

Ma

KEY STAGE

2

LEVEL

6

## Mathematics tests

# Paper 1

Calculator **not** allowed

First name						
Middle name						
Last name						
Date of birth	Day		Month		Year	
School name						
DfE number						

2014

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**Please do not write on this page.**

# Instructions

You **may not** use a calculator to answer any questions in this test.

Work as quickly and as carefully as you can.

You have **30 minutes** for this test.

If you cannot do one of the questions, **go on to the next one**.

You can come back to it later, if you have time.

If you finish before the end, **go back and check your work**.

**Follow the instructions for each question carefully.**



This shows where you need to put the answer.

If you need to do working out, you can use any space on a page.

**Some questions have an answer box like this:**

A diagram showing a large rectangular area for working out. To the left of this area is a smaller, rounded rectangular box with a pointed right side, containing the text 'Show your working'. A small pencil icon is positioned above the top-left corner of the large rectangular area. In the bottom-right corner of the large rectangular area, there is a smaller, empty rectangular box for the final answer.

For these questions you may get a mark for showing your working.

**1**Write the missing numbers so that  $2a + 5b = 30$ 

One is done for you.

$$2a + 5b = 30 \quad \text{when } a = 0 \quad \text{and } b = \underline{6}$$



$$2a + 5b = 30 \quad \text{when } a = 5 \quad \text{and } b = \underline{\hspace{2cm}}$$

---

1 mark

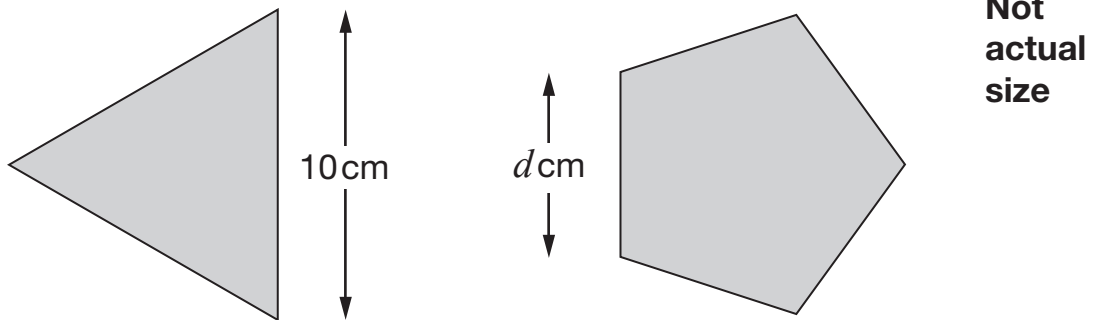
$$2a + 5b = 30 \quad \text{when } a = 15 \quad \text{and } b = \underline{\hspace{2cm}}$$

---

1 mark

2

Here are an equilateral triangle and a regular pentagon.



Each side of the triangle is 10 cm

Each side of the pentagon is  $d$  cm

The perimeter of the pentagon is 4 centimetres more than the perimeter of the triangle.

What number does  $d$  represent?



Show  
your  
working

$d =$   cm

2 marks

3

(a) Here are five number cards.

Write the missing number so that the **mean** is 2



1	4	1	1	
---	---	---	---	--

1 mark

(b) Here are the five number cards again.

1	4	1	1	
---	---	---	---	--

It is **not possible** to write the missing number so that the **range** is 2

Explain why not.



