Key stage 2

Mathematics

Paper 2: reasoning

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

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Please do not write on this page.

Instructions

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

Questions and answers

You have **40 minutes** to complete this test.

Follow the instructions for each question.

Work as quickly and as carefully as you can.

If you need to do working out, you can use the space around the question.
Do not write over any barcodes.

Some questions have a method box like this:

Show your method

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

If you cannot do a question, **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.**

Marks

The number under each line at the side of the page tells you the maximum number of marks for each question.

1 William asks the children in Year 2 and Year 6 if they walk to school.

This graph shows the results.

■ walk to school
☐ don't walk to school

Number of children

Year 2   Year 6
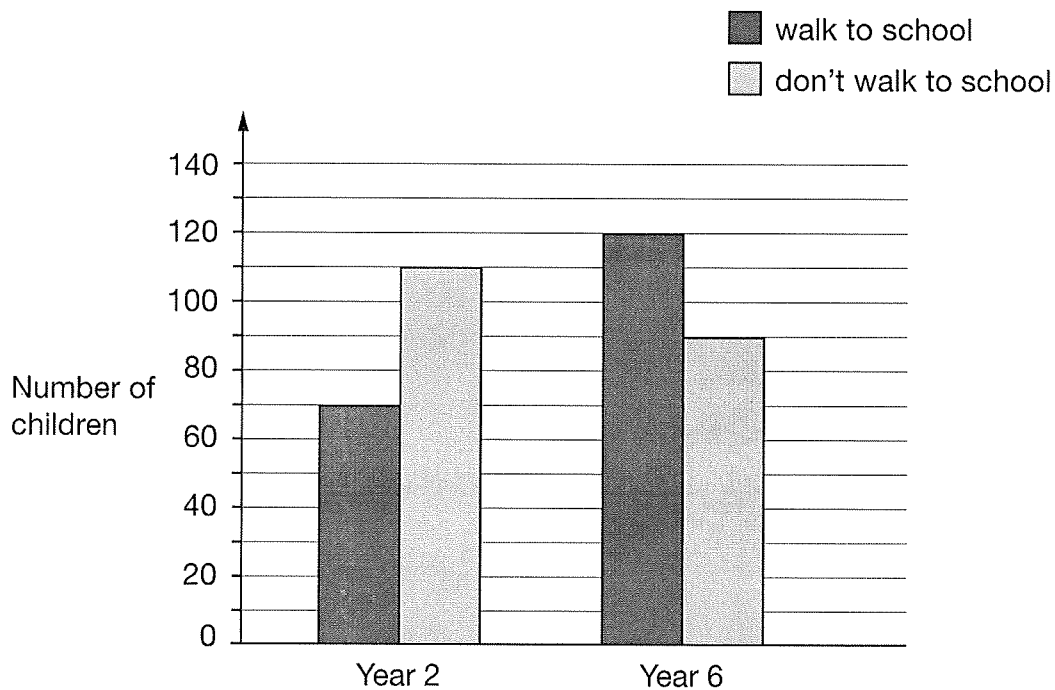
Altogether, how many children **don't** walk to school?

$$\begin{array}{r} 110 \\ +\ 90 \\ \hline 2\underset{\scriptstyle 1}{0}0 \end{array}$$

☐ 200

1 mark

How many **more** Year 6 children than Year 2 children walk to school?

$$\begin{array}{r} \overset{0}{\cancel{1}}{}^{1}20 \\ -\ 70 \\ \hline 50 \end{array}$$

☐ 50

1 mark

F 0 0 0 7 0 A 0 4 2 4

2 Circle the number that is **10 times** greater than nine hundred and seven.

9,700   907   9,007   970   (9,070)   1 mark

$907 \times 10 = 9070$

3 Write the missing numbers to make this **multiplication** grid correct.

×	7	6
9	63	54
8	56	48

1 mark

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4 This table shows the heights of three mountains.

Mountain	Height in metres
Mount Everest	8,848
Mount Kilimanjaro	5,895
Ben Nevis	1,344

How much higher is Mount Everest than the combined height of the other two mountains?

Show your method

```
  5 8 9 5        8 8 4⁷'8
+ 1 3 4 4      - 7 2 3 9
  7 2 3 9        1 6 0 9
```

1609 m

2 marks

5 Complete this table with the missing numbers.

One row has been done for you.

