

# 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

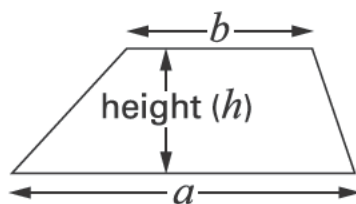


You **must not** use a calculator to answer any question in this test.

## Formulae

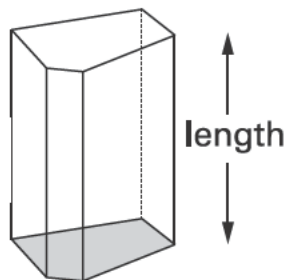
You might need to use these formulae.

### Trapezium



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

### Prism



$$\text{Volume} = \text{area of cross-section} \times \text{length}$$

1

Complete these multiplication squares.



×	6	9
3	18	.....
8	.....	.....

.....  
2 marks





×	.....	.....
.....	28	24
.....	63	54

.....  
2 marks

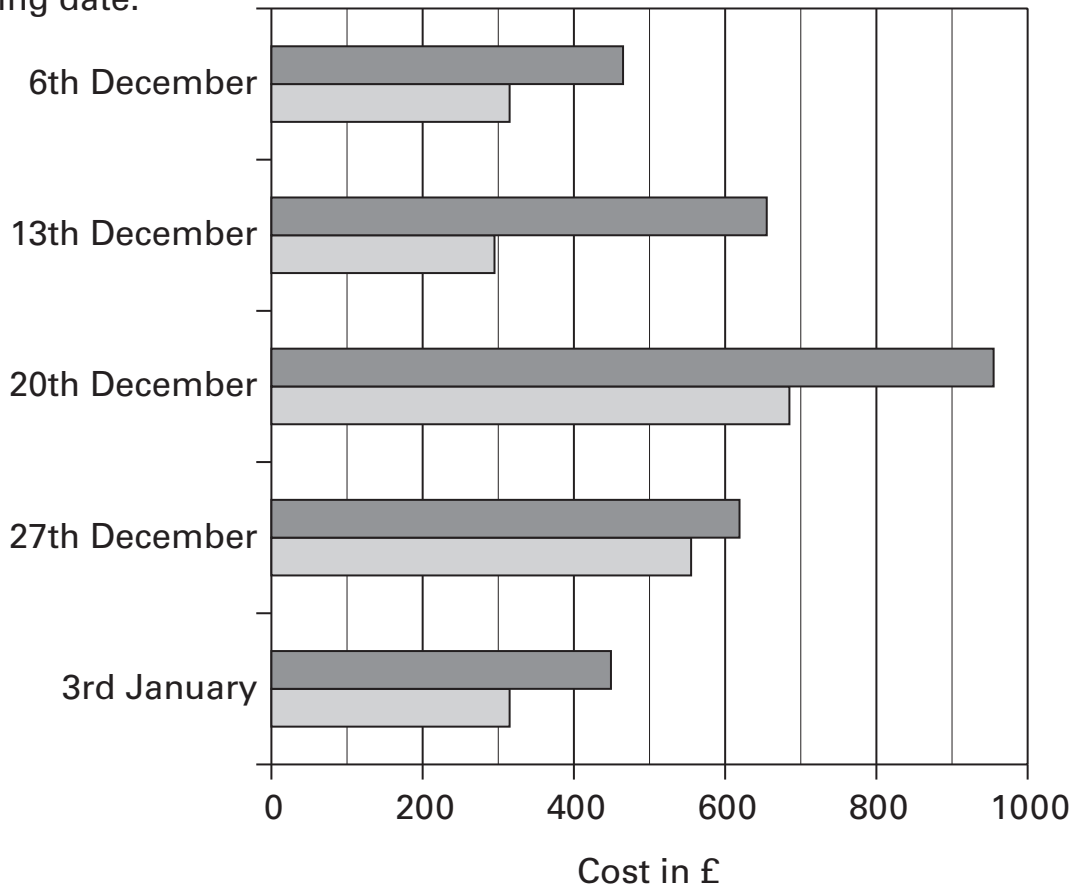


2

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

Key:  two weeks  
 one week

Starting date:



(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?



