**Cambridge Secondary 1 Progression Test**
Question paper

Cambridge Secondary 1

**55 minutes**

# Mathematics Paper 1

## Stage 8

*6766365181*

Name .....

Additional materials: Ruler
Tracing paper
Geometrical instruments

**READ THESE INSTRUCTIONS FIRST**

Answer **all** questions in the spaces provided on the question paper.

Calculators are **not** allowed.

You should show all your working on the question paper.

The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is 45.

| For Teacher's Use | |
|---|---|
| **Page** | **Mark** |
| **1** | |
| **2** | |
| **3** | |
| **4** | |
| **5** | |
| **6** | |
| **7** | |
| **8** | |
| **9** | |
| **10** | |
| **11** | |
| **12** | |
| **13** | |
| **14** | |
| **Total** | |

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**1** Write ten million as a power of 10

..... [1]

**2** Find the lowest common multiple of 24 and 15

..... [1]

**3** Maya wants to paint two doors.
She can paint each door red or blue or green.

List **all** the possible ways she could paint the two doors.

The first four are done for you.

| Door 1 | Door 2 |
|---|---|
| Red | Red |
| Red | Blue |
| Red | Green |
| Blue | Red |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

You may not need to use all the lines in the table. [1]

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**4** Complete these calculations.

**(a)** $\square^2 = 64$ [1]

**(b)** $640 \times \square = 64$ [1]

**5** Simplify this expression.

$11c - 6d - 2c + 10d$

..... [1]

**6** Divide 81 by 6

..... [1]

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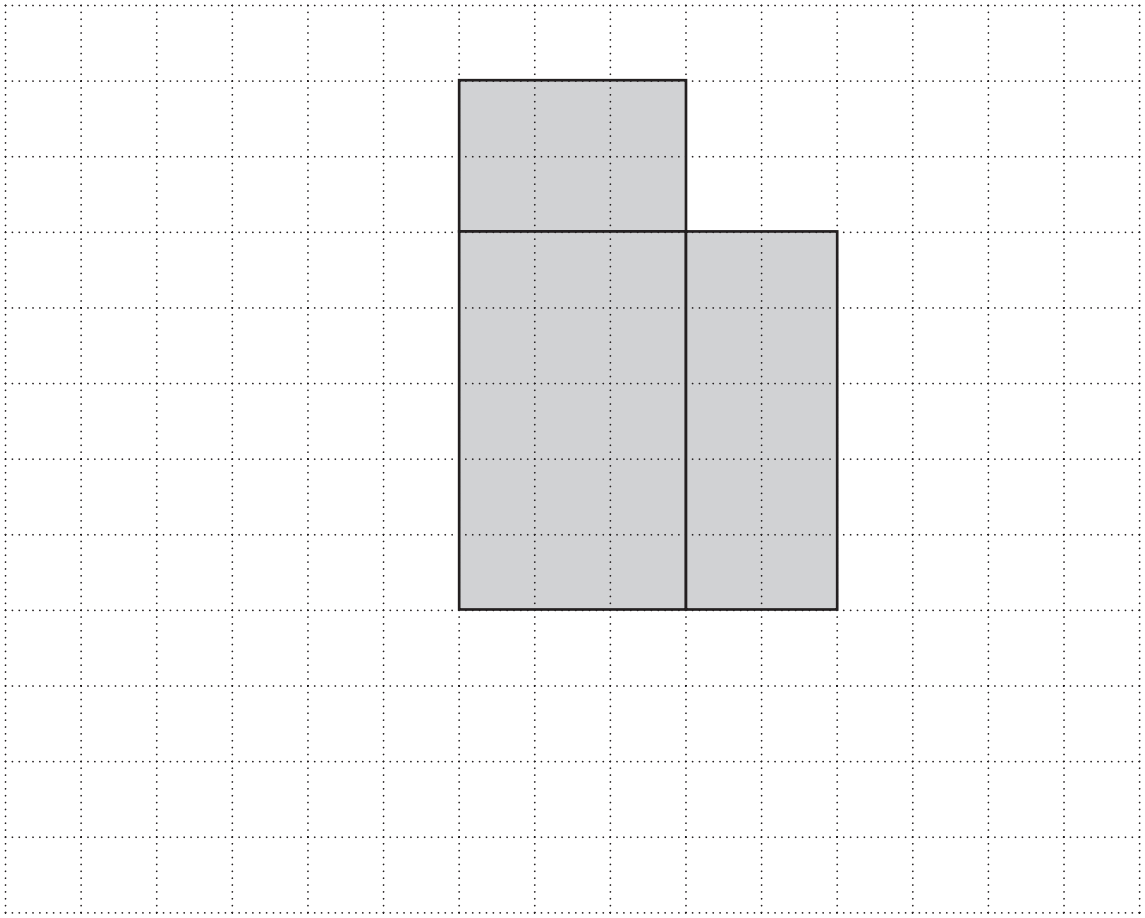
**7** A cuboid measures 5 cm by 3 cm by 2 cm.

