

2018 national curriculum tests

Key stage 2

Mathematics

Paper 3: reasoning

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



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1

The numbers in this sequence increase by the same amount each time.

Write the missing numbers.

35

42 49
))
 7

56

63

70

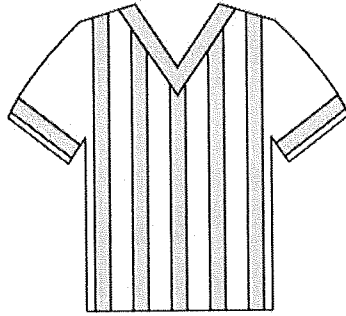
2 marks



2

Adam chooses the colours for a new team shirt.

The shirt has **two** colours.



There are four colours to choose from: **yellow, blue, white** and **red**.

Write the **two** missing combinations.

The shirt could be:

- yellow and blue
- yellow and white
- yellow and red
- blue and white.

blue and red

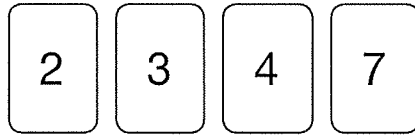
white and red

1 mark



3

Here are four number cards.

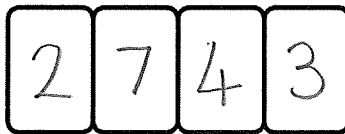


Layla uses each card once to make a four-digit number.

She places:

- 4 in the tens column
- 2 so that it has a higher value than any of the other digits
- the remaining two digits so that 7 has the higher value.

Write a digit in each box to show Layla's number.



1 mark



4

Write the three missing digits to make this **addition** correct.

$$\begin{array}{r}
 \boxed{5} \boxed{3} \boxed{2} \boxed{4} \boxed{9} \\
 + \quad \boxed{7} \boxed{4} \boxed{2} \boxed{7} \\
 \hline
 \boxed{6} \boxed{0} \boxed{6} \boxed{7} \boxed{6}
 \end{array}$$

2 marks

5

Tick the numbers that are common factors of both **12 and 18**

- 2
- 3
- 6
- 9
- 12

$$\begin{array}{l}
 \underline{12} \\
 1, 12 \\
 \textcircled{2}, \textcircled{6} \\
 \textcircled{3}, 4
 \end{array}
 \quad
 \begin{array}{l}
 \underline{18} \\
 1, 18 \\
 \textcircled{2}, 9 \\
 \textcircled{3}, \textcircled{6}
 \end{array}$$

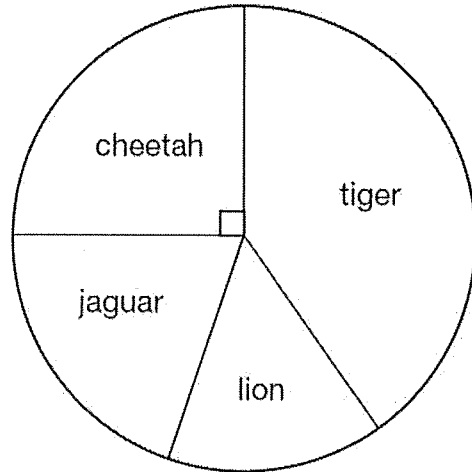
2 marks



6

This chart shows the number of different types of big cat in a zoo.

There are 20 big cats in the zoo altogether.



Here are some statements about the chart.

Tick the statements that are **true**.

There are more cheetahs than jaguars.

The total number of lions and tigers is 10

 $\frac{1}{2} = 10$

One-quarter of the big cats are cheetahs.

There are more than 5 jaguars.

 $\frac{1}{4} = 5$

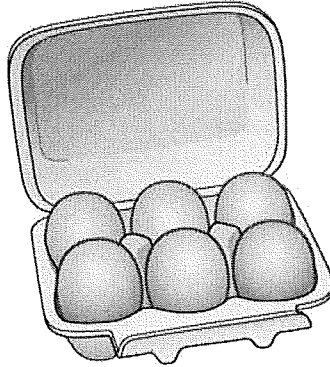
2 marks



7

A farmer is packing eggs.

Each box holds six eggs.



The farmer has 980 eggs to pack.

How many boxes can the farmer fill using 980 eggs?

$$\begin{array}{r} 163 \text{ r } 2 \\ 6 \overline{) 980} \end{array}$$

163 full boxes

1 mark

How many eggs will be left over?

