Question:1

Take three non-collinear points *A*, *B* and *C* on a page of your notebook. Join *AB*, *BC* and *CA*. What figure do you get? Name the triangle. Also, name

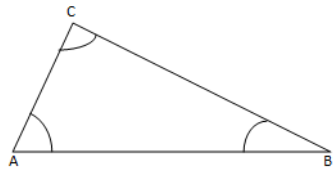
i the side opposite to $\angle B$

ii the angle opposite to side *AB*

iii the vertex opposite to side *BC*

iv the side opposite to vertex *B*.

Solution:



The figure that we get is that of a triangle.

The name of the triangle is $\triangle \mathrm{ABC}$.

i The side opposite to $\angle \mathrm{B}$ is AC.

ii The angle opposite to AB is $\angle \mathrm{ACB}$.

iii The vertex opposite to BC is A.

iv The side opposite to the vertex B is AC.

Question:2

Take three collinear points *A*, *B* and *C* on a page of your note book. Join *AB*, *BC* and *CA*. Is the figure a triangle? If not, why?

Solution:

No, the figure is not a triangle. By definition, a triangle is a plane figure formed by three non-parallel line segments.

Question:3

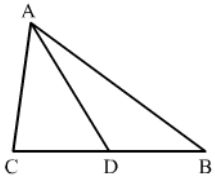
Distinguish between a triangle and its triangular region.

Solution:

A triangle is a plane figure formed by three non-parallel line segments, whereas, its triangular region includes the interior of the triangle along with the triangle itself.

Question:4

In Fig., *D* is a point on side *BC* of a Δ*ABC*. *AD* is joined. Name all the triangles that you can observe in the figure. How many are they?



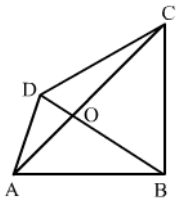
Solution:

We can observe the following three triangles in the given figure:

1. $\triangle$ ABC
2. $\triangle$ ACD
3. $\triangle$ ADB

Question:5

In Fig., *A*, *B*, *C* and *D* are four points, and no three points are collinear. *AC* and *BD* intersect at *O*. There are eight triangles that you can observe. Name all the triangles.



Solution:

The eight triangles that can be observed in the given figure are as follows:

$1.\ \triangle \mathrm{AOD}\, 2.\ \triangle \mathrm{AOB}\, 3.\ \triangle \mathrm{BOC}\, 4.\ \triangle \mathrm{COD}\, 5.\ \triangle \mathrm{ACD}\, 6.\ \triangle \mathrm{ACB}\, 7.\ \triangle \mathrm{ADB}\, 8.\ \triangle \mathrm{CDB}$

Question:6

What is the difference between a triangle and triangular region?

Solution:

A triangle is a plane figure formed by three non-parallel line segments, whereas, a triangular region is the interior of a triangle along with the triangle itself.

Question:7

Explain the following terms:

i Triangle

ii Parts or elements of a triangle

iii Scalene triangle

iv Isosceles triangle

v Equilateral triangle

vi Acute triangle

vii Right triangle

$viii$ Obtuse triangle

ix Interior of a triangle

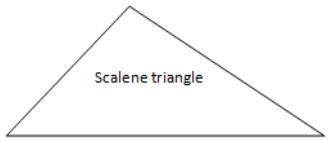
x Exterior of a triangle.

Solution:

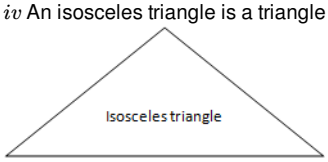
i A triangle is a plane figure formed by three non-parallel line segments.

ii The three sides and the three angles of a triangle are together known as the parts or elements of that triangle.

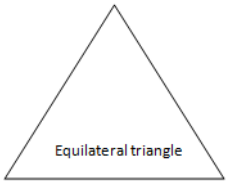
iii A scalene triangle is a triangle in which no two sides are equal.



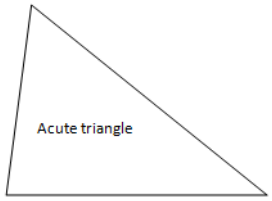
iv An isosceles triangle is a triangle in which two sides are equal.



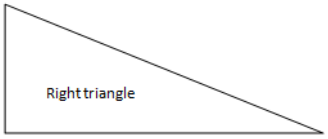
v An equilateral triangle is a triangle in which all three sides are equal.



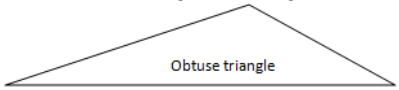
vi An acute triangle is a triangle in which all the angles are acute (less than 90°).



vii A right angled triangle is a triangle in which one angle is right angled, i.e 90°.



$viii$ An obtuse triangle is a triangle in which one angle is obtuse (more than 90°).

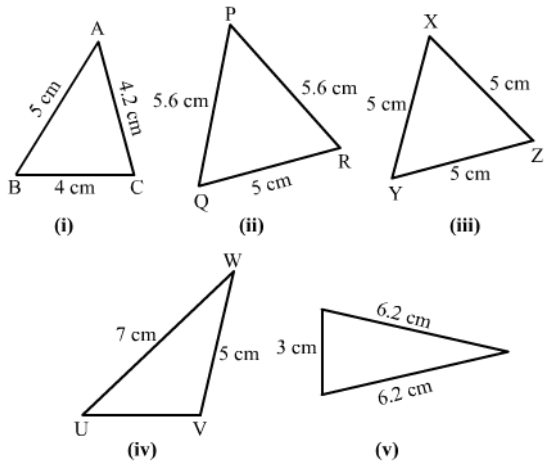


ix The interior of a triangle is made up of all such points that are enclosed within the triangle.

x The exterior of a triangle is made up of all such points that are not enclosed within the triangle.

Question:8

In Fig., the length $in cm$ of each side has been indicated along the side. State for each triangle whether it is scalene, isosceles or equilateral:



Solution:

i This triangle is a scalene triangle because no two sides are equal.

ii This triangle is an isosceles triangle because two of its sides, viz. PQ and PR, are equal.

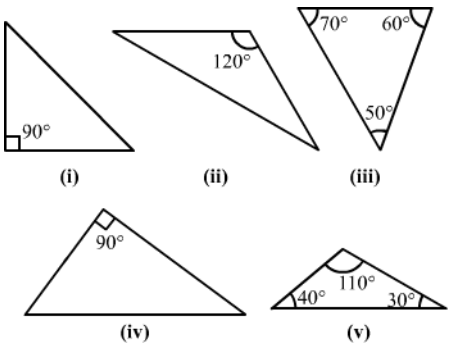
iii This triangle is an equilateral triangle because all its three sides are equal.

iv This triangle is a scalene triangle because no two sides are equal.

v This triangle is an isosceles triangle because two of its sides are equal.

Question:9

In Fig., there are five triangles. The measures of some of their angles have been indicated. State for each triangle whether it is acute, right or obtuse.



Solution:

i This is a right triangle because one of its angles is 90˚.

ii This is an obtuse triangle because one of its angles is 120˚, which is greater than 90˚.

iii This is an acute triangle because all its angles are acute angles (less than 90˚).

iv This is a right triangle because one of its angles is 90˚.

v This is an obtuse triangle because one of its angles is 110˚, which is greater than 90˚.

Question:10

Fill in the blanks with the correct word/symbol to make it a true statement:

i A triangle has ..... sides.

ii A triangle has ..... vertices.

iii A triangle has ..... angles.

iv A triangle has ..... parts.

v A triangle whose no two sides are equal is known as .....

vi A triangle whose two sides are equal is known as .....

vii A triangle whose all the sides are equal is known as .....

$viii$ A triangle whose one angle is a right angle is known as .....

ix A triangle whose all the angles are of measure less than 90° is known as .....

x A triangle whose one angle is more than 90° is known as .....

Solution:

i three

ii three

iii three

iv six $threesides + threeangles$

v a scalene triangle

vi an isosceles triangle

vii an equilateral triangle

$viii$ a right triangle

ix an acute triangle
x an obtuse triangle

Question:11

In each of the following, state if the statement is true T or false F:
i A triangle has three sides.
ii A triangle may have four vertices.
iii Any three line-segments make up a triangle.
iv The interior of a triangle includes its vertices.
v The triangular region includes the vertices of the corresponding triangle.
vi The vertices of a triangle are three collinear points.
vii An equilateral triangle is isosceles also.
$viii$ Every right triangle is scalene.
ix Each acute triangle is equilateral.
x No isosceles triangle is obtuse.

