

Ma

KEY STAGE

2

LEVEL

6

Mathematics tests

Paper 1

Calculator **not** allowed

2014

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

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

One is done for you.

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



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

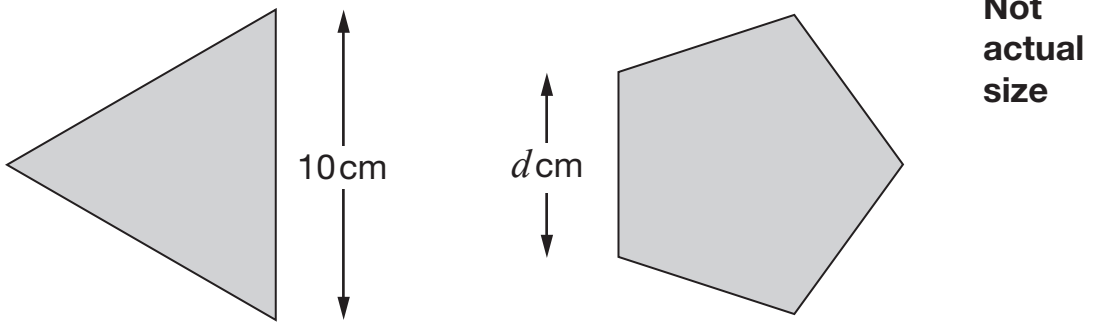
1 mark

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

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.



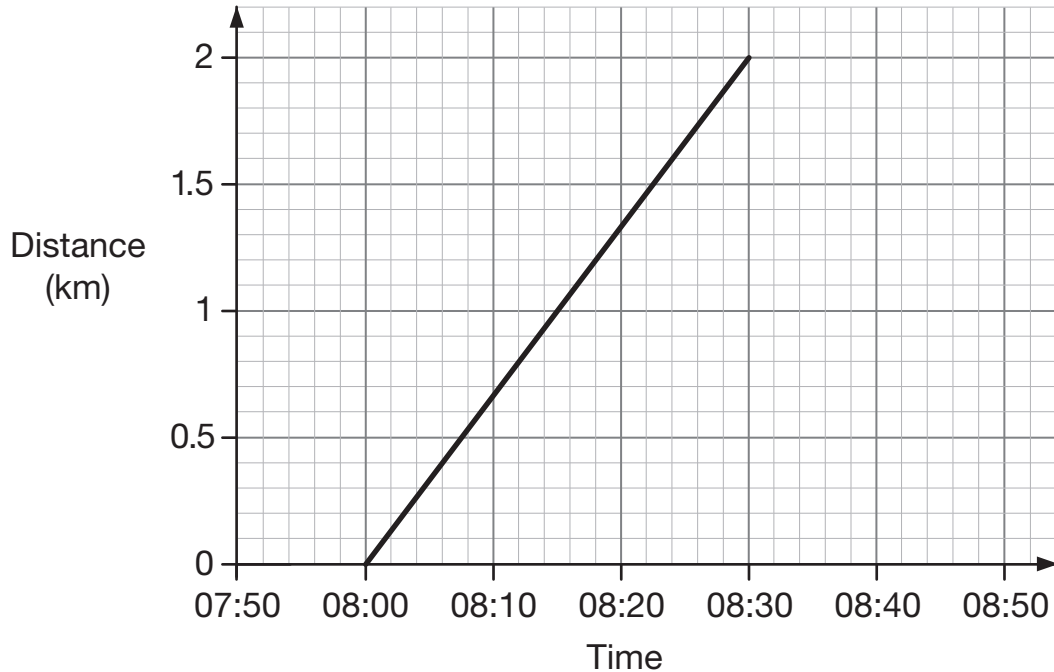
1 mark

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?



