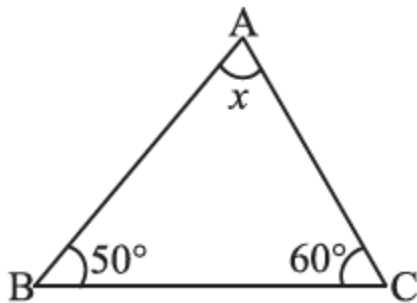**EXERCISE 6.3** **PAGE: 121**

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

(i)

Solution:-
We know that,
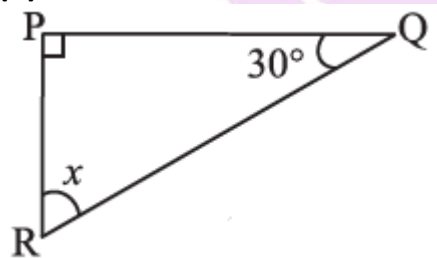The sum of all the interior angles of a triangle is 180⁰.
Then,

= ∠BAC + ∠ABC + ∠BCA = 180⁰

= x + 50⁰ + 60⁰ = 180⁰

= x + 110⁰ = 180⁰

By transposing 110⁰ from LHS to RHS it becomes – 110⁰

= x = 180⁰ – 110⁰

= x = 70⁰

(ii)

Solution:-
We know that,
The sum of all the interior angles of a triangle is 180⁰.
The given triangle is a right angled triangle. So the ∠QPR is 90⁰.
Then,

= ∠QPR + ∠PQR + ∠PRQ = 180⁰

= 90⁰ + 30⁰ + x = 180⁰

= 120⁰ + x = 180⁰

By transposing 110° from LHS to RHS it becomes – 110°

$\quad\quad$ = x = 180° – 120°

$\quad\quad$ = x = 60°

(iii)
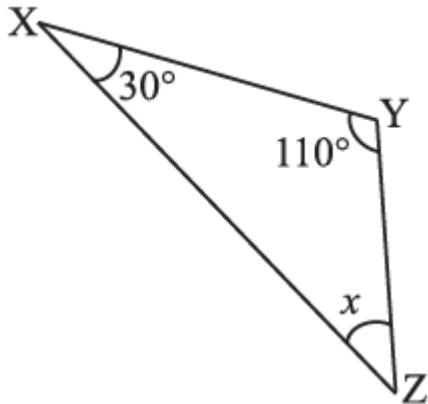
Solution:-

We know that,

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

Then,

$\quad\quad$ = ∠XYZ + ∠YXZ + ∠XZY = 180°

$\quad\quad$ = 110° + 30° + x = 180°

$\quad\quad$ = 140° + x = 180°

By transposing 140° from LHS to RHS it becomes – 140°

$\quad\quad$ = x = 180° – 140°

$\quad\quad$ = x = 40°

(iv)
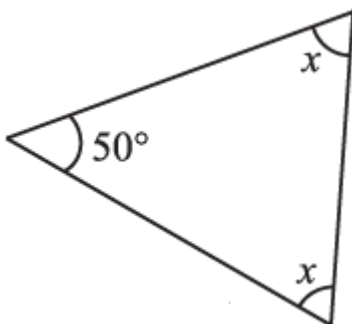
Solution:-

We know that,

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

Then,

= 50° + x + x = 180°

= 50° + 2x = 180°

By transposing 50° from LHS to RHS it becomes – 50°

= 2x = 180° – 50°

= 2x = 130°

= x = 130°/2

= x = 65°

(v)
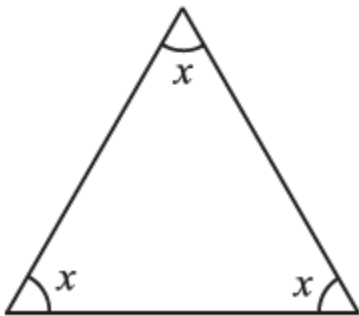
Solution:-

We know that,

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

Then,

= x + x + x = 180°

= 3x = 180°

= x = 180°/3

= x = 60°

∴The given triangle is an equiangular triangle.

(vi)

Solution:-

We know that,

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

Then,

$= 90^o + 2x + x = 180^o$

$= 90^o + 3x = 180^o$
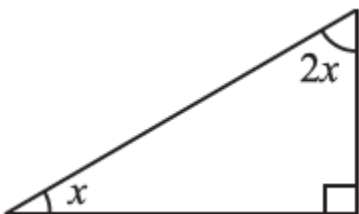
By transposing 90° from LHS to RHS it becomes $– 90^o$
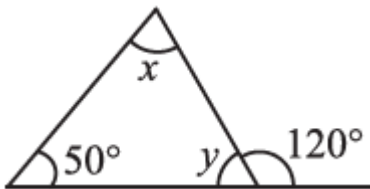
$= 3x = 180^o – 90^o$

$= 3x = 90^o$

$= x = 90^o/3$

$= x = 30^o$

Then,

$= 2x = 2 × 30^o = 60^o$

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

(i)

Solution:-

We Know That,

An exterior angle of a triangle is equal to the sum of its interior opposite angles.