Solution:

i True.
ii False. A triangle has three vertices.
iii False. Any three non-parallel line segments can make up a triangle.
iv False. The interior of a triangle is the region enclosed by the triangle and the vertices are not enclosed by the triangle.
v True. The triangular region includes the interior region and the triangle itself.
vi False. The vertices of a triangle are three non-collinear points.
vii True. In an equilateral triangle, any two sides are equal.
$viii$ False. A right triangle can also be an isosceles triangle.
ix False. Each acute triangle is not an equilateral triangle, but each equilateral triangle is an acute triangle.
x False. An isosceles triangle can be an obtuse triangle, a right triangle or an acute triangle.

Question:12

Two angles of a triangle are of measures 105° and 30°. Find the measure of the third angle.

Solution:

$\text{Let the third angle be x. Sum of all the three angles of a triangle } = 180^\circ \therefore 105^\circ + 30^\circ + x = 180^\circ \text{ or, } x = 180^\circ - 135^\circ \therefore x = 45^\circ \text{ The third}$

Question:13

One of the angles of a triangle is 130°, and the other two angles are equal. What is the measure of each of these equal angles?

Solution:

$\text{Let the other two angles be x. Sum of all the three angles of a triangle } = 180^\circ \text{i.e. } 130^\circ + x + x = 180^\circ \Rightarrow 2x = 180^\circ - 130^\circ \Rightarrow 2x = 50^\circ =$

Question:14

The three angles of a triangle are equal to one another. What is the measure of each of the angles?

Solution:

$\text{Let each angle of the triangle be x. Sum of all the three angles of a triangle } = 180^\circ \text{i.e. } x + x + x = 180^\circ \Rightarrow 3x = 180^\circ \Rightarrow x = \frac{180^\circ}{3} \Rightarrow x = 60^\circ \text{ The}$

Question:15

If the angles of a triangle are in the ratio 1 : 2 : 3, determine three angles.

Solution:

$\text{If the angles of a triangle are in ratio } 1:2:3, \text{ then let us take the first angle to be x. Which means that the second angle will be 2x and the}$

Question:16

The angles of a triangle are $(x - 40)°$, $(x - 20)°$ and $\left(\frac{1}{2}x - 10\right)^\circ$. Find the value of x.

Solution:

$\text{Sum of all the three angles of a triangle } = 180^\circ \Rightarrow \left(x - 40\right)^\circ + \left(x - 20\right)^\circ + \left(\frac{x}{2} - 10\right)^\circ = 180^\circ \Rightarrow x + x + \frac{x}{2} - 40^\circ - 20^\circ - 10^\circ = 180^\circ$

Question:17

The angles of a triangle are arranged in ascending order of magnitude. If the difference between two consecutive angles is 10°, find the three angles.

Solution:

$\text{Let the first angle of the triangle be x. Therefore, we can say that the second angle of the triangle will be } \left(x + 10^\circ\right) \text{ and the third angle of}$

Question:18

Two angles of a triangle are equal and the third angle is greater than each of those angles by 30°. Determine all the angles of the triangle.

Solution:

Let the two equal angles of the triangle be x. Hence, the third angle of the triangle will be $\left(x+30^{\circ}\right)$. Sum of all the three angle of a triangle

Question:19

If one angle of a triangle is equal to the sum of the other two, show that the triangle is a right triangle.

Solution:

Let the three angles of the triangle be $\angle a$, $\angle b$ and $\angle c$. Given : $\angle a = \angle b + \angle c$ Also, the sum of all the three angle of a triangle $= 180^{\circ}$ Or, $\angle a +$

Question:20

If each angle of a triangle is less than the sum of the other two, show that the triangle is acute angled.

Solution:

Let the three angles of the triangle be $\angle a$, $\angle b$ and $\angle c$. We know : $\angle a < \angle b + \angle c$ .....(i) (Given) Which means : $\angle b < \angle a + \angle c$ Or, $\angle c < \angle$

Question:21

In each of the following, the measures of three angles are given. State in which cases, the angles can possibly be those of a triangle:

i 63°, 37°, 80°

ii 45°, 61°, 73°

iii 59°, 72°, 61°

iv 45°, 45°, 90°

v 30°, 20°, 125°

Solution:

(i) We know that the sum of all the three angles of a triangle is equal to 180°. Now, let us find the sum of 63°, 37° and 80°. $63^{\circ} + 37^{\circ} + 80^{\circ}$
(ii) We know that the sum of all the three angles of a triangle is equal to 180°. Now, let us find the sum of 45°, 61° and 73°. $45^{\circ} + 61^{\circ} + 73^{\circ}$
(iii) We know that the sum of all the three angles of a triangle is equal to 180°. Now, let us find the sum of 59°, 72° and 61°. $59^{\circ} + 72^{\circ} + 61^{\circ}$
(iv) We know that the sum of all the three angles of a triangle is equal to 180°. Now, let us find the sum of 45°, 45° and 90°. $45^{\circ} + 45^{\circ} + 90^{\circ}$
(v) We know the sum of all the three angles of a traingle is equal to 180°. Now, let us find the sum of 30°, 20° and 125°. $30^{\circ} + 20^{\circ} + 125^{\circ} =$

Therefore, we can conclude that in *i* and *iv*, the angles can be those of a triangle.

Question:22

The angles of a triangle are in the ratio 3 : 4 : 5. Find the smallest angle.

Solution:

If the angles of the given triangle are in the ratio 3 : 4 : 5, then let us take the smallest angle as 3x. This means that the second angle will b

Question:23

Two acute angles of a right triangle are equal. Find the two angles.

Solution:

Let each of the two acute angles of the given triangle be x. We know that the third angle is 90°. $\left(\text{Given}\right)$ We also know that the sum of all

Question:24

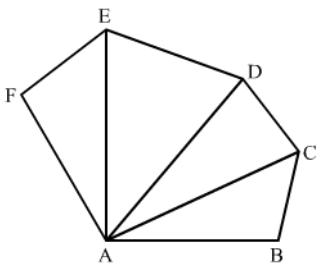
One angle of a triangle is greater than the sum of the other two. What can you say about the measure of this angle? What type of a triangle is this?

Solution:

Let the three angles of the given triangle be $\angle a$, $\angle b$ and $\angle c$. We know : $\angle a > \angle b + \angle c$ .....(i) (Given) We also know that the sum of a

Question:25

In the six cornered figure, *AC*, *AD* and *AE* are joined. Find ∠*FAB* + ∠*ABC* + ∠*BCD* + ∠*CDE* + ∠*DEF* + ∠*EFA*.

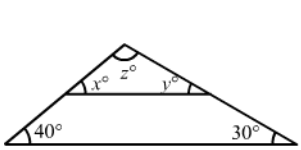


Solution:

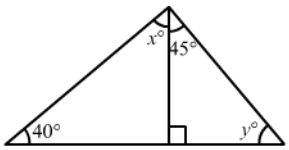
We have to find $\angle FAB + \angle ABC + \angle BCD + \angle CDE + \angle DEF + \angle EFA$ .....(i) From the figure, we have : $\angle FAB = \angle FAE + \angle EAD + \angle DAC + \angle C$.

Question:26

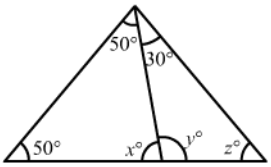
Find x, y, z whichever is required in the figures given below:



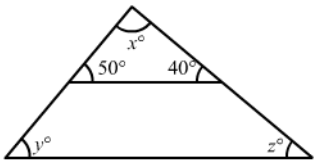
(i)



(ii)

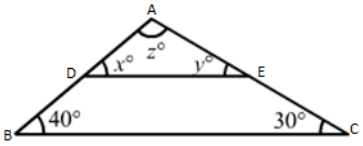


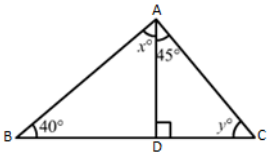
(iii)

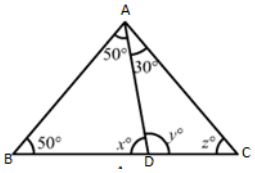


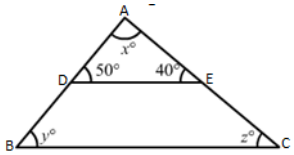
(iv)

Solution:









Question:27

If one angle of a triangle is $60°$ and the other two angles are in the ratio 1 : 2, find the angles.

Solution:

Question:28

If one angle of a triangle is $100°$ and the other two angles are in the ratio 2 : 3, find the angles.

Solution:

Question:29

In a ΔABC, if $3\angle A = 4\ \angle B = 6\ \angle C$, calculate the angles.

Solution:

Question:30

Is it possible to have a triangle, in which

i two of the angles are right?

ii two of the angles are obtuse?

iii two of the angles are acute?

iv each angle is less than $60°$?

v each angle is greater than $60°$?

vi each angle is equal to $60°$?

Give reasons in support of your answer in each case.