2 left over

1 mark

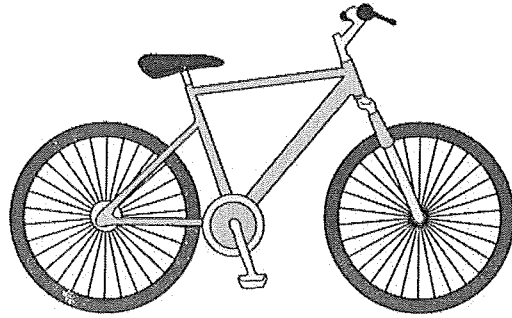


G 0 0 0 8 0 A 0 9 2 4

8

Jack has £400

He spends 35% of his money on a new bike.



How much does Jack spend on his new bike?

$$35\% \text{ of } 100 = 35$$

$$\text{so } 35\% \text{ of } 400 = 35 \times 4$$

£ 140

1 mark

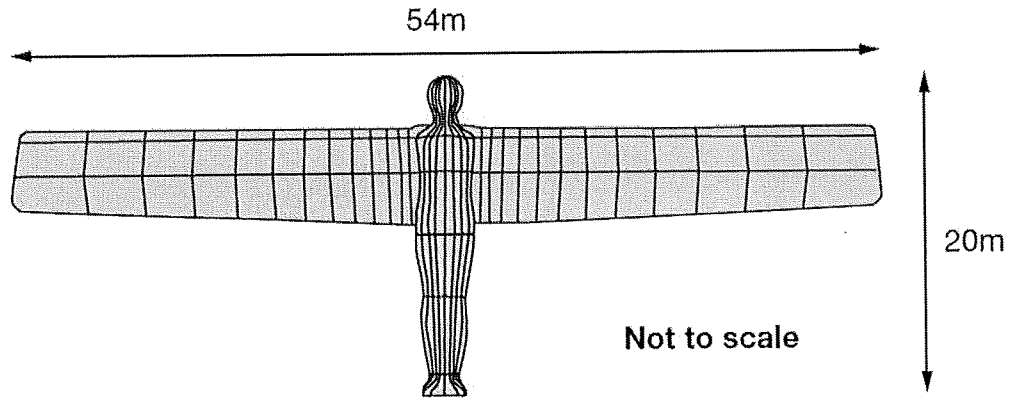
$$\begin{array}{r} 35 \\ \times 4 \\ \hline 140 \\ \hline \end{array}$$



9

The Angel of the North is a large statue in England.

It is 20 metres tall and 54 metres wide.



Ally makes a scale model of the Angel of the North.

Her model is 40 centimetres tall.

How **wide** is her model?

