Ma

YEAR 8

LEVELS 4–6

PAPER 1

Year 8 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 details in the spaces below.

First name _____

Last name _____

Class _____

Date _____

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 and tracing paper (optional).
- 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 marking use only

Total marks	

Instructions

Answers

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

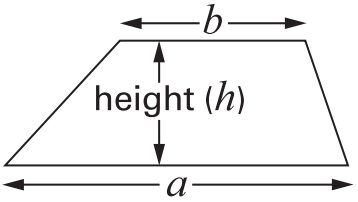
Calculators

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

Formulae

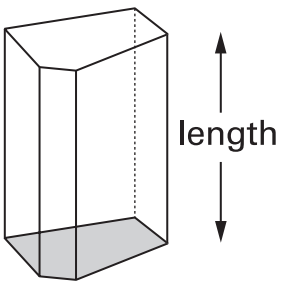
You might need to use these formulae.

Trapezium



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

Prism



Volume = area of cross-section × length

1 Complete these multiplication squares.

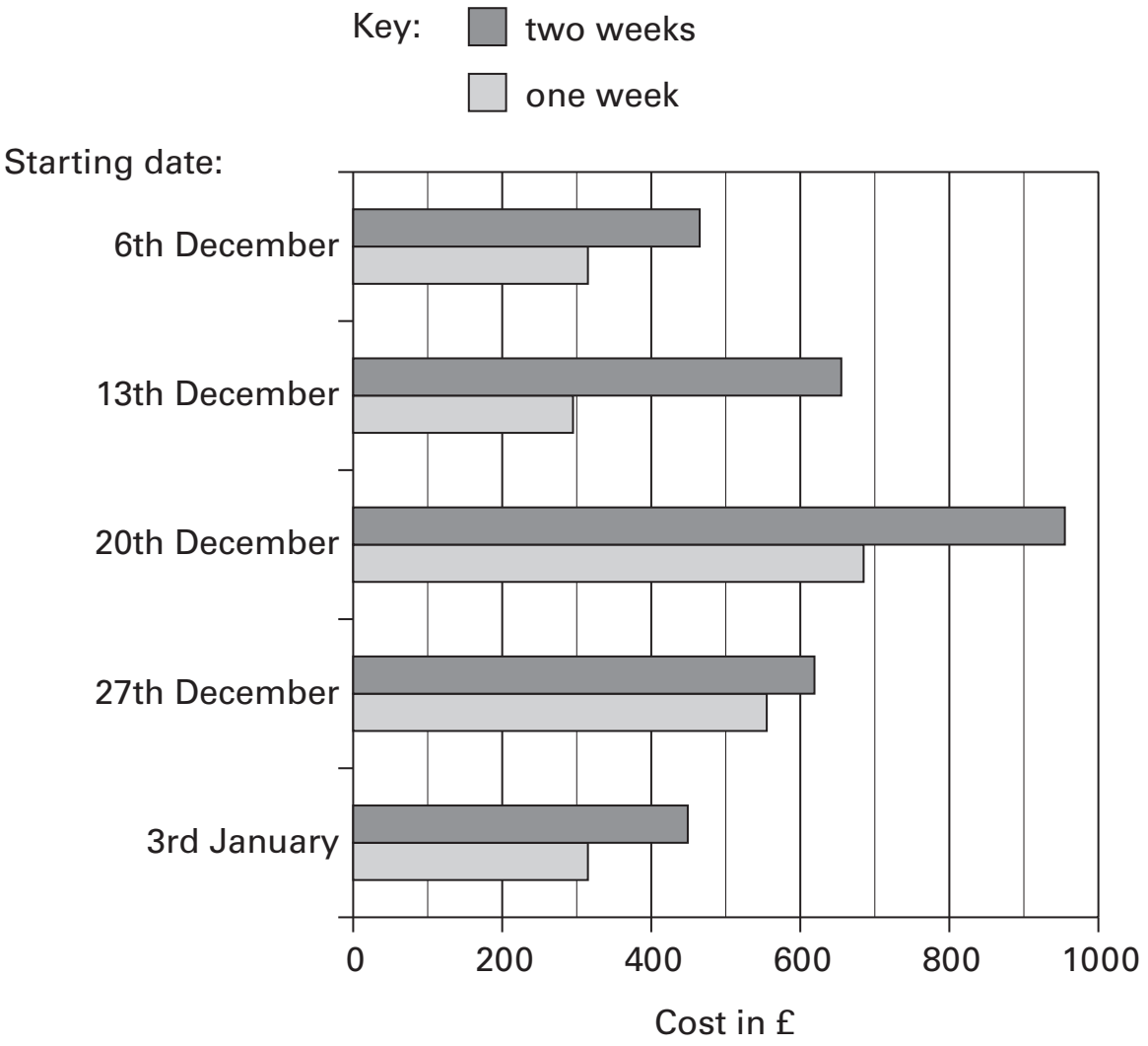
×	6	9
3	18	. . . . .
8	. . . . .	. . . . .