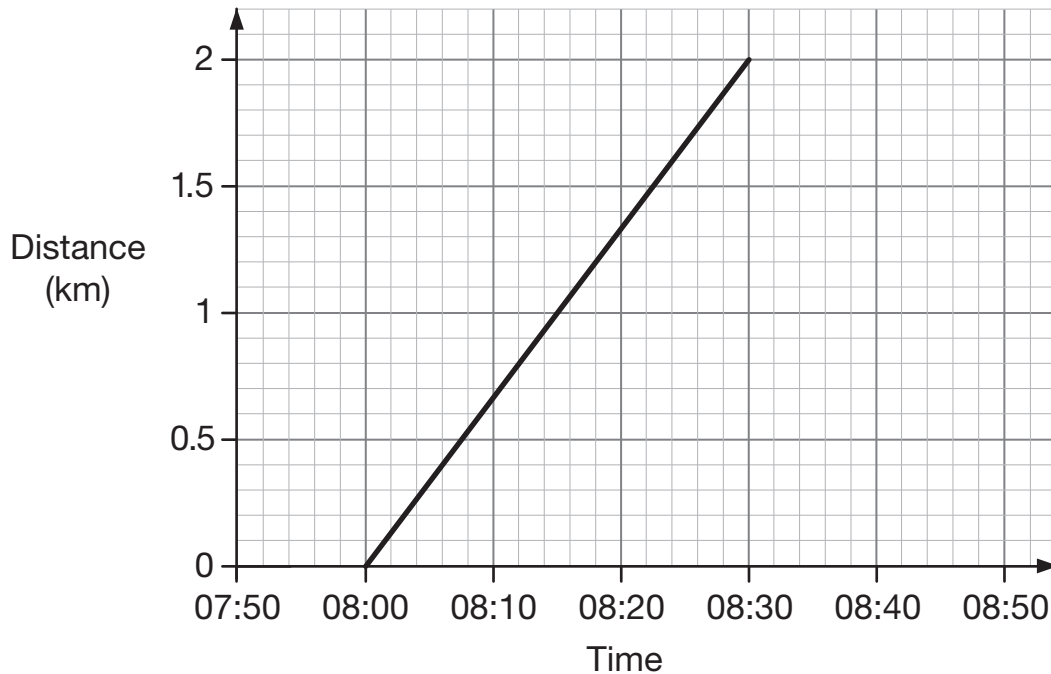
1 mark

4

Alfie and his brother walked from home to their school.

Their school is 2 kilometres from home.

The graph shows information about **Alfie's** journey.



- (a) How does the graph show that Alfie walked at a **constant speed** for all of his journey?




---

1 mark

- (b) Alfie's brother left home **10 minutes before** Alfie.

He arrived at school **20 minutes after** Alfie.

He walked at a **constant speed** for all of his journey.

At what time did Alfie overtake his brother?



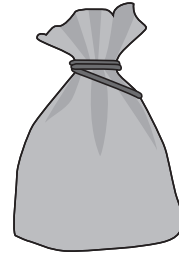
1 mark

5

Megan has a bag containing  
white counters and black counters.

There are 20 counters in the bag altogether.

The probability of choosing a **white** counter from the bag is 0.75



- (a) How many white counters are in the bag?



\_\_\_\_\_

---

1 mark

- (b) Megan adds more **black** counters to the bag.

How many **black** counters must she add so that the probability of choosing a **white** counter is 0.25?



Show  
your  
working

\_\_\_\_\_

---

2 marks



6

Emma thinks of two **prime** numbers.

She adds the two numbers together.

Her answer is 36

Write **all** the possible pairs of prime numbers Emma could be thinking of.

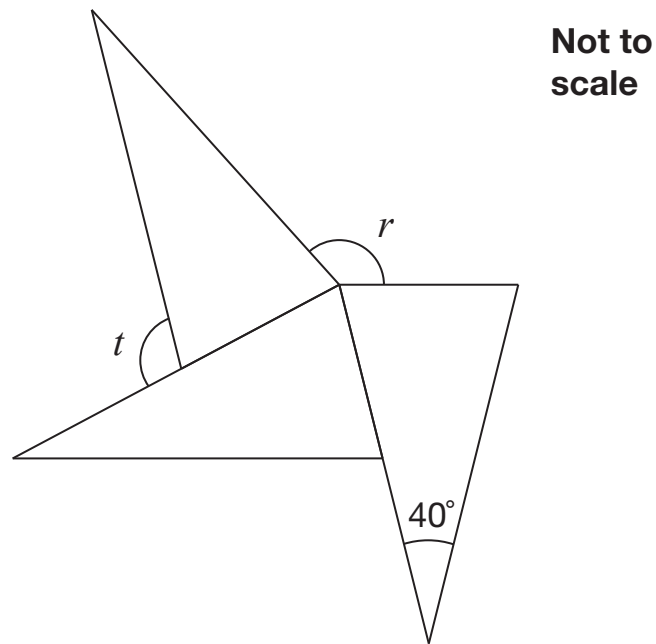


---

2 marks

7

The diagram shows three **identical** isosceles triangles.



What are the sizes of angles  $r$  and  $t$ ?



Show  
your  
working


$r =$

$t =$

2 marks

8


(a) Write numbers in the boxes to make this fraction calculation correct.


$$\frac{1}{\square} + \frac{\square}{5} = \frac{7}{10}$$

---

1 mark

(b) Now write two **different** numbers to make the calculation correct.


$$\frac{1}{\square} + \frac{\square}{5} = \frac{7}{10}$$

---

1 mark

9

Jack has two **square-based pyramids** that are the same size.