£

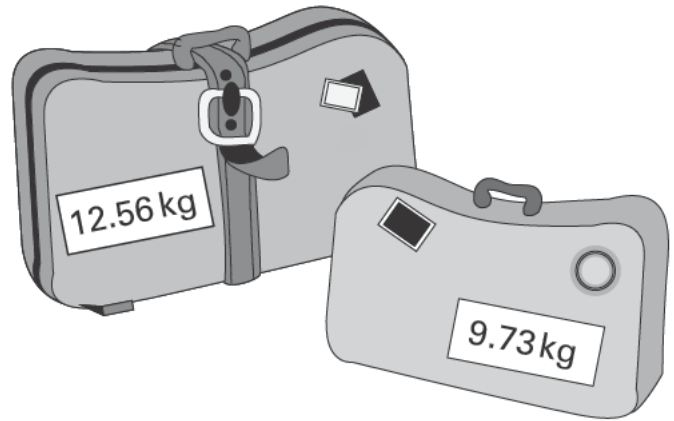
.....  
 2 marks

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 <b>7:30 pm</b>
First act lasts <b>48 minutes</b>
Interval lasts <b>15 minutes</b>
Second act lasts <b>47 minutes</b>

At what time does the second act end?



..... pm

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

5

Here is part of the 87 times table.

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

(a) The answer to  $14 \times 87$  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:**



$7 \times 87 = 609$ , then multiply 609 by .....

1 mark

**Second way:**



$10 \times 87 = 870$  and  $4 \times 87 = 348$ , then .....

1 mark

(b) Work out  $16 \times 87$

You can use the table to help you.



.....

2 marks



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

$$\text{pencil} \quad \square \times \square - 10 = 14$$

1 mark

$$\square \times 5 \times \square = 50$$

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  $1\frac{1}{2}$

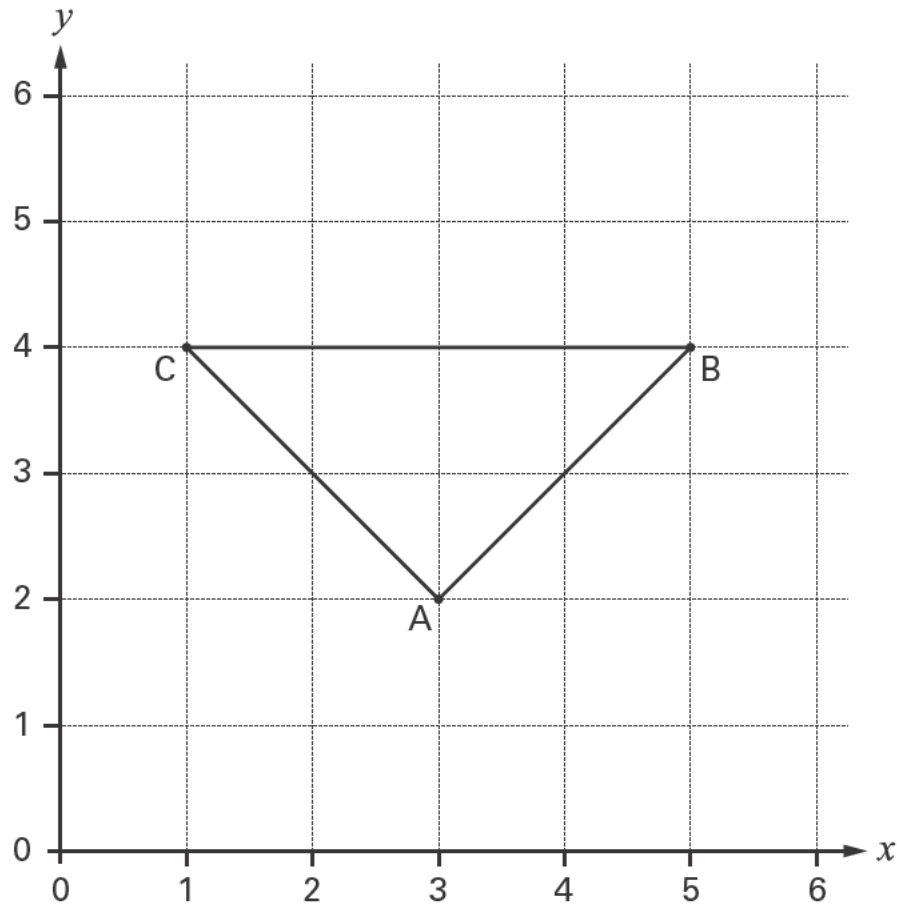
$$\text{pencil} \quad \text{rounded box} + \text{rounded box} + \text{rounded box} + \text{rounded box} + \text{rounded box} = 1\frac{1}{2}$$

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.