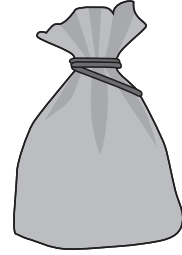
1 mark

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

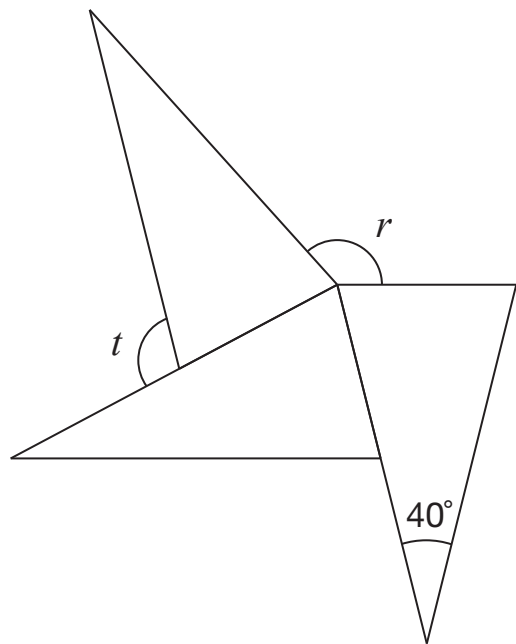
Write **all** the possible pairs of prime numbers Emma could be thinking of.



2 marks


7

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



Not to scale

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?



faces

and

edges

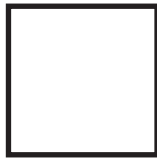
1 mark

10

Write the missing number.



12.5 ÷

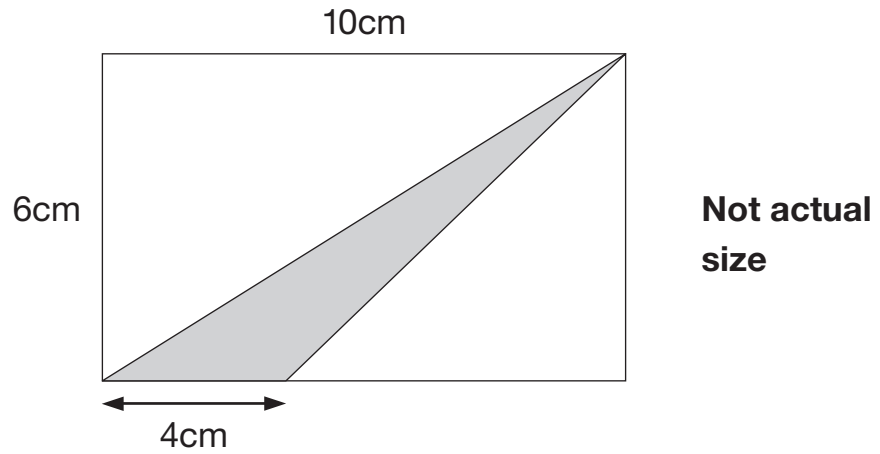


= 7.5 ÷ 1.5


1 mark

11

The diagram shows a shaded triangle inside a rectangle.



What is the area of the shaded triangle?



Show your working

cm^2

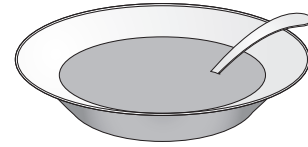
2 marks

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.

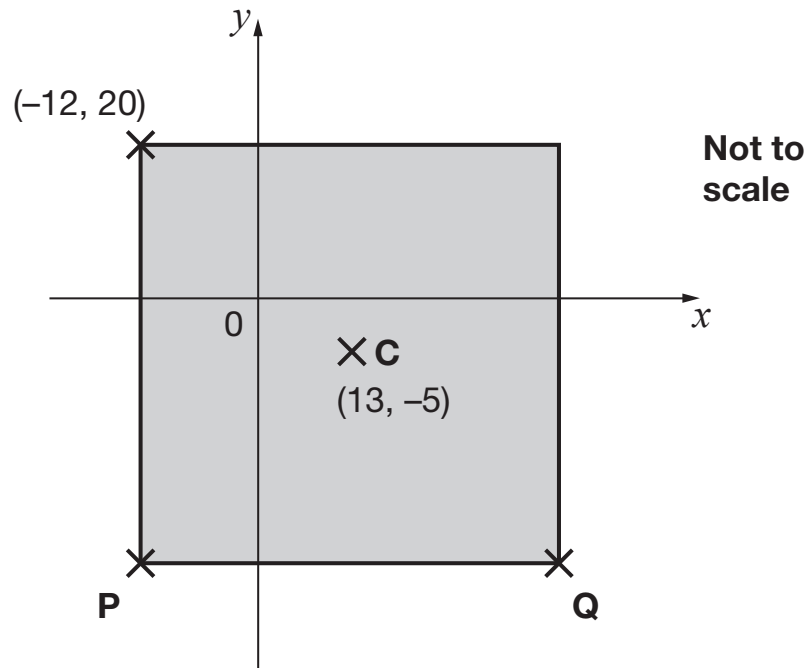
What **angle** should he use for the children who chose tomato soup?

