2018 national curriculum tests

Key stage 2

Mathematics

Paper 2: reasoning

This link shows video solutions for the whole paper.

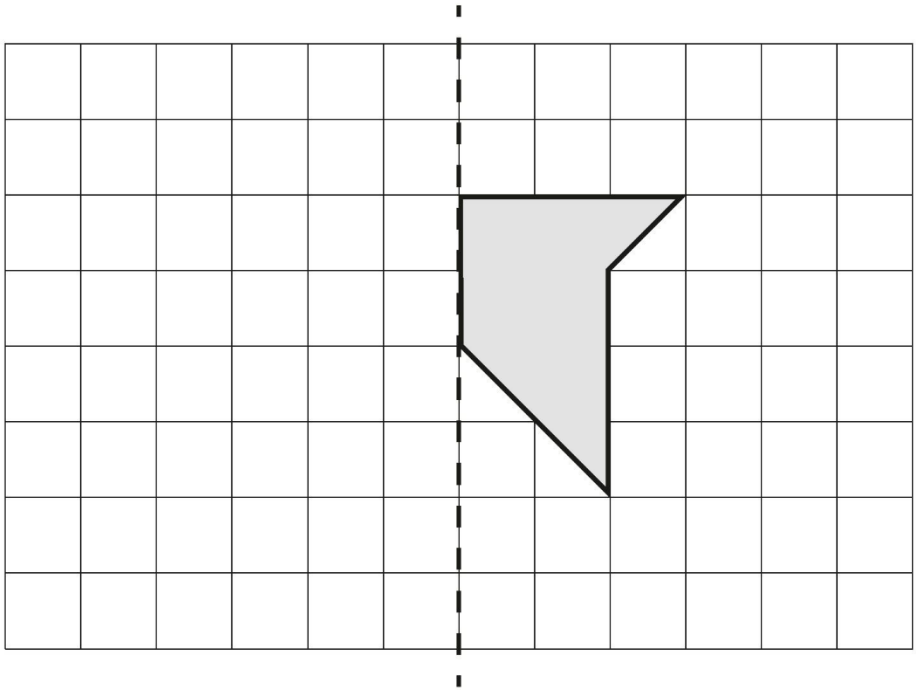
For solutions to individual questions, click on the link below the question number.

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

1 Here is a shape on a grid.

Complete the design so that it is symmetrical about the mirror line.

Use a ruler.



1 mark

2 Stefan completes this calculation.

$$\begin{array}{r} 95 \\ -\ 67 \\ \hline 28 \end{array}$$

Write an **addition** calculation he could use to check his answer.

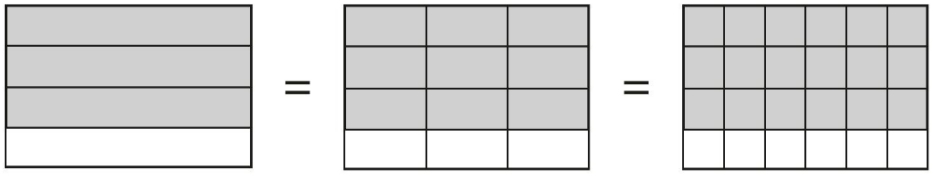
$$\begin{array}{r} \square\square \\ +\ \square\square \\ \hline \square\square \end{array}$$

1 mark

3 On the line below, mark the point that is 6.7 centimetres from A.

1 mark

4 These diagrams show three equivalent fractions.



Write the missing values.

$$\frac{3}{4} = \frac{9}{\square} = \frac{\square}{24}$$

1 mark

5 Here are the temperatures in four cities at midnight and at midday.

City	Temperature	
	At midnight	At midday
Paris	–4°C	–2°C
Oslo	–13°C	–7°C
Rome	3°C	10°C
Warsaw	–6°C	2°C

At **midnight**, how many degrees colder was Paris than Rome?

degrees

1 mark

Which city was 6 degrees colder at midnight than at midday?

1 mark

6 The numbers in this sequence **decrease** by the same amount each time.

303,604 302,604 301,604 300,604 ...

What is the next number in the sequence?

1 mark

7 Tick the **two** numbers that are equivalent to $\frac{1}{4}$

Tick **two**.

