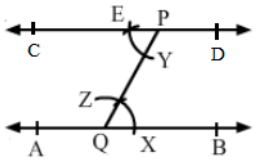
Question:1

Draw a line *AB* and take a point *P* outside it. Draw a line *CD* parallel to *AB* and passing through the point *P*.

Solution:

Steps of construction:

1. Draw a line AB.
2. Take a point Q on AB and a point P outside AB, and join PQ.
3. With Q as the centre and any radius, draw on arc to cut AB at X and PQ at Z.
4. With P as the centre and the same radius, draw an arc cutting QP at Y .
5. With Y as the centre and the radius equal to XZ, draw an arc to cut the previous arc at E.
6. Join PE and produce it on both the sides to get the required line.



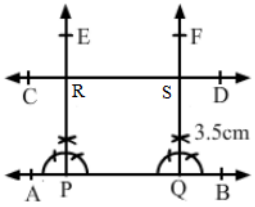
Question:2

Draw a line *AB* and draw another line *CD* parallel to *AB* at a distance of 3.5 cm from it.

Solution:

Steps for construction:

1. Let AB be the given line.
2. Take any two points P and Q on AB.
3. Construct $\angle BPE = 90^\circ$ and $\angle BQF = 90^\circ$
4. With P as the centre and the radius equal to 3.5 cm, cut PE at R.
5. With Q as the centre and the radius equal to 3.5cm, cut QF at S.
6. Join RS and produce it on both the sides to get the required line, parallel to AB and at a distance of 3.5 cm from it.



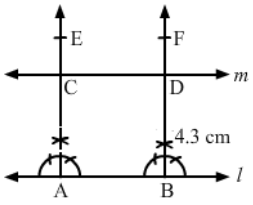
Question:3

Draw a line *l* and draw another line *m* parllel to *l* at a distance of 4.3 cm from it.

Solution:

Steps of construction:

1. Let l be the given line.
2. Take any two points A and B on line l.
3. Construct $\angle BAE = 90^\circ$ and $\angle ABF = 90^\circ$
4. With A as the centre and the radius equal to 4.3 cm, cut AE at C.
5. With B as the centre and the radius equal to 4.3 cm, cut BF at D.
6. Join CD and produce it on either side to get the required line m, parallel to l and at a distance of 4.3 cm from it.



Question:4

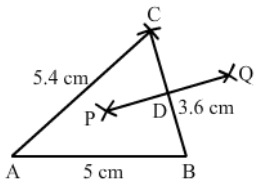
Construct a Δ*ABC* in which *BC* = 3.6 cm, *AB* = 5 cm and *AC* = 5.4 cm. Draw the perpendicular bisector of the side *BC*.

Solution:

Steps of construction:

1. Draw a line segment (AB) of length 5 cm.
2. Draw an arc of radius 5.4 cm from the centre (A).
3. With B as the centre, draw another arc of radius 3.6 cm, cutting the previous arc at C.
4. Join AC and BC.
5. Taking B as the centre and the radius more than half of BC, draw two arcs on both the sides of BC.
6. Similarly, taking C as the centre and the same radius, draw arcs on both the sides of BC, cutting the previous arcs at P and Q.
7. Join PQ.

Then, PQ is the required]



Question:5

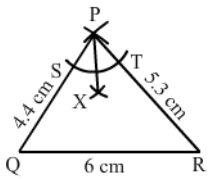
Construct a ΔPQR in which $QR = 6$ cm, $PQ = 4.4$ cm and $PR = 5.3$ cm. Draw the bisector of $\angle P$.

Solution:

Steps of construction:

1. Draw a line segment QR of length 6 cm.
2. Draw arcs of 4.4 cm and 5.3 cm from Q and R, respectively. They intersect at P.
3. Draw an arc of any radius from the centre (P), cutting PQ and PR at S and T, respectively.
4. With S as the centre and the radius more than half of ST, draw an arc .
5. With T as the centre and the same radius, draw another arc cutting the previously drawn arc at X.
6. Join P and X.

Then, PX is the bisector of $\angle P$.



Question:6

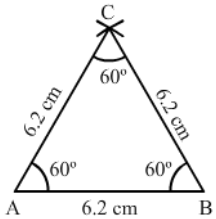
Construct an equilateral triangle each of whose sides measures 6.2 cm. Measure each of its angles.

Solution:

Steps of construction:

1. Draw AB of length 6.2 cm.
2. By taking the centres as A and B, draw equal arcs of 6.2 cm on the same side of AB, cutting each other at C.
3. Join AC and BC.