Number	1,000 more
3,500	4,500
85	1085
8099	9,099
14 250	15,250

2 marks

$$
\begin{array}{r}
1000 \\
+\ \ \ 85 \\
\hline
1085
\end{array}
\qquad
\begin{array}{r}
9099 \\
-\ 1000 \\
\hline
8099
\end{array}
\qquad
\begin{array}{r}
15250 \\
-\ 1000 \\
\hline
14250
\end{array}
$$

6 Write these numbers in order of size, starting with the **smallest**.

$\overset{4}{1.9}$ $\qquad$ $\overset{2}{0.96}$ $\qquad$ $\overset{3}{1.253}$ $\qquad$ $\overset{1}{0.328}$

| 0.328 | 0.96 | 1.253 | 1.9 |

smallest

7 Write the missing numbers.

60 months = | 5 | years $\qquad$ $12 \times 5 = 60$

72 hours = | 3 | days $\qquad$ $\begin{array}{r} 24 \\ 48 \\ 72 \end{array}$

84 days = | 12 | weeks $\qquad$ $7\overline{)84}$ = 12

8 At the start of June, there were 1,793 toy cars in the shop.

During June,

- 8,728 more toy cars were delivered

- 9,473 toy cars were sold.

How many toy cars were left in the shop at the end of June?

Show your method

```
    8 7 2 8         0  4  4
  +   ₁7 9 3      ₁0ₓ6 ₅2 ₄2 ₃1
  -----------     -   9 4 7 3
  1 0 5 2 1        --------------
                   0 1 0 4 8
```

1 0 4 8

2 marks

Tick two shapes that have $\frac{3}{4}$ shaded.
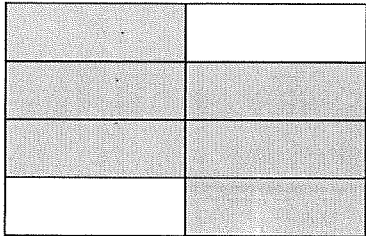
$\frac{6}{8} \rightarrow \frac{3}{4}$ ✓
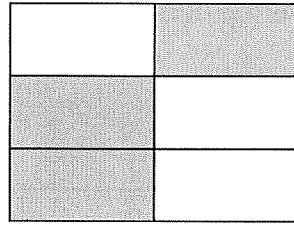
$\frac{3}{6} = \frac{1}{2}$
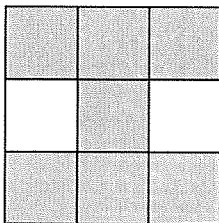
$\frac{7}{9}$
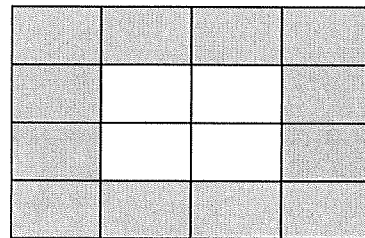
$\frac{12}{16} = \frac{3}{4}$ ✓

1 mark

10 Round **84,516**

84 5̲16
to the nearest 10

84520

84 5̲16
to the nearest 100

84500

84̲ 516
to the nearest 1,000

85000

11 Here is a rule for the time it takes to cook a chicken.

> **Cooking time = 20 minutes plus an extra 40 minutes for each kilogram**

How many minutes will it take to cook a 3kg chicken?

$20 + (3 \times 40)$

$20 + 120 = 140$

| 140 | minutes |

What is the mass of a chicken that takes 100 minutes to cook?

$100 - 20 = 80$

$80 \div 2 = 40$

| 2 | kg |

12 Here are diagrams of some 3-D shapes.

Tick each shape that has the same number of faces as vertices.
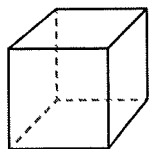
Cube   6 faces   8 vertices   ☐
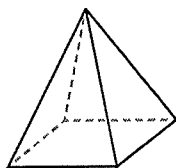
Square-based pyramid   ☑

5 faces
5 vertices
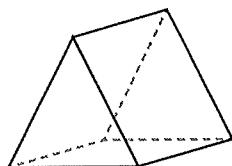
Triangular prism   ☐

5 faces
6 vertices
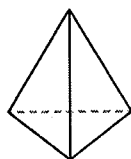
Triangular-based pyramid   ☑

4 faces
4 vertices

2 marks

13 Ally and Jack buy some stickers.

**Pack of 12 stickers
£10.49**

**12 stickers
99p each**

Ally buys a pack of 12 stickers for £10.49

Jack buys 12 single stickers for 99p each.

How much more does Jack pay than Ally?

Show your method

```
    9 9          1 1 8⁷8   Remember to
  ×   1 2        - 1 0 4 9  replace the decimal
  + 1 9 8          1 · 3 9  point
    9 9 0
  1 1 · 8 8
```

£ 1 · 39

2 marks

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14 Amina planted some seeds.

For every 3 seeds Amina planted, only 2 seeds grew.

Altogether, 12 seeds grew.