. . . .
. . . .
2 marks

×	. . . . .	. . . . .
. . . . .	28	24
. . . . .	63	54

. . . .
. . . .
2 marks

2 The chart shows the cost of a winter holiday in Spain.



(a) What is the **starting date** of the **most expensive** holiday?

..... 1 mark

(b) Meg is booking a holiday with starting date **27th December**.

About **how much more** will a two week holiday cost than a one week holiday?

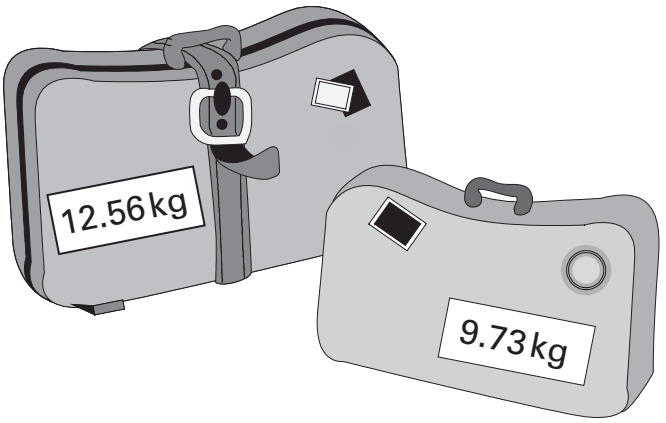
£ .....

2 marks

3 Amar packs two suitcases to take on a plane.

One suitcase weighs **12.56 kg**

The other weighs **9.73 kg**



Amar is only allowed to take **20 kg** on the plane.

His suitcases are too heavy.

By how much are they too heavy?

kg

2 marks

4 Here is some information about a play.

Starts at **7:30 pm**
First act lasts **48** minutes
Interval lasts **15** minutes
Second act lasts **47** minutes

At what time does the second act end?

..... pm

2 marks

5 Here is part of the 87 times table.

1	×	87	=	87
2	×	87	=	174
3	×	87	=	261
4	×	87	=	348
5	×	87	=	435
6	×	87	=	522
7	×	87	=	609
8	×	87	=	696
9	×	87	=	783
10	×	87	=	870

(a) The answer to **14 × 87** is 1218

You can use the table to work out this answer in different ways.

Fill in the gaps to complete two different ways.

First way:

7 × 87 = 609, then multiply 609 by .....

1 mark

Second way:

10 × 87 = 870 and 4 × 87 = 348, then .....

1 mark

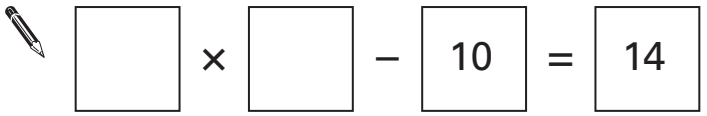
(b) Work out 16 × 87

You can use the table to help you.

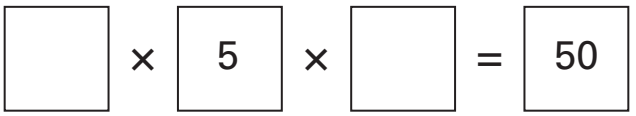
.....

