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KEY STAGE

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TIER

3–5

2003

Mathematics test

Paper 1

Calculator not allowed

Please read this page, but do not open your booklet until your teacher tells you to start. Write your name and the name of your school in the spaces below.

First name _____

Last name _____

School _____

Remember

- The test is 1 hour long.
- You **must not** use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler, a pair of compasses, tracing paper and mirror (optional).
- 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

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

Instructions

Answers



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

Calculators




You **must not** use a calculator to answer any question in this test.

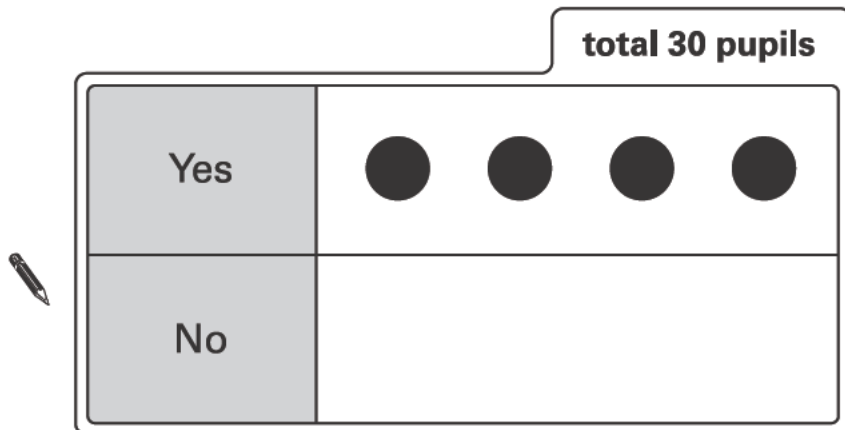
1. (a) Jeff asked 30 pupils if they travel to school by bus.

20 pupils said **yes**.

10 pupils said **no**.

He started to draw a pictogram using the key  represents 5 pupils.

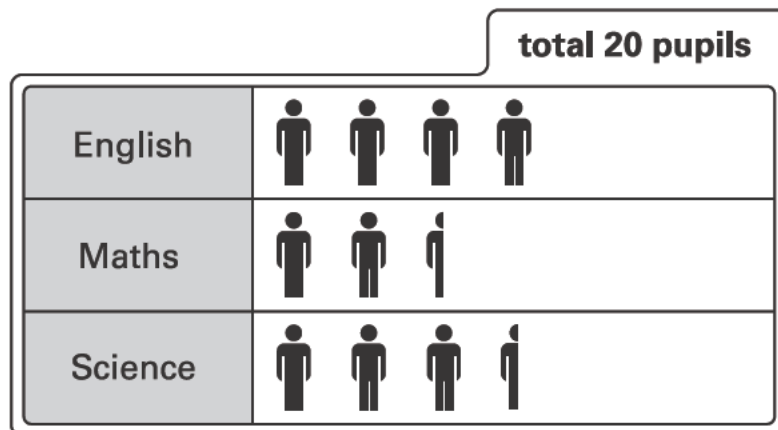
Complete the pictogram to show Jeff's results.




.....
1 mark

(b) Sue asked 20 pupils which subject they like best.

She drew this pictogram but forgot to write the key.



How many pupils does  represent?

 pupils

.....
1 mark



2. Write in the boxes what the missing numbers could be.



$$\square + \square + \square = 15$$

.....
1 mark

$$\square \times \square = 15$$

.....
1 mark

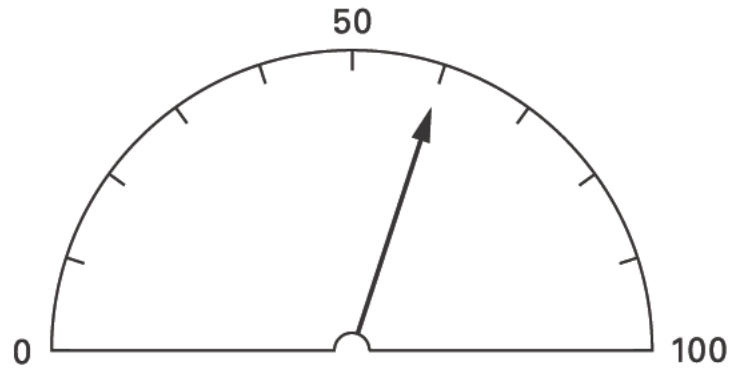
$$\square \div \square = 15$$

.....
1 mark

$$\square \times \square + \square = 15$$

.....
1 mark

3. (a) Look at this scale.



