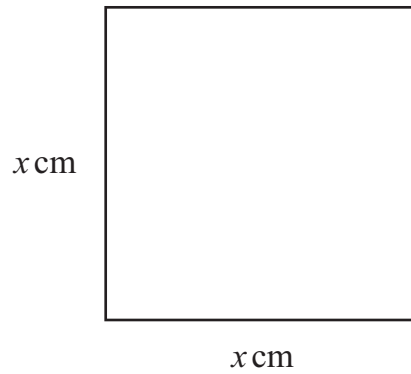


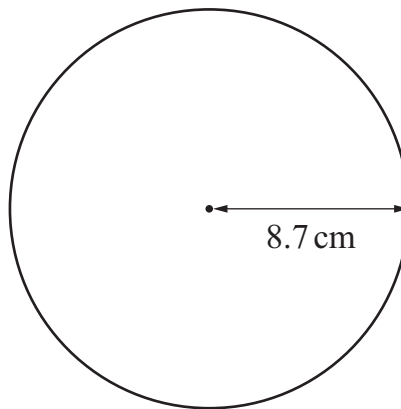
- 1 A square has a side length of x cm.



Find an expression for the area of the square.
Give your answer in its simplest form.

..... cm^2 [1]

- 2 A circle has a radius of 8.7 cm.



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Find the area of the circle.

..... cm^2 [2]

- 3 Naomi and Samira share some apples.
 Naomi receives less than half of the apples.

Draw a ring around the possible value of the ratio of Naomi's share to Samira's share.

$1 : 5$

$3 : 2$

$1 : 1$

$7 : 5$

[1]

- 4 Use the numbers in the box to complete the sentences.



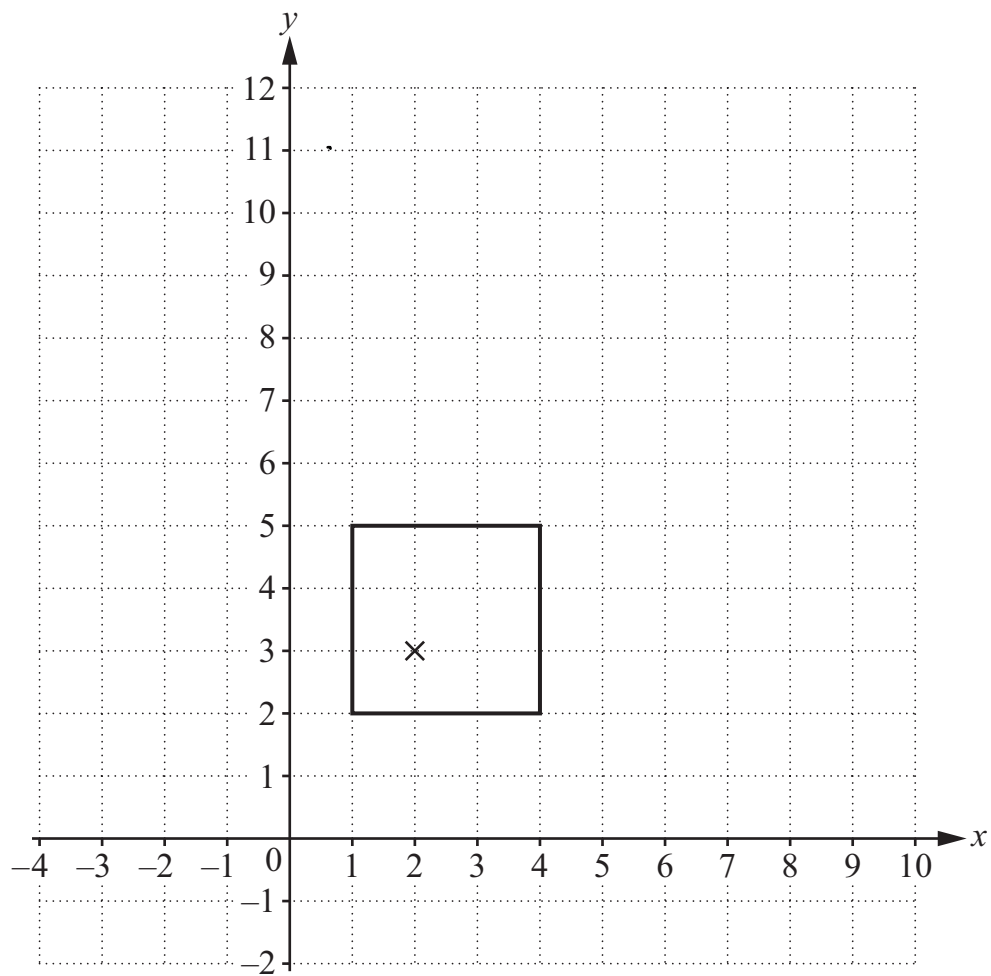
$\sqrt{19}$	$\frac{19}{6}$
8^2	π

..... and are rational numbers.