2 marks

6 Write in the empty boxes what the missing numbers could be.



1 mark

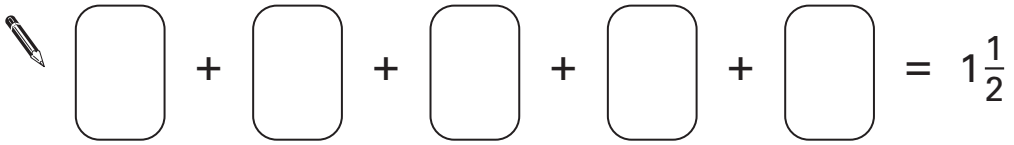


1 mark

7 Here are some fraction cards.

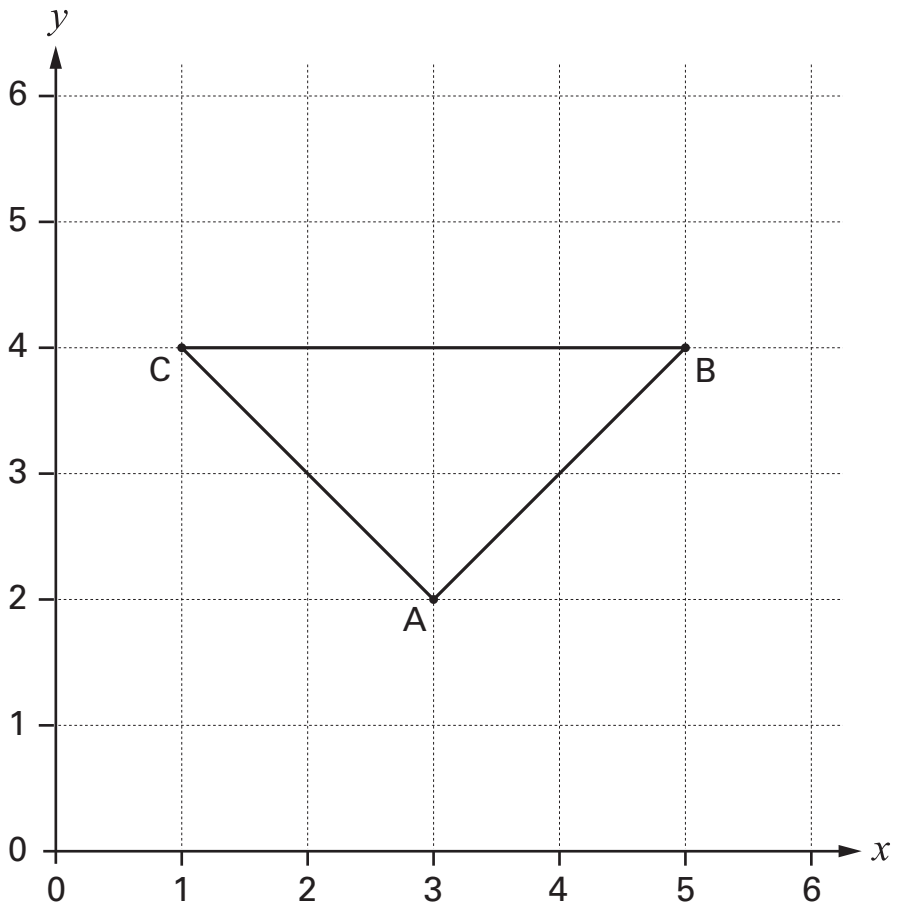
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

Use **five** of these cards to make a total of $\mathbf{1\frac{1}{2}}$



1 mark

8 Look at the triangle ABC, drawn on a square grid.



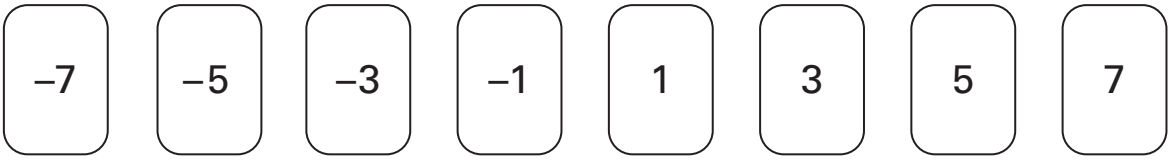
Here are some statements about triangle ABC.

For each statement tick (✓) True or False.

