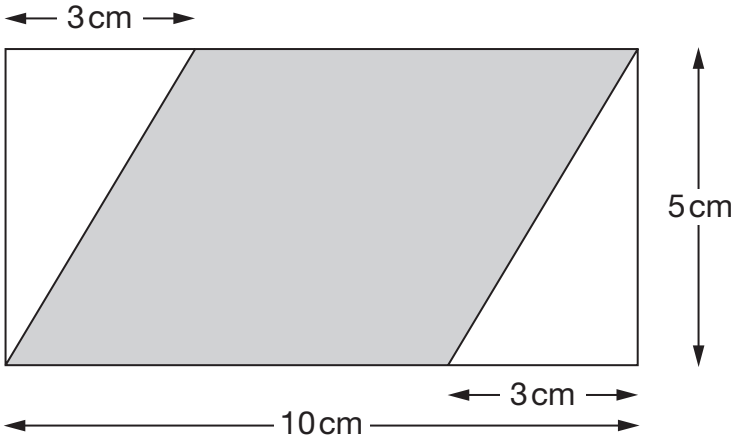
1 mark

To get y, **divide** x by _____ and **add** _____

This can be written as $y =$ _____

1 mark

23. The diagram shows a shaded parallelogram drawn inside a rectangle.



Not drawn accurately

What is the **area** of the shaded parallelogram?

You **must** give the correct unit with your answer.

2 marks

24. Write the missing numbers.

$6x + 2 = 10$

so $6x + 1 =$ _____

1 mark

$1 - 2y = 10$

so $(1 - 2y)^2 =$ _____

1 mark

25. The value of π correct to 7 decimal places is:

3.1415927

(a) Write the value of π correct to **4 decimal places**.

1 mark

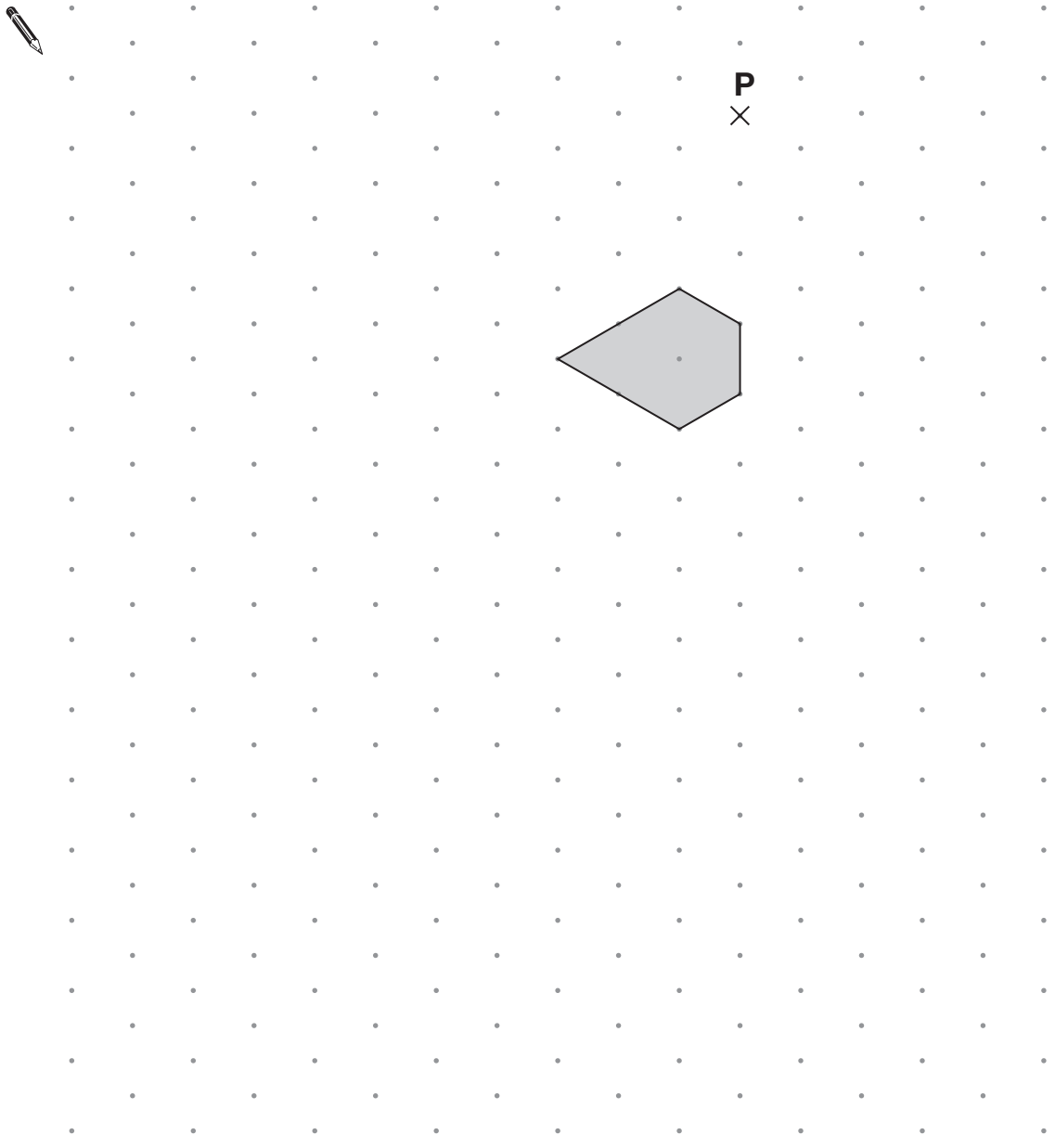
(b) Which value below is closest to the value of π?

Put a ring round the correct one.

$\frac{179}{57}$ $3\frac{1}{7}$ $\left(\frac{16}{9}\right)^2$ $\frac{355}{113}$

1 mark

26. Enlarge the shaded shape by a **scale factor of 2**, using **P** as the centre of enlargement.



2 marks

Isometric grid

27. (a) Here are two equations.

$k = a + b$

$a + b + k = 30$

What is the value of k?

$k =$ _____

1 mark

(b) Look at this information.

$10 = c + d$

c is one more than d

What is the value of c?

$c =$ _____

1 mark

28. A pupil investigated how the teachers at his school travel to work.

The table shows the results.

Number of teachers who travel by car	Number of teachers who do **not** travel by car
18	7

(a) What **percentage** of these teachers travel by car?



_____ %

1 mark

(b) **18 teachers** travel by car. Some of these teachers travel together.

Write the missing frequency in the table below.



Number of teachers in one car	Number of cars
1	
2	4
3	2

1 mark

29. Jenny wants to multiply out the brackets in the expression $3(2a + 1)$

She writes:

$$3(2a + 1) = 6a + 1$$

Show why Jenny is **wrong**.

1 mark

30. A computer is going to choose a letter at random from an English book.

The table shows the probabilities of the computer choosing each vowel.

Vowel	A	E	I	O	U
Probability	0.08	0.13	0.07	0.08	0.03

What is the probability that it will **not** choose a vowel?

2 marks

END OF TEST

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QCA/06/2782 (Pupil pack)
QCA/06/2778 (Mark scheme pack)
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