How many seeds did Amina **plant**?

$$12 = \frac{2}{3}$$

$$12 \div 2 = 6$$

$$\frac{1}{3} = 6, \text{ so } \frac{3}{3} = 18$$

18

1 mark

15 At the end of a film, the year is given in Roman numerals.

The End

MMVI

Write the year MMVI in **figures**.

$$M = 1000 \times 2$$
$$V = 5$$
$$I = 1$$

2006

1 mark

16 Layla completes one-and-a-half somersaults in a dive.

start _____

360

180
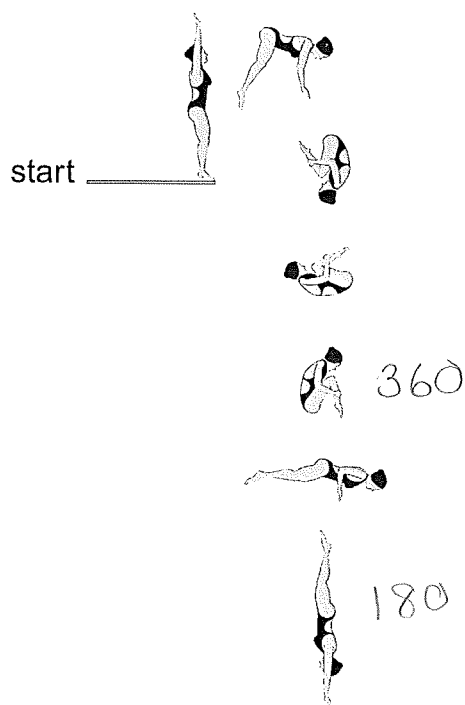
How many **degrees** does Layla turn through in her dive?

$$\begin{array}{r} 360 \\ + 180 \\ \hline 540 \end{array}$$

540 °

1 mark

17

The vertices of a quadrilateral have these coordinates.

(1, 5)   (5, 4)   (1, −3)   (−3, 4)

One side of the quadrilateral has been drawn on the grid.

Complete the quadrilateral.

Use a ruler.
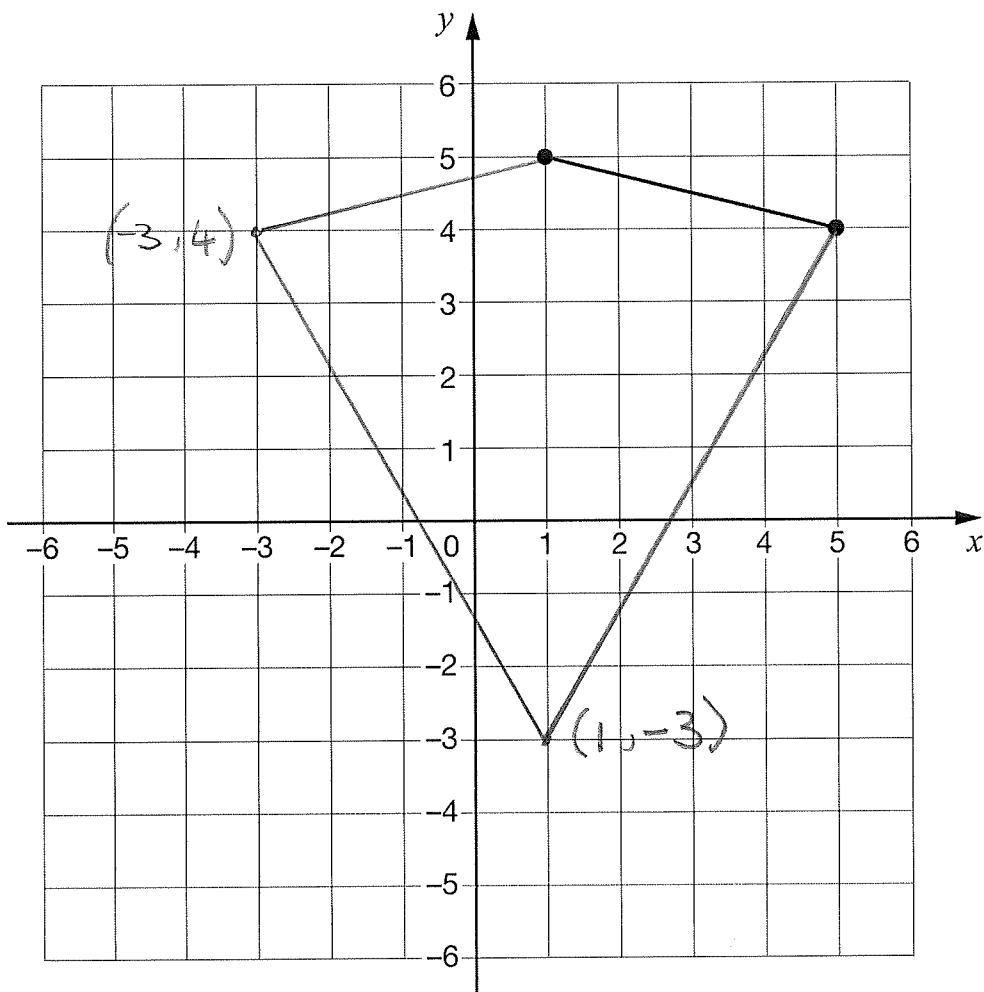
1 mark

18 A cat sleeps for **12 hours** each day.

50% of its life is spent asleep.