..... and are irrational numbers.

[1]

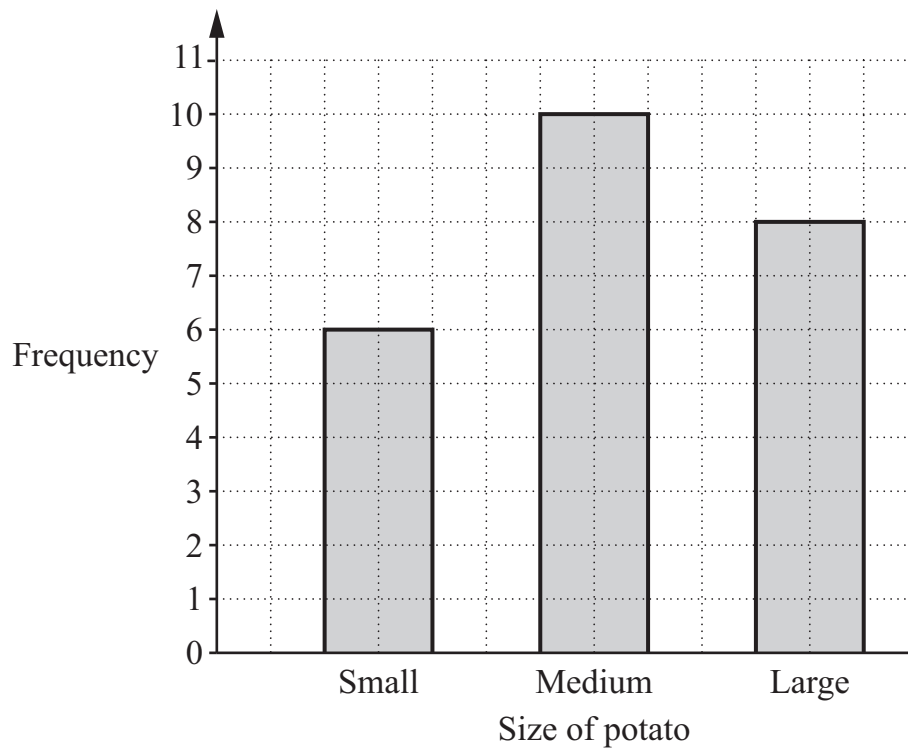
- 5 The diagram shows a square drawn on a coordinate grid.



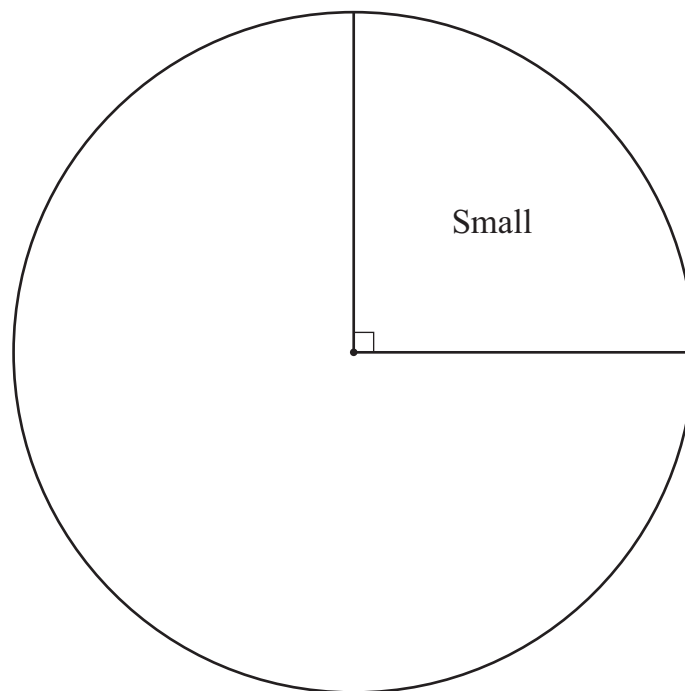
Draw the image of the square after an enlargement, scale factor 3, centre (2, 3).