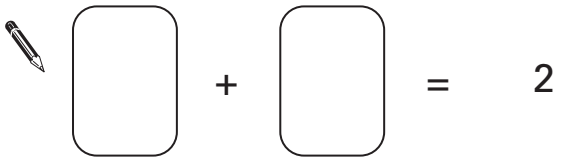
	True	False
The triangle is isosceles.	☐	☐
The triangle has only one line of symmetry.	☐	☐
The triangle is right-angled.	☐	☐
The coordinates of A are (2, 3)	☐	☐

2 marks

9 Look at these number cards.

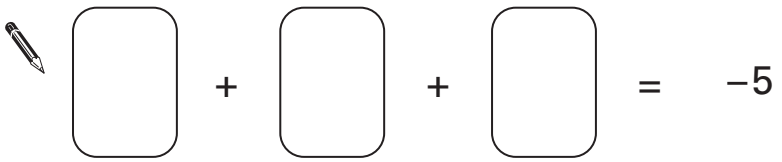


(a) Choose any two of the number cards that **add to 2**



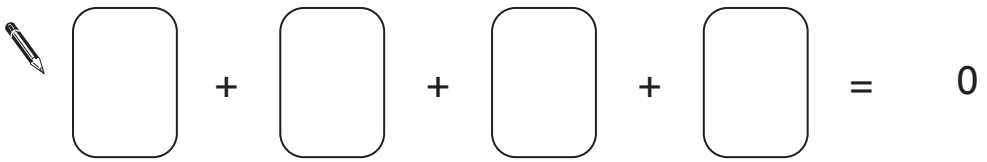
1 mark

(b) Choose any three of the number cards that **add to –5**



1 mark

(c) Choose any four of the number cards that **add to 0**



1 mark

10 Dave and Steve are in a high jump competition.

Dave jumps $1\frac{1}{4}$ metres.

Steve jumps **1.4** metres.

Who jumps higher? Tick (✓) Dave or Steve.

☐ Dave ☐ Steve

How much higher does he jump?

Give your answer in metres.

metres

2 marks

11 Fill in the gaps to show what the units measure.

The first one is done for you.

centimetres measure *length*

kilograms measure .....

litres measure .....

square metres measure .....

2 marks

12 When n is **5**, work out the value of $2(n + 1)$

.....

1 mark

13 (a) Here are three numbers.

4	8	9

Show that the **mean** of these three numbers is **7**

1 mark

(b) The **mean** of three numbers is **5**

One of these numbers is 2

What could the other numbers be?

Write them on the cards below.

2		

1 mark

What else could the numbers be?

Use **different numbers** from your answer above.

Write them on the cards below.

2		

1 mark

14 (a) Use a **ruler** and **compasses** to draw a triangle that has these side lengths:

5cm, 5cm, 8cm

. . . .

. . . .

2 marks

(b) Sally says it is possible to draw a triangle with these side lengths:

5cm, 5cm, 12cm

Is she correct? Tick (✓) Yes or No.

☐ Yes ☐ No

Explain how you know.

. . . .

1 mark

15 A petrol station shows this information:

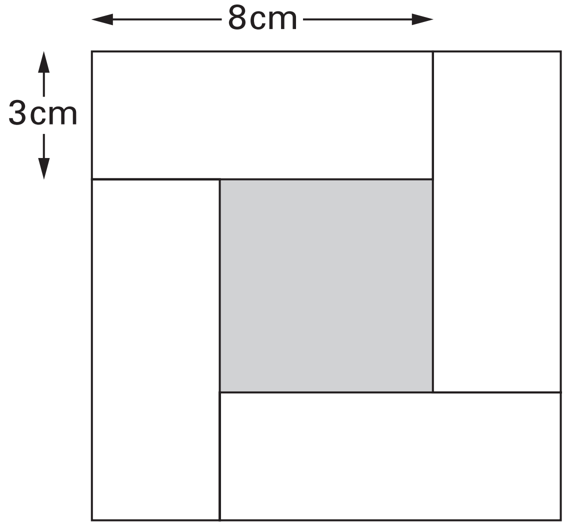
10 litres = 2.2 gallons

How many gallons is **50 litres**?

..... gallons

2 marks

16 The diagram shows four identical white rectangles around a shaded square.



Not drawn accurately

What is the area of the shaded square?

....

3 marks

17 I think of a number.

4% of my number is **42**

(a) What is **40%** of my number?

. . . . . 1 mark

(b) What is my number?