What value is the arrow pointing to on the scale?

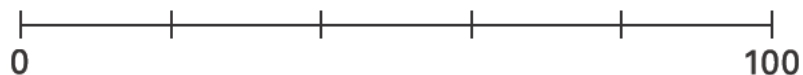


.....

1 mark

(b) Here is a different scale.

Draw an arrow (\downarrow) so that it shows the **same value** as the arrow in part (a).



1 mark



4. Look at these prices.

| | |
|-----------|-----|
| Ruler | 30p |
| Pencil | 15p |
| Blue pen | 35p |
| Green pen | 40p |
| Eraser | 20p |

(a) Use the prices to fill in the gaps below.



← The total cost of two rulers and one pencil.

.....
1 mark



← The total cost of three blue pens.

.....
1 mark

55p

→ The total cost of one blue pen and

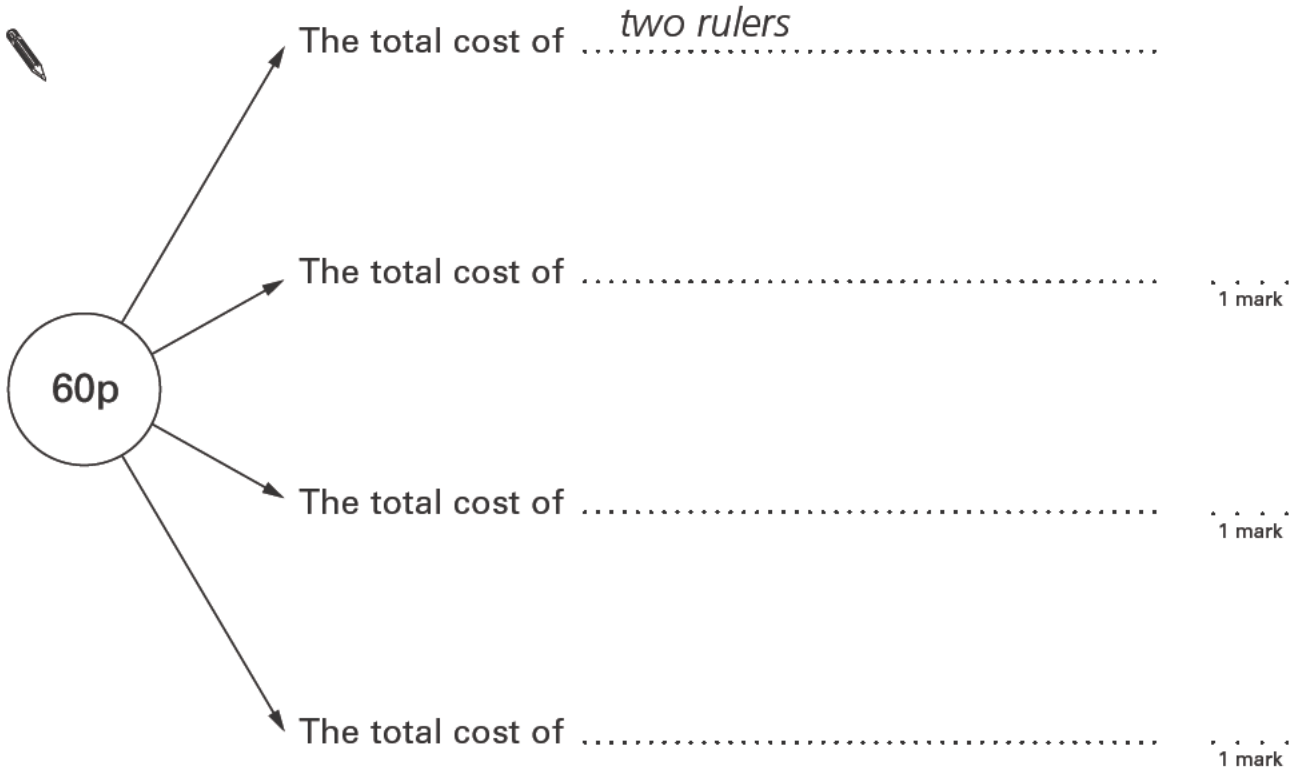


.....
1 mark

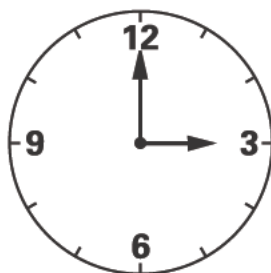
(b) There are many **different ways** to make the total cost **60p**.

Use the prices to fill in the gaps below.

One way is done for you.

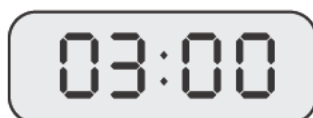


5. (a) My wall clock shows this time:



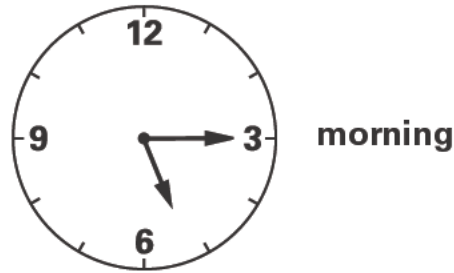
Which **two** of the digital clocks below could be showing the **same time** as my wall clock?

Tick (✓) the correct two.



1 mark

(b) Early in the **morning** my wall clock shows this time:



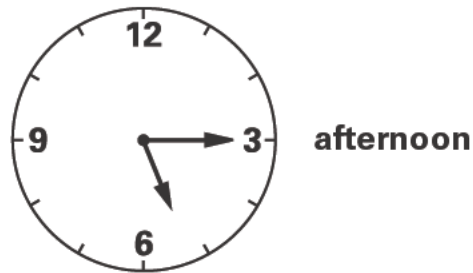
My digital clock shows the same time as my wall clock.

Write what time my digital clock is showing.



.....
1 mark

(c) In the **afternoon** my wall clock shows this time:



My digital clock is a 24 hour clock.

Now what time is my digital clock showing?



.....
1 mark



6. (a) What number should you **add to 28** to make **100**?



.....

.....
1 mark

(b) What number should you **subtract from 100** to make **78**?



.....

.....
1 mark

(c) Work out



$$48 + 49 = \dots\dots\dots$$

.....
1 mark

$$78 \div 3 = \dots\dots\dots$$

.....
1 mark

$$1048 + 208 = \dots\dots\dots$$

.....
1 mark

$$4828 - 480 = \dots\dots\dots$$

.....
1 mark

7. (a) The number chain below is part of a **doubling** number chain.

Fill in the two missing numbers.



1 mark

- (b) The number chain below is part of a **halving** number chain.

Fill in the two missing numbers.



1 mark



8. A teacher has five number cards.

She says:

'I am going to take a card at random.

Each card shows a **different** positive whole number.

It is **certain** that the card will show a number less than 10

It is **impossible** that the card will show an even number.'

What numbers are on the cards?



• • • •

• • • •
2 marks

9. When the wind blows it feels colder.
The stronger the wind, the colder it feels.

Fill in the gaps in the table.