**(a)** Complete the net of the cuboid.
Three faces have been drawn for you. [1]



**(b)** Work out the volume of the cuboid.
Give units with your answer.

..... ..... [2]

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**8** Work out these calculations.
Give your answers as mixed numbers.

**(a)** $2\frac{1}{4} - \frac{1}{2}$

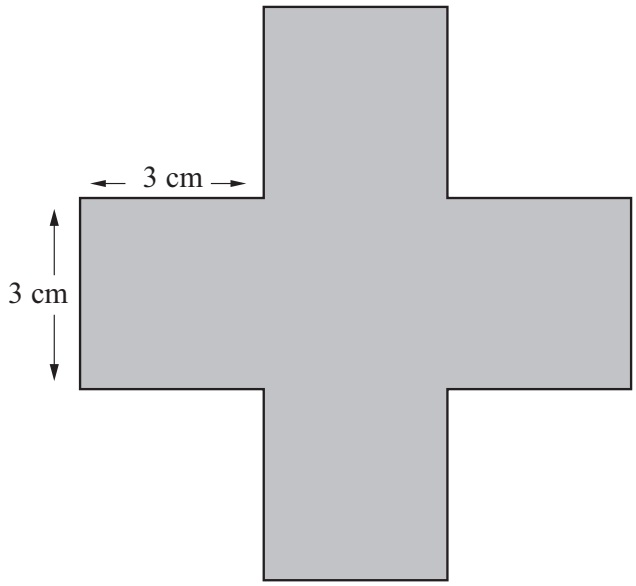
..... [1]

**(b)** $9 \times \frac{2}{5}$

..... [1]

**9** This shape is made of five identical squares with side length 3 cm.

NOT TO SCALE




Work out

**(a)** the perimeter of the shape,

..... cm [1]

**(b)** the area of the shape.

..... $cm^2$ [2]

**10** Put **one** set of brackets in this calculation so that it is correct.

$$10 - 3 \times 4 - 2 + 1 = 5$$

[1]

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**11** Tick (✓) a box for each statement.

| | True | False |
|---|---|---|
| $\frac{2}{3}$ can be written as a recurring decimal. | ☐ | ☐ |
| The decimal equivalent of $\frac{2}{3}$ is 0.666 | ☐ | ☐ |

[1]

**12** **(a)** Here are the test scores for 8 students.

29, 27, 47, 43, 50, 31, 50, 48

Draw an ordered stem-and-leaf diagram to show the data.
The diagram has been started for you.

| | |
|---|---|
| 2 | 7 9 |
| 3 | |
| 4 | |
| 5 | |

Key 2 | 7 means a score of 27

[1]

**(b)** To pass the test a student needs a score of 47 or more.

How many students pass the test?

..... [1]

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**13** Blessy does two calculations.

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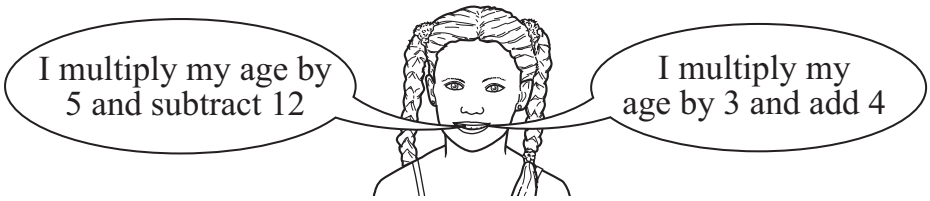


She gets the same answer to both calculations.

**(a)** Blessy's age is $b$ years.

Write down an equation in $b$.

