# Cambridge Secondary 1 Progression Test
Question paper

Cambridge Secondary 1

55 minutes

# Mathematics Paper 1

## Stage 9

*9490275461*

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** | |
| **Total** | |

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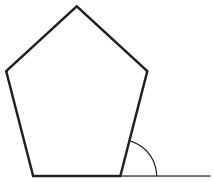
**1** Work out the **third** term of the sequence with $n$th term $3(n + 2)$.

..... [1]

**2** Work out the size of an exterior angle of a **regular** pentagon.



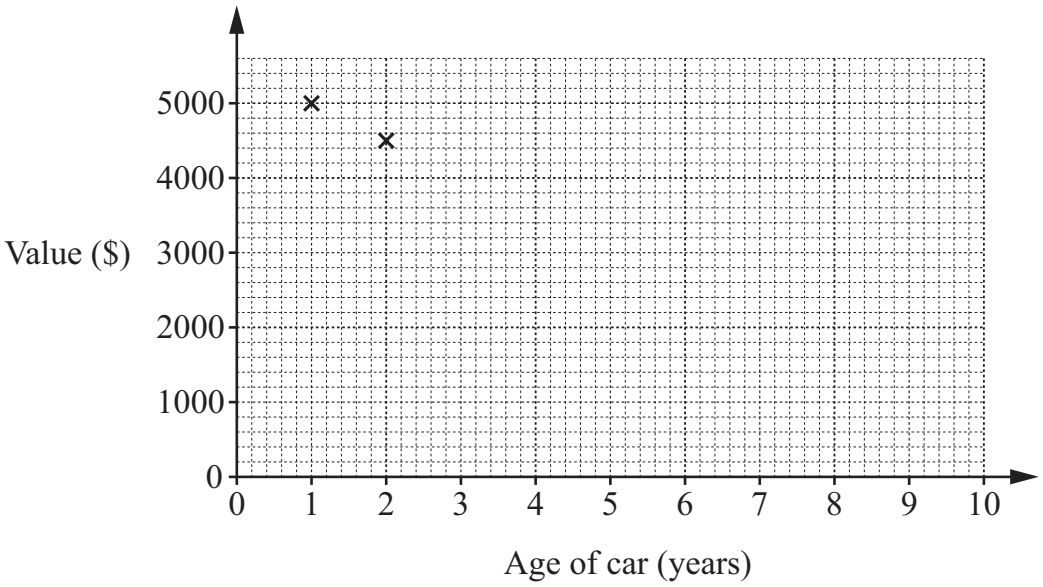
NOT TO SCALE

.....° [1]

**3** The table shows the age and value of seven cars.

| **Age of car (years)** | **2** | **1** | 9 | 7 | 10 | 5 | 8 |
|---|---|---|---|---|---|---|---|
| **Value ($)** | **4500** | **5000** | 1200 | 2900 | 500 | 2700 | 2200 |

**(a)** Complete the scatter graph.




[2]

**(b)** Write down the type of correlation shown on the scatter graph.

..... [1]

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**4** Tick (✓) to show whether each of these statements is true or false.
Do not do any calculations.

