

# Cambridge Secondary 1 Progression Test

## Question paper

Cambridge  
Secondary 1

55 minutes

# Mathematics Paper 1

## Stage 9

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.

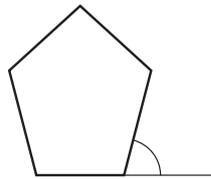
For Teacher's Use	
Page	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
<b>Total</b>	



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.



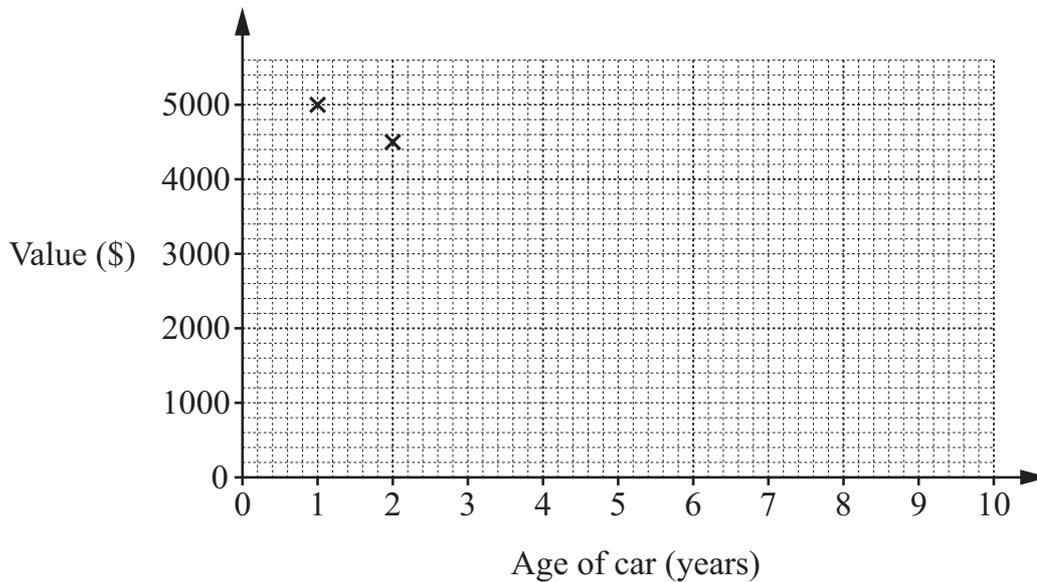
NOT TO SCALE

.....° [1]

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

<b>Age of car (years)</b>	<b>2</b>	<b>1</b>	9	7	10	5	8
<b>Value (\$)</b>	<b>4500</b>	<b>5000</b>	1200	2900	500	2700	2200

(a) Complete the scatter graph.



[2]

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

..... [1]