A large, empty rectangular box intended for the student to show their working. On the left side, there is a callout box with a pencil icon and the text "Show your working". In the bottom right corner of the main box, there is a small rectangular box containing a small circle, likely a placeholder for a mark or a specific instruction.

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

Ma

KEY STAGE

2

LEVEL

6

Mathematics tests

Paper 2

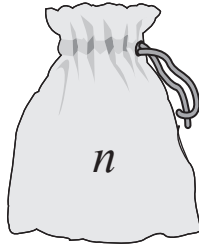
Calculator allowed

2014

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

1

(a) There are n counters in Alfie's bag.



Alfie puts **3** more counters in the bag.

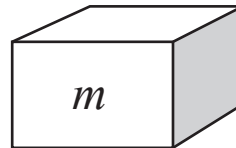
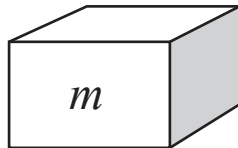
Write an expression for the number of counters that are in the bag now.



1 mark

(b) Megan has two boxes.

There are m counters in each box.



She puts all her counters together in a pile, then removes **5** of them.

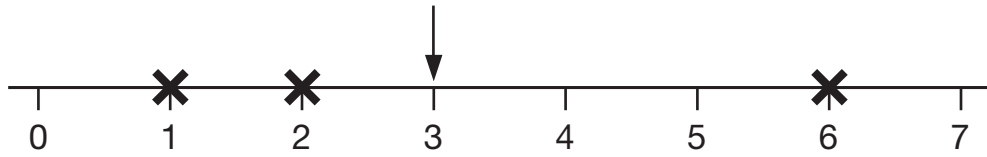
Write an expression for the number of counters that are in the pile now.



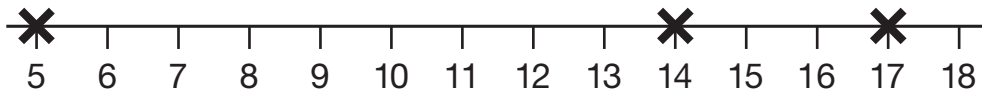
1 mark

2

The arrow below points to the **mean** of the three numbers shown by crosses.



- (a) Draw an arrow that points to the mean of the three numbers shown below.

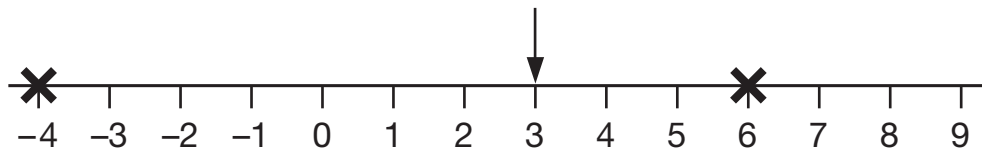


1 mark

- (b) The arrow below points to the mean of three numbers.

One of the numbers is missing.

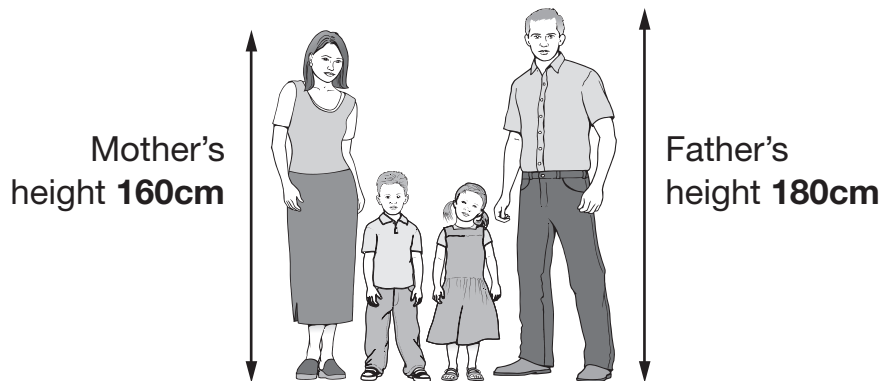
Draw a cross to show the position of the missing number.



1 mark

3

Here are Alfie and Emma with their parents.



You can use the table below to predict how tall children will be when they are adults.

There is one formula for boys and a different one for girls:

Boy's predicted height	Girl's predicted height
$0.4(x + y) + 42$	$0.4(x + y) + 29$
x is the father's height in cm. y is the mother's height in cm.	