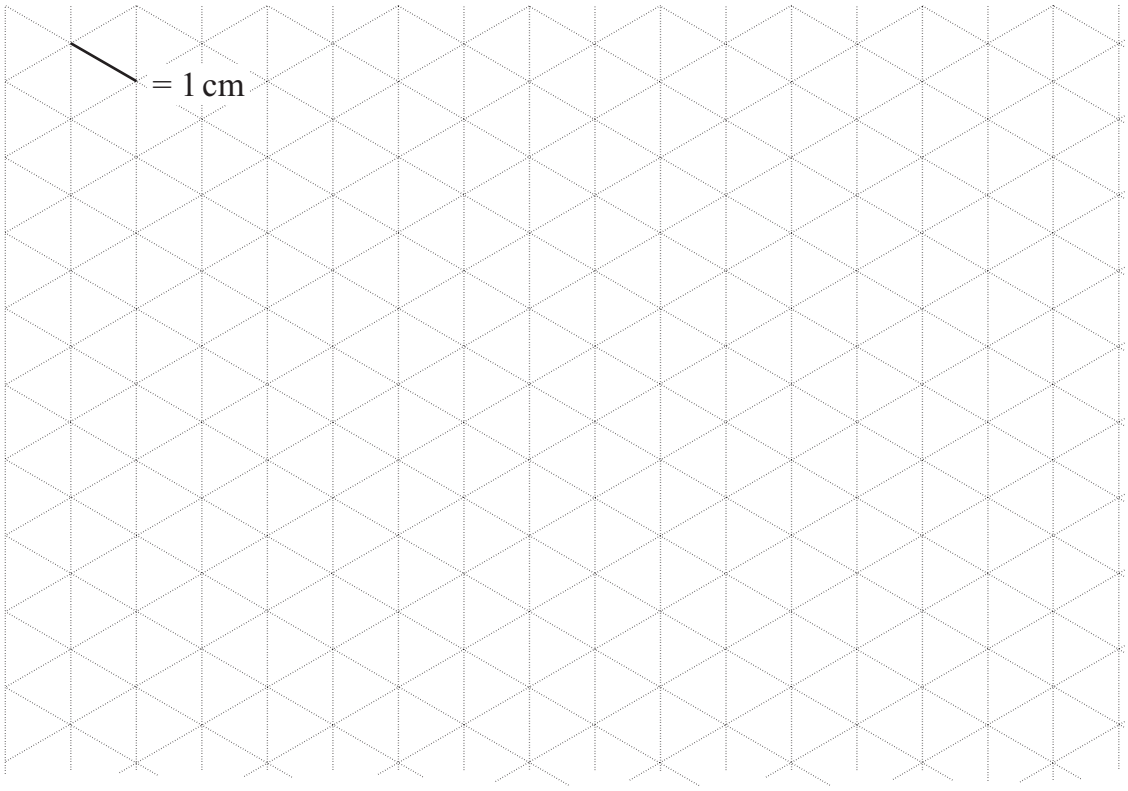
The first one has been done for you.

| | True | False |
|---|---|---|
| The answer to $20.1 \times 1.53$ is larger than 20.1 | ✓ | |
| The answer to $17.4 \times 0.82$ is larger than 17.4 | | |
| The answer to $23.8 \div 0.74$ is smaller than 23.8 | | |

[1]

**5** **(a)** A cuboid measures 5 cm by 4 cm by 3 cm.

Draw the cuboid on the isometric grid.




[1]

**(b)** Write down the number of planes of reflectional symmetry of the cuboid.

..... [1]

**6** Put a ring around the value that is closest to $\sqrt[3]{70}$

3.2 4.1 5.6 8.4 23.3

[1]

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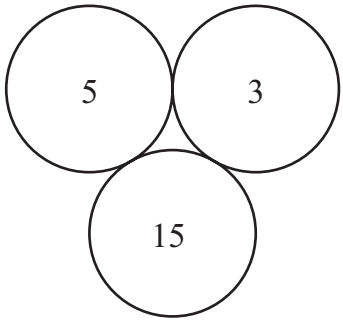
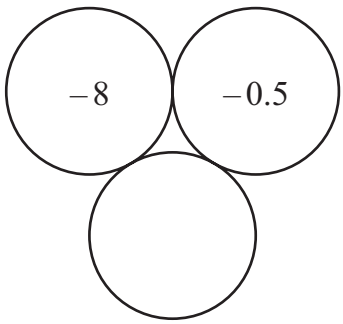
**7** Here is a pattern.




The rule is to multiply the values in the top two circles to make the value in the bottom circle.

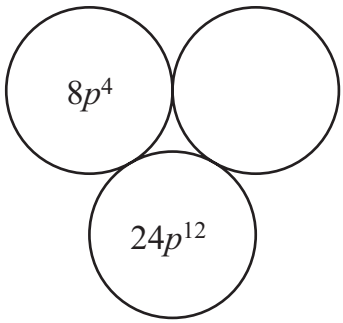
Complete these patterns using the same rule.

