

Answers :

(1) (a) area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$

$$\begin{aligned} 45 &= \frac{1}{2}(x - 1 + x + 2)(2x) \\ &= (2x + 1)(x) \\ &= 2x^2 + x \end{aligned}$$

Or, $2x^2 + x - 45 = 0$

$$(2x - 9)(x + 5) = 0$$

$\therefore 2x = 9$ (only positive value valid)

$$x = 4.5$$

(b) Let the length of each side of equilateral triangle = l

Each interior angle of the triangle = 60°

$$\text{Area of triangle} = \frac{1}{2} \times l^2 \times \sin 60^\circ = 45$$

$$\therefore l^2 = \frac{90}{\sin 60^\circ}$$

$$l = 10.2 \text{ cm (to one decimal point)}$$

(2) Let the breath of rectangle = a cm

Therefore the length = $3a$ cm

Perimeter of rectangle = $a + 3a + a + 3a = 32$ cm (given)

$$\therefore 8a = 32$$

$$a = 4$$

And $3a = 12$

$$\therefore \text{area of rectangle} = 4 \times 12 = 48 \text{ cm}^2$$