

2022 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						



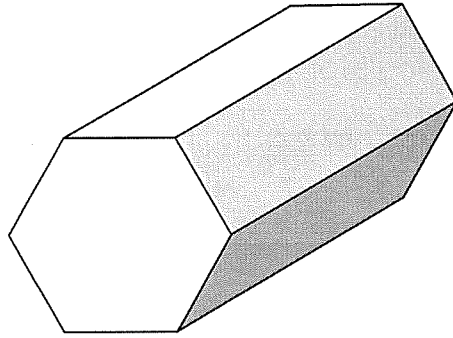
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1

Here is a drawing of a hexagonal prism.



How many **faces** does the prism have?

$$6 + 2 = 8$$

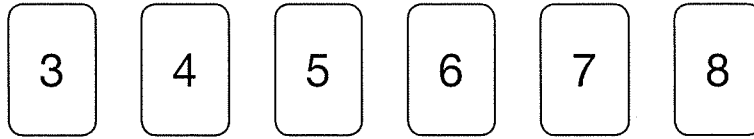
8

1 mark



2

Here are six number cards.



Use **all six** cards to complete the three multiplications below.

$$24 = 3 \times 8$$

$$28 = 4 \times 7$$

$$30 = 5 \times 6$$

1 mark



4

Draw **four** lines to match each fraction to its equivalent decimal.

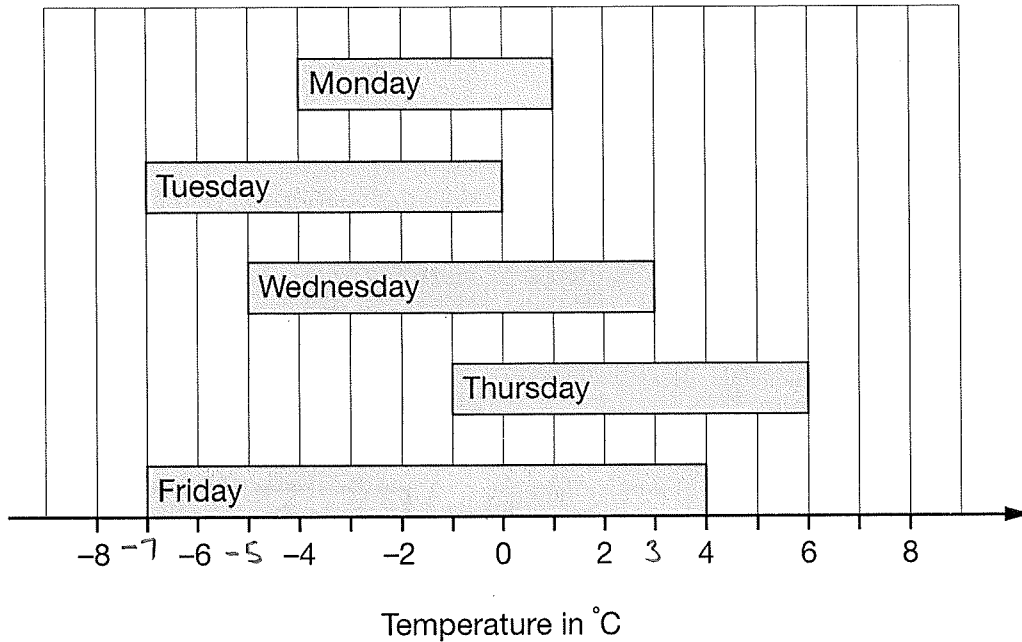
		$\frac{1}{2}$		0.3
0.5		$\frac{1}{2}$	—	0.5
	Tenth	$\frac{3}{10}$	—	0.8
0.3		$\frac{3}{10}$	—	0.03
		$\frac{3}{4}$	—	0.25
$\frac{3 \times 25}{4 \times 25} = \frac{75}{100}$		$\frac{3}{4}$	—	0.75
	Hundredth	$\frac{3}{100}$	—	
0.03		$\frac{3}{100}$	—	

2 marks



6

This chart shows the range of temperatures each day during one week from Monday to Friday.



What was the **lowest** temperature?