Solution:

i No, because if there are two right angles in a triangle, then the third angle of the triangle must be zero, which is not possible.

ii No, because as we know that the sum of all three angles of a triangle is always 180. If there are two obtuse angles, then their sum will be more than 180, which is not possible in case of a triangle.

iii Yes, in right triangles and acute triangles, it is possible to have two acute angles.

iv No, because if each angle is less than 60, then the sum of all three angles will be less than 180, which is not possible in case of a triangle.

Proof :

v No, because if each angle is greater than 60, then the sum of all three angles will be greater than 180, which is not possible.

Proof :

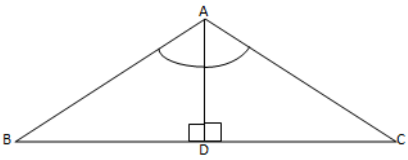
vi Yes, if each angle of the triangle is equal to 60, then the sum of all three angles will be 180, which is possible in case of a triangle.

Proof :

Question:31

In ΔABC, $\angle A = 100°$, AD bisects $\angle A$ and $AD \perp BC$. Find $\angle B$.

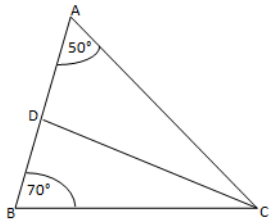
Solution:



Question:32

In ΔABC, $\angle A = 50°$, $\angle B = 70°$ and bisector of $\angle C$ meets AB in D. Find the angles of the triangles ADC and BDC.

Solution:



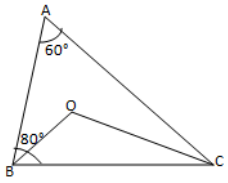
Question:33

In ΔABC, $\angle A = 60°$, $\angle B = 80°$ and the bisectors of $\angle B$ and $\angle C$ meet at O. Find

i $\angle C$

ii $\angle BOC$.

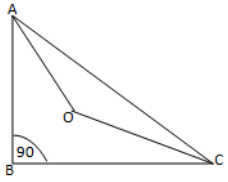
Solution:



Question:34

The bisectors of the acute angles of a right triangle meet at O. Find the angle at O between the two bisectors.

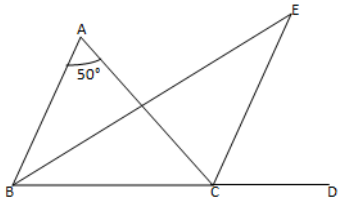
Solution:



Question:35

In ΔABC, $\angle A = 50°$ and BC is produced to a point D. The bisectors of $\angle ABC$ and $\angle ACD$ meet at E. Find $\angle E$.

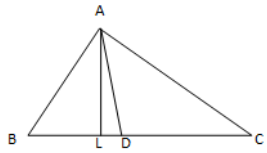
Solution:



Question:36

In ΔABC, $\angle B = 60°$, $\angle C = 40°$, $AL \perp BC$ and AD bisects $\angle A$ such that L and D lie on side BC. Find $\angle LAD$.

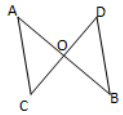
Solution:



Question:37

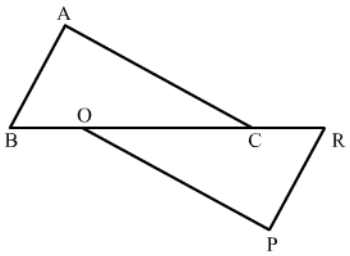
Line segments AB and CD intersect at O such that $AC \parallel DB$. If $\angle CAB = 35°$ and $\angle CDB = 55°$, find $\angle BOD$.

Solution:



Question:38

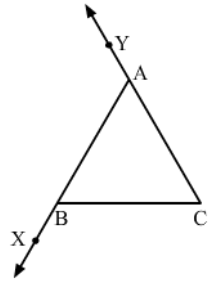
In Fig., ΔABC is right angled at A. Q and R are points on line BC and P is a point such that $QP \parallel AC$ and $RP \parallel AB$. Find $\angle P$.



Solution:

Question:39

In Fig., $\angle CBX$ is an exterior angle of ΔABC at B. Name



i the interior adjacent angle

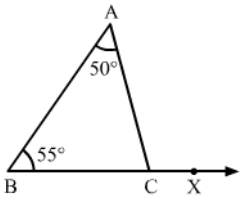
ii the interior opposite angles to exterior $\angle CBX$.

Also, name the interior opposite angles to an exterior angle at A.

Solution:

Question:40

In Fig, two of the angles are indicated. What are the measures of $\angle ACX$ and $\angle ACB$?

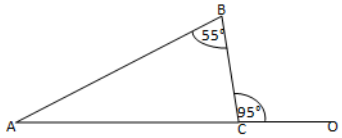


Solution:

Question:41

In a triangle, an exterior angle at a vertex is 95° and its one of the interior opposite angles is 55°. Find all the angles of the triangle.

Solution:



Question:42

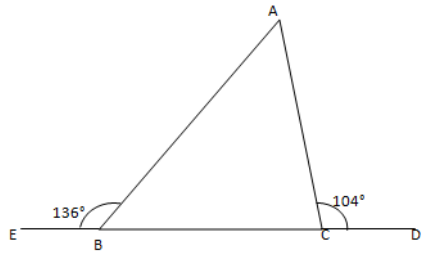
One of the exterior angles of a triangle is 80°, and the interior opposite angles are equal to each other. What is the measure of each of these two angles?

Solution:

Question:43

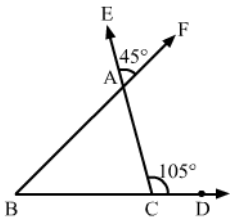
The exterior angles, obtained on producing the base of a triangle both ways are 104° and 136°. Find all the angles of the triangle.

Solution:



Question:44

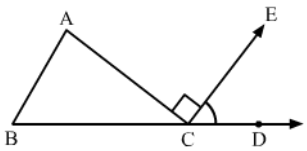
In Fig., the sides *BC*, *CA* and *BA* of a Δ*ABC* have been produced to *D*, *E* and *F* respectively. If ∠*ACD* = 105° and ∠*EAF* = 45°; find all the angles of the Δ*ABC*.



Solution:

Question:45

In Fig., *AC* ⊥ *CE* and ∠*A* : ∠*B* : ∠*C* = 3 : 2 : 1, find the value of ∠*ECD*.



Solution:

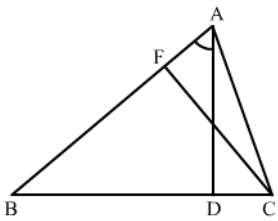
Question:46

A student when asked to measure two exterior angles of Δ*ABC* observed that the exterior angles at *A* and *B* are of 103° and 74° respectively. Is this possible? Why or why not?

Solution:

Question:47

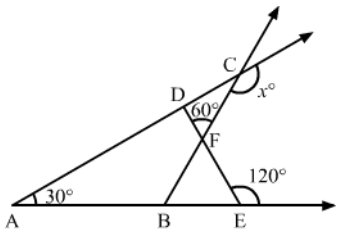
In Fig., AD and CF are respectively perpendiculars to sides BC and AB of ΔABC. If $\angle FCD = 50°$, find $\angle BAD$.



Solution:

Question:48

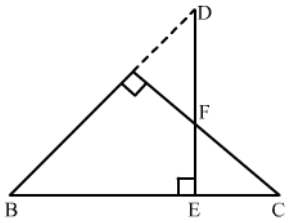
In Fig., measures of some angles are indicated. Find the value of x.



Solution:

Question:49

In Fig., ABC is a right triangle right angled at A. D lies on BA produced and $DE \perp BC$, intersecting AC at F. If $\angle AFE = 130°$, find



i $\angle BDE$

ii $\angle BCA$

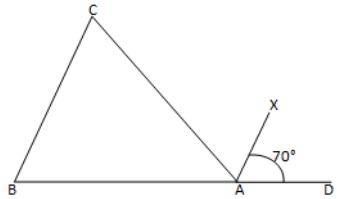
iii $\angle ABC$

Solution:

Question:50

ABC is a triangle in which $\angle B = \angle C$ and ray AX bisects the exterior angle DAC. If $\angle DAX = 70°$, find $\angle ACB$.

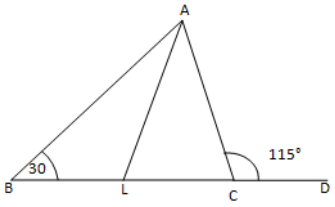
Solution:



Question:51

The side BC of ΔABC is produced to a point D. The bisector of $\angle A$ meets side BC in L. If $\angle ABC = 30°$ and $\angle ACD = 115°$, find $\angle ALC$.