The first row is done for you.

| Wind strength | Temperature out of the wind (°C) | How much colder it feels in the wind (°C) | Temperature it feels in the wind (°C) | |
|-----------------|----------------------------------|--|---------------------------------------|-----------------|
| Moderate breeze | 5 | 7 degrees colder | -2 | |
| Fresh breeze | -8 | 11 degrees colder | | 1 mark |
| Strong breeze | -4 | degrees colder | -20 | 1 mark |
| Gale | | 23 degrees colder | -45 | 1 mark |

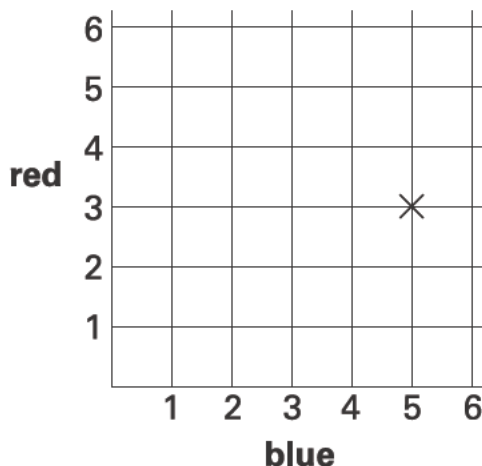


10. Some pupils throw two fair six-sided dice. Each dice is numbered 1 to 6
One dice is blue. The other dice is red.

Anna's dice show **blue 5, red 3**

Her **total score** is **8**

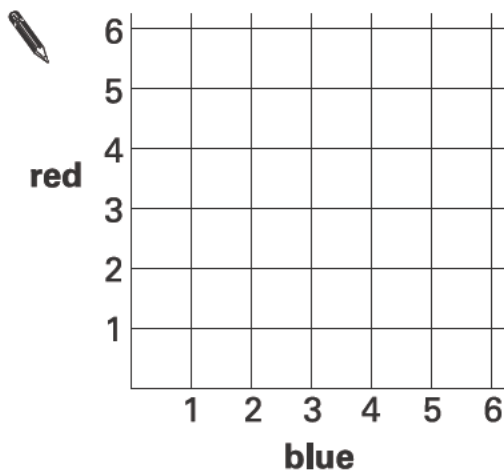
The cross on the grid shows her throw.



- (a) Carl's **total score** is **6**

What numbers could Carl's dice show?

Put crosses on the grid to show **all** the different pairs of numbers Carl's dice could show.

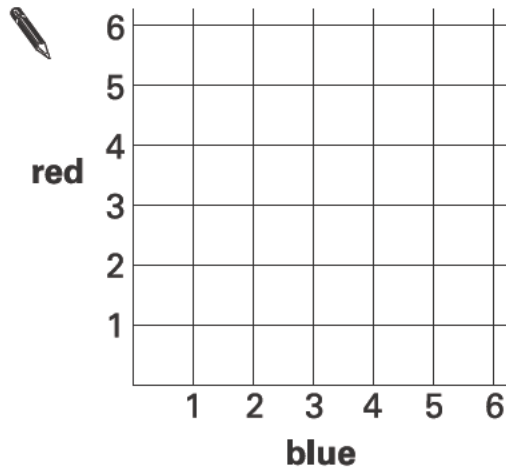


.....
.....
2 marks

(b) The pupils play a game.

Winning rule: Win a point if the number on the **blue** dice is the **same as** the number on the **red** dice.

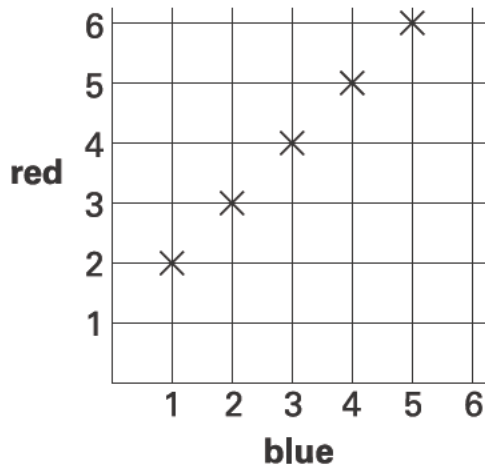
Put crosses on the grid to show **all** the different winning throws.



.....
.....
2 marks

(c) The pupils play a different game.

The grid shows all the different winning throws.