When we will measure angles of triangle using protractor then we find that all angles are equal to 60°



Question:7

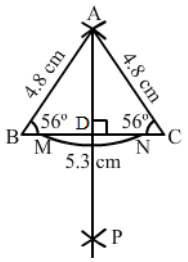
Construct a ΔABC in which $AB = AC = 4.8$ cm and $BC = 5.3$ cm. Measure $\angle B$ and $\angle C$. Draw $AD \perp BC$.

Solution:

Steps of construction:

1. Draw BC=5.3 cm
2. Draw an arc of radius 4.8 cm from the centre, B.
3. Draw another arc of radius 4.8 cm from the centre, C.
4. Both of these arcs intersect at A.
5. Join AB and AC.
6. With A as the centre and any radius, draw an arc cutting BC at M and N.
7. With M as the centre and the radius more than half of MN, draw an arc.
8. With N as the centre and the same radius, draw another arc cutting the previously drawn arc at P.
9. Join AP, cutting BC at D.

Then, AD $\perp$ *BC*



Question:8

Construct a ΔABC in which $AB = 3.8$ cm, $\angle A = 60°$ and $AC = 5$ cm.

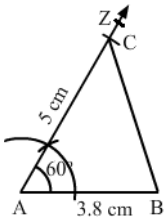
Solution:

Steps of construction:

1. Draw AB of length 3.8 cm.
2. Draw $\angle BAZ = 60^\circ$

Then, ABC is the required triangle.

3. With the centre as A, cut ray AZ at 5 cm at C.
4. Join BC.



Question:9

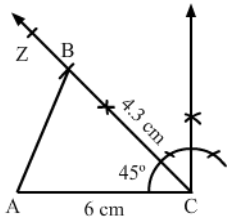
Construct a ΔABC in which $BC = 4.3$ cm, $\angle C = 45°$ and $AC = 6$ cm.

Solution:

Steps of construction:

1. Draw AC= 6 cm
2. Draw $\angle ACZ = 45^\circ$
3. With C as the centre, cut ray BZ at 4.3 cm at point B.
4. Join AB.

Then, ABC is the required triangle.



Question:10

Construct a ΔABC in which $AB = AC = 5.2$ cm and $\angle A = 120°$. Draw $AD \perp BC$.

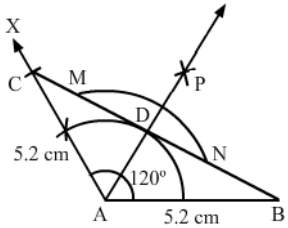
Solution:

Steps of construction:

1. Draw AB=5.2 cm
2. Draw $\angle BAX = 120^\circ$
3. With A as the centre, cut the ray AX at 5.3 cm at point C.
4. Join BC.

$\therefore$ AD $\perp$ BC

5. With A as the centre and any radius, draw an arc cutting BC at M and N.
6. With M as the centre and the radius more than half of MN, draw an arc.
7. With N as the centre and the same radius as before, draw another arc cutting the previously drawn arc at P.
8. Join AP meeting BC at D.



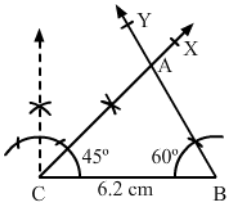
Question:11

Construct a ΔABC in which $BC = 6.2$ cm, $\angle B = 60°$ and $\angle C = 45°$.

Solution:

Steps of construction:

1. Draw BC=6.2 cm
2. Draw $\angle$BCX=45°
3. Draw $\angle$CBY=60°
4. The ray CX and BY intersect at A. Then, ABC is the required triangle.



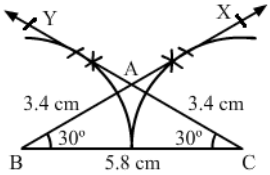
Question:12

Construct a ΔABC in which $BC = 5.8$ cm, $\angle B = \angle C = 30°$. Measure AB and AC. What do you observe?

Solution:

Steps of construction:

1. Draw BC=5.8 cm
2. Draw $\angle BCY = 30^\circ$3. Draw $\angle CBX = 30^\circ$4. The ray BX and CY intersect at A. Then, ABC is the required triangle. On



Question:13

Construct a ΔABC in which $AB = 7$ cm, $\angle A = 45°$ and $\angle C = 75°$.