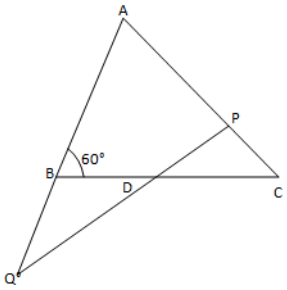
Solution:



Question:52

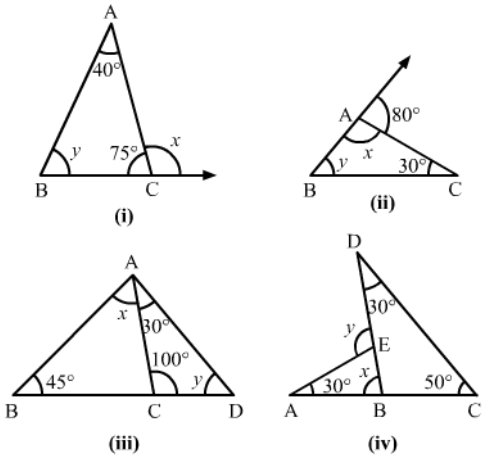
D is a point on the side *BC* of Δ*ABC*. *A* line *PDQ*, through *D*, meets side *AC* in *P* and *AB* produced at *Q*. If $\angle A = 80°$, $\angle ABC = 60°$ and $\angle PDC = 15°$, find i $\angle AQD$ ii *APD*.

Solution:



Question:53

Explain the concept of interior and exterior angles and in each of the figures given below, find *x* and *y*.



Solution:

The interior angles of a triangle are the three angle elements inside the triangle.

The exterior angles are formed by extending the sides of a triangle, and if the side of a triangle is produced, the exterior angle so formed is equal to the sum of the two interior opposite angles.

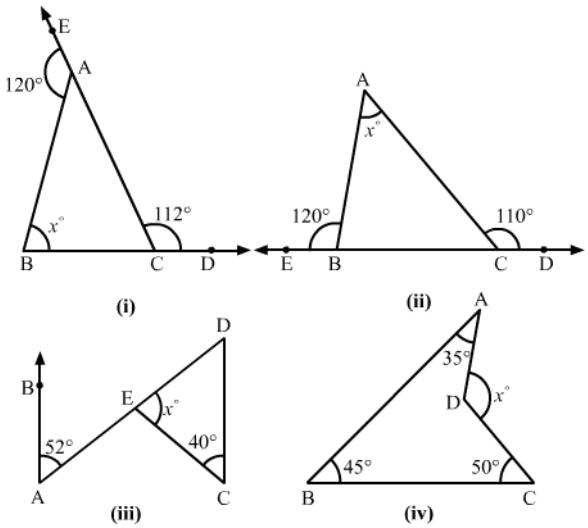
Using these definitions, we will obtain the values of *x* and *y*.

i

ii

Question:54

Compute the value of *x* in each of the following figures:



Solution:

Question:55

In each of the following, there are three positive numbers. State if these numbers could possibly be the lengths of the sides of a triangle:

i 5, 7, 9

ii 2, 10, 15

iii 3, 4, 5

iv 2, 5, 7

v 5, 8, 20

Solution:

i Yes, these numbers can be the lengths of the sides of a triangle because the sum of any two sides of a triangle is always greater than the third side.

Here,

ii No, these numbers cannot be the lengths of the sides of a triangle because the sum of any two sides of a triangle is always greater than the third side, which is not true in this case.

iii Yes, these numbers can be the lengths of the sides of a triangle because the sum of any two sides of triangle is always greater than the third side.

Here,

iv No, these numbers cannot be the lengths of the sides of a triangle because the sum of any two sides of a triangle is always greater than the third side, which is not true in this case.

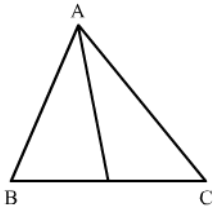
Here,

v No, these numbers cannot be the lengths of the sides of a triangle because the sum of any two sides of a triangle is always greater than the third side, which is not true in this case.

Here,

Question:56

In Fig., *P* is the point on the side *BC*. Complete each of the following statements using symbol ' = ', '>' or '<' so as to make it true:



i *AP* ... *AB* + *BP*

ii *AP* .... *AC* + *PC*

iii

Solution:

i In triangle APB, AP < AB + BP because the sum of any two sides of a triangle is greater than the third side.

ii In triangle APC, AP < AC + PC because the sum of any two sides of a triangle is greater than the third side.

iii AP <

In triangles ABP and ACP, we can see that:

AP < AB + BP ...i Because the sum of any two sides of a triangle is greater than the third side

AP < AC + PC ...ii Because the sum of any two sides of a triangle is greater than the third side

On adding i and ii, we have:

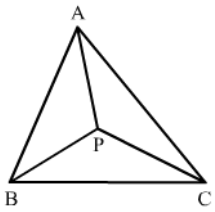
AP + AP < AB + BP + AC + PC

2AP < AB + AC + BC BC = BP + PC

AP <

Question:57

P is a point in the interior of Δ*ABC* as shown in Fig. State which of the following statements are true T or false F:



i $AP + PB < AB$

ii $AP + PC > AC$

iii $BP + PC = BC$

Solution:

i False

We know that the sum of any two sides of a triangle is greater than the third side; it is not true for the given triangle.

ii True

We know that the sum of any two sides of a triangle is greater than the third side; it is true for the given triangle.

iii False

We know that the sum of any two sides of a triangle is greater than the third side; it is not true for the given triangle.

Question:58

O is a point in the exterior of Δ*ABC*. What symbol '>', '<' or '=' will you use to complete the statement *OA* + *OB* .. *AB*? Write two other similar statements and shown that

Solution:

Because the sum of any two sides of a triangle is always greater than the third side, in triangle OAB, we have:

Question:59

In Δ*ABC*, $\angle A = 100°$, $\angle B = 30°$, $\angle C = 50°$. Name the smallest and the largest sides of the triangle.

Solution:

Because the smallest side is always opposite to the smallest angle, which in this case is 30^o, it is AC.

Also, because the largest side is always opposite to the largest angle, which in this case is 100^o, it is BC.

Question:60

State Pythagoras theorem and its converse.

Solution:

The Pythagoras Theorem: In a right triangle, the square of the hypotenuse is always equal to the sum of the squares of the other two sides.

Converse of the Pythagoras Theorem: If the square of one side of a triangle is equal to the sum of the squares of the other two sides, then the triangle is a right triangle, with the angle opposite to the first side as right angle.

Question:61

In right Δ *ABC*, the lengths of the legs are given. Find the length of the hypotenuse.

i $a = 6$ cm, $b = 8$ cm

ii $a = 8$ cm, $b = 15$ cm

iii $a = 3$ cm, $b = 4$ cm

iv $a = 2$ cm, $b = 1.5$ cm

Solution:

According to the Pythagoras theorem,

Question:62

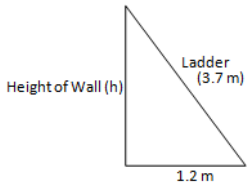
The hypotenuse of a triangle is 2.5 cm. If one of the sides is 1.5 cm, find the length of the other side.

Solution:

Question:63

A ladder 3.7 m long is placed against a wall in such a way that the foot of the ladder is 1.2 m away from the wall. Find the height of the wall to which the ladder reaches.

Solution:



Question:64

If the sides of a triangle are 3 cm, 4 cm and 6 cm long, determine whether the triangle is right-angled triangle.

Solution:

Question:65

The sides of certain triangles are given below. Determine which of them are right triangles.

i $a = 7$ cm, $b = 24$ cm and $c = 25$ cm

ii $a = 9$ cm, $b = 16$ cm and $c = 18$ cm

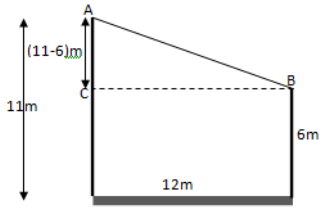
Solution:

Question:66

Two poles of heights 6 m and 11 m stand on a plane ground. If the distance between their feet is 12 m, find the distance between their tops.

[*Hint: Find the hypotenuse of a right triangle having the sides 11 – 6 m = 5 m and 12 m]*

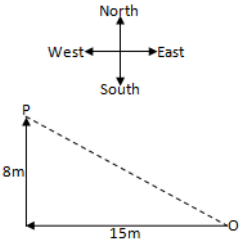
Solution:



Question:67

A man goes 15 m due west and then 8 m due north. How far is he from the starting point?

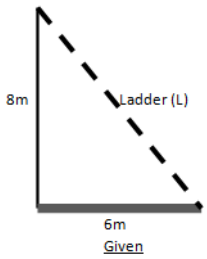
Solution:



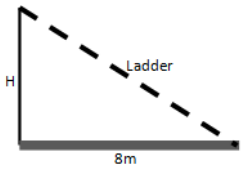
Question:68

The foot of a ladder is 6 m away from a wall and its top reaches a window 8 m above the ground. If the ladder is shifted in such a way that its foot is 8 m away from the wall, to what height does its top reach?