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

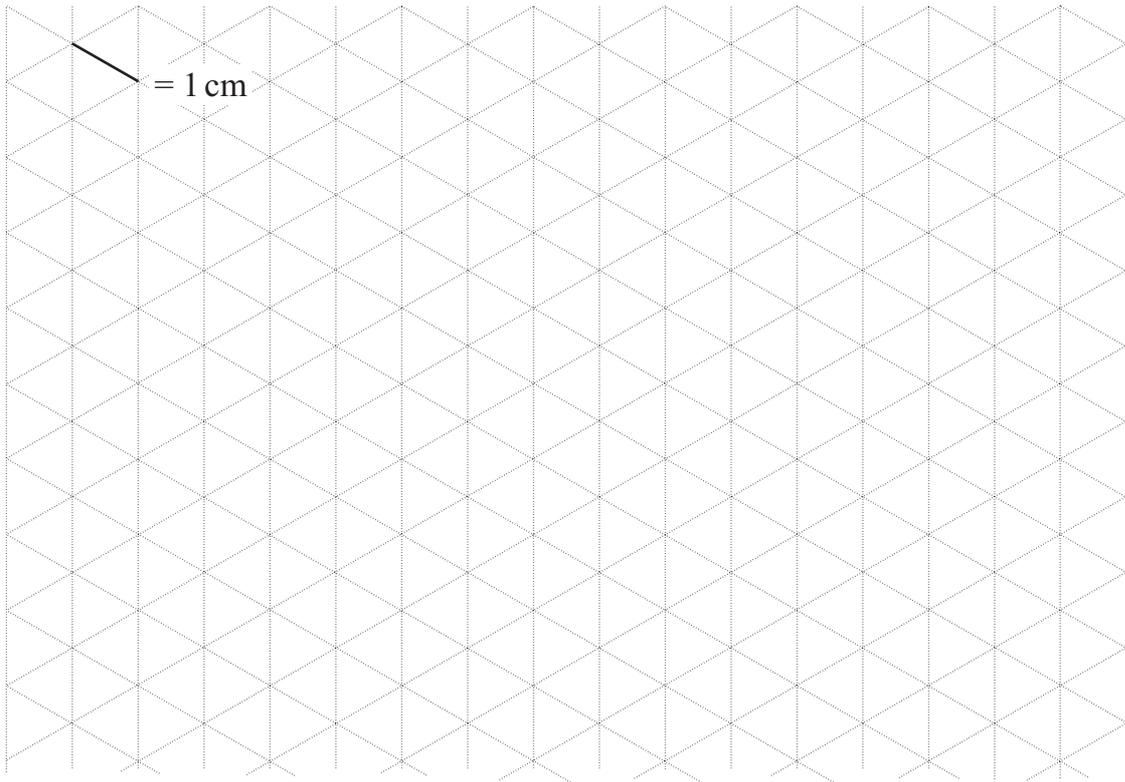
The first one has been done for you.

	True	False
The answer to $20.1 \times 1.53$ is larger than 20.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The answer to $17.4 \times 0.82$ is larger than 17.4	<input type="checkbox"/>	<input type="checkbox"/>
The answer to $23.8 \div 0.74$ is smaller than 23.8	<input type="checkbox"/>	<input type="checkbox"/>

[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.

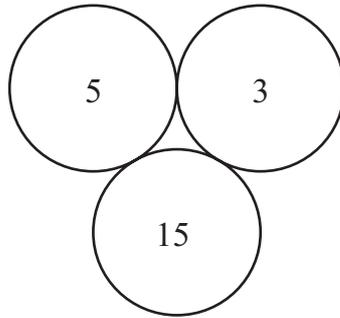
..... [1]

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]

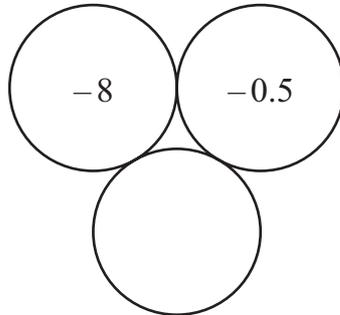
7 Here is a pattern.



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

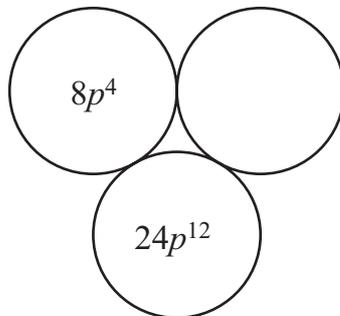
Complete these patterns using the same rule.

(a)



[1]

(b)



[2]

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.

$0.5 + 1.5 \times 3$	$18$
$3 \times (2 + 4)$	$5$
$8 - 1 \times 2$	$14$
$10 + 2^3 - 4$	$40$
$(2^2 + 1) \times 8$	$6$