. . . . . 1 mark

18 (a) Write the missing **decimal** so that each pair **adds to 1**

The first one is done for you.

fraction		decimal		
$\frac{1}{4}$	+	0.75	=	1
$\frac{3}{10}$	+		=	1
$\frac{3}{5}$	+		=	1

1 mark

1 mark

(b) Write the missing **fraction** so that the pair below **adds to 1**

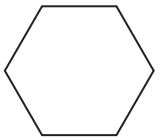
Write the fraction as simply as possible.

fraction		decimal		
	+	0.72	=	1

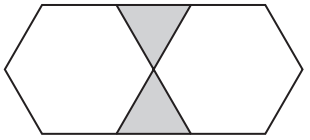
2 marks

19 Here is a sequence of patterns made from hexagons and triangles.

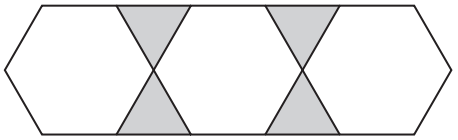
pattern number 1



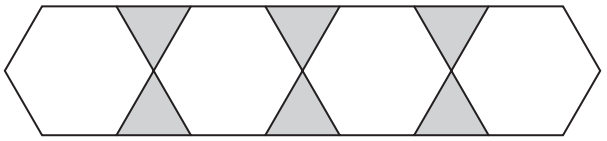
pattern number 2



pattern number 3



pattern number 4



The sequence of patterns continues.

(a) In **pattern number 90**, how many hexagons and how many triangles will there be?

..... hexagons ..... triangles

2 marks

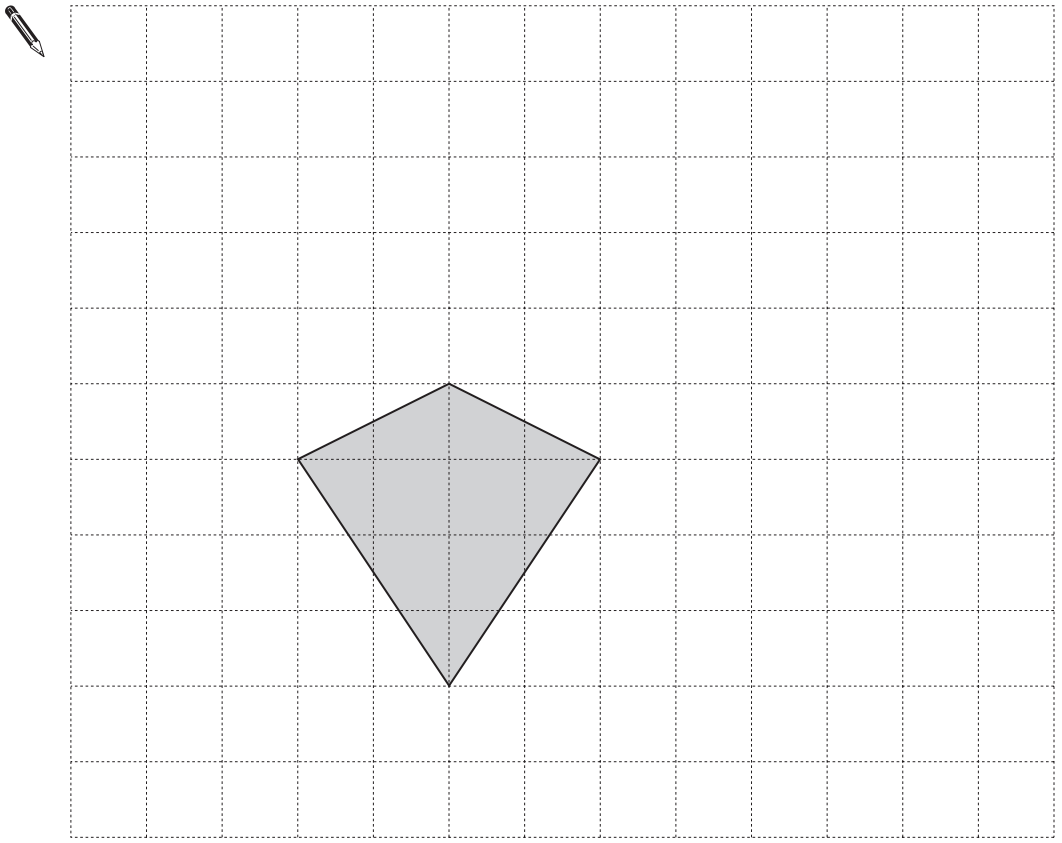
(b) In which pattern will there be **100 triangles**?

pattern number .....

1 mark

20 The diagram shows a kite drawn on a square grid.

Draw **five more** of these kites to show how they tessellate.



. . . .

. . . .