[2]

- 6 The bar chart shows the number of small, medium and large potatoes in a sack.



Complete the pie chart to show this information.

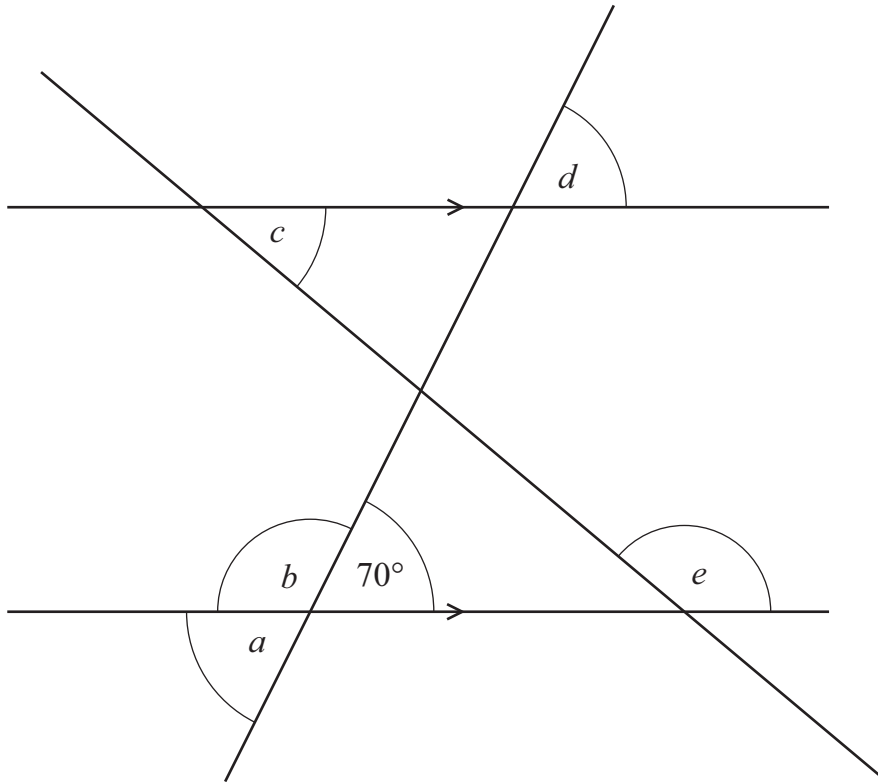


[3]

- 7 The diagram shows two parallel lines and two transversals.



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Draw a ring around all the angles that **must** be equal to 70° .

a

b

c

d

e

[1]

8 Here are three scatter diagrams.



Diagram A

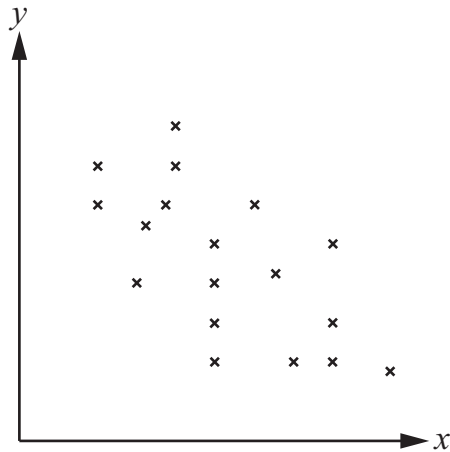


Diagram B

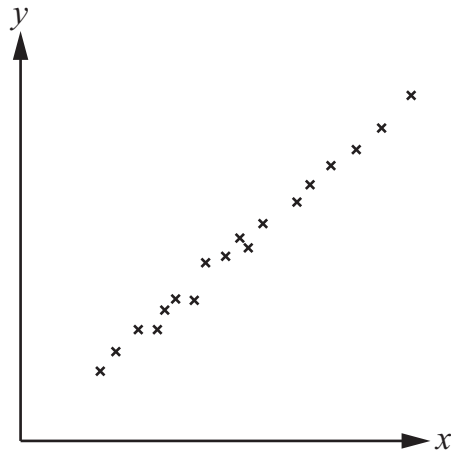
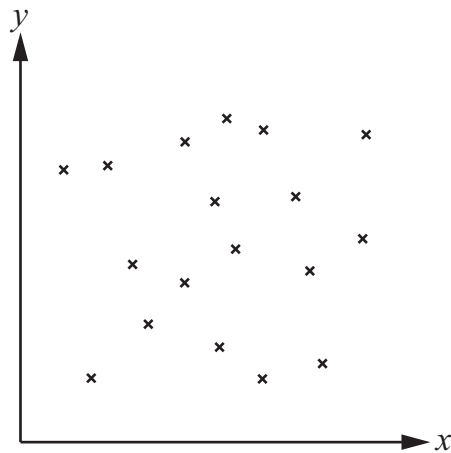