-7 °C

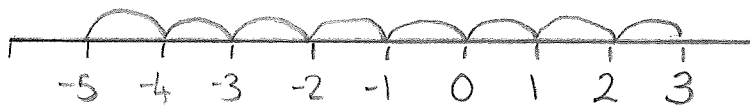
1 mark

What was the difference between the highest and lowest temperatures on **Wednesday**?

$$3 - -5 = 8$$

8 °C

1 mark



8

7,546

Round this number:

to the nearest 1,000

 $\underline{7}546 \uparrow$

8000

to the nearest 100

 $7\underline{5}46 -$

7500

to the nearest 10

 $75\underline{4}6 \uparrow$

7550

2 marks

9

Complete the calculation.

$$1,000 \times 416 = 10 \times \boxed{41600}$$

$(416000) \quad (416000 \div 10)$

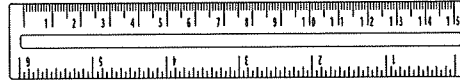
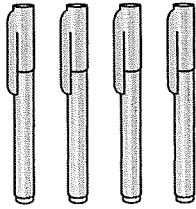
1 mark



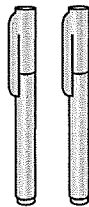
K 0 0 0 8 0 A 0 1 1 2 4

10

Adam buys 4 pens and a ruler and pays £4.75 altogether.



Jack buys 2 pens and pays £1.98 altogether.



How much does a ruler cost?

Show your method

	$\begin{array}{r} 1.98 \\ \times 2 \\ \hline 3.96 \end{array}$	$\begin{array}{r} 3.16 \\ + 1.59 \\ \hline 4.75 \end{array}$	
		$\begin{array}{r} 4.75 \\ - 3.96 \\ \hline 0.79 \end{array}$	
			79p

2 marks



11

Ally chooses a whole number.

When she multiplies her number by 4, the answer is **less than 100**

When she multiplies her number by 5, the answer is **greater than 100**

Write a number that Ally could have started with.

$$\begin{array}{r} 21 \\ \times 4 \\ \hline 84 \end{array} \quad \begin{array}{r} 21 \\ \times 5 \\ \hline 105 \end{array}$$

21

1 mark



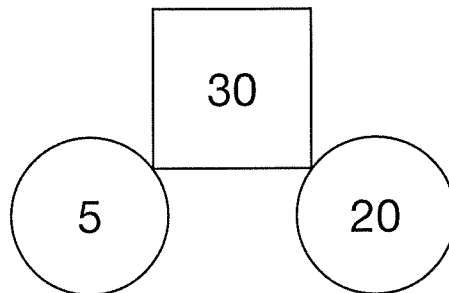
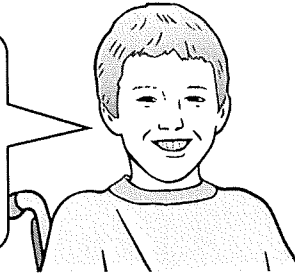
K 0 0 0 8 0 A 0 1 3 2 4

12

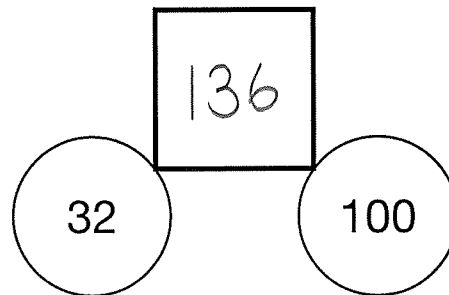
William says the rule for this diagram.

Find the difference between the numbers in the circles.

Double this to make the number in the square.

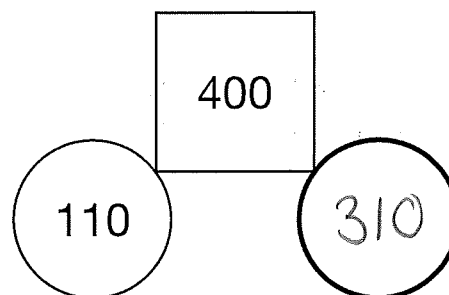


Use the same rule to write the missing numbers below.



$$\begin{array}{r} 100 \\ - 32 \\ \hline 68 \\ \hline \end{array} \quad \begin{array}{r} 68 \\ \times 2 \\ \hline 136 \\ \hline \end{array}$$

1 mark



$$\begin{array}{r} 200 \\ 2 \overline{)400} \\ \hline \end{array} \quad \begin{array}{r} 200 \\ + 110 \\ \hline 310 \\ \hline \end{array}$$

1 mark



13

Write the missing fraction to make this **addition** correct.

$$\frac{2}{3} + \boxed{\frac{1}{6}} = \frac{5}{6}$$

$$\frac{4}{6}$$

1 mark

14

Jack hires a hall for a party.