- (a) Calculate the predicted height of Alfie when he is an adult.


 cm

1 mark

- (b) When Emma is an adult, she is predicted to be taller than her mother.

How much taller?


 cm

1 mark

4

Two numbers are in the ratio **4 : 5**

One of the numbers is **60**

There are two possible values for the other number.

What are the two possible values?

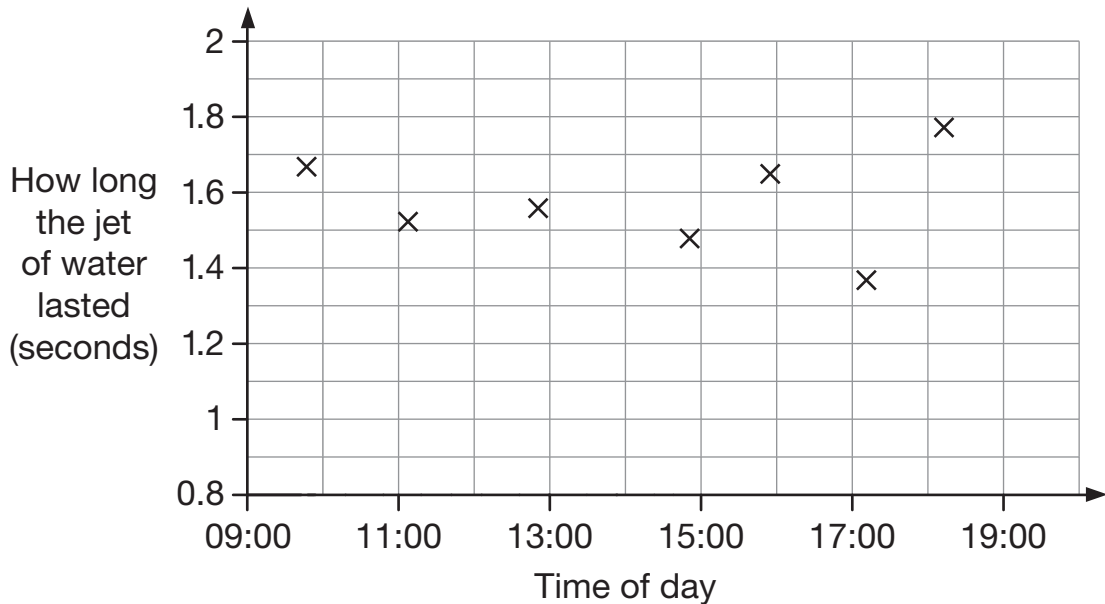


2 marks

5

A geyser is a jet of hot water that comes from below the Earth's surface.

The graph shows information about the times when the jet of hot water appeared.



- (a) What was the greatest time between two jets of water?



1 mark

- (b) Write in the missing information.

The jets of water lasted for different lengths of time.



The range of these times was about _____ seconds.

1 mark

6

The cost to hire a boat on a lake is worked out using the information below.

Cost to hire a boat:
£4.50 per boat
and then
£3.50 per hour



- (a) Four friends hire a boat for five hours.

They share the cost equally.

How much does **each** person pay?



Show
your
method

£

2 marks

- (b) Chen's family hires a boat and pays a total of £15

How many hours did they have the boat for?