Diagram C



Draw a line to match each scatter diagram to the best description of its correlation.

Diagram A

Strong positive

Weak positive

Diagram B

No correlation

Weak negative

Diagram C

Strong negative

[1]

9 Ahmed has two bags each containing four balls.



The balls in bag A are numbered 1, 3, 5 and 6

The balls in bag B are numbered 2, 3, 4 and 6

Ahmed picks a ball at random from each bag.

He adds together the numbers on the two balls to get a total score.

Show that $P(\text{total score is even}) = P(\text{total score is more than 8})$.

You may use the table to help you.

		Bag A			
Bag B	+	1	3	5	6
	2	3			
	3			8	
	4				10
	6				

.....

.....

..... [3]

10 (a) Here are the definitions of some angles.



A = interior angle of an equilateral triangle

B = interior angle of a regular pentagon

C = exterior angle of a regular pentagon

D = exterior angle of a regular hexagon

Draw a ring around the **two** angles that add up to 180° .

A

B

C

D

[1]

(b) Find the sum of the interior angles of a 7-sided polygon.

..... $^\circ$ [1]

11 (a) A number, x , rounded to the nearest 100 is 1500



Complete the inequality to show the possible values of x .

..... $\leq x <$

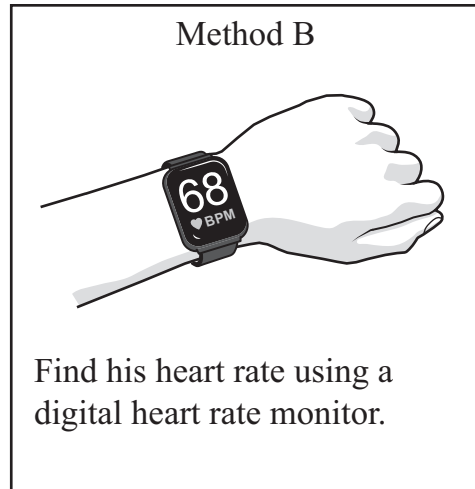
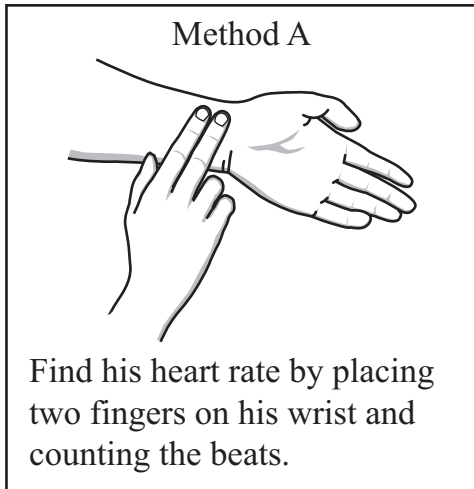
[1]

(b) The time taken to run a race is 9.87 seconds correct to 3 significant figures.

Write down the upper limit for the time.

..... s [1]

- 12 (a) Yuri wants to investigate how exercise changes his heart rate.
He considers two methods for measuring his heart rate.



Yuri decides to use method A.

Give one reason why this may **not** be the better method.

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

- (b) Yuri also wants to compare his results with those for other people his age.
He decides to repeat his experiment on 40 members of a gym.

Explain why his sampling method may **not** give him reliable data about the heart rates of other people his age.

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

13 Hassan thinks of a number, n .



He multiplies it by 4

His answer is greater than -8 and less than or equal to 20

(a) Write the correct inequality signs to complete the inequality.

$$-8 \dots\dots\dots 4n \dots\dots\dots 20$$

[1]

(b) Solve the inequality to find the possible values of n .

Give your answer as an inequality in terms of n .

..... [2]

14 In September a coat costs \$62.50




In October the cost of the coat increases by 4% of the cost in September.