Write the missing percentage.

A koala sleeps for **18 hours** each day.

| 75 | % | of its life is spent asleep.

$$\frac{18}{24} = 75\%$$

19 Amina posts three large letters.

The postage costs the same for each letter.

She pays with a £20 note.

Her change is £14.96

What is the cost of posting **one** letter?

Show your method

$$20.00$$
$$-14.96$$
$$5.04$$

$$35.04 \div 3 = 1.68$$

£ 1 68

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2 marks

20 Adam says,

0.25 is **smaller** than $\frac{2}{5}$
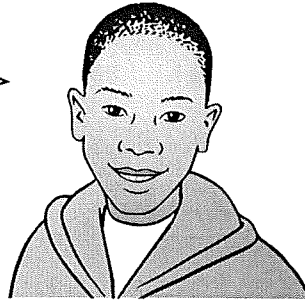
Explain why he is correct.

$$\frac{2}{5} = \frac{4}{10} = 0.4$$

$\frac{2}{5}$ is the same as 0.4 and 0.25 is smaller than 0.4.

1 mark

21 On a map, 1cm represents 20km.

```
0    20   40   60   80  100
|____|____|____|____|____|
         kilometres
```

The distance between two cities is **250km**.

On the map, what is the distance between the two cities?

Show your method

```
        1  2 . 5
  2 0 | 2²5⁵0 . ¹0
      -2 0
         5 0
       - 4 0
         1 0
```

12.5 cm

2 marks

22 Here are two similar right-angled triangles.
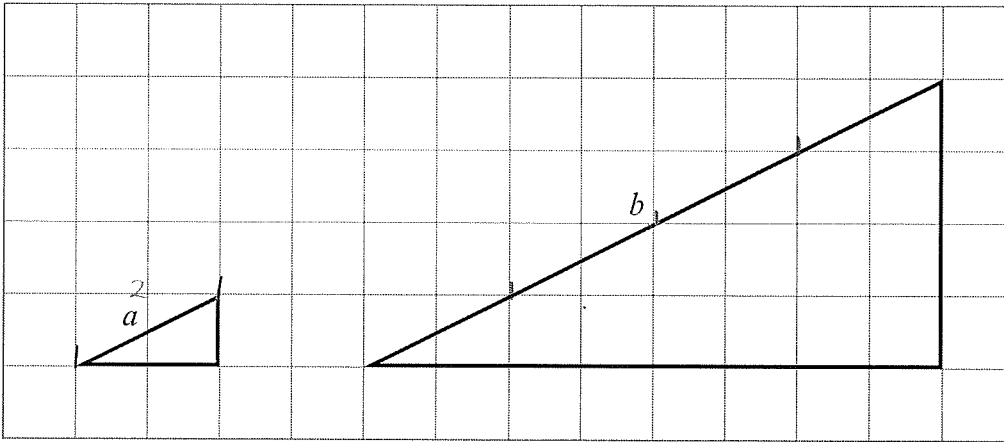
Write the ratio of side a to side b.

$2:8 \rightarrow 1:4$ $a:b=$ | 1 : 4 |

23 In this circle, $\frac{1}{4}$ and $\frac{1}{6}$ are shaded.
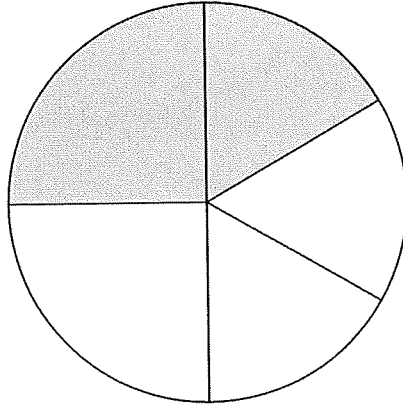
What fraction of the whole circle is **not** shaded?

Show your method

$\frac{1^{\times 6}}{4^{\times 6}} + \frac{2^{\times 4}}{6^{\times 4}}$

Find a common denominator
eg 24

$\frac{6}{24} + \frac{8}{24} = \frac{14}{24} = \frac{7}{12}$

$\boxed{\dfrac{7}{12}}$

2 marks

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