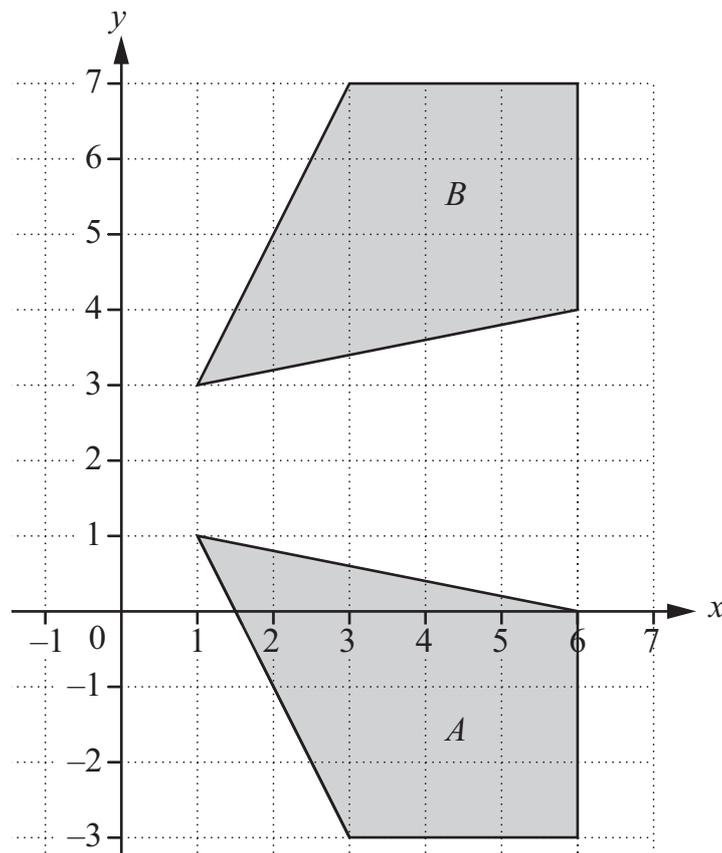
[2]

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

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Use

..... [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  $7^0$

..... [1]

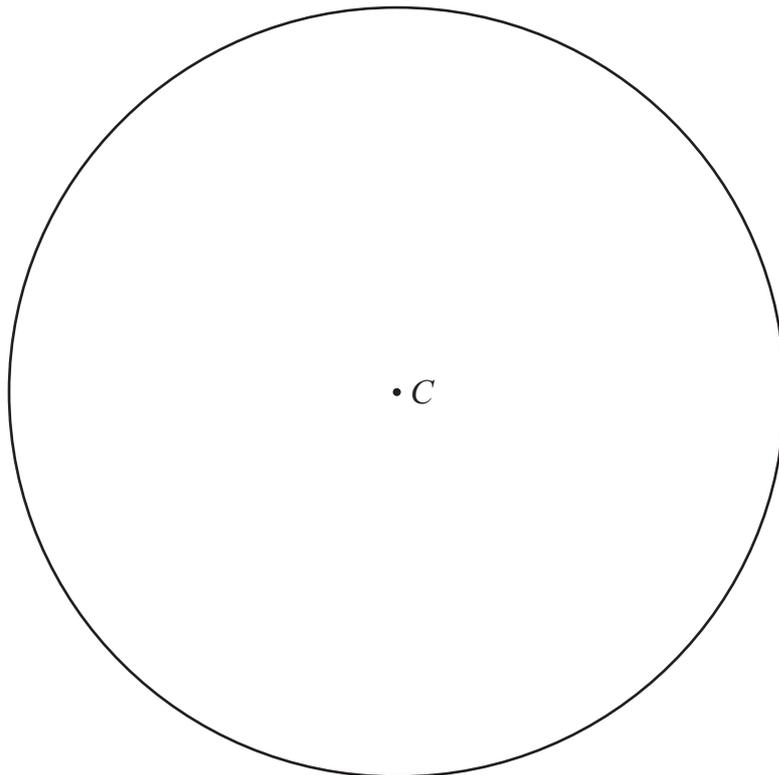
13 (a) Work out  $24.73 \div 0.001$

..... [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]

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

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

[1]

16 Expand and simplify.

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

..... [2]

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

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

[1]

