

Mathematics

Stage 9

Paper 2

2022

Cambridge Lower Secondary Progression Test

Name

Class

Date

1 hour

Additional materials: Calculator
Geometrical instruments
Tracing paper (optional)


INSTRUCTIONS

- Answer **all** questions.
- Write your answer to each question in the space provided.
- You should show all your working on the question paper.
- You may use a calculator.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [].

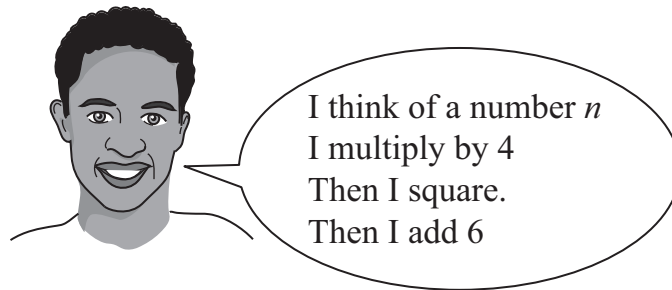
1 A plant is 6.2 cm tall.

 The height of the plant increases by 11% each week.

Find how tall the plant will be after **two** weeks.

..... cm [2]

2 Pierre says,



Write down an algebraic expression for Pierre's rule.

..... [1]

3 Draw a ring around **each** of the rational numbers.



$$\sqrt{8100}$$

$$\frac{22}{7}$$

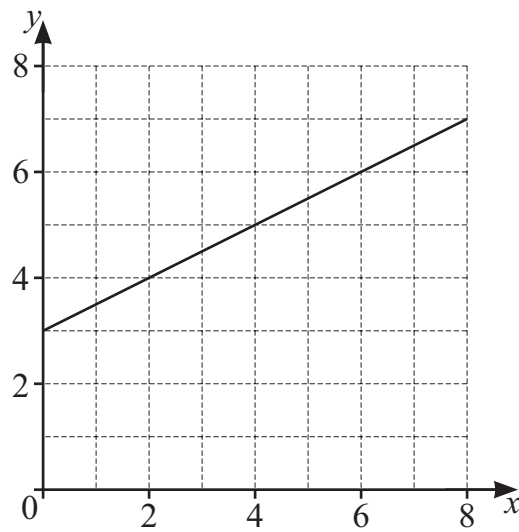
$$7$$

$$\sqrt{7}$$

$$\sqrt[3]{8}$$

[1]

- 4 A line is drawn on the grid.



Find the equation of the line.

..... [2]

- 5 Oliver and Mia attempt this question.



Round 0.027 648 correct to three significant figures.

Oliver says, 'The answer is 0.028'

Mia says, 'The answer is 0.0276'

Tick (✓) to show who is correct.

Oliver ☐

Mia ☐

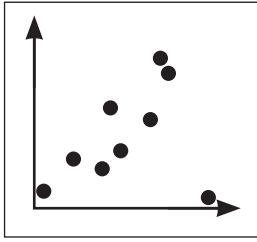
Explain why the other answer is **not** correct.

.....

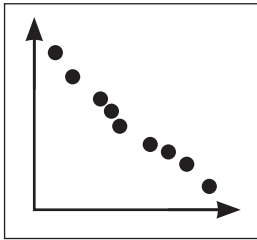
[1]

6 Draw a line to match each scatter graph to the **best** description.

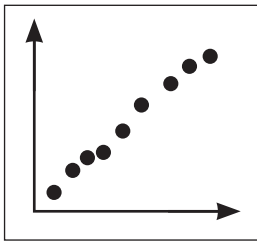
7



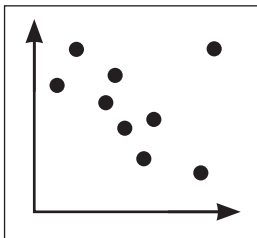
Strong positive correlation



Weak positive correlation



Weak negative correlation



Strong negative correlation

[1]

7 Calculate.

7

$$\frac{0.6 + (1.78 - 0.28)^2}{5}$$

..... [1]

- 8 Safia drives for 4 hours from A to B.
 8 Angelique drives at half the speed of Safia.

