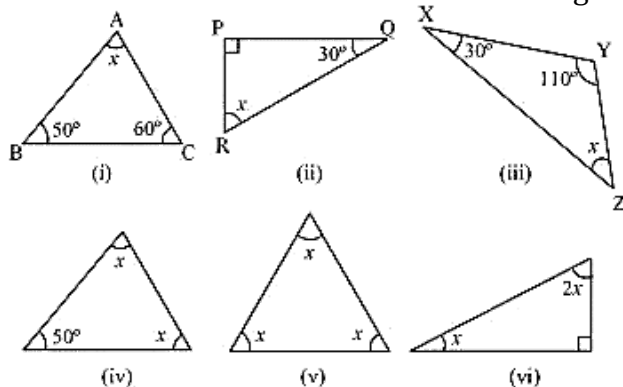


Board – CBSE

Class – 7th

Topic – The Triangle and Its Properties 6.3

Q.1 Find the value of the unknown exterior angle x in the following diagrams:



Sol: The sum of all interior angles of a triangle is 180° . By using this property, these problems can be solved as follows.

$$(i) x + 50^\circ + 60^\circ = 180^\circ$$

$$x + 110^\circ = 180^\circ$$

$$x = 180^\circ - 110^\circ = 70^\circ$$

$$(ii) x + 90^\circ + 30^\circ = 180^\circ$$

$$x + 120^\circ = 180^\circ$$

$$x = 180^\circ - 120^\circ = 60^\circ$$

$$(iii) x + 30^\circ + 110^\circ = 180^\circ$$

$$x + 140^\circ = 180^\circ$$

$$x = 180^\circ - 140^\circ = 40^\circ$$

$$(iv) 50^\circ + x + x = 180^\circ$$

$$50^\circ + 2x = 180^\circ$$

$$2x = 180^\circ - 50^\circ = 130^\circ$$

$$x = \frac{130^\circ}{2} = 65^\circ$$

$$(v) x + x + x = 180^\circ$$

$$3x = 180^\circ$$

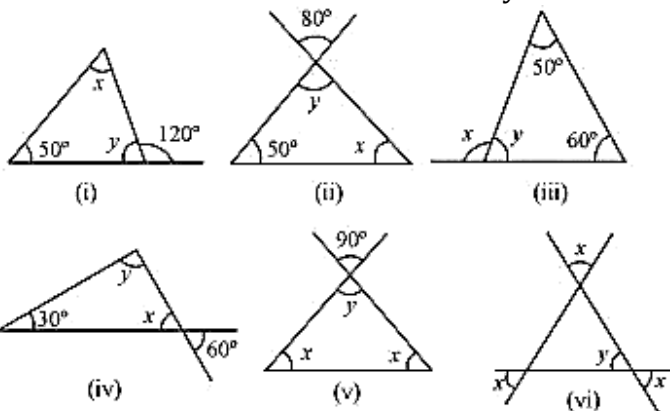
$$x = \frac{180^\circ}{2} = 60^\circ$$

$$(vi) x + 2x + 90^\circ = 180^\circ$$

$$3x = 180^\circ - 90^\circ = 90^\circ$$

$$x = \frac{90^\circ}{3} = 30^\circ$$

Q.2 Find the value of the unknowns x and y in the following diagrams:



Sol: (i) $y + 120^\circ = 180^\circ$ (Linear pair)

$$y = 180^\circ - 120^\circ = 60^\circ$$

$$x + y + 50^\circ = 180^\circ \text{ (Angle sum property)}$$

$$x + 60^\circ + 50^\circ = 180^\circ$$

$$x + 110^\circ = 180^\circ$$

$$x = 180^\circ - 110^\circ = 70^\circ$$

(ii) $y = 80^\circ$ (Vertically opposite angles)

$$y + x + 50^\circ = 180^\circ \text{ (Angle sum property)}$$

$$80^\circ + x + 50^\circ = 180^\circ$$

$$x + 130^\circ = 180^\circ$$

$$x = 180^\circ - 130^\circ = 50^\circ$$

(iii) $y + 50^\circ + 60^\circ = 180^\circ$ (Angle sum property)

$$y = 180^\circ - 60^\circ - 50^\circ = 70^\circ$$

$$x + y = 180^\circ \text{ (Linear pair)}$$

$$x = 180^\circ - y = 180^\circ - 70^\circ = 110^\circ$$

$$x = \frac{90^\circ}{2} = 45^\circ$$

(iv) $x = 60^\circ$ (Vertically opposite angles)

$$30^\circ + x + y = 180^\circ$$

$$30^\circ + 60^\circ + y = 180^\circ$$

$$y = 180^\circ - 30^\circ - 60^\circ = 90^\circ$$

(v) $y = 90^\circ$ (Vertically opposite angles)

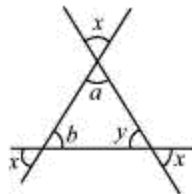
$$x + x + y = 180^\circ \text{ (Angle sum property)}$$

$$2x + y = 180^\circ$$

$$2x + 90^\circ = 180^\circ$$

$$2x = 180^\circ - 90^\circ = 90^\circ$$

(vi)



$y = x$ (Vertically opposite angles)

$a = x$ (Vertically opposite angles)

$b = x$ (Vertically opposite angles)

$a + b + y = 180^\circ$ (Angle sum property)

$$x + x + x = 180^\circ$$

$$3x = 180^\circ$$

$$x = \frac{180^\circ}{3} = 60^\circ$$

$$y = x = 60^\circ$$