Then,

$= 50^o + x = 120^o$

By transposing 50° from LHS to RHS it becomes $– 50^o$

$= x = 120^o – 50^o$

$= x = 70^o$

We also know that,

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

Then,
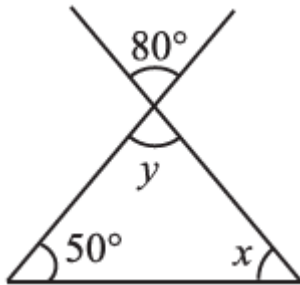
$= 50^o + x + y = 180^o$

$= 50^o + 70^o + y = 180^o$

$= 120^o + y = 180^o$

By transposing 120° from LHS to RHS it becomes $– 120^o$

$= y = 180^o – 120^o$

$= y = 60^o$

(ii)

Solution:-

From the rule of vertically opposite angles,

$\qquad$ = y = 80°

Then,

We know that,

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

Then,

$\qquad$ = 50° + 80° + x = 180°

$\qquad$ = 130° + x = 180°

By transposing 130° from LHS to RHS it becomes – 130°

$\qquad$ = x = 180° – 130°

$\qquad$ = x = 50°

(iii)
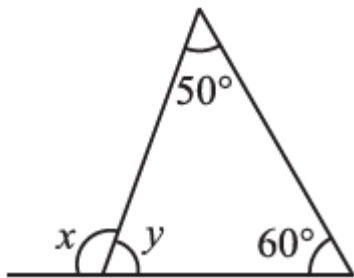
Solution:-

We know that,

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

Then,

$\qquad$ = 50° + 60° + y = 180°

$\qquad$ = 110° + y = 180°

By transposing 110° from LHS to RHS it becomes – 110°

$\qquad$ = y = 180° – 110°

$\qquad$ = y = 70°

Now,

From the rule of linear pair,

= x + y = 180°

= x + 70° = 180°

By transposing 70° from LHS to RHS it becomes – 70°

= x = 180° – 70

= x = 110°

(iv)
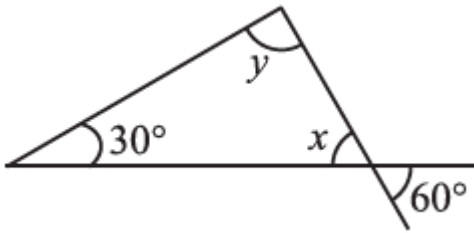
Solution:-

From the rule of vertically opposite angles,

= x = 60°

Then,

We know that,

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

Then,

= 30° + x + y = 180°

= 30° + 60° + x = 180°

= 90° + x = 180°

By transposing 90° from LHS to RHS it becomes – 90°

= x = 180° – 90°

= x = 90°

(v)
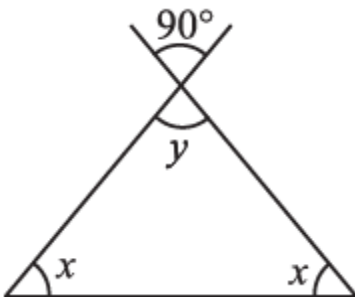
Solution:-

From the rule of vertically opposite angles,

= y = 90°

Then,

We know that,

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

Then,

     = x + x + y = 180°

     = 2x + 90° = 180°
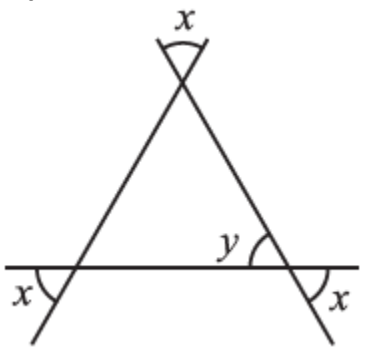
By transposing 90° from LHS to RHS it becomes – 90°

     = 2x = 180° – 90°

     = 2x = 90°

     = x = 90°/2

     = x = 45°

(vi)

Solution:-

From the rule of vertically opposite angles,

     = x = y

Then,

We know that,

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

Then,

     = x + x + x = 180°

     = 3x = 180°

     = x = 180°/3

     = x = 60°