This formula is used to work out the total cost.

$$\text{Total cost} = \text{£15 booking fee} + \text{£12.50 per hour}$$

What is the total cost of hiring the hall from 6pm until 11pm?

$$11 - 6 = 5$$

$$\begin{array}{r} 12.50 \\ \times \quad 5 \\ \hline 62.50 \\ \hline \end{array}$$

$$\begin{array}{r} 62.50 \\ + 15.00 \\ \hline 77.50 \\ \hline \end{array}$$

£ 77.50

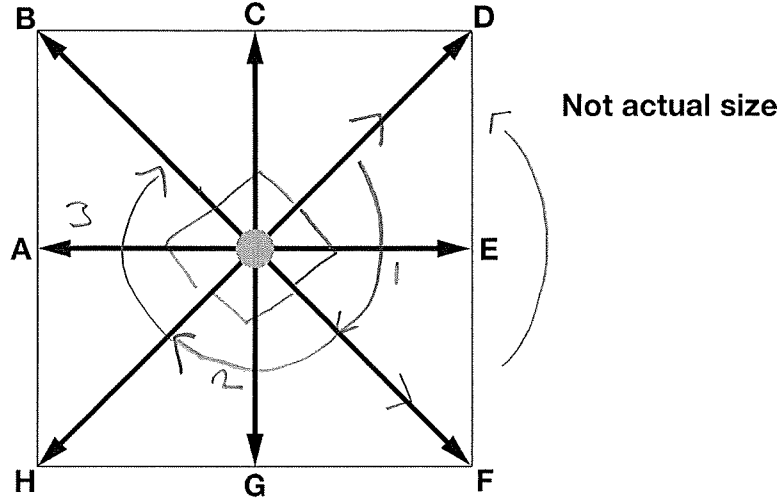
1 mark



K 0 0 0 8 0 A 0 1 5 2 4

15

Stefan stands in the centre of this square.



Stefan is facing towards **F**.

He turns **anti-clockwise** to face **D**.

What **angle** does Stefan turn through?

$$4 \overline{) 360} \begin{array}{r} 90 \\ \end{array}$$

90 degrees

1 mark

Stefan is now facing towards **D**.

He turns **3 right angles clockwise**.

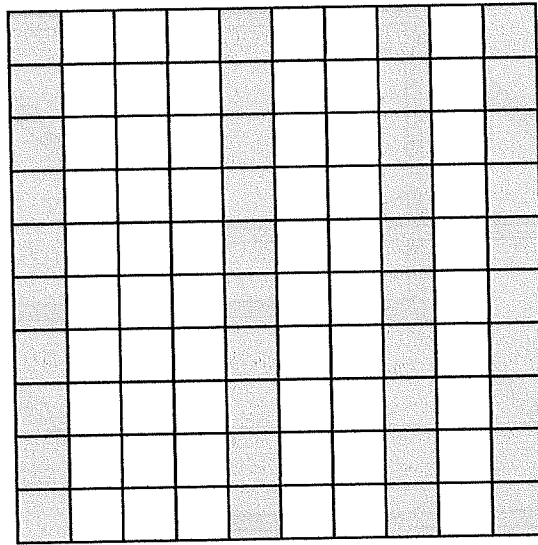
Write the **letter** he faces after the turn.

B

1 mark



16

Part of this 10×10 grid is shaded.

$$\frac{40}{100} \quad \frac{4}{10} \quad \frac{2}{5}$$

Tick the fractions that represent the shaded part of the grid.

