

Question 1

Question 2

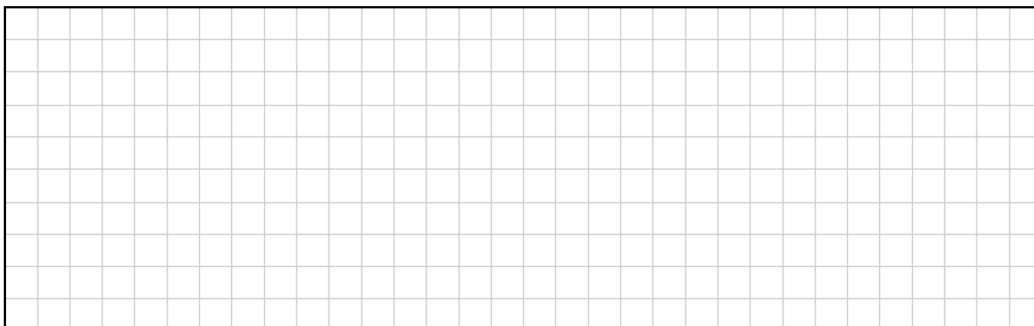
Question 3

Question 4


Question 11

(Suggested maximum time: 5 minutes)

- (a) Simplify $5x^2 - 7x + 3x^2 - 6x$.



Question 5

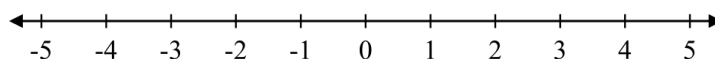
4. (a)  Graph on the number line the solution set of

$$4 - x \geq 2x - 5, x \in \mathbb{N}.$$

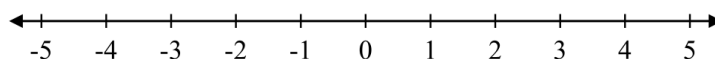
Question 6

- (b) Graph each of the following inequalities on the number line given.

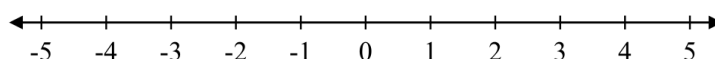
- (i) $x < 4$, where $x \in \mathbb{N}$.



- (ii) $x < 4$, where $x \in \mathbb{Z}$.



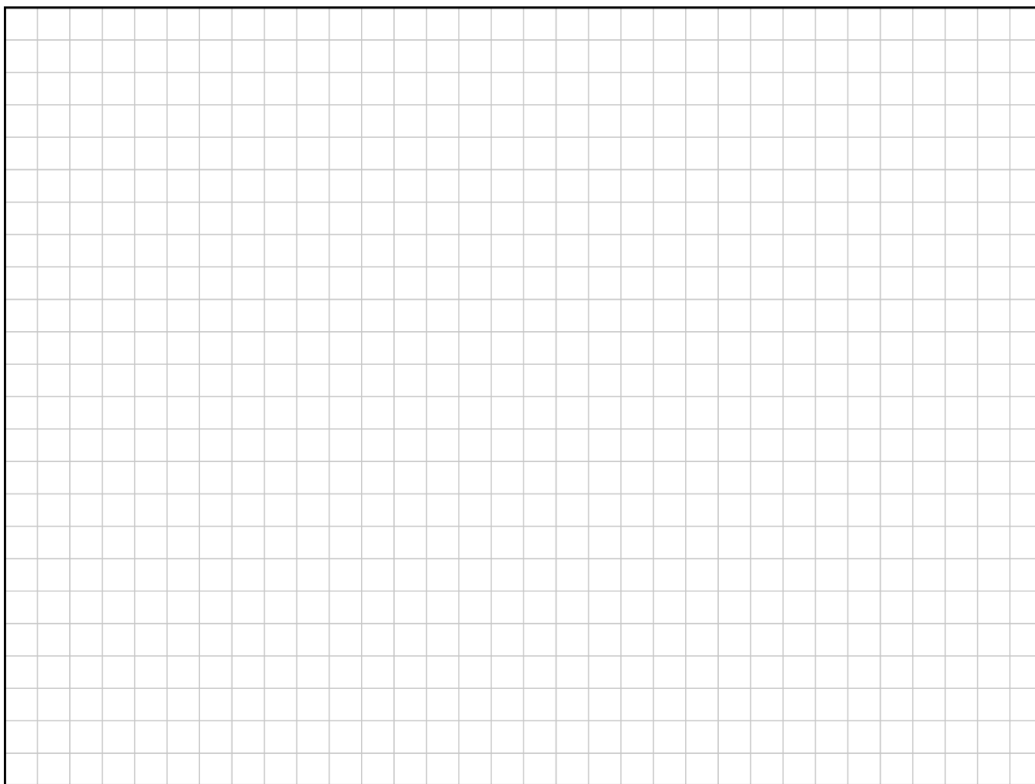
- (iii) $x < 4$, where $x \in \mathbb{R}$.



Question 7

(d) Solve the equation $2x^2 - 7x - 3 = 0$.

Give each answer correct to 2 decimal places.



Question 8

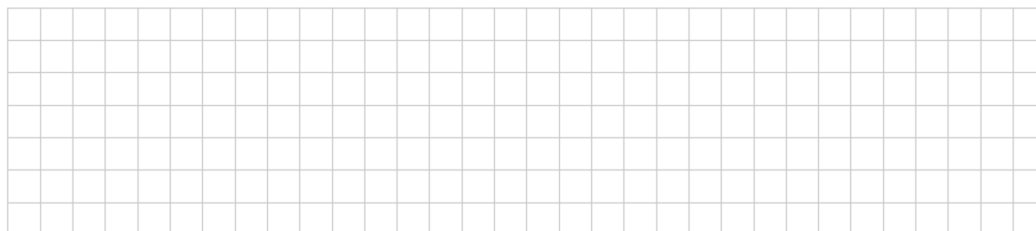
- (c) (i) Solve the simultaneous equations:

$$2x - 3y = 18$$

$$5x + 9y = -10.$$



- (ii) Verify your answer to (c)(i).