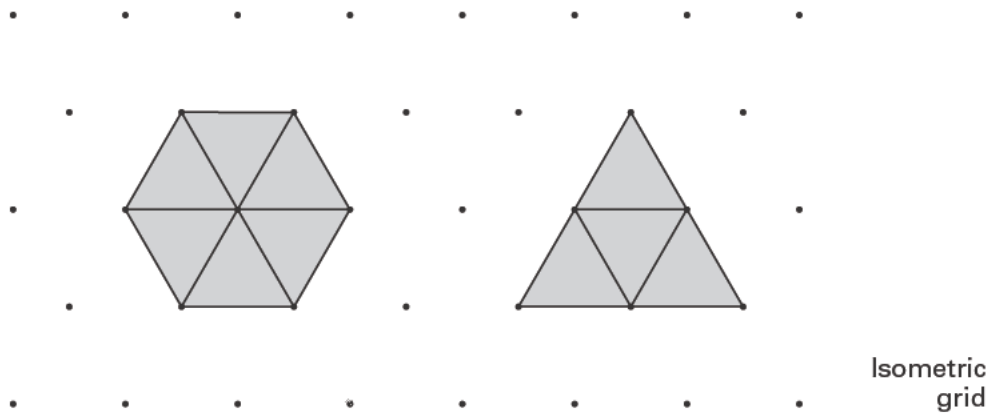
Complete the sentence below to show the winning rule.

Winning rule: Win a point if the number on the **blue** dice is

.....
1 mark



11. Look at the hexagon and the triangle.



Isometric grid

(a) Do the hexagon and triangle have the **same area**?

Tick (✓) Yes or No.



Yes

No

Explain your answer.



1 mark

(b) Do the hexagon and triangle have the **same perimeter**?

Tick (✓) Yes or No.



Yes

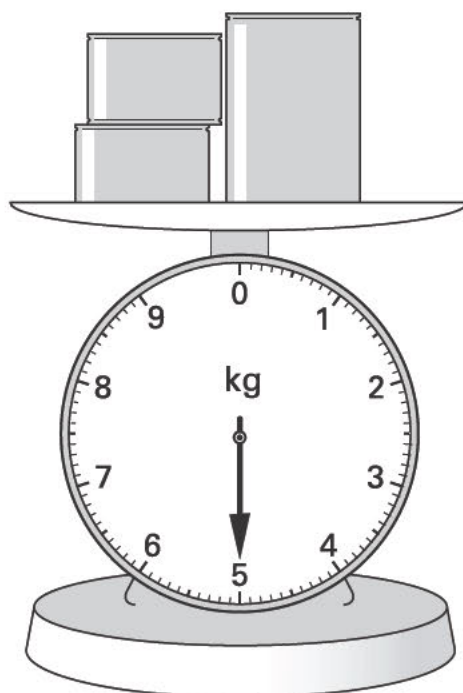
No

Explain your answer.



1 mark

12. There are two small tins and one big tin on these scales.



The two small tins each have the same mass.

The mass of the big tin is **2.6 kg**.

What is the mass of one small tin?

Show your working.

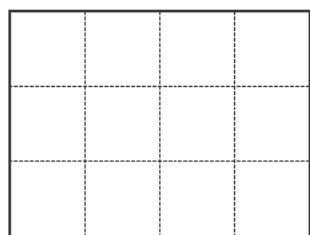


kg

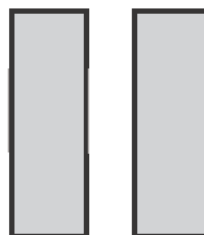
.....
.....
2 marks



13. I have a square grid and two rectangles.

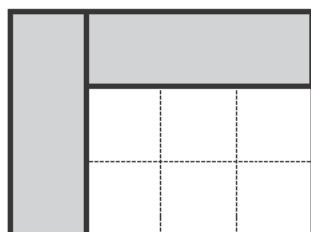


grid



two rectangles

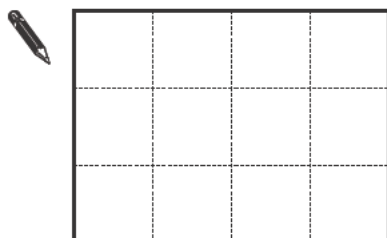
I make a pattern with the grid and the two rectangles:



The pattern has **no** lines of symmetry.