..... [1]

**(b)** How old is Blessy?

..... [1]

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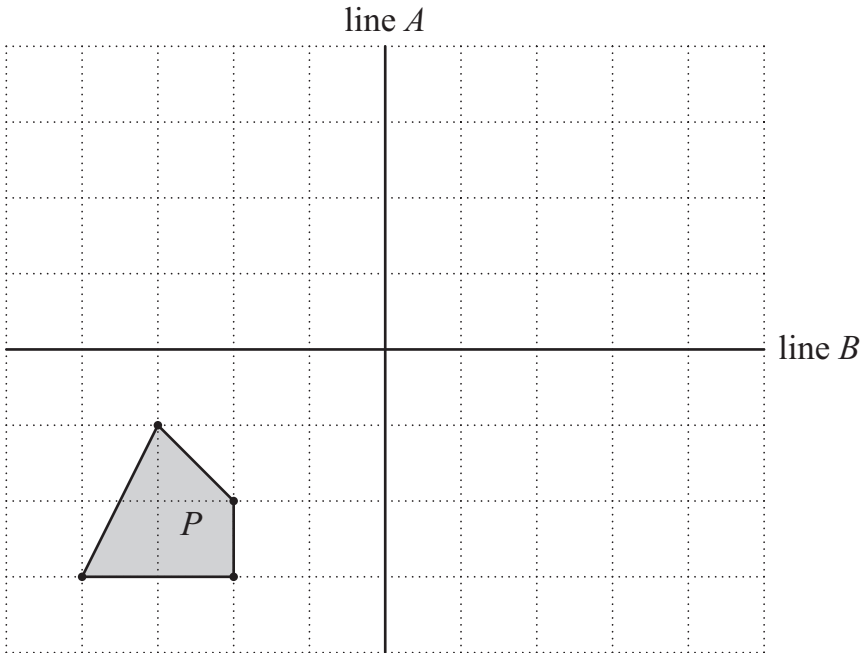
**14** Shape $P$ is shown on the grid.




**(a)** Reflect Shape $P$ in line $A$.
Label the shape $Q$. [1]

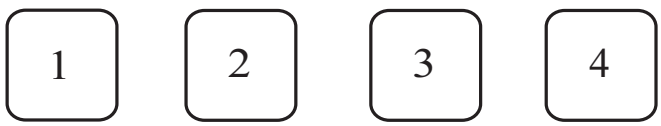
**(b)** Reflect **Shape *Q*** in line $B$.
Label this shape $R$. [1]

**(c)** Put a ring around the **single** transformation that maps $P$ onto $R$ directly.

reflection rotation translation enlargement

[1]

**15** Here are four cards.




Use two of these cards to make this calculation correct.

$$\square\square^{2} - \square\square^{2} = 5^{2}$$

[1]

**16 (a)** Here is a list of parts of a circle.

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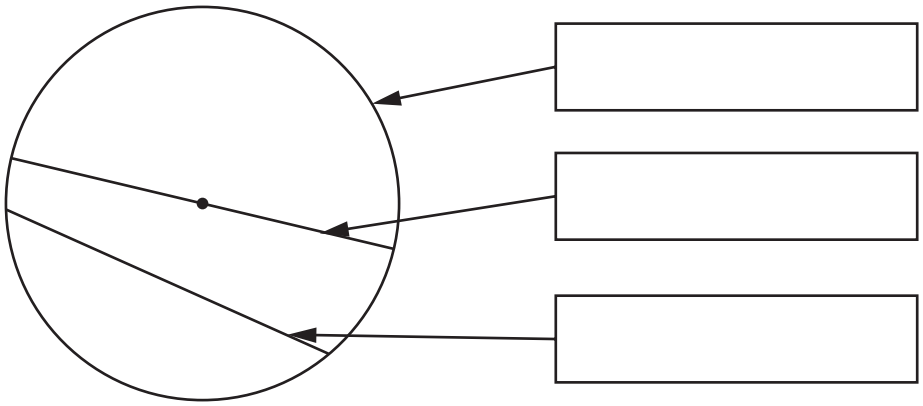
Circumference Chord Diameter

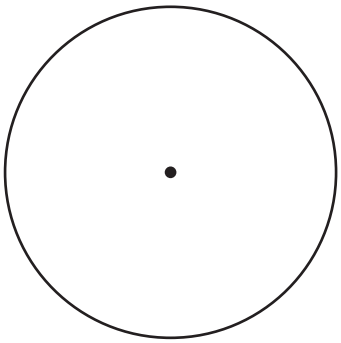
Use these words to label the diagram.
Each word should be used only once.



