



#### (vi) Given figure:



Since, given figure is right angled triangle.  $2x + x + 90^\circ = 180^\circ$   $3x + 90^\circ = 180^\circ$ On transposing 90° from LHS to RHS,  $3x = 180^\circ$ -90  $3x = 90^\circ$ On dividing by 3 on the both sides of equation,  $3x/3 = 90^\circ/3$   $x = 30^\circ$ And  $2x = 2 \times 30^\circ = 60^\circ$ 

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



*Sol:* (i) Given figure:



Since, exterior angle of a triangle is equal to the sum of its interior opposite angles. So,  $50^{\circ} + x = 120^{\circ}$ 

On transposing 90° from LHS to RHS,

 $x = 120^{\circ} - 50^{\circ}$ 

 $x = 70^{\circ}$ 

And sum of all the interior angles of a triangle is 180°.

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50^{\circ} + x + y = 180^{\circ}
Since, x = 70^{\circ}
50^{\circ} + 70^{\circ} + y = 180^{\circ}
120^{\circ} + y = 180^{\circ}
On transposing 120° from LHS to RHS,
y = 180^{\circ} - 120^{\circ}
y = 60^{\circ}
Thus, x = 70^{\circ} and y = 60^{\circ}.
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# (ii) Given figure:



Since, vertically opposite angles are equal. So, y = 80° Since, sum of all the interior angles of a triangle is 180°.  $50^{\circ} + y + x = 180^{\circ}$ Since,  $y = 80^{\circ}$ So,  $50^{\circ} + 80^{\circ} + x = 180^{\circ}$  $130^{\circ} + x = 180^{\circ}$ On transposing 130° from LHS to RHS,  $x = 180^{\circ} - 130^{\circ}$  $x = 50^{\circ}$ Thus,  $x = 50^{\circ}$  and  $y = 80^{\circ}$ 

## (iii) Given figure:



Since, sum of all the interior angles of a triangle is 180°.  $50^{\circ} + y + 60^{\circ} = 180^{\circ}$   $110^{\circ} + y = 180^{\circ}$ On transposing 110° from LHS to RHS,  $y = 180^{\circ} - 110^{\circ}$   $y = 70^{\circ}$ Since, exterior angle of a triangle is equal to the sum of its interior opposite angles. So,  $50^{\circ} + 60^{\circ} = x$   $x = 110^{\circ}$ Thus,  $x = 110^{\circ}$  and  $y = 70^{\circ}$ 

# (iv) Given figure:



Since, vertically opposite angles are equal. So,  $x = 60^{\circ}$ Since, sum of all the interior angles of a triangle is 180°.  $30^{\circ} + y + x = 180^{\circ}$ Since,  $x = 60^{\circ}$  $60^{\circ} + 30^{\circ} + y = 180^{\circ}$  $90^{\circ} + y = 180^{\circ}$ On transposing  $90^{\circ}$  from LHS to RHS,  $y = 180^{\circ} - 90^{\circ}$  $y = 90^{\circ}$ Thus,  $x = 60^{\circ}$  and  $y = 90^{\circ}$ 

#### (v) Given figure:



Since, vertically opposite angles are equal. So,  $y = 90^{\circ}$ Since, sum of all the interior angles of a triangle is  $180^{\circ}$ .  $x + y + x = 180^{\circ}$ Since,  $y = 90^{\circ}$  $90^{\circ} + 2x = 180^{\circ}$ On transposing  $90^{\circ}$  from LHS to RHS,  $2x = 180^{\circ} - 90^{\circ}$ On dividing by 2 both the side of equation,  $2x/2 = 90^{\circ}/2$  $x = 45^{\circ}$ Thus,  $x = 45^{\circ}$  and  $y = 90^{\circ}$ 

## (vi) Given figure:



Since, vertically opposite angles are equal. So, y = xSince, sum of all the interior angles of a triangle is 180°.  $x + x + x = 180^{\circ}$  $3x = 180^{\circ}$ On dividing by 3 on the both sides of equation,  $3x/3 = 180^{\circ}/3$ Thus,  $x = 60^{\circ}$