Find how many hours Angelique takes to drive from A to B.

..... hours [1]

- 9 The table gives information about the masses of 20 watermelons.



Mass, m (kg)	Frequency, f	Midpoint, x	$f \times x$
$2 \leq m < 4$	2	3	6
$4 \leq m < 6$	4	5	20
$6 \leq m < 8$	9	7	63
$8 \leq m < 10$	5		
	Total = 20		Total =

- (a) Complete the table. [1]

- (b) Calculate an estimate of the mean mass of these watermelons.

..... kg [1]

- (c) Explain why your answer to part (b) is an estimate.

.....
 [1]

10 Lily counts the number of people on the 12 buses that arrive at Pugu bus station in one day.



23	29	20	27	44	27
41	28	19	16	17	8

She draws a stem-and-leaf diagram of her results.

0	8					
1	6	7	9			
2	0	3	7	8	9	
3						
4	4	1				

Key:

1 | 6 represents 16 buses

Lily makes some mistakes on her stem-and-leaf diagram.

Redraw the stem-and-leaf diagram correctly below.

Key:

.....
.....

[3]

11 The exterior angle of a regular polygon is 40° .



Draw a ring around the number of sides this polygon has.

7

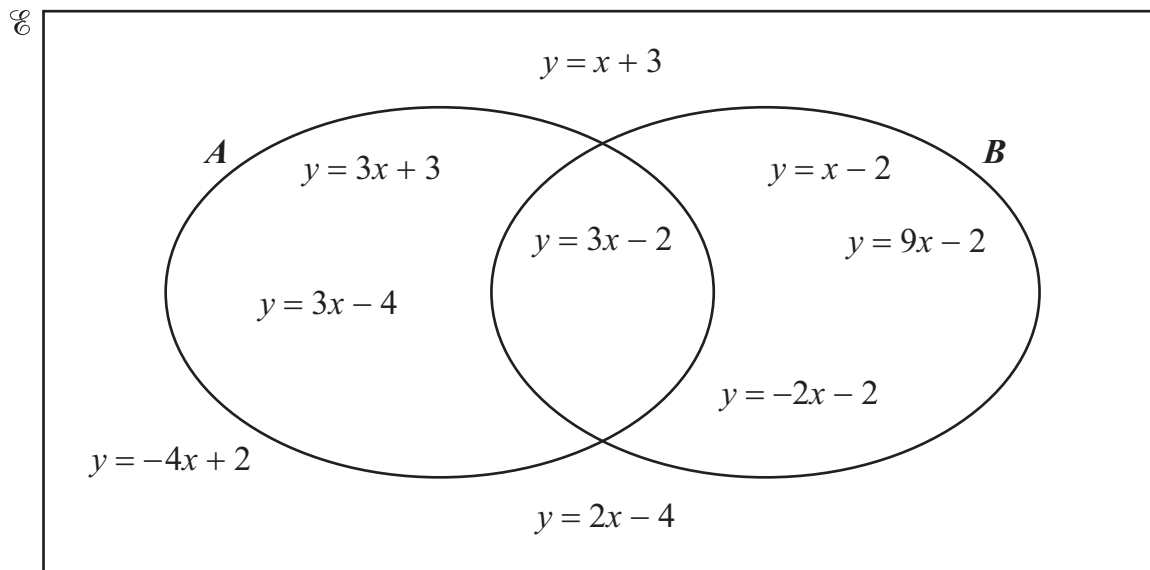
8

9

10

[1]

12 Some equations of straight lines have been placed in the Venn diagram.



(a) Write down a description of the straight lines in set **A**.

..... [1]


(b) Write down a description of the straight lines in set **B**.