0.25 ☐

0.75 ☐

$\frac{25}{100}$ ☐

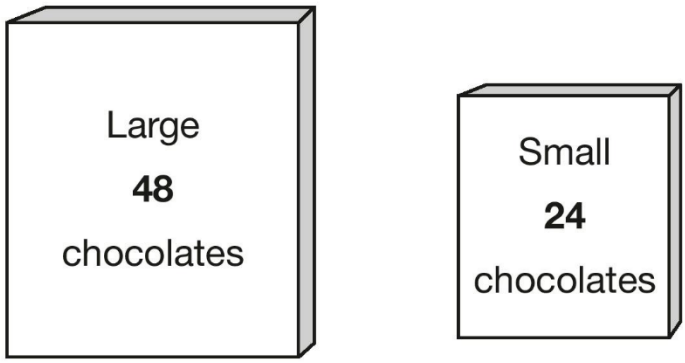
0.5 ☐

$\frac{2}{5}$ ☐

1 mark

8 Ken buys 3 large boxes and 2 small boxes of chocolates.

Each large box has 48 chocolates. Each small box has 24 chocolates.



How many **chocolates** did Ken buy altogether?

Show your method

chocolates

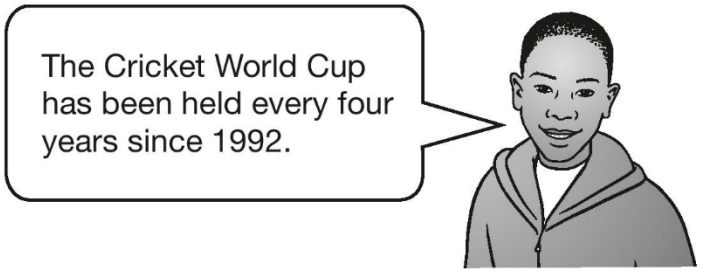
2 marks

9

The list below shows the years in which the Cricket World Cup was held since 1992:

1992, 1996, 1999, 2003, 2007, 2011, 2015

Adam says,



Adam is **not** correct.

Explain how you know.

1 mark

10

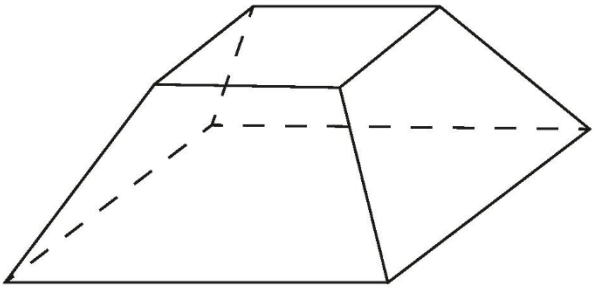
>	=	<

Write the correct symbol in each box to make the statements correct.

11×12		15×10
$90 \div 30$		$60 \div 20$
$120 \div 4$		$160 \div 8$
30×8		100×10

2 marks

11 Here is a drawing of a 3-D shape.



Complete the table.