Solution:



Given

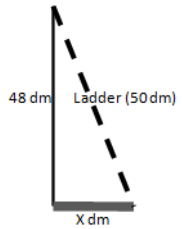


When ladder is shifted

Question:69

A ladder 50 dm long when set against the wall of a house just reaches a window at a height of 48 dm. How far is the lower end of the ladder from the base of the wall?

Solution:



Question:70

The two legs of a right triangle are equal and the square of the hypotenuse is 50. Find the length of each leg.

Solution:

Question:71

Verify that the following numbers represent Pythagorean triplet:

i 12, 35, 37

ii 7, 24, 25

iii 27, 36, 45

iv 15, 36, 39

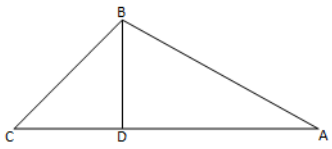
Solution:

We will check for a Pythagorean triplet by checking if the square of the largest side is equal to the sum of the squares of the other two sides.

Question:72

In a ΔABC, $\angle ABC = 100°$, $\angle BAC = 35°$ and $BD \perp AC$ meets side AC in D. If $BD = 2$ cm, find $\angle C$ and length DC.

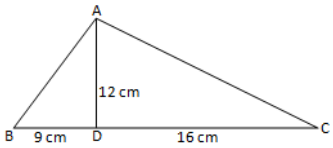
Solution:



Question:73

In a ΔABC, AD is the altitude from A such that $AD = 12$ cm, $BD = 9$ cm and $DC = 16$ cm. Examine if ΔABC is right angled at A.

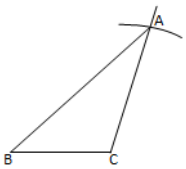
Solution:



Question:74

Draw a triangle ABC, with $AC = 4$ cm, $BC = 3$ cm and $\angle C = 105°$. Measure AB. Is $(AB)^2 = (AC)^2 + (BC)^2$? If not, which one of the following is true: $(AB)^2 > (AC)^2 + (BC)^2$ or $(AB)^2 < (AC)^2 + (BC)^2$?

Solution:



Draw .

Draw a line $BC = 3$ cm.

At point C, draw a line at 105 angle with BC.

Take an arc of 4 cm from point C, which will cut the line at point A.

Now, join AB, which will be approximately 5.5 cm.

$(AB)^2$ $(AC)^2 + (BC)^2$

Here,

$(AB)^2 > (AC)^2 + (BC)^2$

Question:75

Draw a triangle ABC, with $AC = 4$ cm, $BC = 3$ cm and $\angle C = 80°$. Measure AB. Is $(AB)^2 = (AC)^2 + (BC)^2$? If not, which one of the following is true: $(AB)^2 > (AC)^2 + (BC)^2$ or $(AB)^2 < (AC)^2 + (BC)^2$?

Solution:

First draw .

Draw a line $BC = 3$ cm.

At point C, draw a line at 80 angle with BC.

Take an arc of 4 cm from point C, which will cut the line at point A.

Now, join *AB;* it will be approximately 4.5 cm.

$(AB)^2$ $(AC)^2 + (BC)^2$

Here,

$(AB)^2 < (AC)^2 + (BC)^2$

Question:76

If the measures of the angles of a triangle are $(2x)°$, $(3x - 5)°$ and $(4x - 13)°$. Then the value of x is

a 22

b 18

c 20

d 30

Solution:

$(2x)° + (3x - 5)° + (4x - 13)° = 180°$ Angle sum property of triangle

$\Rightarrow 2x + 3x - 5 + 4x - 13 = 180°$

$\Rightarrow 9x - 18 = 180$

$\Rightarrow 9x = 198$

$\Rightarrow x = 22$

Hence, the correct answer is option a.

Question:77

The angles of a triangle are in the ratio 2 : 3 : 7. The measure of the largest angle is

a 84°

b 91°

c 105°

d 98°

Solution:

Let the angles of the triangle be $2x$, $3x$ and $7x$.

Now, $2x + 3x + 7x = 180°$ Angle sum property of triangle

$\Rightarrow 12x = 180°$

$\Rightarrow x = 15°$

$\therefore$ Largest angle $= 7x = 7 \times 15° = 105°$

Hence, the correct answer is option c.

Question:78

In a $\triangle ABC$, if $2\angle A = 3\angle B = 6\angle C$, then th s measure of the smallest angle is

a 90°

b 60°

c 40°

d 30°

Solution:

We have

$2\angle A = 3\angle B = 6\angle C$

$\therefore$ Smallest angle =

Hence, the correct answer is option d.

Question:79

In a $\triangle ABC$,if $\angle A + \angle B = 150°$ and $\angle B + \angle C = 75°$, then $\angle B$ =

a 35°

b 45°

c 55°

d 25°

Solution:

$\angle A + \angle B + \angle C = 180°$ Angle sum property of triangle

$\Rightarrow 150° + \angle C = 180°$

$\Rightarrow \angle C = 30°$

Now, $\angle B + \angle C = 75°$

$\Rightarrow \angle B + 30° = 75°$

$\Rightarrow \angle B = 45°$

Hence, the correct answer is option b.

Question:80

In a $\triangle ABC$, if $\angle A - \angle B = 33°$ and $\angle B - \angle C = 18°$, then $\angle B$ =

a 35°

b 45°

c 55°

d 25°

Solution:

$\angle A - \angle B = 33°$ and $\angle B - \angle C = 18°$

$\Rightarrow \angle A = \angle B + 33°$ and $\angle C = \angle B - 18°$

Now, $\angle A + \angle B + \angle C = 180°$ Angle sum property of triangle

$\Rightarrow \angle B + 33° + \angle B + \angle B - 18° = 180°$

$\Rightarrow 3\angle B + 15° = 180°$

$\Rightarrow 3\angle B = 165°$

$\Rightarrow \angle B = 55°$

Hence, the correct answer is option d.

Question:81

If the measures of the angles of a triangle are , then $x =$

a

b

c

d

Solution:

Hence, the correct answer is option a.

Question:82

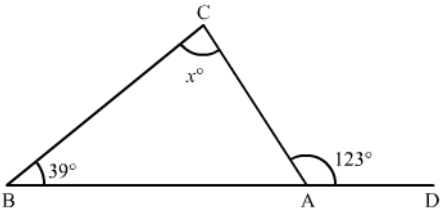
In Fig. 59, the value of x is

a 84

b 74

c 94

d 57



Solution:

$\angle CAD = \angle ABC + \angle ACB$ Exterior angle property

$\Rightarrow 123° = 39° + x°$

$\Rightarrow 84° = x°$

$\Rightarrow x = 84$

Hence, the correct answer is option a.

Question:83

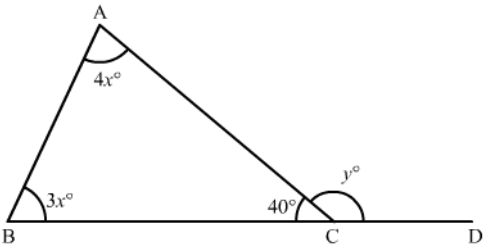
In Fig. 60, the values of x and y are

a $x = 20, y = 130$

c $x = 20, y = 140$

b $x = 40, y = 140$

d $x = 15, y = 140$



Solution:

$\angle ACB + \angle ACD = 180°$

$\Rightarrow 40° + y° = 180°$

$\Rightarrow y° = 140°$

$\Rightarrow y = 140$

Now, $\angle ACD = \angle ABC + \angle BAC$ Exterior angle property

$\Rightarrow 3x° + 4x° = y°$

$\Rightarrow 7x° = 140°$

$\Rightarrow x = 20$

Hence, the correct answer is option c.

Question:84

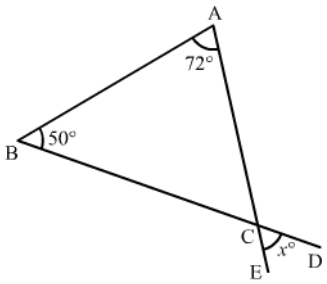
In Fig. 61, the value of xis

a 72

b 50

c 58

d 48



Solution:

$\angle A + \angle B + \angle C = 180°$ Angle sum property of triangle

$\Rightarrow 50° + 72° + \angle C = 180°$

$\Rightarrow \angle C + 122° = 180°$

$\Rightarrow \angle C = 58°$

Now, $x° = \angle C$ Vertically opposite angles

$\Rightarrow x° = 58°$

$\Rightarrow x = 58$

Hence, the correct answer is option c.