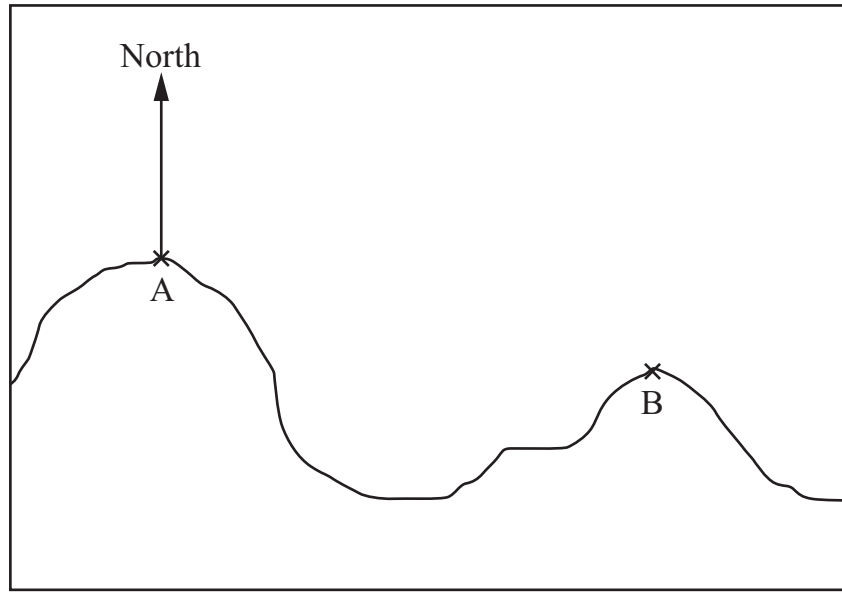
..... [1]

(c) Write the equation $y = -2x + 3$ in the correct part of the Venn diagram.

[1]

13 The map shows the positions of two lighthouses, A and B.

 The map is drawn to a scale of 1 : 50 000



Scale 1 : 50 000

The bearing of ship S from lighthouse A is 080° .

The distance of ship S from lighthouse B is 1.8 km.

Show the **two** possible positions for ship S on the map.

[3]

14 Expand and simplify.

 $(x + 4)(x - 7)$

..... [2]

15 Yuri has a box containing white, milk and plain chocolates in the ratio



$$\begin{array}{ccccc} \text{white} & : & \text{milk} & : & \text{plain} \\ 12 & : & 7 & : & 2 \end{array}$$

There are more than 50 chocolates in the box.

Find the smallest possible number of milk chocolates in the box.

..... [1]

16 Rearrange the formula to make x the subject.



$$y = \frac{9}{5}x + 4$$

$x =$ [2]

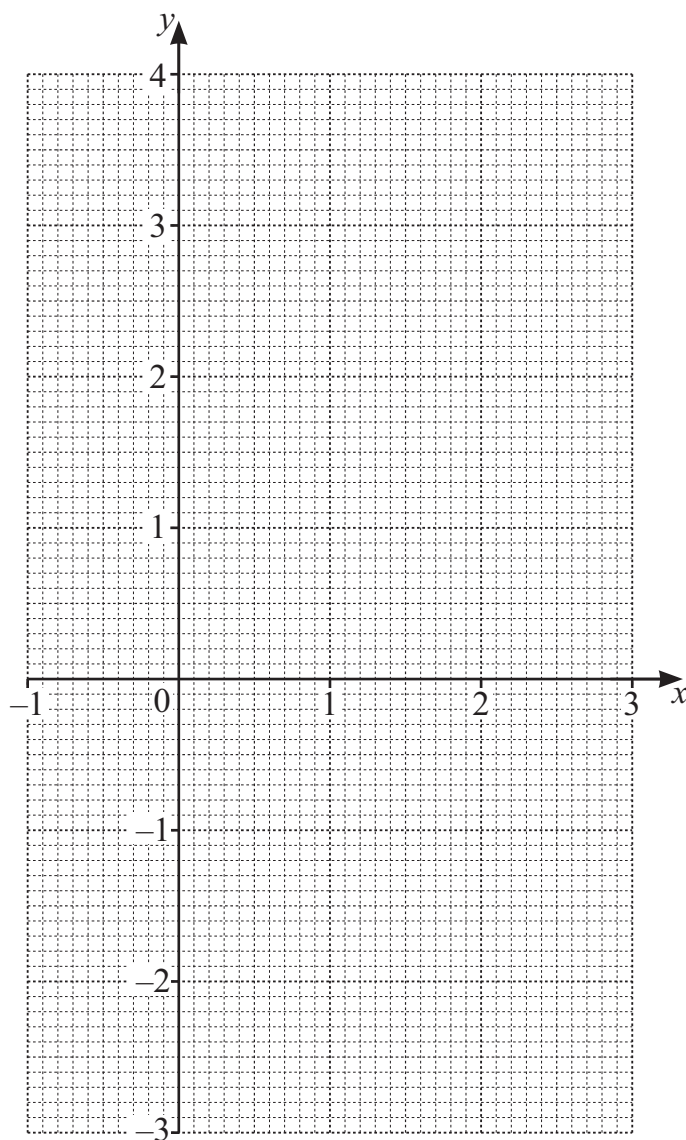
17 (a) Complete the table of values for $3x + 2y = 4$



