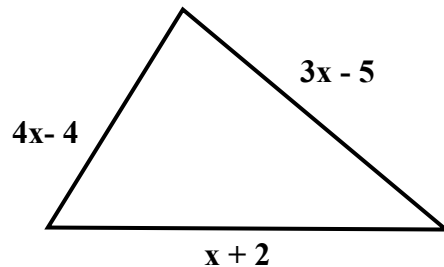


Answer Sheet

Forming and Solving Equation

1. The length, in cm, of the sides of a triangle are $4x - 4$, $3x - 5$ and $x + 2$.



Write down an expression, in terms of x , for the perimeter of the triangle.

$$= 4x - 4 + 3x - 5 + x + 2$$

$$= 8x - 7$$

_____ cm

The perimeter of the triangle is 41 cm.

- a) Work out the value of x .

$$8x - 7 = 41$$

$$8x = 41 + 7$$

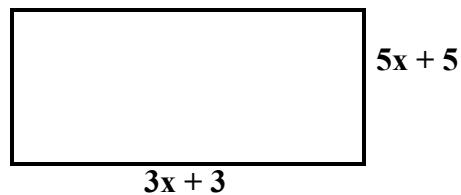
$$8x = 48$$

$$x = 48 / 8$$

$$x = 6$$

_____ cm

-
2. A rectangle has a length of $(3x + 3)$ cm and a width of $(5x + 5)$ cm.



- a) Find an expression for the perimeter of the rectangle.

$$= 2(3x + 3) + 2(5x + 5)$$

$$= 6x + 6 + 10x + 10$$

$$= 16x + 16$$

_____ cm

b) Given the rectangle has a perimeter of 55 cm find the value of x.

$$16x + 16 = 55$$

$$16x = 55 - 16$$

$$16x = 39$$

$$x = 39 / 16$$

cm

3.

$$3x + 6x + 90 = 360$$

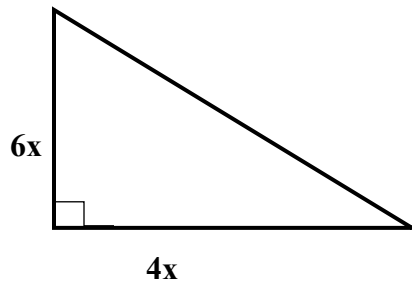
$$9x = 360 - 90$$

$$9x = 270$$

$$x = 270 / 9$$

$$x = 30$$

4. The diagram shows a right angled triangle.



The area of the triangle is 192cm^2

Work out the value of x.

$$\frac{1}{2} (6x) (4x) = 192$$

$$\frac{1}{2} (24x^2) = 192$$

$$12x^2 = 192$$

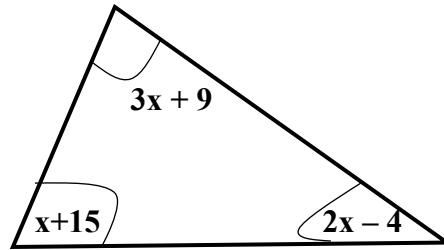
$$x^2 = 192 / 12$$

$$x^2 = 16$$

$$x = \sqrt{16}$$

$$x = 4\text{cm}$$

5. The sizes of the angles, in degrees, of a triangle are $3x + 9$, $x + 15$ and $2x - 4$.

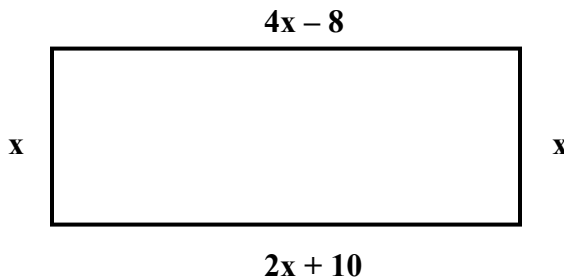


Work out the value of x .

$$\begin{aligned} 3x + 9 + x + 15 + 2x - 4 &= 180 \\ 6x + 20 &= 180 \\ 6x &= 180 - 20 \\ x &= 160 / 6 \end{aligned}$$

$$x = 80 / 3 \text{ OR } 26.6^\circ$$

6. The diagram shows a rectangle.
All measurements are in centimeters.



Find the perimeter of the rectangle.

$$4x - 8 = 2x + 10$$

$$4x - 2x = 10 + 8$$

$$2x = 18$$

$$x = 9$$

$$4x - 8 \quad ; \quad 2x + 10$$

put the value of x

$$4(9) - 8 \quad ; \quad 2(9) + 10$$

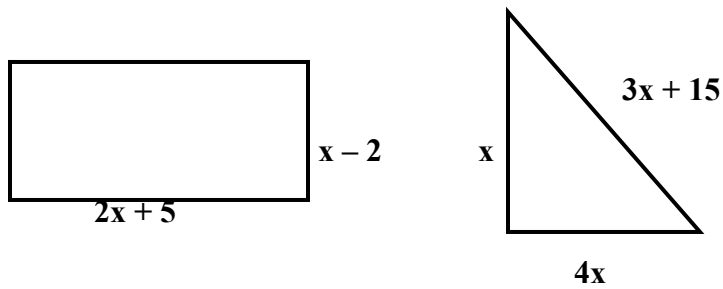
$$28 \quad ; \quad 28$$

$$\text{Perimeter of the rectangle} = 2(28) + 2(9) + 9 + 9$$

$$= 56 + 18 + 18$$

$$92\text{cm}$$

7. The diagram shows a rectangle and a triangle.



The perimeter of the rectangle is equal to the perimeter of the triangle.