Question 9

Question 6

(Suggested maximum time: 5 minutes)

A chocolate bar in the shape of a prism is shown below.

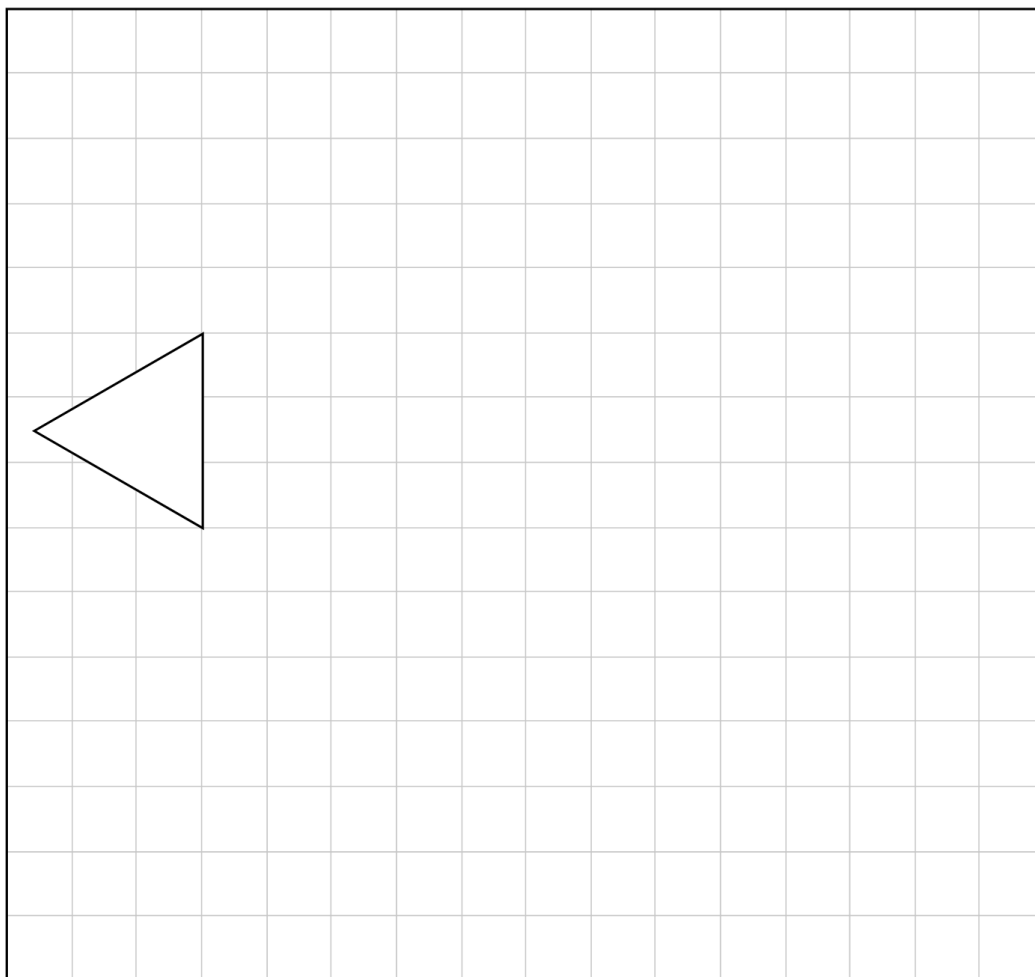


The front and back faces are each in the shape of equilateral triangles, with sides of length 3 cm. The other three faces are each in the shape of rectangles that are 9 cm in length, as shown above.

Complete an accurate net of the prism below, by drawing in the four missing faces.

One of the triangular faces has already been drawn.

Each small square in the grid has sides of length 1 cm.



Question 10

(Suggested maximum time: 10 minutes)

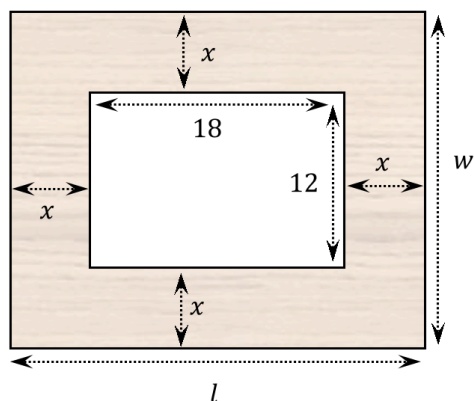
In this question, all lengths are in cm.

The diagram below shows a rectangular frame for a photo, where $w, l, x \in \mathbb{R}$.

The width of the frame is w and the length is l .

There is a rectangular hole in the middle for the photo, measuring 12 by 18.

The internal width of the frame is x , as shown.



- (a)** The length of the frame $l = 18 + 2x$.
Write the **width** of the frame, w , in terms of x .

[illegible]

- (b)** Hence, show that:

$$l \times w = 4x^2 + 60x + 216$$

A large grid of graph paper, consisting of 20 columns and 10 rows of squares, intended for drawing a picture.

(c) $l \times w = 648 \text{ cm}^2$.

Use this, and the information from part (b), to find the value of x .
Give your answer in cm, correct to 1 decimal place.