Number of faces	Number of vertices	Number of edges

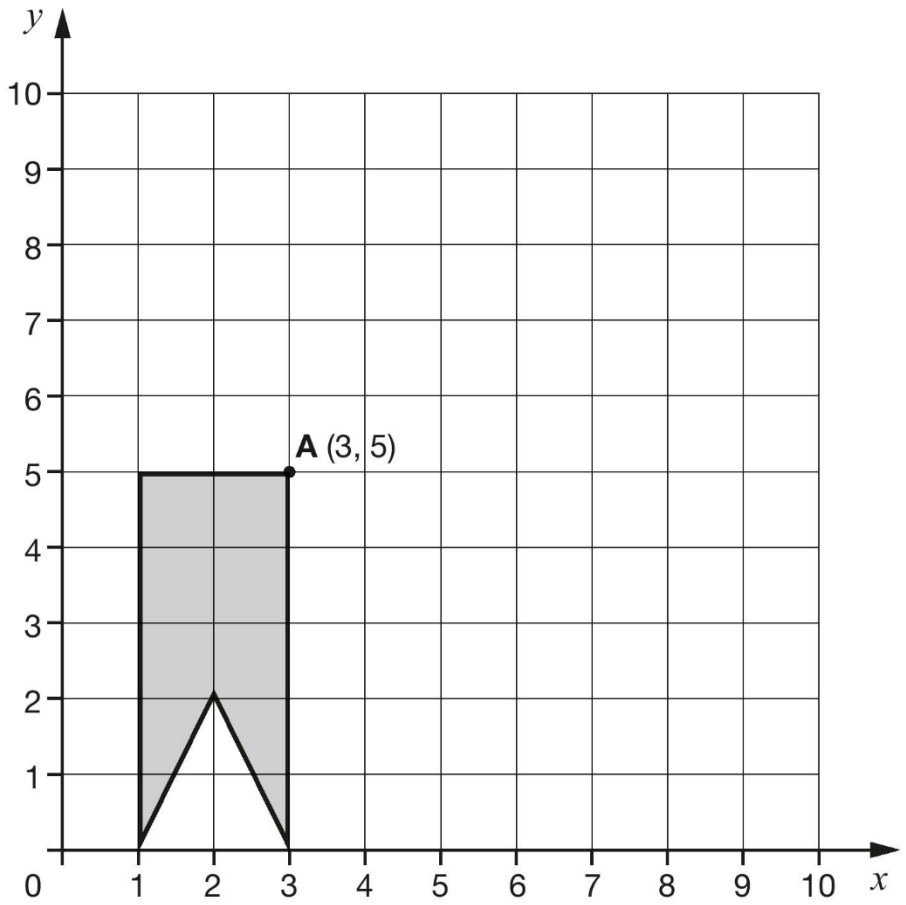
2 marks

12 Here is a shape on a grid.

The shape is translated so that point **A** moves to (7, 8).

Draw the shape in its new position.

Use a ruler.



1 mark

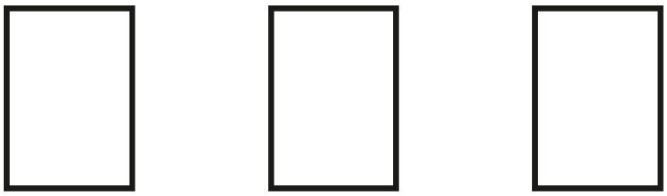
13 Circle the improper fraction that is equivalent to $6\frac{7}{8}$

$\frac{67}{8}$ $\frac{48}{8}$ $\frac{62}{8}$ $\frac{55}{8}$ $\frac{76}{8}$

1 mark

14 $\frac{6}{5}$ $\frac{3}{5}$ $\frac{3}{4}$

Write these fractions in order, starting with the **smallest**.



smallest

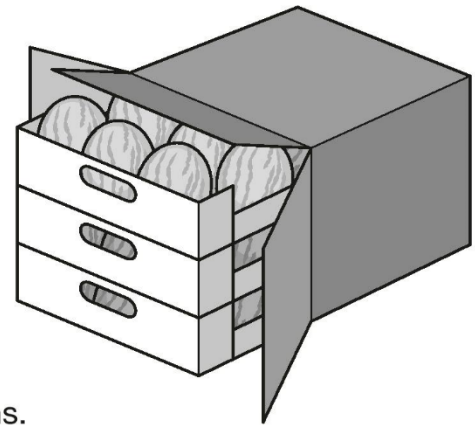
1 mark

15

A box contains trays of melons.

There are 15 melons in a tray.

There are 3 trays in a box.



A supermarket sells **40** boxes of melons.

How many melons does the supermarket sell?

Show your method

melons

2 marks

16 Adam wants to use a mental method to calculate 182 – 97

He starts from 182

Here are some methods that Adam could use.

Tick the methods that are **correct**.

add 3 then subtract 90 ☐

subtract 100 then add 3 ☐

subtract 7 then subtract 90 ☐

subtract 3 then subtract 100 ☐

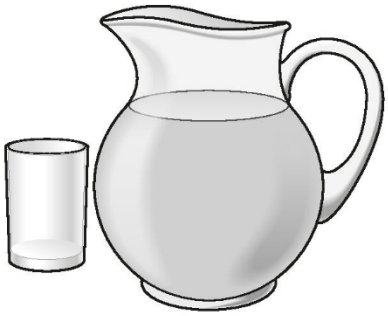
2 marks

17

There are 28 pupils in a class.