[1]

**(b)** In the circle below, draw a sector that is 25% of the total area of the circle.

Label this sector *S*.



[1]

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**17** Jani has a metal pipe 90 cm in length.
She wants to cut the pipe into three pieces in the ratio 1 : 2 : 3

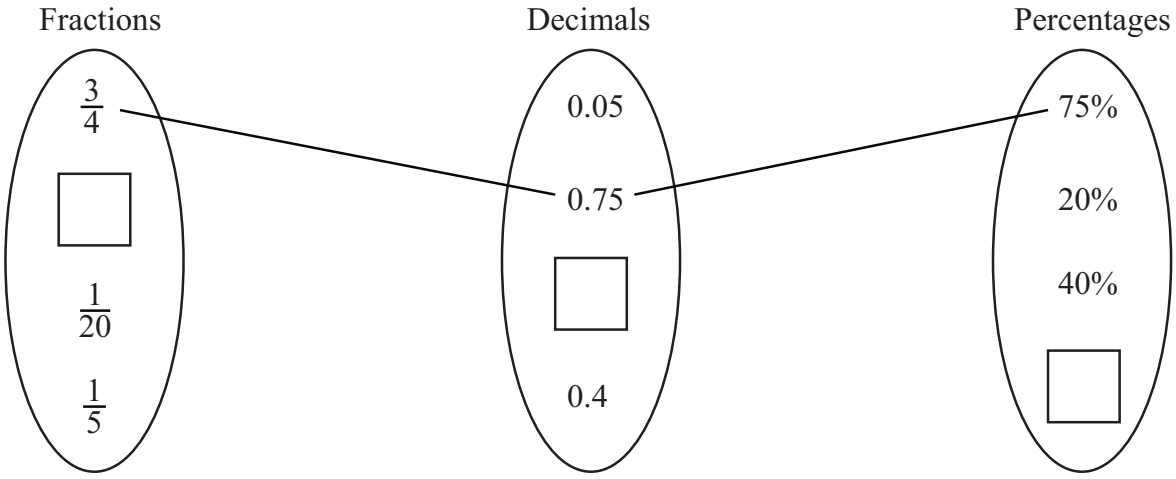
Work out the length of each piece of pipe.

.....cm .....cm .....cm [2]

**18** Draw lines to connect the four sets of equivalent fractions, decimals and percentages.

One set has been done for you.

Write the missing values in the boxes.




[2]

**19** Evaluate the following expression using $a = 4$, $b = 3$ and $c = 2$

$$a^3 - bc^3$$

..... [2]

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**20** Simplify the ratio.

$$250\,\text{g} : 3.5\,\text{kg}$$

..... : .....[2]

**21** Here are some symbols.

$$= \quad > \quad <$$

Choose a symbol to complete each statement.

Symbols can be used more than once.

$0.345\,\text{m}$ ☐ $3.45\,\text{mm}$ $0.075\,\text{kg}$ ☐ $750\,\text{g}$ [1]