18 Bushra writes

$$480 \div 0.4 = 48 \div 4$$

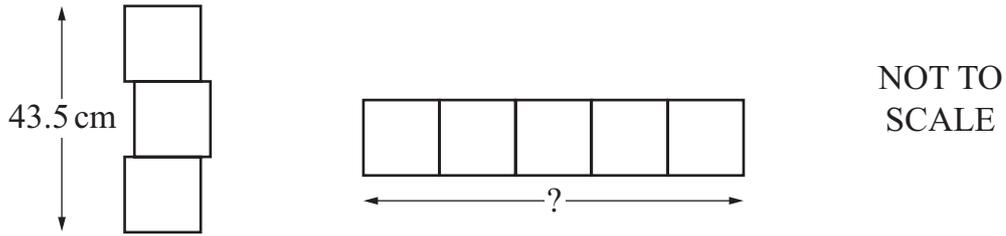
Is Bushra correct?

Tick (✓) a box. Yes  No

Explain your answer.

.....  
..... [1]

- 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.



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

..... cm [2]

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

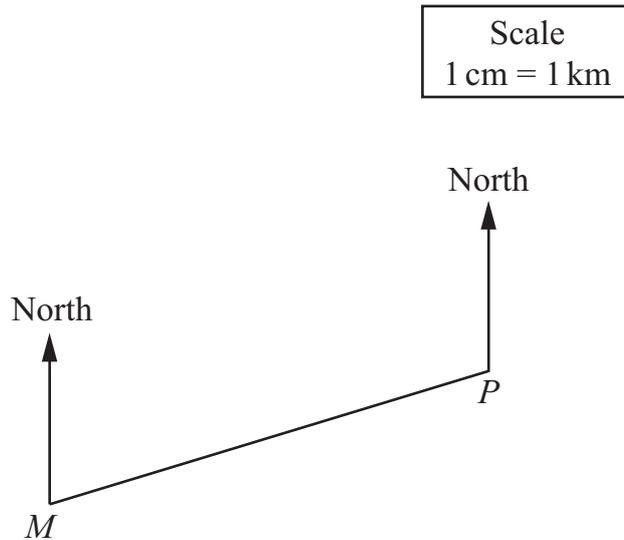
Ibrahim takes a block at random without looking.

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  $M$ ?

.....<sup>o</sup> [1]

- (b) School  $Q$  is on a bearing of  $120^\circ$  from school  $P$ .  
School  $Q$  is 4 km away from school  $P$ .

Put a cross ( $\times$ ) 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.

$$7x + y = 50$$

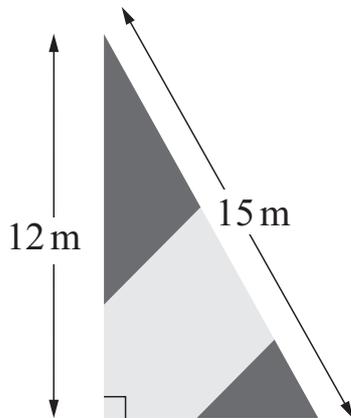
$$4x + y = 23$$

Show your working.

$x =$  .....

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

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

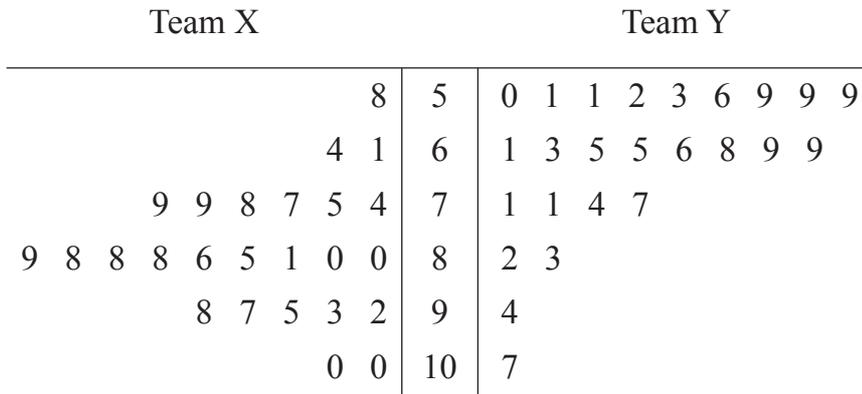


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SCALE

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.



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]

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