Question:85

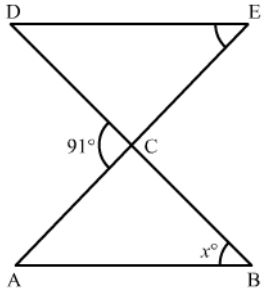
In Fig. 62, if AB || DE, then the value of *x* is

a 25

b 35

c 40

d 45



Solution:

$\angle ACD + \angle ACB = 180°$ Linear angles

$\Rightarrow 91° + \angle ACB = 180°$

$\Rightarrow \angle ACB = 89°$

Since, AB || DE

$\angle DEC = \angle CAB = 46°$ Alternate angles

Now,

$\angle ACB + \angle CAB + \angle ABC = 180°$ Angle sum property of triangle

$\Rightarrow 89° + 46° + x° = 180°$

$\Rightarrow x° = 45°$

$\Rightarrow x = 45$

Hence, the correct answer is option d.

Question:86

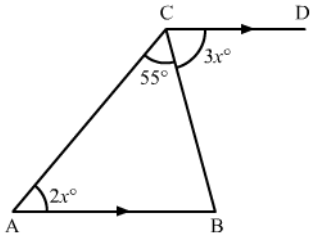
In Fig. 63, if AB || CD, the value of *x* is

a 25

b 35

c 15

d 20



Solution:

Since, AB || DE

∠DCB = ∠CBA = 3*x*° Alternate angles

Now,

∠ACB + ∠CAB + ∠CBA = 180° Angle sum property of triangle

⇒ 55° + 2*x*° + 3*x*° = 180°

⇒ 5*x*° = 125°

⇒ *x* = 25

Hence, the correct answer is option a.

Question:87

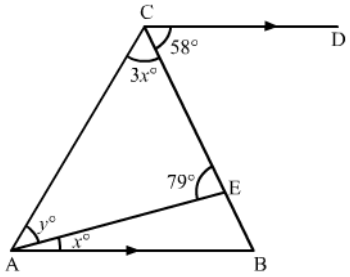
In Fig. 64, if AB || CD, the values of *x* and *y* are

a *x* = 21, *y* = 28

b *x* = 21, *y* = 38

c *x* = 38, *y* = 21

d *x* = 22, *y* = 38



Solution:

∠AEC + ∠AEB = 180° Linear angles

⇒ 79° + ∠AEB = 180°

⇒ ∠AEB = 101°

Since, AB || CD

∠ABE = ∠ECD = 58° Alternate angles

Now, In △AEB

∠AEB + ∠EAB + ∠ABE = 180° Angle sum property of triangle

⇒ 101° + 58° + *x*° = 180°

⇒ *x*° = 21°

⇒ *x* = 21

Now, In △AEB

∠AEC + ∠CAE + ∠CEA = 180° Angle sum property of triangle

⇒ 79° + *y*° + 3*x*° = 180°

⇒ 79° + *y*° + 321° = 180°

⇒ 79° + *y*° + 63° = 180°

⇒ *y*° = 38°

⇒ *y* = 38

Hence, the correct answer is option b.

Question:88

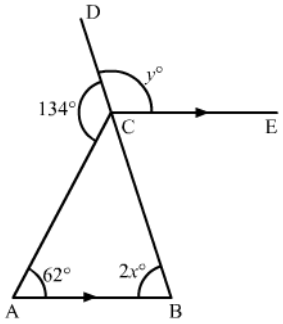
In Fig. 65, if AB || CE, then the values of *x* and *y* are

a *x* = 26, *y* = 144

b *x* = 36, *y* = 154

c *x* = 154, *y* = 36

d *x* = 144, *y* = 26



Solution:

$\angle DCA + \angle ACB = 180°$ Linear angles

$\Rightarrow 134° + \angle ACB = 180°$

$\Rightarrow \angle ACB = 46°$

Now, In $\triangle ABC$

$\angle BAC + \angle ACB + \angle ABC = 180°$ Angle sum property of triangle

$\Rightarrow 62° + 46° + 2x° = 180°$

$\Rightarrow 2x° = 72°$

$\Rightarrow x = 36$

Since, AB || CE

$\therefore \angle ECB = \angle CBA = (2x)° = (2 \times 36)° = 72°$ Alternate angles

Now, $\angle DCE + \angle ECB = 180°$ Linear angles

$\Rightarrow y° + 72° = 180°$

$\Rightarrow y = 108$

Disclaimer: No Option is correct

Question:89

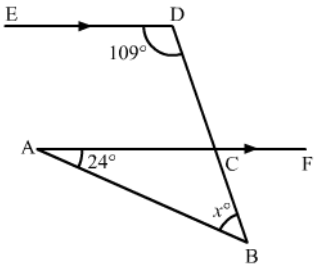
In Fig. 66, if AF || DE, then $x =$

a 37

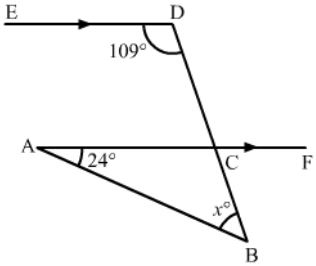
b 57

c 47

d 67



Solution:



Since, AF || DE

$\angle EDC = \angle ACB = 109°$ Corresponding angles

Now, In $\triangle ABC$

$\angle ACB + \angle CAB + \angle CBA = 180°$ Angle sum property of triangle

$\Rightarrow 109° + 24° + x° = 180°$

$\Rightarrow x° = 47°$

$\Rightarrow x = 47$

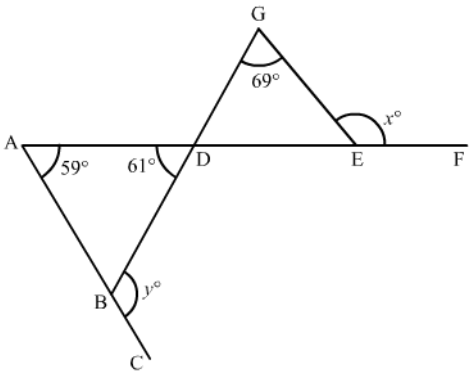
Hence, the correct answer is option c.

Question:90

In Fig. 67, the values of x and y are

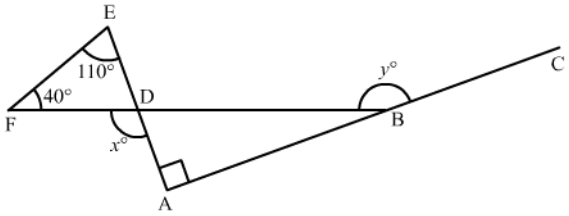
a $x = 130, y = 120$

b $x = 120, y = 130$
c $x = 120, y = 120$
d $x = 130, y = 130$



Solution:
In $\triangle ABD$
$\angle ADB + \angle BAD + \angle ABD = 180°$ Angle sum property of triangle
$\Rightarrow 61° + 59° + \angle ABD = 180°$
$\Rightarrow \angle ABD = 60°$
$\angle ABD + \angle DBC = 180°$ Linear pair angles
$\Rightarrow 60° + y° = 180°$
$\Rightarrow y = 120$
Now, $\angle ADB = \angle GDE = 61°$ Vertically opposite angles
Now, In $\triangle GDE$
$\angle GDE + \angle DGE + \angle GED = 180°$ Angle sum property of triangle
$\Rightarrow 61° + 69° + \angle GED = 180°$
$\Rightarrow \angle GED = 50°$
Now, $\angle GED + \angle GEF = 180°$ Linear pair angles
$\Rightarrow 50° + x° = 180°$
$\Rightarrow x = 130$
Hence, the correct answer is option a.

Question:91
In Fig. 68, the values of x and y are
a $x = 120, y = 150$
b $x = 110, y = 160$
c $x = 150, y = 120$
d $x = 110, y = 160$



Solution:
In $\triangle DEF$
$\angle DEF + \angle DFE + \angle EDF = 180°$ Angle sum property of triangle
$\Rightarrow 110° + 40° + \angle EDF = 180°$
$\Rightarrow \angle EDF = 30°$
Now, $\angle EDF + \angle FDA = 180°$ Linear pair angles
$\Rightarrow 30° + x° = 180°$
$\Rightarrow x = 150$
Now, $\angle EDF = \angle ADB = 30°$ Vertically opposite angles
Now, In $\triangle ABD$
$\angle ADB + \angle DAB + \angle ABD = 180°$ Angle sum property of triangle
$\Rightarrow 30° + 90° + \angle ABD = 180°$
$\Rightarrow \angle ABD = 60°$
Now, $\angle ABD + \angle DBC = 180°$ Linear pair angles
$\Rightarrow 60° + y° = 180°$
$\Rightarrow y = 120$
Hence, the correct answer is option c.