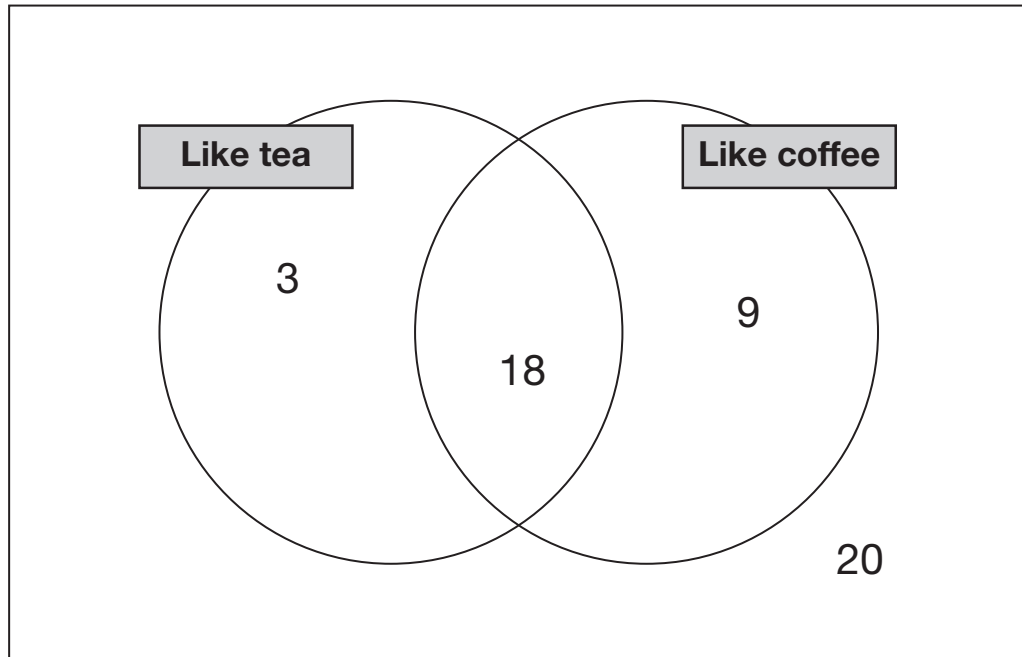
hours

1 mark

7

In a survey people were asked if they like tea and coffee.

The results are in this Venn diagram.



(a) What **percentage** of people in the survey like **both** tea and coffee?



%

1 mark

(b) What **percentage** of people in the survey do **not** like coffee?



%

1 mark

8

Anna says $\frac{4}{7}$ is greater than $\frac{5}{9}$

Explain why Anna is correct.

A large, empty, cloud-shaped area with a scalloped border, intended for the student to write their explanation.

1 mark

Two numbers have a **difference of 1**

They multiply together to make 9

Megan makes this spreadsheet to help find what the two numbers might be.

first number	second number	multiply
2	3	6
2.1	3.1	6.51
2.2	3.2	7.04
2.3	3.3	7.59
2.4	3.4	8.16
2.5	3.5	8.75
2.6	3.6	9.36

Megan says,

'From my spreadsheet, the best estimate for the two numbers is 2.5 and 3.5'

Chen says,

'I can work out a better estimate for the two numbers.'

Write what Chen's estimate could be.

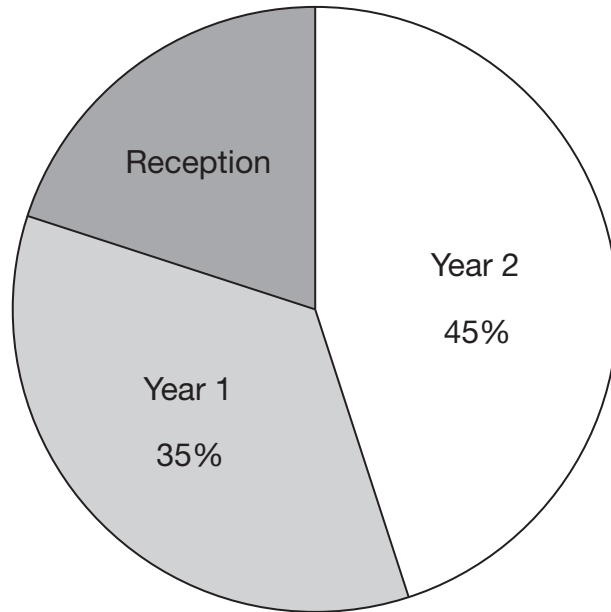


and

2 marks

10

The pie chart shows the Year groups of children at Woodland Infant School.



There are **56** children in **Year 1**

How many children are there in Reception?



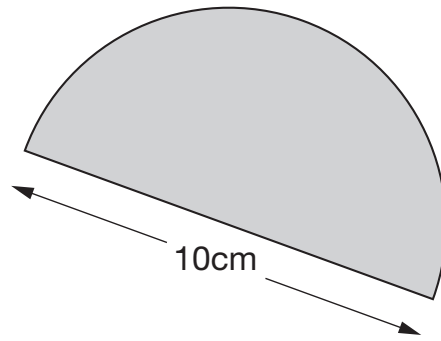
Show
your
method

children

2 marks

11

This shape is a semi-circle.



Not
actual
size

What is the **perimeter** of the shape?

Use this formula:

the circumference of a circle is $3.14 \times \text{diameter}$



Show
your
method

cm

2 marks



How many **days** old will the baby be when she has lived for **one million seconds**?



Show
your
method

days

2 marks