x	-1	0	3
y			

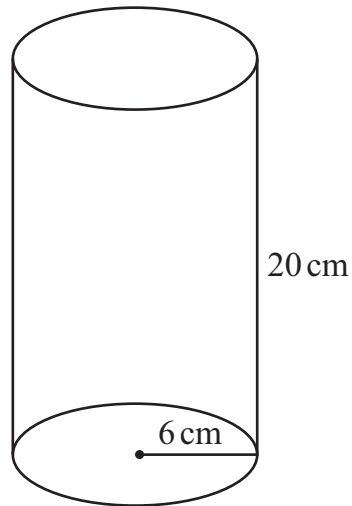
[2]

(b) Draw the graph of $3x + 2y = 4$ for values of x between -1 and 3



[1]

- 18 A cylinder has a radius of 6 cm and a height of 20 cm.



NOT TO
SCALE

Find the **total** surface area of this cylinder.

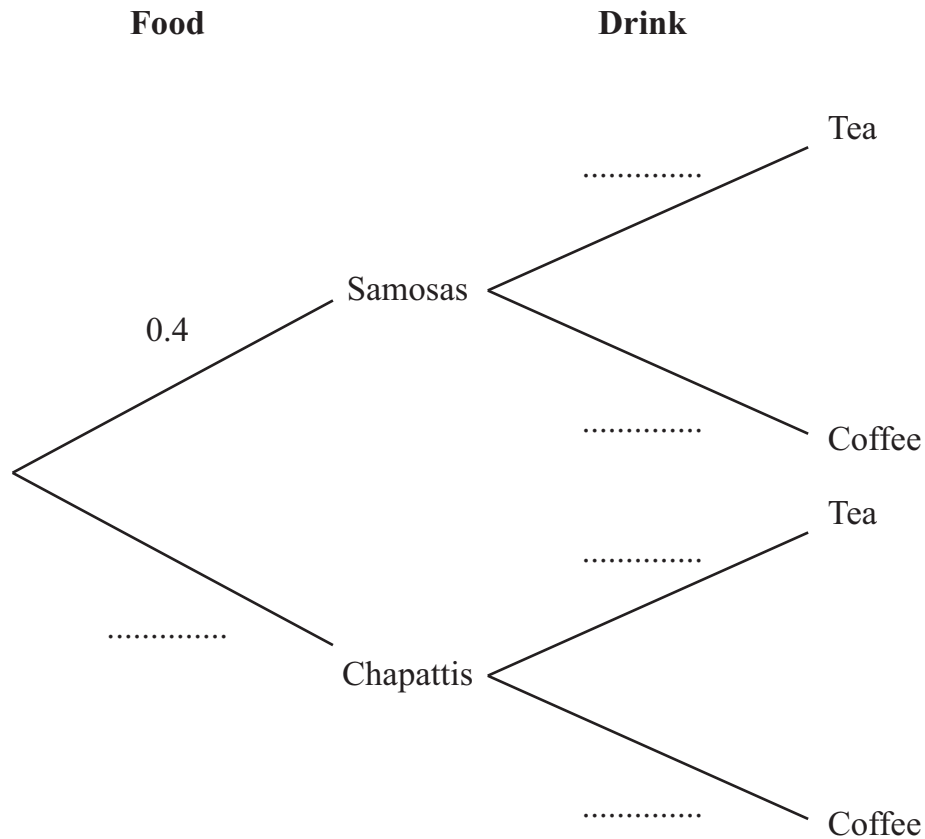
..... cm^2 [3]