$$\begin{array}{r} 54 \\ \times 2 \\ \hline 108 \end{array}$$

108 cm

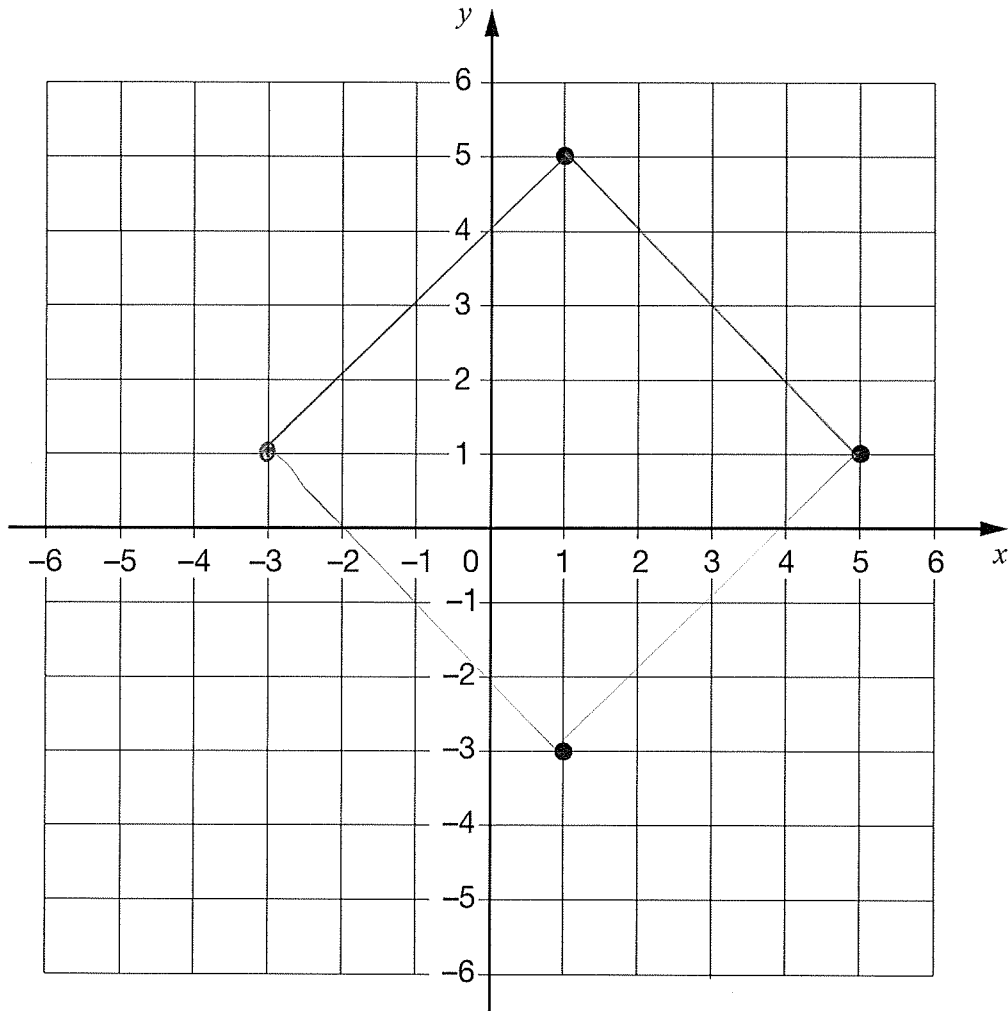
1 mark



10

Layla draws a **square** on this coordinate grid.

Three of the vertices are marked.



What are the coordinates of the missing vertex?

$(-3, 1)$

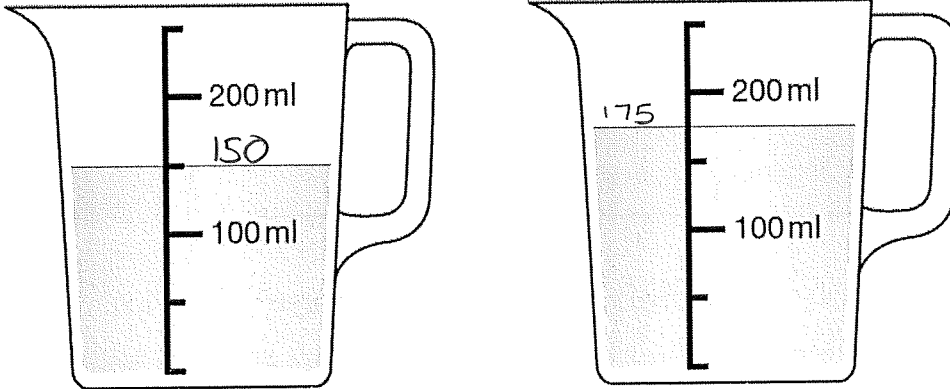
1 mark



11

Stefan has 600 millilitres of water in a bottle.

He pours some of the water into two measuring jugs as shown.



How many millilitres of water are left in Stefan's bottle?

Show
your
method

			5	9	
	1	5	0	0	0
+	1	7	5		
<hr/>					
	3	2	5		

			5	9	
	6	0	0		
-	3	2	5		
<hr/>					
	2	7	5		

275 ml

2 marks



12

This table shows the areas of the United Kingdom and Jamaica.

Country	Area (square kilometres)
United Kingdom	240,000
Jamaica	10,000

The area of the United Kingdom is larger than the area of Jamaica.

How many times larger is the United Kingdom?

$$240\ 000 \div 10\ 000$$

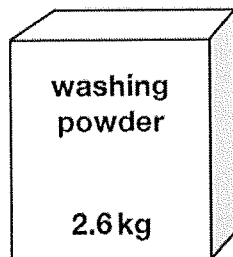
24 times larger

1 mark



13

A box contains 2.6 kg of washing powder.



Jack uses 65 grams of powder for each wash.

He uses all the powder.

How many washes did Jack do?

Show your method

$2.6 \text{ kg} = 2600 \text{ g}$	$\begin{array}{r} 65_1 \\ 130_2 \\ 195_3 \\ 260_4 \end{array}$
$\begin{array}{r} 40 \\ 65 \overline{) 2600} \\ - 260 \\ \hline 00 \end{array}$	<p>40 washes</p>

2 marks

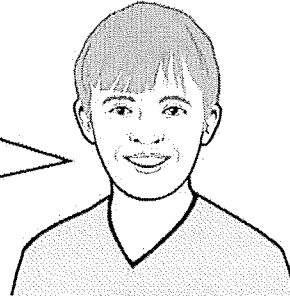


14

Two of the angles in a triangle are 70° and 40°

Jack says,

The triangle is equilateral.



Explain why Jack is **not** correct.