**(a)**




[1]

**(b)**




[2]

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**8** Factorise fully.

**(a)** $2a^2 + 5a$

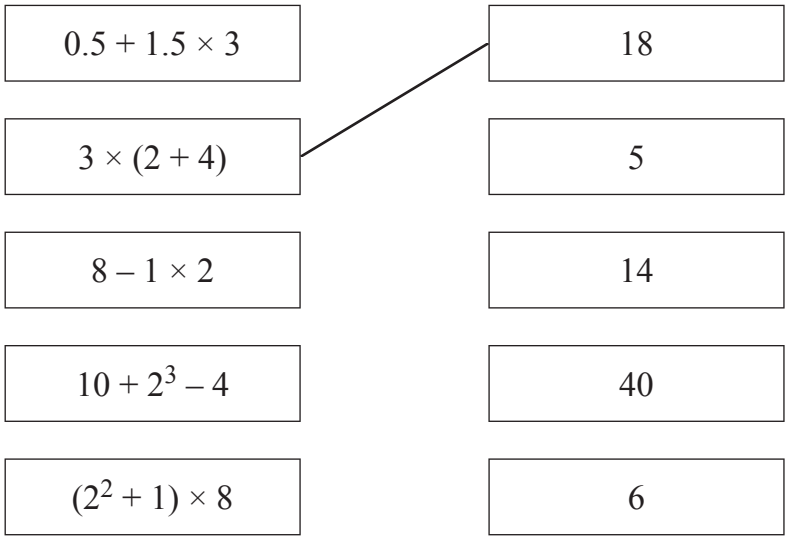
..... [1]

**(b)** $6 - 18x + 24y$

..... [1]

**9** Draw lines to join each calculation to the correct answer.

One has been done for you.




[2]

**10** Work out $2\frac{1}{6} + 1\frac{3}{5}$

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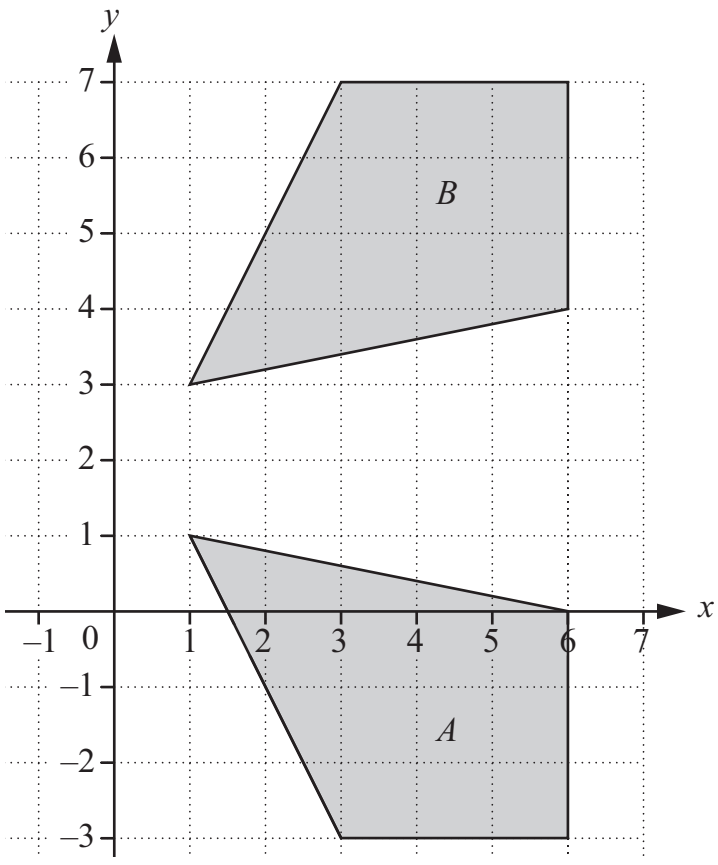
..... [2]

**11** Quadrilaterals $A$ and $B$ are drawn on the grid.




Describe fully the single transformation that maps $A$ onto $B$.

.....