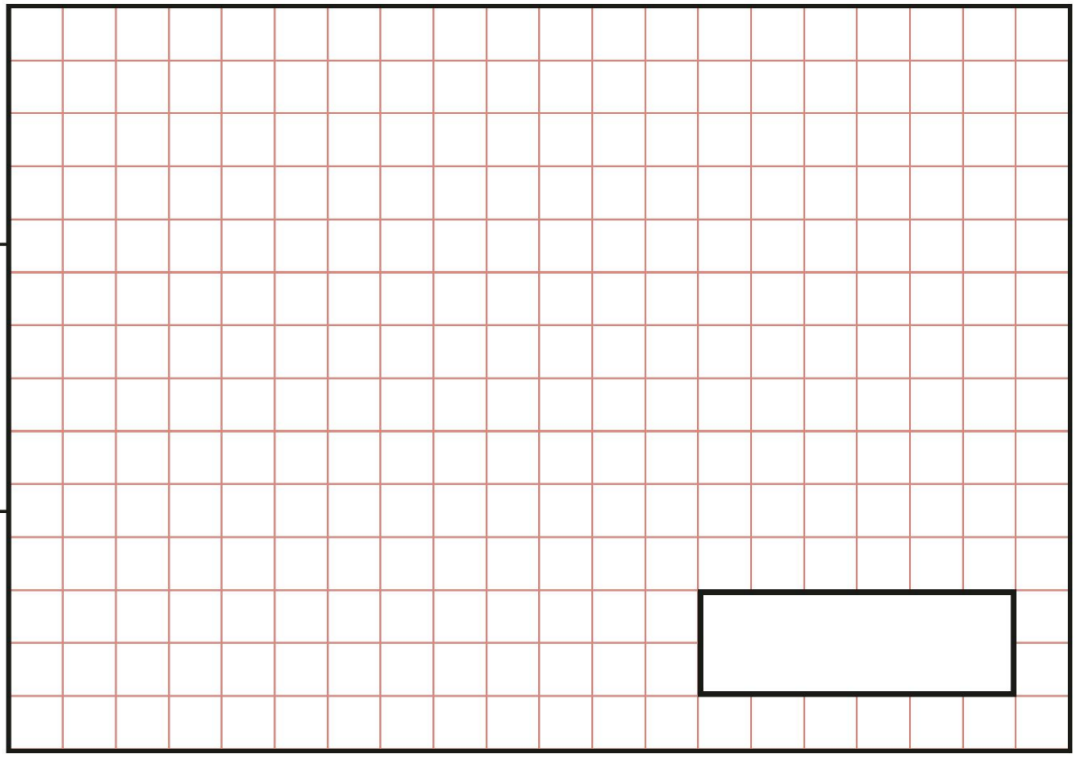
The teacher has 8 litres of orange juice.

She pours 225 millilitres of orange juice for every pupil.



How much orange juice is left over?

Show your method

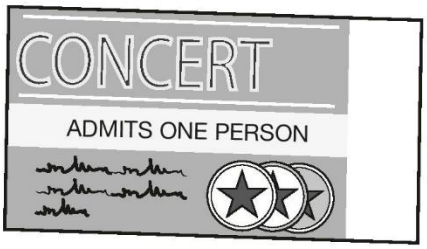


3 marks

18 Last year, Jacob went to four concerts.

Three of his tickets cost £5 each.

The other ticket cost £7



What was the **mean** cost of the tickets?

Show your method

£

2 marks

19 Layla wants to estimate the answer to this calculation.

$$3\frac{9}{10} - 2\frac{1}{8} + 1\frac{4}{5}$$

Tick the calculation below that is the best estimate.

Tick **one**.

$3 - 2 + 2$ ☐

$4 - 2 + 1$ ☐

$4 - 2 + 2$ ☐

$3 - 2 + 1$ ☐

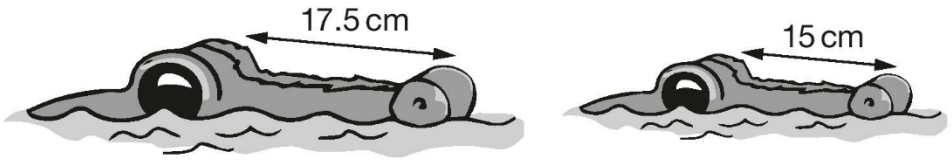
1 mark

20

The length of an alligator can be estimated by:

- measuring the distance from its eyes to its nose
- then multiplying that distance by 12

What is the **difference** in the estimated lengths of these two alligators?