19 Chen prepares food and drink for his friends.



He prepares either samosas or chapattis for the food.
The probability that he prepares samosas is 0.4

He prepares either tea or coffee for the drink.
He is equally likely to prepare tea or coffee.



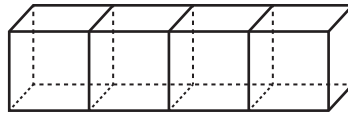
(a) Complete the tree diagram.

[2]

(b) Find the probability that he prepares chapattis and tea.

..... [2]

- 20 A cuboid is formed by joining together four identical cubes.



NOT TO
SCALE

The total surface area of this cuboid is 54 cm^2 .

These four cubes are rearranged to form a cuboid with a **different** total surface area.

Find the total surface area of the new cuboid.

..... cm^2 [2]

- 21 Eva thinks of a number.



When she rounds the number correct to two significant figures the answer is 43 000

When she rounds the number correct to three significant figures the answer is 43 500

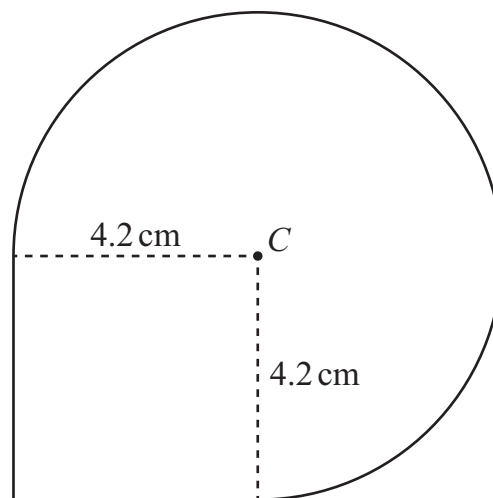
Complete the inequality to show the limits for Eva's number.

..... \leq Eva's number $<$ [2]

- 22** A shape is made from part of a circle, centre C , with a radius of 4.2 cm and a square with sides of 4.2 cm.



Find the area of the shape.
Give your answer correct to **one** decimal place.



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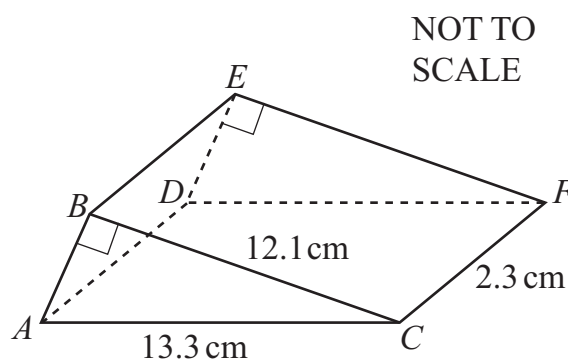
..... cm^2 [4]

- 23** Here is a triangular prism $ABCDEF$.



ABC is a right-angled triangle.
 $BC = 12.1$ cm, $AC = 13.3$ cm and $CF = 2.3$ cm.

Calculate the volume of this triangular prism.



NOT TO
SCALE

..... cm^3 [4]