Question:92

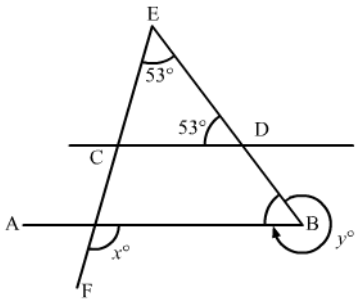
In Fig. 69, if AB || CD, then the values of x and y are

a $x = 106, y = 307$

b $x = 307, y = 106$

C $x = 107, y = 306$

d $x = 105, y = 308$



Solution:

In $\triangle CDE$

$\angle CDE + \angle CED + \angle ECD = 180°$ Angle sum property of triangle

$\Rightarrow 53° + 53° + \angle ECD = 180°$

$\Rightarrow \angle ECD = 74°$

Since, AB || CD

$\therefore \angle ECD = \angle CGB = 74°$ Corresponding angles

Now, $\angle CGB + \angle BGF = 180°$ Linear pair angles

$\Rightarrow 74° + x° = 180°$

$\Rightarrow x = 106$

Now, In $\triangle EGB$

$\angle EGB + \angle BEG + \angle EBG = 180°$ Angle sum property of triangle

$\Rightarrow 74° + 53° + \angle EBG = 180°$

$\Rightarrow \angle EBG = 53°$

Now, $\angle EBG + \text{Reflex} \angle EBG = 360°$ Complete angle

$\Rightarrow 53° + y° = 360°$

$\Rightarrow y = 307$

Hence, the correct answer is option a.

Question:93

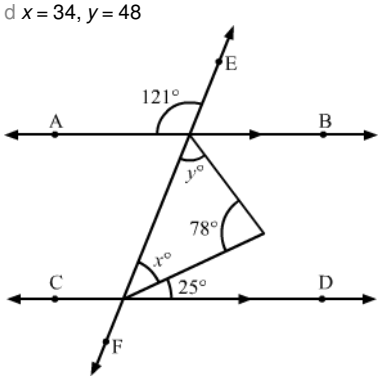
In Fig. 70, if AB || CD, then the values of x and y are

a $x = 24, y = 48$

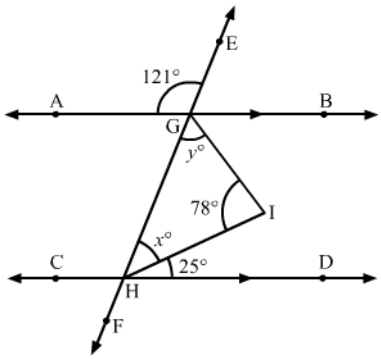
b $x = 34, y = 68$

c $x = 24, y = 68$

d $x = 34, y = 48$



Solution:



$\angle AGE + \angle BGE = 180°$ Linear pair angles

$\Rightarrow 121° + \angle BGE = 180°$

$\Rightarrow \angle BGE = 59°$

Since, AB || CD

$\therefore \angle BGE = \angle GHD = 59°$ Corresponding angles

$\Rightarrow x° + 25° = 59°$

$\Rightarrow x = 34$

In $\triangle GHI$

$\angle GHI + \angle GIH + \angle HGI = 180°$ Angle sum property of triangle

$\Rightarrow 34° + 78° + y° = 180°$

$\Rightarrow y = 68$

Hence, the correct answer is option b.

Question:94

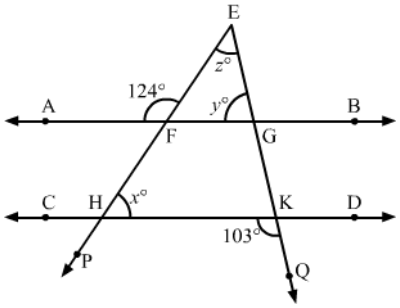
In Fig. 71, if AB || CD, then the values of x, y and z are

a $x = 56$, $y = 47$, $z = 77$

b $x = 47$, $y = 56$, $z = 77$

c $x = 77$, $y = 56$, $z = 47$

d $x = 56$, $y = 77$, $z = 47$



Solution:

$\angle AFE + \angle EFG = 180°$ Linear pair angles

$\Rightarrow 124° + \angle EFG = 180°$

$\Rightarrow \angle EFG = 56°$

Since, AB || CD

$\therefore \angle EFG = \angle FHK = 56°$ Corresponding angles

$\Rightarrow x = 56$

Now, $\angle QKH + \angle GKH = 180°$ Linear pair angles

$\Rightarrow 103° + \angle GKH = 180°$

$\Rightarrow \angle GKH = 77°$

Since, AB || CD

$\therefore \angle EGF = \angle GKH = 77°$ Corresponding angles

$\Rightarrow y = 77$

In $\triangle EHK$

$\angle EHK + \angle EKH + \angle HEK = 180°$ Angle sum property of triangle

$\Rightarrow 56° + 77° + z° = 180°$

$\Rightarrow z = 47$

Hence, the correct answer is option d.

Question:95

If the exterior angles of a triangle are $(2x + 10)°$, $(3x - 5)°$ and $(2x + 40)°$, then $x =$

a 25

b 35

c 45

d 55

Solution:

Sum of the exterior angles of a triangle is 360°

$\therefore (2x + 10)° + (3x - 5)° + (2x + 40)° = 360°$

$\Rightarrow 2x + 10 + 3x - 5 + 2x + 40 = 360$

$\Rightarrow 7x + 45 = 360$

$\Rightarrow 7x = 315$

$\Rightarrow x = 45$

Hence, the correct answer is option c

Question:96

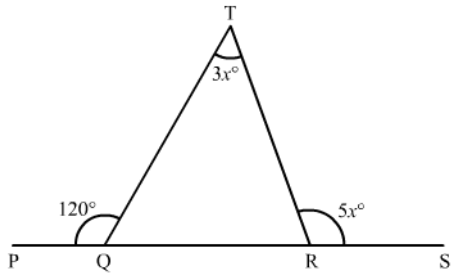
In Fig. 73, the value of x is

a 20

b 30

c 40

d 25



Solution:

$\angle TRS + \angle TRQ = 180°$ Linear angles

$\Rightarrow 5x° + \angle TRQ = 180°$

$\Rightarrow \angle TRQ = 180° - 5x°$

Now, $\angle QTR + \angle TRQ = \angle PQT$ Exterior angle property of triangle

$\Rightarrow 3x° + 180° - 5x° = 120°$

$\Rightarrow 2x° = 60°$

$\Rightarrow x = 30$

Hence, the correct answer is option b.

Question:97

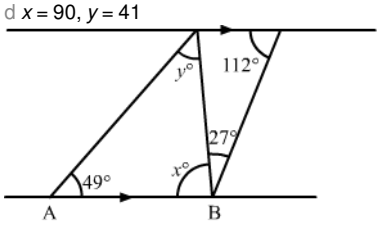
In Fig. 74, if AB || CO, $\angle CAB = 49°$, $\angle CBD = 27°$ and $\angle BDC = 112°$, then the values of x and y are

a $x = 41$, $y = 90$

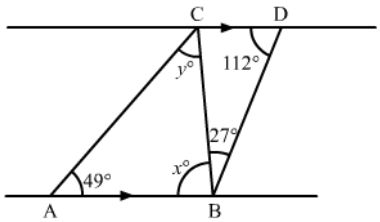
b $x = 41$, $y = 63$

c $x = 63$, $y = 41$

d $x = 90$, $y = 41$



Solution:



Since, AB || CD

$\angle ABD + \angle CDB = 180°$ Angles on the same side of a transversal line are supplementary

$\Rightarrow x° + 27° + 112° = 180°$

$\Rightarrow x° = 41°$

$\Rightarrow x = 41$

Now, In $\triangle ABC$

$\angle A + \angle B + \angle C = 180°$ Angle sum property of triangle

$\Rightarrow 49° + 41° + y° = 180°$

$\Rightarrow y° = 90°$

$\Rightarrow y = 90$

Hence, the correct answer is option a.

Question:98

Which of the following is the set of measures of the sides of a triangle?

a 8 cm, 4 cm, 20 cm

b 9 cm, 17 cm, 25 cm
c 11 cm, 16 cm, 28 cm
d None of these
Solution:
We knwno that Triangle Inequality Theorem states that the sum of two side lengths of a triangle is always greater than the third side.
Using this in a, we get
$8 + 4 \not> 20$
$\Rightarrow 12 \not> 20$
So, triangle is not possible
Using this in b, we get
$9 + 17 > 25$
$\Rightarrow 26 > 25$
and
$9 + 25 > 7$
$\Rightarrow 34 > 7$
and
$17 + 25 > 9$
$\Rightarrow 42 > 9$
So, triangle is possible.
Using this in c, we get
$11 + 16 \not> 28$
$\Rightarrow 27 \not> 28$
So, triangle is not possible.
Hence, the correct answer is option b.