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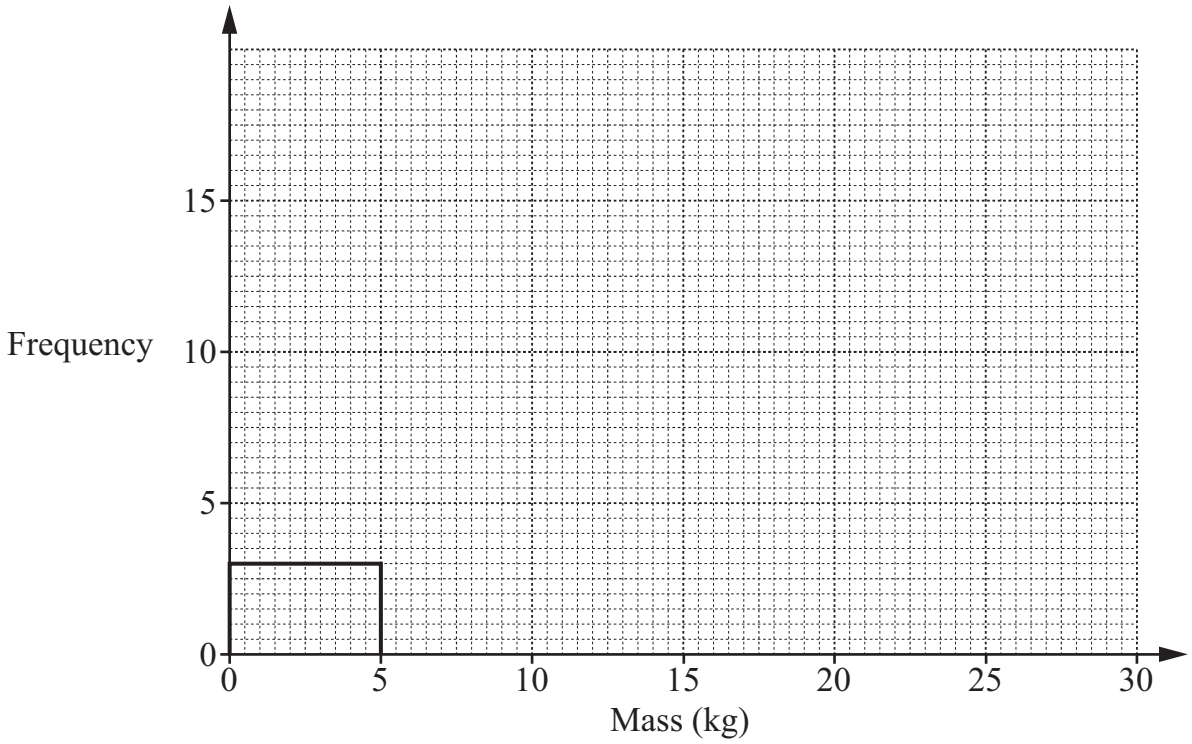
**22** The frequency table shows the masses, in kilograms, of some bags.

| Mass (kg) | Frequency |
|---|---|
| 0 up to 5 | 3 |
| 5 up to 10 | 5 |
| 10 up to 15 | 9 |
| 15 up to 20 | 15 |
| 20 up to 25 | 8 |
| 25 up to 30 | 2 |

Complete the frequency diagram to show the data.




[2]

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**23** All students in a class study either History or Geography, but not both.

There are
- 17 students who study History
- 15 students who study Geography
- 7 boys who study History
- 18 boys in the class.

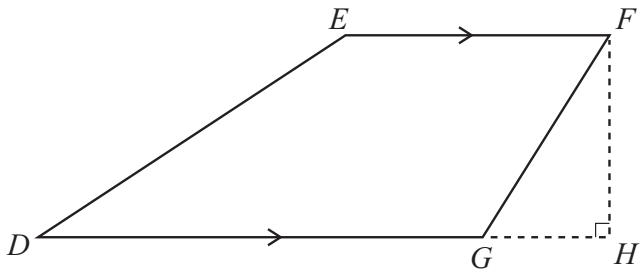
Complete the two-way table to show this information.

| | **History** | **Geography** | **Total** |
|---|---|---|---|
| **Boys** | | | |
| **Girls** | | | |
| **Total** | | | |

[2]

**24** In the diagram, $EF = p$ cm and $FH = 8$ cm.

$DG$ is twice the length of $EF$.




NOT TO SCALE

Write, as simply as possible, an expression for the area of shape $DEFG$ in terms of $p$.

..... $cm^2$ [2]

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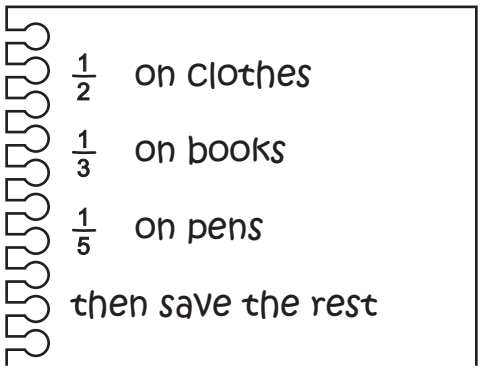
**25** Rida plans to spend her money like this.




Explain why she cannot do this.

Show your working.

[2]

**26** Alex knows that $374 \times 3 = 1122$

He thinks that $1122 \div 0.3$ equals 37.4

Is Alex correct?

Tick (✓) a box. Yes ☐ No ☐

Explain your answer.

.....

..... [1]

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