..... [2]

**12** Work out $7^0$

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..... [1]

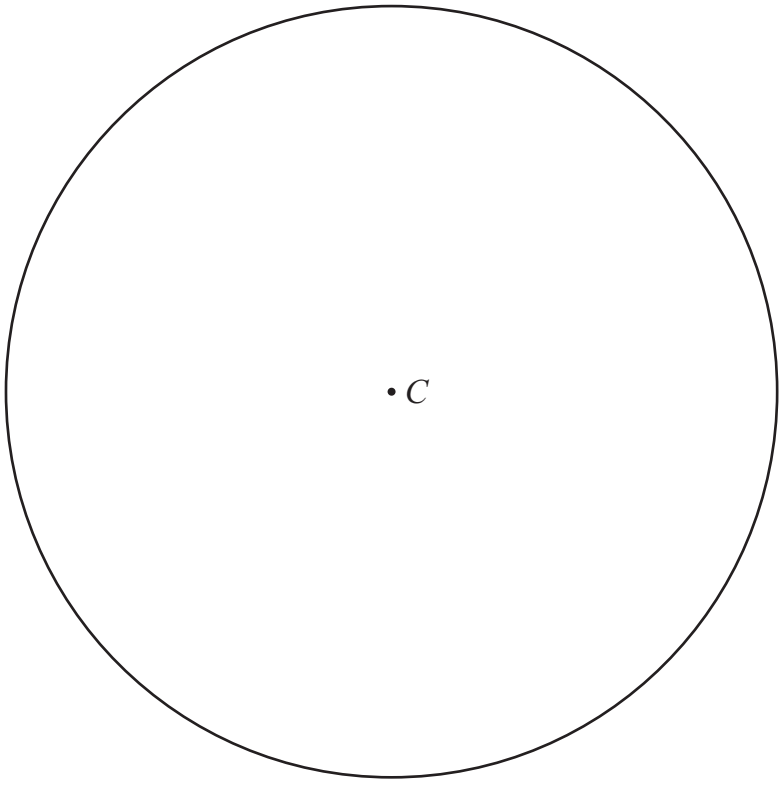
**13** **(a)** Work out $24.73 \div 0.001$

..... [1]

**(b)** Give your answer to part **(a)** to 2 significant figures.

..... [1]

**14** Here is a circle with centre $C$.




Construct an inscribed regular hexagon.
Use only a pair of compasses and a ruler.

Do not rub out your construction lines. [2]

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**15** Put a ring around the fraction that is **not** equivalent to $\frac{20}{24}$

$\frac{10}{12}$ $\frac{35}{42}$ $\frac{14}{18}$ $\frac{50}{60}$

[1]

**16** Expand and simplify.

$(x + 5)(x + 3)$

..... [2]

**17** Put a ring around the **correct** calculation.

$9^8 \div 9^8 = 9$ $7 \times 7^3 = 7^4$ $6^8 \div 6^2 = 6^4$ $2^3 \times 2^4 = 4^7$

[1]

**18** Bushra writes

$480 \div 0.4 = 48 \div 4$

Is Bushra correct?

Tick (✓) a box. Yes ☐ No ☐

Explain your answer.

.....

..... [1]

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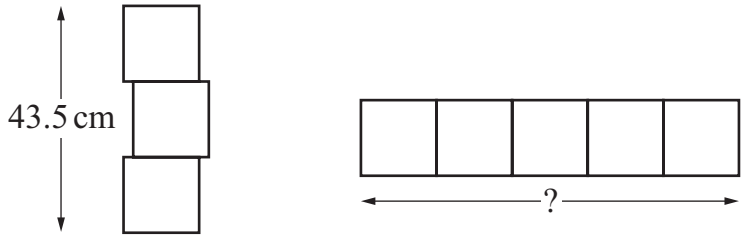
**19** Ibrahim has some building blocks that are all cubes of the same size.
He uses three of the blocks to make a pile with a height of 43.5 cm.
Then he makes a row with five of the blocks with no gaps.