- (a) Put both rectangles on the grid to make a pattern with **two** lines of symmetry.

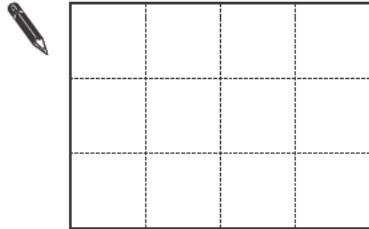
You must **shade** the rectangles.



1 mark

- (b) Put both rectangles on the grid to make a pattern with **only one** line of symmetry.

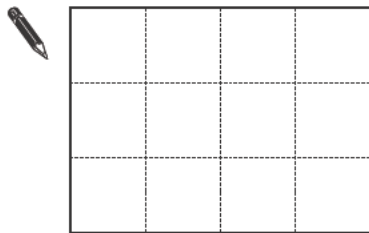
You must **shade** the rectangles.



.....
1 mark

- (c) Put both rectangles on the grid to make a pattern with **rotation** symmetry of **order 2**

You must **shade** the rectangles.



.....
1 mark

14. Simplify these expressions.



$$5k + 7 + 3k = \dots\dots\dots$$

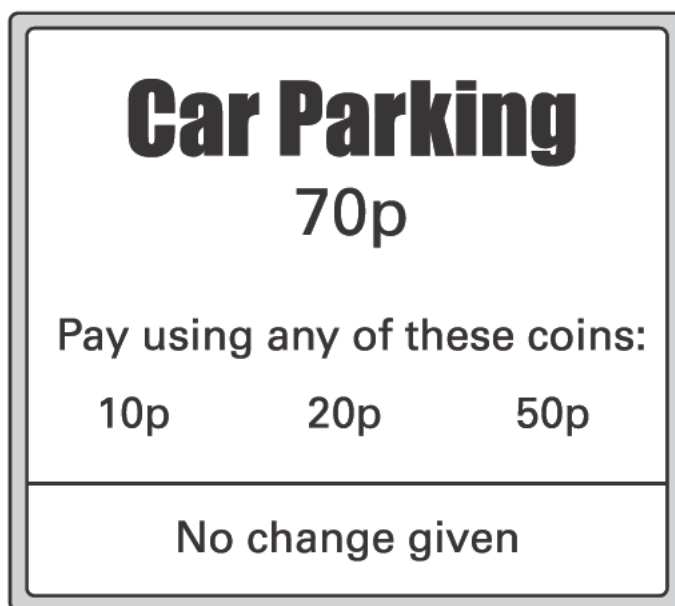
.....
1 mark

$$k + 1 + k + 4 = \dots\dots\dots$$

.....
1 mark



15. A car park shows this sign.



Complete the table to show all the **different ways** of paying **exactly 70p**.

| Number of 10p coins | Number of 20p coins | Number of 50p coins |
|-------------------------------|-------------------------------|-------------------------------|
| 7 | 0 | 0 |
| | | |
| | | |
| | | |
| | | |
| | | |

.....