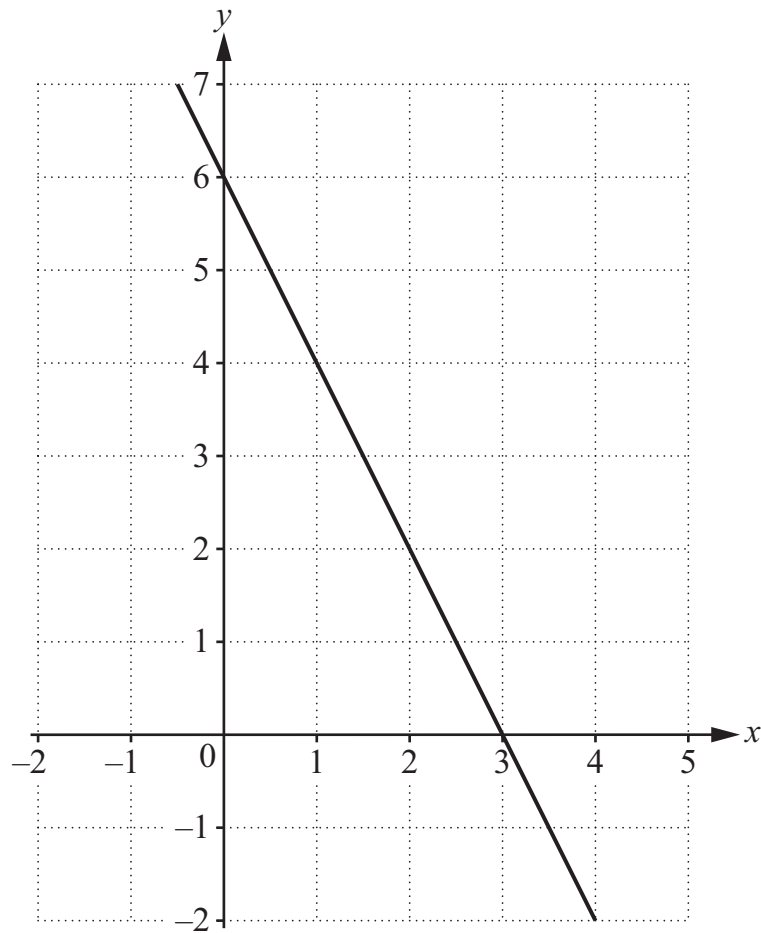
In November the cost of the coat increases by a further 14.6% of the cost in October.

Find the cost of the coat after both increases.

\$ [2]


15 Find the equation of the graph.

 Give your answer in the form $y = mx + c$.



$y =$ [2]

16 The first term of a sequence is -0.7

 The term-to-term rule of the sequence is ‘multiply by -1 and then add 0.5 ’

(a) Show that the sum of the first four terms of the sequence is 1

[2]


(b) Complete the following statements.