NOT TO SCALE

**(a)** Work out the length of the row of five blocks.

..... cm [2]

**(b)** Ibrahim only has red, yellow and green building blocks.

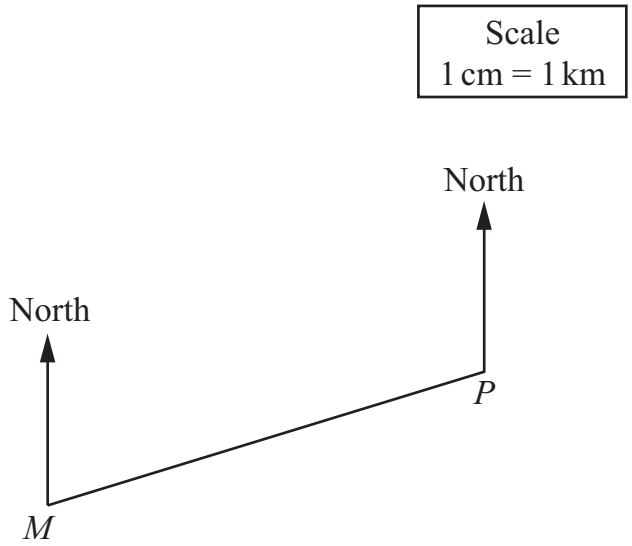
Ibrahim takes a block at random without looking.

Complete the table.

| | **Red** | **Yellow** | **Green** |
|---|---|---|---|
| **Number of blocks** | 10 | 10 | |
| **Probability** | | | $\frac{3}{5}$ |

[2]

**20** The diagram shows the position of two schools, $M$ and $P$.
The scale used in the diagram is 1 cm is equal to 1 km.




**(a)** What is the bearing of school $P$ from school $M$?

..... ° [1]

**(b)** School $Q$ is on a bearing of 120° from school $P$.
School $Q$ is 4 km away from school $P$.

Put a cross (×) on the diagram to show the position of school $Q$.
Label it $Q$. [1]

**(c)** Cheng lives exactly 3 km away from school $M$.
Draw on the diagram the locus of points showing where Cheng lives. [1]

**21** Solve the simultaneous equations.

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$$7x + y = 50$$

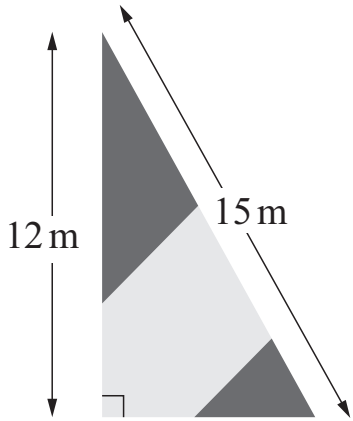
$$4x + y = 23$$

Show your working.

$x =$ .....

$y =$ ..... [2]

**22** Here is a boat's sail in the shape of a right angled triangle.

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Work out the **total** distance around the outside of the sail.

..... m [2]

**23** The back to back stem-and-leaf diagram shows the scores for two different teams in their last 25 basketball matches.

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| Team X | | | | | | | | | | Team Y | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 8 | 5 | | 0 | 1 | 1 | 2 | 3 | 6 | 9 | 9 | 9 | |
| | | | | | | 4 | 1 | 6 | | 1 | 3 | 5 | 5 | 6 | 8 | 9 | 9 | | |
| | | | 9 | 9 | 8 | 7 | 5 | 4 | 7 | | 1 | 1 | 4 | 7 | | | | | |
| 9 | 8 | 8 | 8 | 6 | 5 | 1 | 0 | 0 | 8 | | 2 | 3 | | | | | | | |
| | | | | 8 | 7 | 5 | 3 | 2 | 9 | | 4 | | | | | | | | |
| | | | | | | | 0 | 0 | 10 | | 7 | | | | | | | | |

Key: 8 | 5 | 0 is a score of 58 for Team X and 50 for Team Y

Tick (✓) a box to show which team generally had higher scores.

Team X ☐ Team Y ☐

Explain your answer.

.....

..... [1]

**24** Work out $1\frac{7}{8} \div 1\frac{1}{4}$

Give your answer as a mixed number in its simplest form.

..... [3]