He sticks the square faces together to make a new 3-D shape.

How many **faces** and how many **edges** does his new 3-D shape have?



and

---

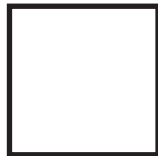
1 mark

10

Write the missing number.



12.5 ÷



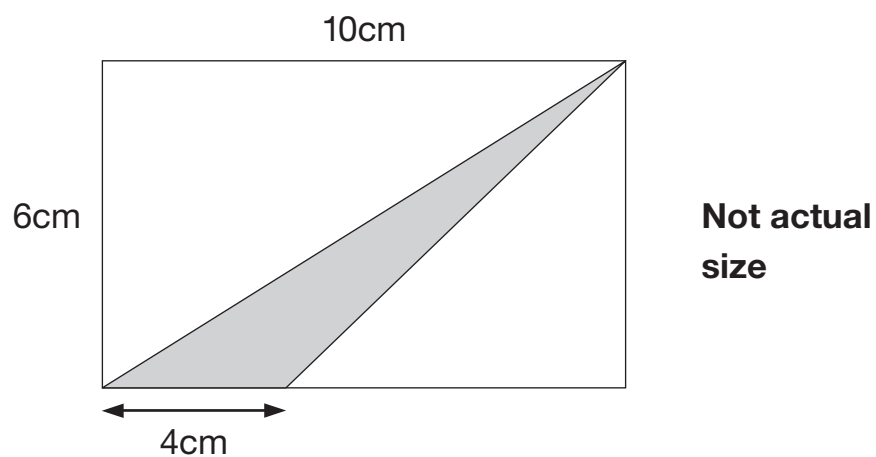
= 7.5 ÷ 1.5

---

1 mark

11

The diagram shows a shaded triangle inside a rectangle.



What is the area of the shaded triangle?



Show  
your  
working

cm<sup>2</sup>

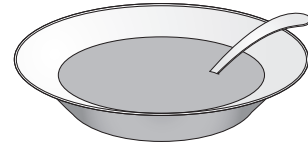
2 marks

12

Alfie did a survey to find which soup was most popular.

The choices were:

- tomato
- chicken
- mushroom



A quarter of the children chose chicken soup.

Four times as many children chose tomato soup as chose mushroom soup.

Alfie makes a pie chart to show this information.

What **angle** should he use for the children who chose tomato soup?



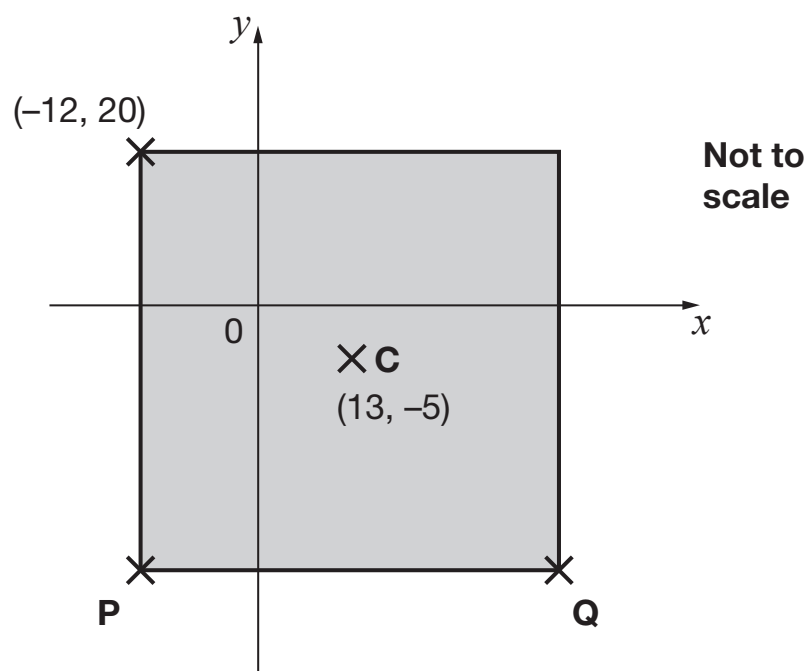
Show  
your  
working



3 marks

13

Here is a square on coordinate axes.

**C** is the centre of the square.Find the coordinates of **P** and **Q**.**P** is

1 mark

**Q** is

1 mark

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