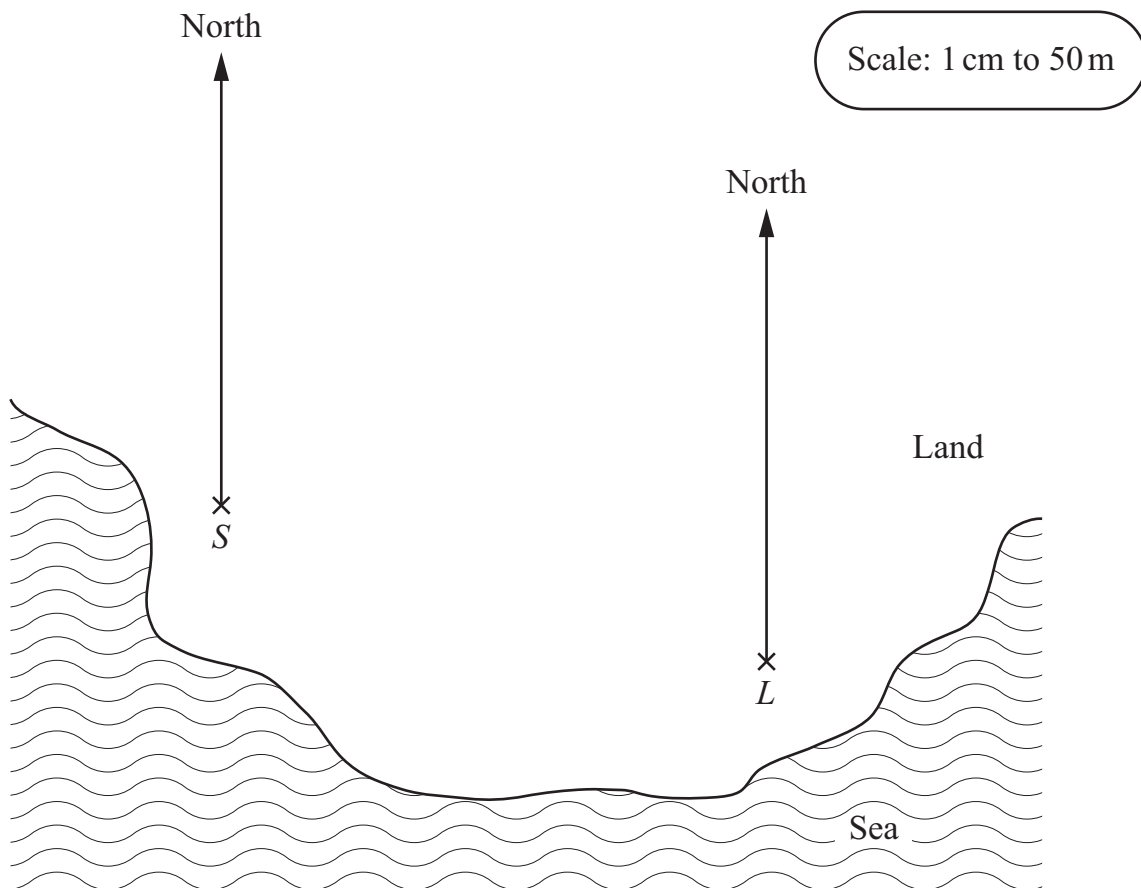
The sum of the first 12 terms of this sequence is

The sum of the first 400 terms of this sequence is

[1]

17 The map shows the position of a shop, S , and a library, L , on an island.

 The scale of the map is 1 cm to 50 m.



A restaurant, R , is built on the island

on a bearing of 130° from the shop

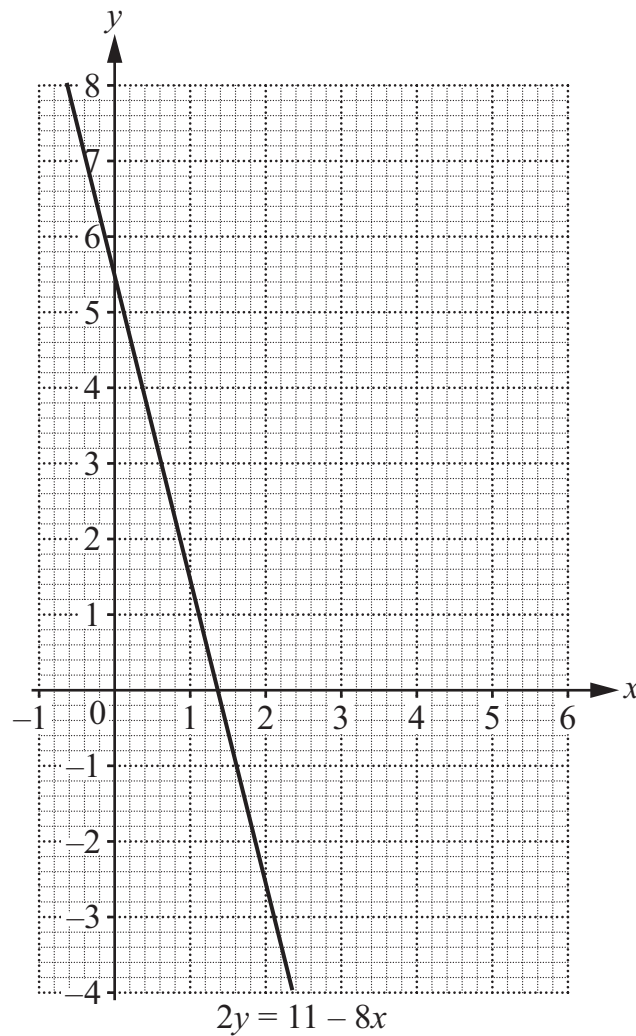
and

220 metres from the library.

Mark the position of the restaurant on the map.