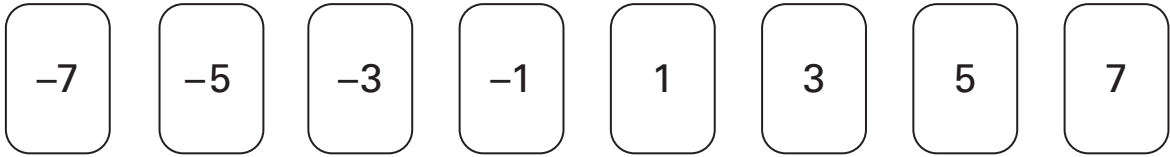
	True	False
The triangle is isosceles.	<input type="checkbox"/>	<input type="checkbox"/>
The triangle has only one line of symmetry.	<input type="checkbox"/>	<input type="checkbox"/>
The triangle is right-angled.	<input type="checkbox"/>	<input type="checkbox"/>
The coordinates of A are (2, 3)	<input type="checkbox"/>	<input type="checkbox"/>

.....  
2 marks



9

Look at these number cards.

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

$$\boxed{\phantom{00}} + \boxed{\phantom{00}} = 2$$

1 mark

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

$$\boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} = -5$$

1 mark

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

$$\boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} = 0$$

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:

$$10 \text{ litres} = 2.2 \text{ gallons}$$

How many gallons is **50 litres**?



..... gallons

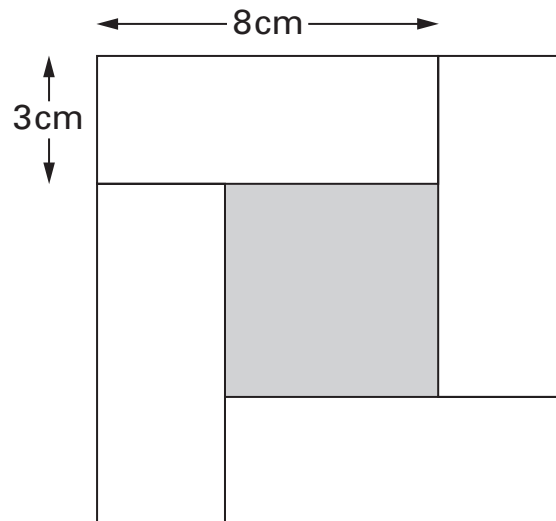
.....

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	
--	----------------	---	--	---	---	--

1 mark

$\frac{3}{5}$	+		=	1	
---------------	---	--	---	---	--

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	

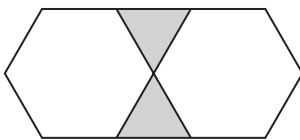
2 marks

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

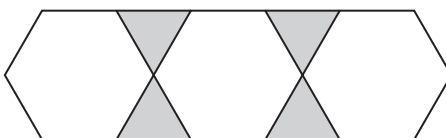
pattern number 1



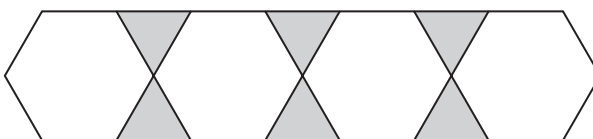
pattern number 2



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 .....