Find the value of x .

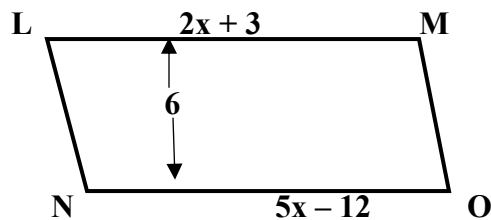
$$\begin{aligned} 2(x - 2) + 2(2x + 5) &= x + 4x + 3x + 15 \\ 2x - 4 + 4x + 10 &= 8x + 15 \\ 6x + 6 &= 8x + 15 \\ 2x &= -9 \end{aligned}$$

$$x = -9 / 2$$

8. LMNO is a parallelogram.

All measurements are in centimetres.

The perpendicular height of the parallelogram is 8cm.



Find the area of LMNO.

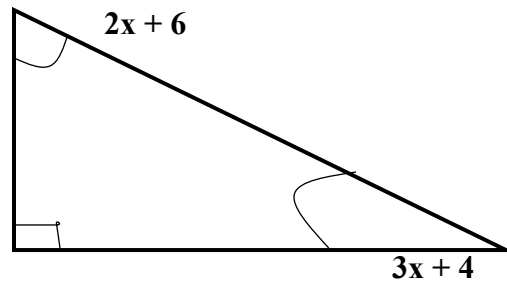
$$\begin{aligned} 2x + 3 &= 5x - 12 \\ 3x &= 15 \\ x &= 15 / 3 \\ x &= 5 \end{aligned}$$

$$\begin{aligned} 2x + 3 \\ \text{put the value of } x \\ &= 2(5) + 3 \\ &= 13 \end{aligned}$$

$$\text{Area of LMNO} = 13 \times 6$$

$$= 78 \text{ cm}^2$$

9. The diagram shows a right-angled triangle.
All angles are in degrees.
Find the value of the size of the smallest angle in the triangle.



$$2x + 6 + 3x + 4 + 90 = 180$$

$$5x + 100 = 180$$

$$5x = 180 - 100$$

$$5x = 80$$

$$x = 80 / 5$$

$$x = 16$$

$$\begin{array}{lcl} 2x + 6 & ; & 3x + 4 \\ & \text{put the value of } x & \\ = 2(16) + 6 & ; & = 3(16) + 4 \\ = 32 + 6 & ; & = 48 + 4 \\ = 38 & ; & = 52 \end{array}$$

The smallest angle in the triangle = 38°

10. Harry has some stones.
Babar has a thrice as many stones as Harry.
Asif has 4 more stones than Babar.
In total, they have 60 stones.
How many stones do Babar and Asif have?

$$\text{Harry} = x$$

$$\text{Babar} = 3x$$

$$\text{Asif} = 3x + 4$$

$$x + 3x + 3x + 4 = 60$$

$$7x = 60 - 4$$

$$7x = 56$$

$$x = 56 / 7$$

$$x = 8$$

$$\text{Harry} = 8$$

$$\text{Babar} = 3(8) = 24$$

$$\text{Asif} = 3x + 4$$

$$= 3(8) + 4$$

$$= 24 + 4$$

$$= 28$$

- 11. The size of the largest angle in a triangle is four times the size of the smallest angle.
The other angle is 42° more than the smallest angle.**

Work out, in degrees, the size of each angle in the triangle.

You must show your working

$$4x + x + x + 42 = 180$$

$$6x = 180 - 42$$

$$6x = 138$$

$$x = 138 / 6$$

$$x = 23^\circ$$

-
- 12. Sharukh is four times as old as Maria.**

Sharukh is 3 years older than Alexa.

The sum of their ages is 24.

Find the ratio of Maria's age to Sharukh's age to Alexa's age.

$$\text{Maria} = x$$

$$\text{Sharukh} = x + 4$$

$$\text{Alexa} = 3x$$

$$x + x + 4 + 3x = 24$$

$$5x + 4 = 24$$

$$5x = 24 - 4$$

$$5x = 20$$

$$x = 20 / 5$$

$$x = 4$$

$$\text{Maria} = 4$$

$$\text{Sharukh} = x + 4$$

$$= 4 + 4 = 8$$

$$\text{Alexa} = 3x$$

$$= 3 (4)$$

$$= 12$$