2 marks

21 Use the expressions on cards P, Q, R, S and T to answer the questions below.

$3a + 1$	$2(a - 1)$	$a^2 - 2$	$(a + 1)^2$	$6 - a$
card P	card Q	card R	card S	card T

(a) When $a = 3$, which card has the **highest value**?

card .....

1 mark

(b) When $a = -3$, which card has the **highest value**?

card .....

1 mark

(c) Which card's value is **never negative** whatever the value of a?

card .....

1 mark

22 Look at the information in the box.

$$\frac{16}{80} = 20\%$$

The information can help you work out other number facts.

Fill in the missing numbers below.

$$\frac{32}{160} = \square\ \%$$

1 mark

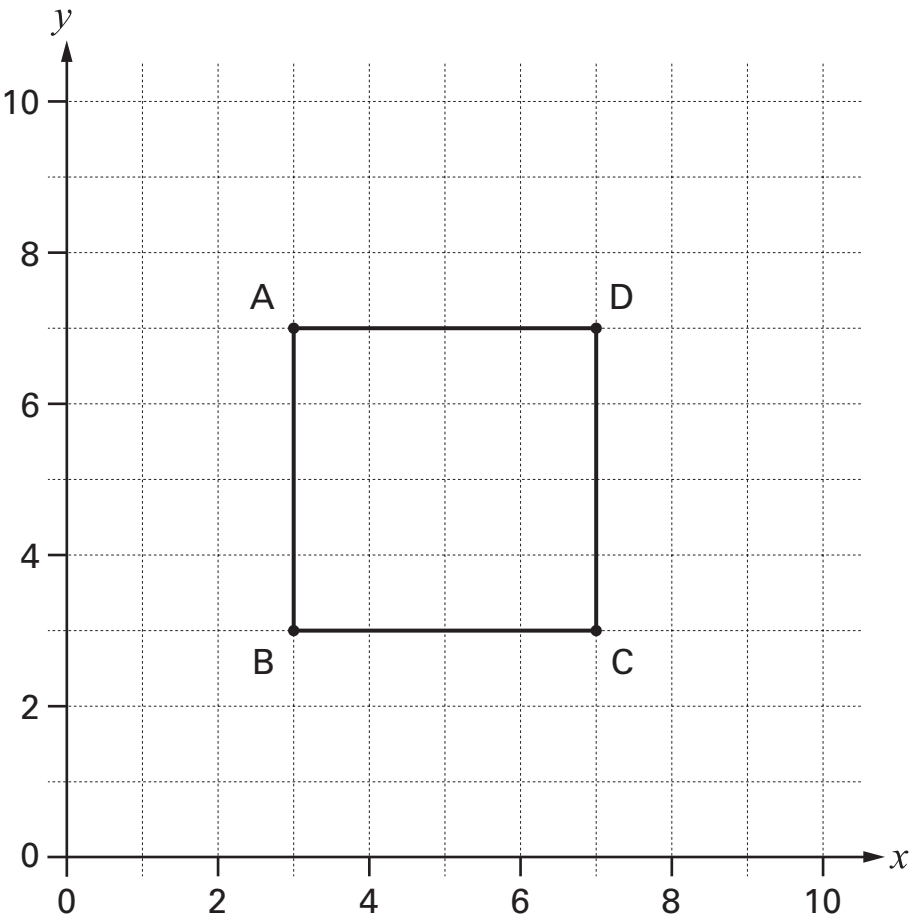
$$\frac{16}{40} = \square\ \%$$

1 mark

$$\frac{\square}{80} = 60\ \%$$

1 mark

23 The graph shows square ABCD.



The equation of the straight line through **C** and **D** is $x = 7$

(a) What is the equation of the straight line through **B** and **C**?

. . . . . 1 mark

(b) What is the equation of the straight line through **B** and **D**?

. . . . . 1 mark

24 The pupils in a class recorded the length of time they took to do their maths homework.

The stem-and-leaf diagram shows the results, in minutes.

There are **25 pupils** in the class.

1	8	9							
2	1	2	3	3	6	6	6	6	7
3	0	2	3	5	8	9			
4	0	2	4	5	5	7			
5	0	4							

1 | 8 means 18 minutes

(a) The **shortest** time was **18** minutes.

What was the **longest** time?

..... minutes

1 mark

(b) What length of time was the **mode**?

..... minutes

1 mark

END OF TEST

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QCA, Years 7 and 8 Team, 83 Piccadilly, London W1J 8QA

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