Question:99
In which of the following cases, a right triangle cannot be constructed?
a 12 cm, 5 cm, 13 cm
b 8 cm, 6 cm, 10 cm
c 5 cm, 9 cm, 11 cm
d None of these
Solution:
In a
$12^2 + 5^2 = 13^2$
$\Rightarrow 144 + 25 = 169$
$\Rightarrow 169 = 169$
Since, the sum of the square of two smallest side is equal to the square of largest side.
Hence, a right triangle can be constructed.

In b
$8^2 + 6^2 = 10^2$
$\Rightarrow 44 + 36 = 100$
$\Rightarrow 100 = 100$
Since, the sum of the square of two smallest side is equal to the square of largest side.
Hence, a right triangle can be constructed.

In c
$5^2 + 9^2 \neq 11^2$
$\Rightarrow 25 + 81 \neq 121$
$\Rightarrow 106 \neq 121$
Since, the sum of the square of two smallest side is not equal to the square of largest side.
Hence, a right triangle can not be constructed.
Hence, the correct answer is option c.

Question:100
Which of the following is/are not Pythagorean triplet s?
a 3,4,5
b 8,15,17
c 7,24,25
d 13,26,29
Solution:
In a
$3^2 + 4^2 = 5^2$

$\Rightarrow 9 + 16 = 25$

$\Rightarrow 25 = 25$

Since, the sum of the square of two smallest number is equal to the square of largest number.

Hence, it is a Pythagorean triplet.

In b

$8^2 + 15^2 = 17^2$

$\Rightarrow 64 + 225 = 289$

$\Rightarrow 289 = 289$

Since, the sum of the square of two smallest number is equal to the square of largest number.

Hence, it is a Pythagorean triplet.

In c

$7^2 + 24^2 = 25^2$

$\Rightarrow 49 + 576 = 625$

$\Rightarrow 625 = 625$

Since, the sum of the square of two smallest number is equal to the square of largest number.

Hence, it is a Pythagorean triplet.

In d

$13^2 + 26^2 \neq 29^2$

$\Rightarrow 169 + 676 \neq 841$

$\Rightarrow 845 \neq 841$

Since, the sum of the square of two smallest number is not equal to the square of largest number.

Hence, it is not a Pythagorean triplet.

Hence, the correct answer is option d.

Question:101

In a right triangle, one of the acute angles is four times the other. Its measure is

a $68°$

b $84°$

c $80°$

d $72°$

Solution:

Let the smallest angle be x, then the other angle be $4x$.

Now,

$x + 4x + 90° = 180°$

$\Rightarrow 5x = 90°$

$\Rightarrow x = 18°$

Thus, the measure of the angles are $18°$, and $418° = 72°$

Hence, the correct answer is option d.

Question:102

In which of the following cases can a right triangle ABC be constructed?

a AB = 5 cm, BC = 7 cm, AC = 10 cm

b AB = 7 cm, BC = 8 cm, AC = 12 cm

c AB = 8 cm, BC = 17 cm, AC = 15 cm

d None of these

Solution:

In c

$BC^2 = AC^2 + AB^2$

$\Rightarrow 17^2 = 15^2 + 8^2$

$\Rightarrow 289 = 225 + 64$

$\Rightarrow 289 = 289$

Since, the sum of the square of two smallest side is equal to the square of largest side.

Hence, ABC is a right angle triangle at A.

Hence, the correct answer is option c.

Question:103

$\triangle$ ABC is a right triangle right angled at A. If AB = 24 cm and AC = 7 cm, then BC =

a 31 cm

b 17 cm

c 25 cm

d 28 cm

Solution:

In right traingle ABC,

$BC^2 = AC^2 + AB^2$

$\Rightarrow BC^2 = 7^2 + 24^2$

$\Rightarrow BC^2 = 49 + 576$

$\Rightarrow BC^2 = 625$

$\Rightarrow BC^2 = 25^2$

$\Rightarrow BC = 25$ cm

Hence, the correct answer is option c.

Question:104

If $\triangle ABC$ is an isosceles right-triangle right angled at C such that AC = 5 cm. Then, AB =

a 2.5cm

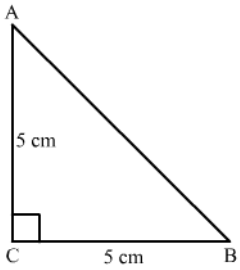
b cm

c 10 cm

d 5 cm

Solution:

Suppose BC is the ladder which is placed againts the wall OA. The foot of the ladder C is 15 m away from the foot O of the wall and its top reaches the window which is 20 m above the ground.



In right traingle ABC,

$AB^2 = BC^2 + AC^2$

$\Rightarrow AB^2 = 5^2 + 5^2$

$\Rightarrow AB^2 = 25 + 25$

$\Rightarrow AB^2 = 50$

$\Rightarrow AB^2 =$

$\Rightarrow AB =$ cm

Hence, the correct answer is option b.

Question:105

Two poles of heights 6 m and 11 m stand vertically on a plane ground. If the distance between their feet is 12 m, the distance between their tops is

a 13 m

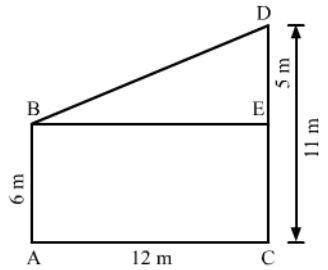
b 14 m

c 15 m

d 12.8 m

Solution:

Suppose AB and CD are two poles.The is distance between AB and CD is 12 m.



In right traingle BDE,

$BD^2 = DE^2 + BE^2$

$\Rightarrow BD^2 = 5^2 + 12^2$

$\Rightarrow BD^2 = 25 + 144$

$\Rightarrow BD^2 = 169$

$\Rightarrow BD^2 = 13^2$

$\Rightarrow BD = 13$ m

Hence, the correct answer is option a.

Question:106

A ladder is placed in such a way that its foot is 15 m away from the wall and its top reaches a window 20 m above the ground. The length of the ladder is

a 35 m

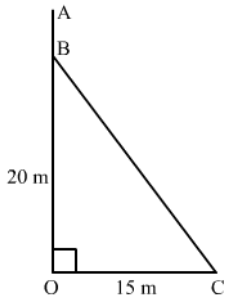
b 25 m

c 18 m

d 17.5 m

Solution:

Suppose BC is the ladder which is placed againts the wall OA. The foot of the ladder C is 15 m away from the foot O of the wall and its top reaches the window which is 20 m above the ground.



In right traingle BOC,

$BC^2 = OC^2 + OB^2$

$\Rightarrow BC^2 = 15^2 + 20^2$

$\Rightarrow BC^2 = 225 + 400$

$\Rightarrow BC^2 = 625$

$\Rightarrow BC^2 = 25^2$

$\Rightarrow BC = 25$ m

Hence, the correct answer is option b.

Question:107

The hypotenuse of a right triangle is 26 cm long. If one of the remaining two sides is 10 cm long, the length of the other side is

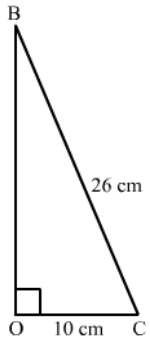
a 25 cm

b 23 cm

c 24 cm

d 22 cm

Solution:



In right traingle BOC,

$BC^2 = OC^2 + OB^2$

$\Rightarrow 26^2 = 10^2 + OB^2$

$\Rightarrow 676 = 100 + OB^2$

$\Rightarrow OB^2 = 576$

$\Rightarrow OB^2 = 24^2$

$\Rightarrow OB = 24$ cm

Hence, the correct answer is option c.

Question:108

A 15 m long ladder is placed against a wall in such away that the foot of the ladder is 9 m away from the wall. Up to what height does the ladder reach the wall?

a 13 m

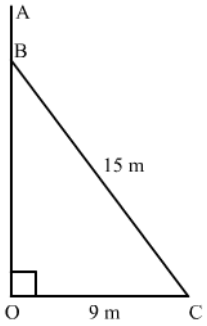
b 10 m

c 8 m

d 12 m

Solution:

Suppose BC is the ladder having length 15 m is placed againts the wall OA. The foot of the ladder C is 9 m away from the foot of the wall O.



In right traingle BOC,

$BC^2 = OC^2 + OB^2$

$\Rightarrow 15^2 = 9^2 + OB^2$

$\Rightarrow 225 = 81 + OB^2$

$\Rightarrow OB^2 = 144$

$\Rightarrow OB^2 = 12^2$

$\Rightarrow OB = 12$ m

Hence, the correct answer is option d.