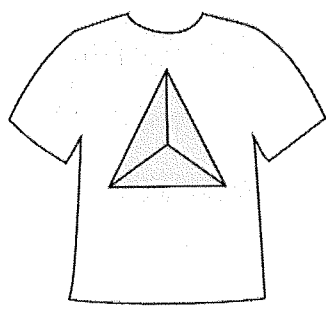
In an equilateral triangle
has three equal angles of
 60° .

1 mark



15

A shop prints designs on T-shirts.



They use this formula to work out the price for printing a design.

$$\text{price} = 60\text{p} \times \text{number of colours} + \text{£}1.25$$

What is the price for printing a design that has 3 colours in it?

$$P = 60 \times 3 + \text{£}1.25$$

$$\text{£ } 3.05$$

1 mark

$$P = \text{£}1.80 + 1.25$$

Amina has £5 to spend on printing a design.

What is the greatest number of colours she can have in the design?

Show your method

	4	9			6	¹⁵	60	360
	5	0		60	3	75	120	2
-	1	25		-	3	60	180	3
	3	75			1	5	240	4
							300	5

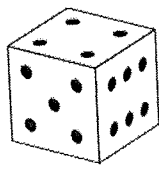
$$6 \text{ colours}$$

2 marks

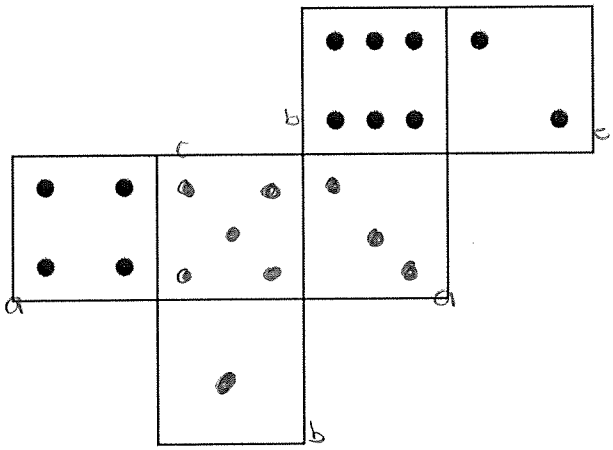


17

On a dice, the sum of the dots on opposite faces is always 7



Draw dots on the three empty faces of the net so that it could fold up to make a dice.



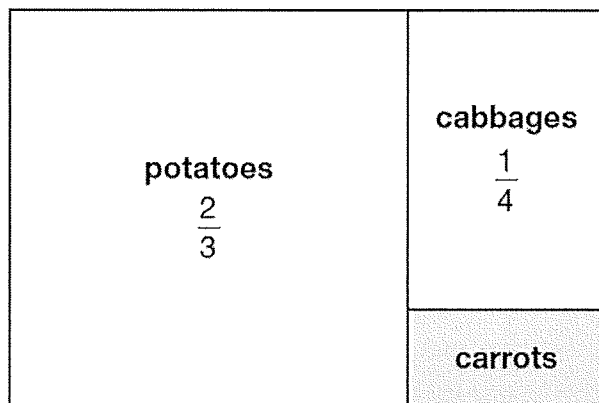
1 mark



18

This is a diagram of a vegetable garden.

It shows the fractions of the garden planted with potatoes and cabbages.



Not to scale

The remaining area is planted with carrots.

What fraction of the garden is planted with carrots?

Show your method

$$\frac{2}{3} + \frac{1}{4}$$
$$\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$$

Find a common denominator eg 12

$\frac{1}{12}$

2 marks



19

$$33,630 = 354 \times 95$$

Use this multiplication to complete the calculations below.

$$354 \times 9.5 = \boxed{3363} \quad 33630 \div 10$$

$$3,540 \times 95 = \boxed{336300} \quad 33630 \times 10$$

$$3,363 \div 95 = \boxed{35.4} \quad 354 \div 10$$

2 marks



21

Jack finished a sponsored run in 53 minutes 25 seconds.

Ally finished 3 minutes 50 seconds **after** Jack.

How long did Ally take?

$$\begin{array}{r} 53 \\ + 3 \\ \hline 56 \end{array}$$

$$\begin{array}{r} 50 \\ + 25 \\ \hline 75 \end{array}$$

$$75s = 1m 15s$$

57 min 15 sec

1 mark

Layla finished the run 8 minutes 45 seconds **before** Jack.

How long did Layla take?

$$\begin{array}{r} 41 \\ \$3 \\ - 8 \\ \hline 45 \end{array}$$

45m 25s
take 45s

44 min 40 sec

1 mark





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2018 key stage 2 mathematics

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