[2]

18 The graph of $2y = 11 - 8x$ is shown on the grid.



- (a) Draw the graph of $2x - 5y = 10$ on the grid.
Use the table of values to help you.

x	0	
y		0

[2]

- (b) Use **your graph** to solve the simultaneous equations.

$$2y = 11 - 8x$$

$$2x - 5y = 10$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

[2]

19 The cross-section of a prism is a regular polygon.

K The prism has exactly 6 planes of symmetry.

Draw a ring around the shape of the cross-section.

square

pentagon

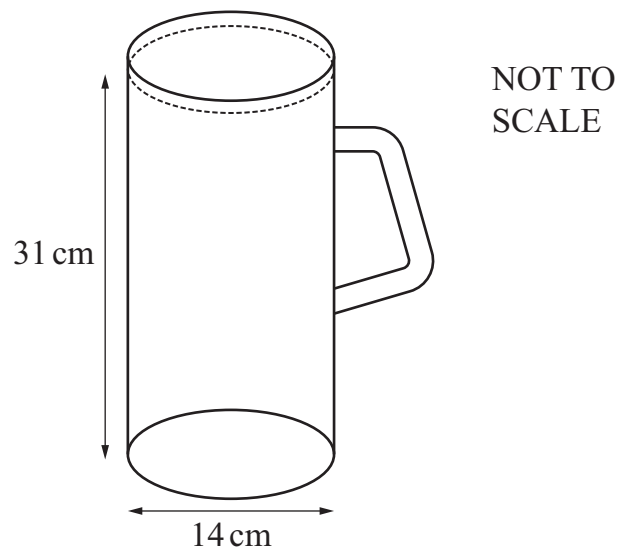
hexagon

octagon

[1]

20 A jug is a cylinder with a diameter of 14 cm.

K The height of the water in the jug is 31 cm.



The capacity of a glass is 315 cm^3 .

Find how many of these glasses can be completely filled using the water in the jug.

[3]

21 Here are some of the inputs and outputs of a function.



input		output
x	\rightarrow	$5x^2$
a	\rightarrow	180

a is an integer.

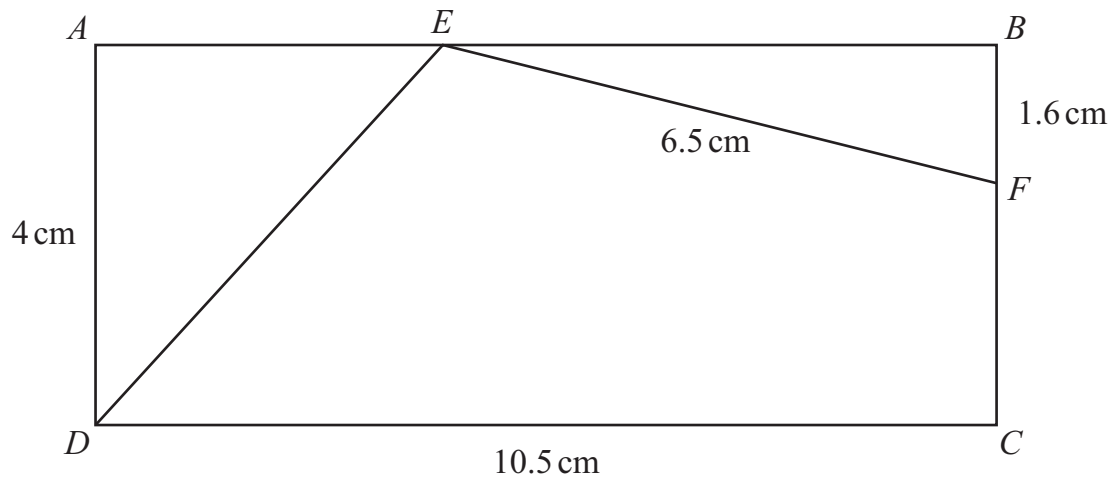
Find the **two** possible values of the output when the input is $a + 1$

..... and [3]

22 $ABCD$ is a rectangle measuring 4 cm by 10.5 cm.



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$$EF = 6.5 \text{ cm}$$

$$BF = 1.6 \text{ cm}$$

Calculate DE .

..... cm [4]

23 a and b are positive integers.



$$\frac{a}{b} = 0.37 \text{ correct to 2 significant figures.}$$

b is a cube number less than 200

Find a possible pair of values for a and b .

$a =$

$b =$

[2]