.....
2 marks

16. Fill in the missing numbers.



$$\frac{1}{2} \text{ of } 20 = \frac{1}{4} \text{ of } \dots\dots\dots$$

.....
1 mark

$$\frac{3}{4} \text{ of } 100 = \frac{1}{2} \text{ of } \dots\dots\dots$$

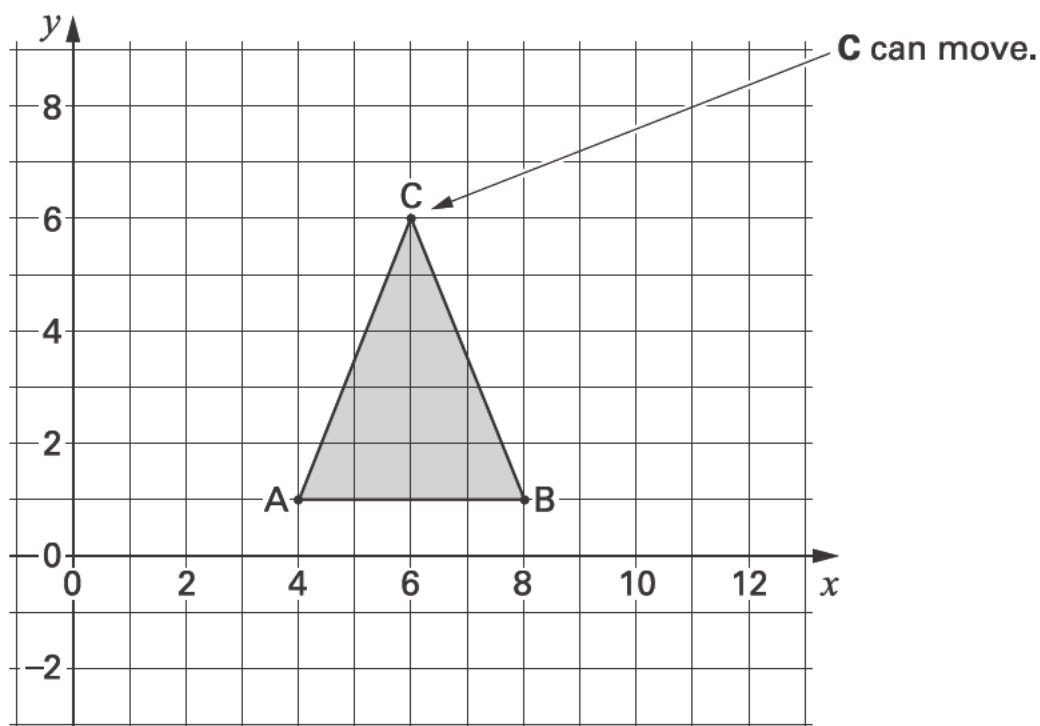
.....
1 mark

$$\frac{1}{3} \text{ of } 60 = \frac{2}{3} \text{ of } \dots\dots\dots$$

.....
1 mark



17. On this square grid, **A** and **B** must not move.



When C is at $(6, 6)$, triangle ABC is **isosceles**.

- (a) C moves so that triangle ABC is still **isosceles**.

Where could C have moved to?

Write the coordinates of its new position.



(.....,.....)

.....
1 mark

- (b) Then C moves so that triangle ABC is **isosceles and right-angled**.

Where could C have moved to?

Write the coordinates of its new position.



(.....,.....)

.....
1 mark

18. (a) There are four people in Sita's family.
Their shoe sizes are 4, 5, 7 and 10

What is the **median** shoe size in Sita's family?



.....

.....
1 mark

- (b) There are **three** people in John's family.
The **range** of their shoe sizes is **4**

Two people in the family wear shoe size 6
John's shoe size is **not 6** and it is **not 10**

What is John's shoe size?



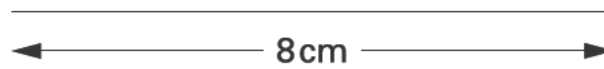
.....

.....
1 mark



19. Use compasses to construct a triangle that has sides **8cm**, **6cm** and **7cm**.
Leave in your construction lines.

One side of the triangle is drawn for you.



.....
.....
2 marks

20. (a) I pay **£16.20** to travel to work each week.

I work for **45 weeks** each year.

How much do I pay to travel to work each year?

Show your working.



.....
.....
2 marks

(b) I could buy one season ticket that would let me travel for **all 45 weeks**.

It would cost **£630**

How much is that per week?



.....
1 mark



21. Solve these equations.



$$8k - 1 = 15$$

$$k = \dots\dots\dots$$

.....
1 mark

$$2m + 5 = 10$$

$$m = \dots\dots\dots$$

.....
1 mark

END OF TEST