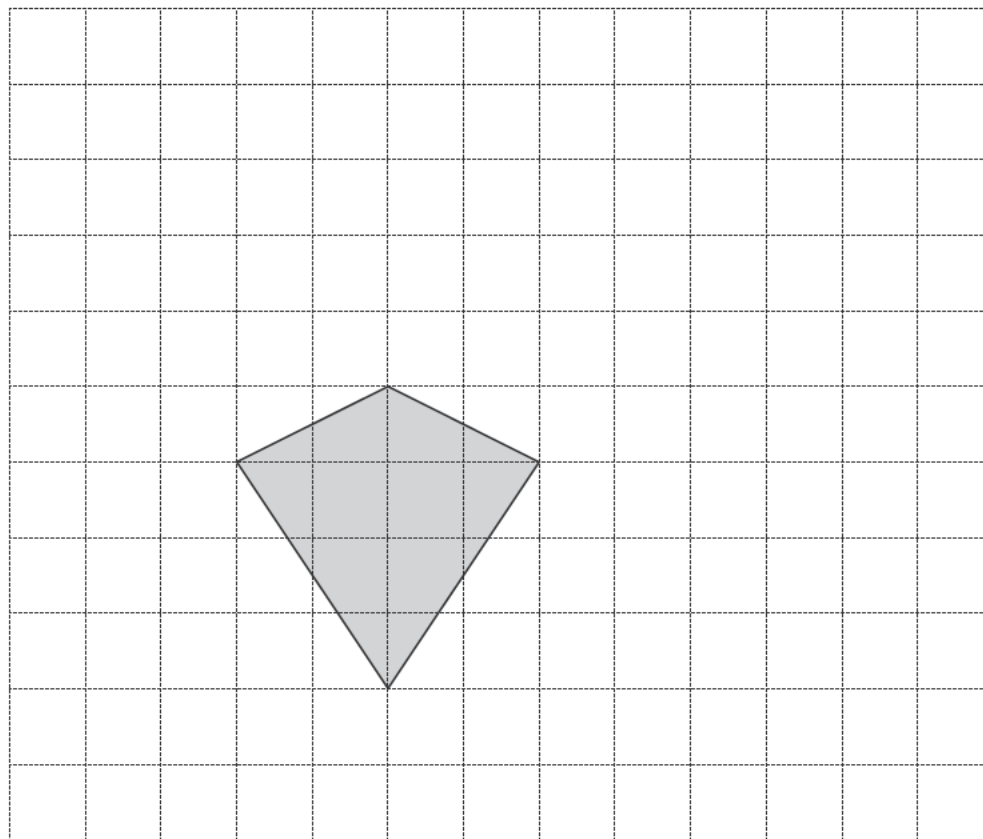
.....  
1 mark



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.

$$3a + 1$$

card P

$$2(a - 1)$$

card Q

$$a^2 - 2$$

card R

$$(a + 1)^2$$

card S

$$6 - a$$

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

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

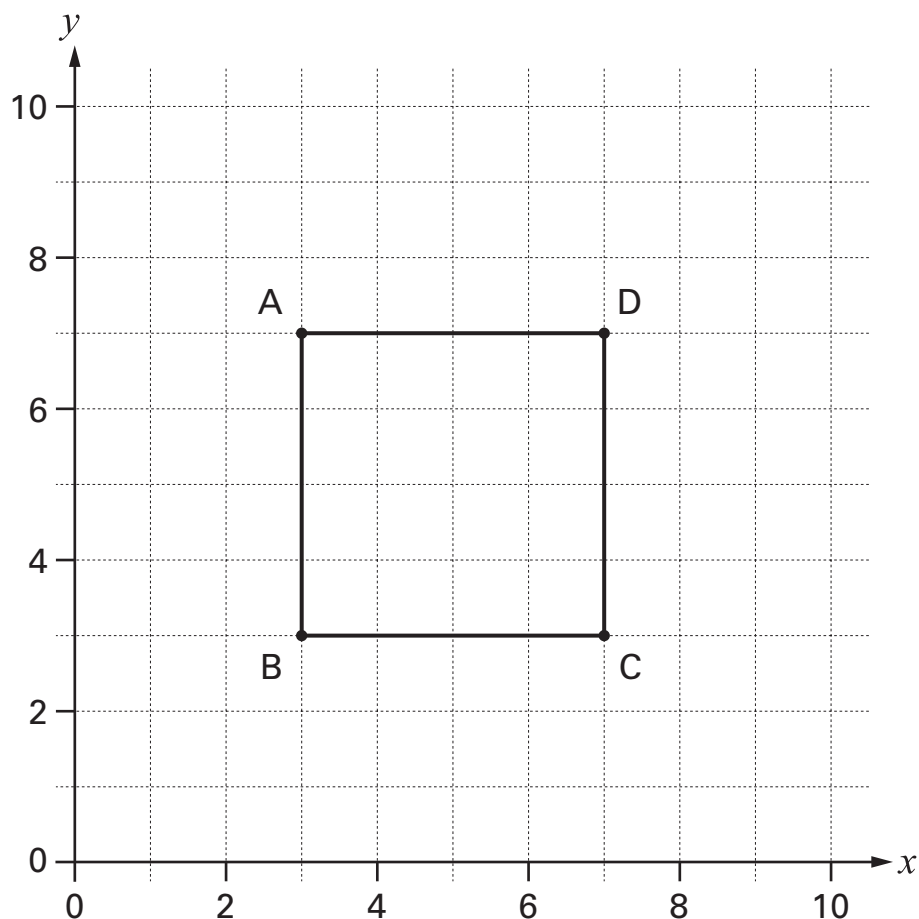
1 mark

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

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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