$\frac{1}{4}$

$\frac{2}{5}$

$\frac{4}{10}$

$\frac{6}{10}$

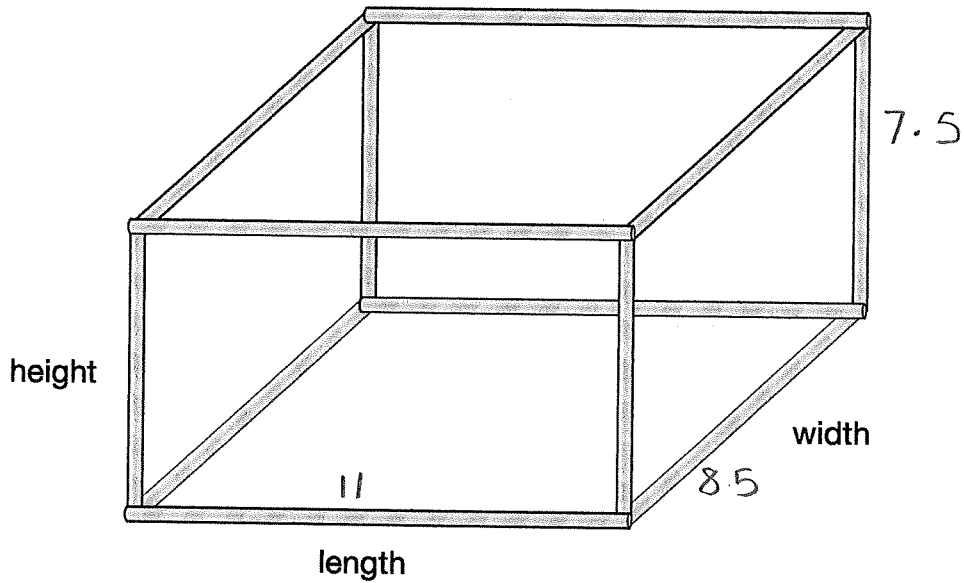
$\frac{40}{100}$

2 marks



17

Kim makes a cuboid model using straws.



She uses straws that are 7.5 cm long for the height.

She uses straws that are 11 cm long for the length.

She uses straws that are 8.5 cm long for the width.

What is the **total** length of all the straws in her model?

Show
your
method

$\begin{array}{r} 11 \\ \times 4 \\ \hline 44 \end{array}$	$\begin{array}{r} 8.5 \\ \times 4 \\ \hline 34.0 \\ 2 \end{array}$	$\begin{array}{r} 7.5 \\ \times 4 \\ \hline 30.0 \\ 2 \end{array}$	$\begin{array}{r} 44 \\ 34 \\ + 30 \\ \hline 108 \end{array}$
			<p style="font-size: 2em; margin: 0;">108</p> <p style="margin: 0;">cm</p>

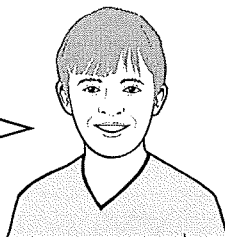
2 marks



19

Jack says,

When you square a prime number, the answer has only two factors.



Explain why Jack is **not** correct.

7 is a prime number

$$7 \times 7 = 49$$

The factors of 49 are 1, 7 and 49

Prime numbers only have two factors and 49 has three.

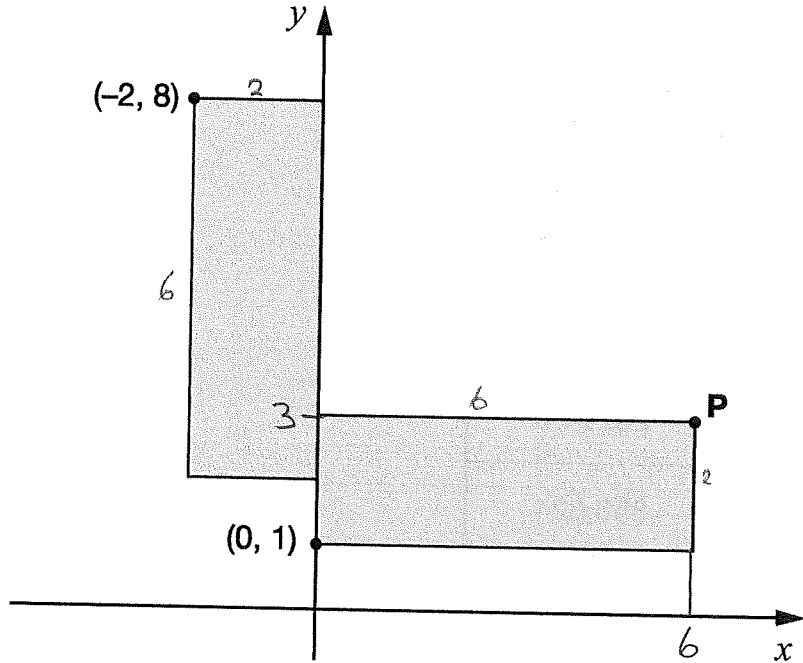
1 mark



21

These two rectangles are identical.

The length of each rectangle is **three times** its width.



Not to scale

What are the coordinates of point P?

(6, 3)

1 mark



[END OF TEST]

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Standards
& Testing
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2022 key stage 2 mathematics

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