Not to scale

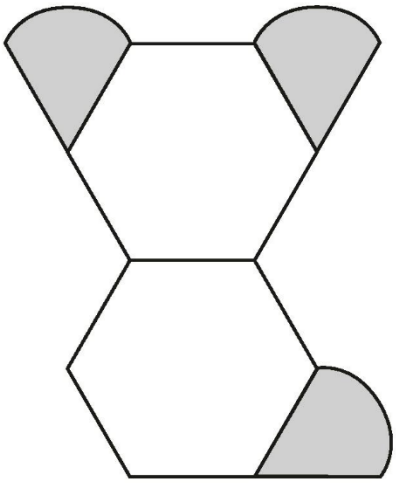
Show your method

cm

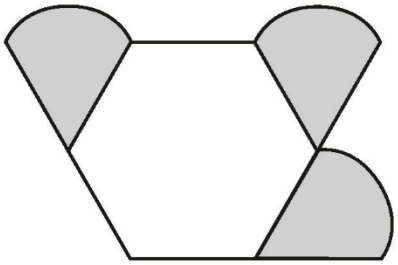
2 marks

21 Amina is making designs with two different shapes.

She gives each shape a value.

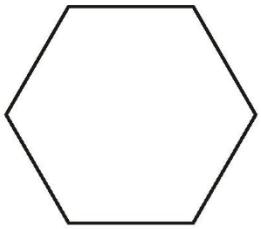


Total value is 147

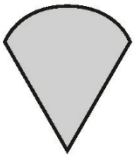


Total value is 111

Calculate the value of each shape.

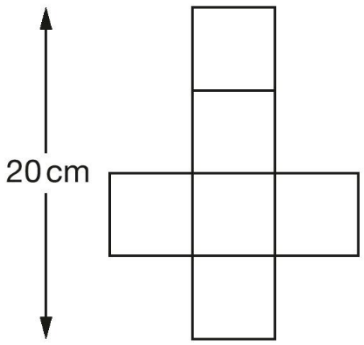
 = ☐

1 mark

 = ☐

1 mark

22 This is the net of a cube.



Not actual size

What is the **volume** of the cube?

$\square$ **cm^3**

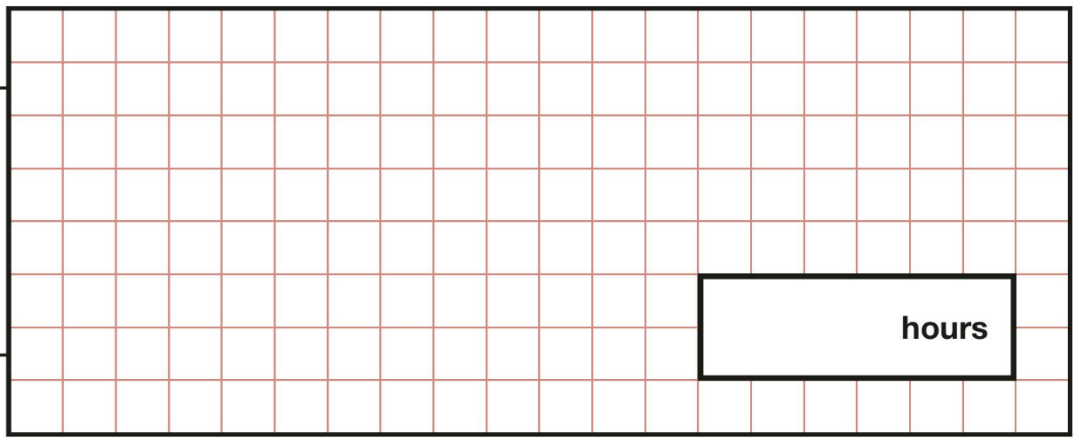
1 mark

23 The length of a day on Earth is 24 hours.

The length of a day on Mercury is $58\frac{2}{3}$ times the length of a day on Earth.

What is the length of a day on Mercury, in **hours**?

Show your method



2 marks