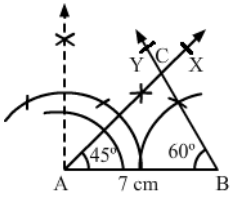
Solution:

By angle sum property : $\angle B = 180^\circ - \angle A - \angle C = 180^\circ - 45^\circ - 75^\circ = 60^\circ$

Steps of construction:

1. Draw AB=7cm
2. Draw $\angle$BAX= 45°
3. Draw $\angle$ABY= 60°
4. The ray AX and BY intersect at C.

Then, ABC is the required triangle.



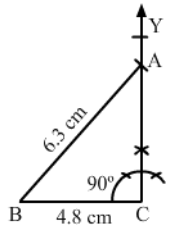
Question:14

Construct a ΔABC in which $BC = 4.8$ cm, $\angle C = 90°$ and $AB = 6.3$ cm.

Solution:

Steps of construction:

1. Draw BC=4.8 cm
2. Draw a perpendicular on C such that $\angle$C is equal to 90°.
3. Draw an arc of radius 6.3 cm from the centre B.
4. Join AB.



Question:15

Construct a right-angled triangle one side of which measures 3.5 cm and the length of whose hypotenuse is 6 cm.

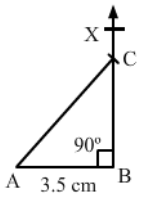
Solution:

Steps of construction:

1. Draw AB=3.5 cm
2. Construct $\angle ABX = 90^\circ$

Then, ABC is the required triangle.

3. With centre A, draw an arc of radius 6 cm cutting BX at C.
4. Join AC.



Question:16

Construct a right triangle having hypotenuse of length 5.6 cm and one of whose acute angles measures 30°.

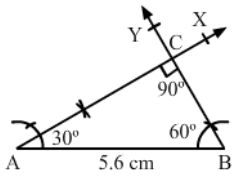
Solution:

Here, $\angle A=30^\circ$ and $\angle C=90^\circ$

By angle sum property:

1. Draw the hypotenuse AB of length 5.6 cm.
2. Draw $\angle BAX=30^\circ$ and $\angle ABY=60^\circ$
3. The ray AX and BY intersect a

$\angle B=60^\circ$



Question:17

Mark ✓ against the correct answer

The supplement of 45° is

a 45°
b 75°
c 135°
d 155°

Solution:

(c) 135° Supplement of $45^\circ = 180^\circ - 45^\circ$
$= 135^\circ$

Question:18

Mark ✓ against the correct answer

The complement of 80° is

a 100°
b 10°
c 20°
d 280°

Solution:

(b) 10° Complement of $80^\circ = 90^\circ - 80^\circ$
$= 10^\circ$

Question:19

Mark ✓ against the correct answer

An angle is its own complement. The measure of the angle is

a 30°
b 45°
c 90°
d 60°

Solution:

(b) 45° Suppose the angle is x°. Then, the complement is also x°. Complement of $x^\circ = 90^\circ - x^\circ \Rightarrow x^\circ = 90^\circ - x^\circ \Rightarrow x^\circ + x^\circ = 90^\circ \Rightarrow 2x^\circ = 90^\circ \Rightarrow$

Question:20

Mark ✓ against the correct answer

An angle is one-fifth of its supplement. The measure of the angle is

a 30°
b 15°
c 75°
d 150°

Solution:

$\left(a\right)\ 30^\circ \text{ Suppose the angle is } x. x = \frac{(180-x)}{5} \Rightarrow 5x = 180 - x \Rightarrow 5x + x = 180 \Rightarrow x = \frac{180}{6} \Rightarrow x = 30^\circ$

Question:21

Mark ✓ against the correct answer

An angle is 24° more than its complement. The measure of the angle is

a 47°
b 57°
c 53°
d 66°

Solution:

$\left(b\right)\ 57^\circ S\text{uppose the angle is x.} x = 90 - x + 24 \Rightarrow x + x = 114 \Rightarrow 2x = 114 \Rightarrow x = \frac{114}{2} \Rightarrow x = 57^\circ$

Question:22

Mark ✓ against the correct answer

An angle is 32° less than its supplement. The measure of the angle is

a 37°
b 74°
c 148°
d none of these

Solution:

$\left(b\right)\ 74^\circ \text{ Suppose the angle is } x. x = 180 - x - 32 \Rightarrow x + x = 148 \Rightarrow 2x = 148 \Rightarrow x = \frac{148}{2} \Rightarrow x = 74^\circ$

Question:23

Mark ✓ against the correct answer

Two supplementary angles are in the ratio 3 : 2. The smaller angle measures

a 108°
b 81°
c 72°
d none of these

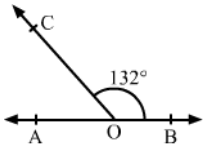
Solution:

$\left(c\right)\ 72^\circ \quad \begin{array}{l} \text{Supplementary angles:} \\ 3x + 2x = 180 \\ => x = \frac{180}{5} \end{array} \Rightarrow x = 36^\circ \quad \begin{array}{l} \text{Smaller angle} = (2 \times 36^\circ) \\ = 72^\circ \end{array}$

Question:24

Mark ✓ against the correct answer

In the given figure, *AOB* is a straight line and the ray *OC* stands on it.
If ∠*BOC* = 132°, then ∠*AOC* = ?



a 68°

b 48°

c 42°

d none of these

Solution:

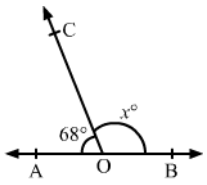
$(b)\ 48^\circ \angle AOC + \angle BOC = 180^\circ\ \ (\text{linear pair}) \angle AOC = 180^\circ - \angle BOC = 180^\circ - 132^\circ = 48^\circ$

Question:25

Mark ✓ against the correct answer

In the given figure, *AOB* is a straight line, ∠*AOC* = 68° and ∠*BOC* = *x*°.

The value of *x* is



a 32

b 22

c 112

d 132

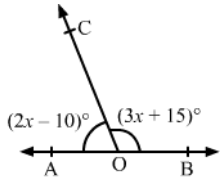
Solution:

$(\mathrm{x})\ 112 \angle AOC + \angle AOB\ = 180^\circ \quad (\text{linear pair}) 68^\circ + \mathrm{x}^\circ = 180^\circ \Rightarrow x^\circ = 180^\circ - 68^\circ \Rightarrow x^\circ = 112^\circ$

Question:26

Mark ✓ against the correct answer

In the adjoining figure, what value of *x* will make *AOB* a straight line?



a *x* = 30

b *x* = 35

c *x* = 25

d *x* = 40

Solution:

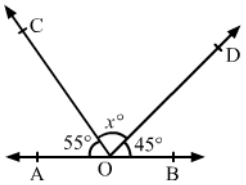
$(\mathrm{c}) x = 35$

$$(2x - 10) + (3x + 15) = 180$$
$$\Rightarrow 2x - 10 + 3x + 15 = 180$$
$$\Rightarrow 5x + 5 = 180$$
$$\Rightarrow 5x = 180 - 5$$
$$\Rightarrow 5x = 175$$
$$\Rightarrow x = \frac{\cancel{175}^{35}}{\cancel{5}^{1}}$$
$$\Rightarrow x = 35$$

Question:27

Mark ✓ against the correct answer

In the given figure, what value of *x* will make *AOB* a straight line?



a *x* = 50

b *x* = 100

c $x = 60$

d $x = 80$

Solution:

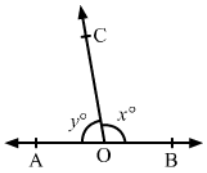
$(d)\ x = 80x + 55 + 45 = 180\ (\text{linear pair}) \Rightarrow \text{x} = 180 - 55 - 45 \Rightarrow \text{x} = 180 - 100 \Rightarrow \text{x} = 80$

Question:28

Mark ✓ against the correct answer

In the given figure, it is given that *AOB* is a straight line and $4x = 5y$.

What is the value of *x*?



a 100

b 105

c 110

d 115

Solution:

(a) 100

$x + y = 180\ \ (\text{linear pair})$

$=> x + \frac{4}{5}x = 180^{\circ}$

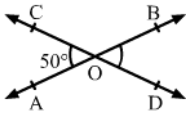
$=> 9x = 5 \times 180$

$=> x = 100$

Question:29

Mark ✓ against the correct answer

In the given figure, two straight lines *AB* and *CD* intersect at a point *O* and $\angle AOC = 50°$. Then, $\angle BOD$ = ?



a 40°

b 50°

c 130°

d 60°

Solution:

(b) 50°

$\text{Here, } \angle\text{AOC and } \angle\text{BOD are vertically opposite angles.}$

$\therefore \angle\text{AOC} = \angle\text{BOD}$

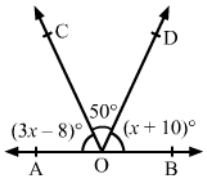
$\text{Given, } \angle\text{AOC} = 50^{0}$

$\therefore \angle\text{BOD} = 50^{0}$

Question:30

Mark ✓ against the correct answer

In the given figure, *AOB* is a straignt line, $\angle AOC = (13x - 8)°$, $\angle COD = 50°$ and $\angle BOD = (x + 10)°$. The value of *x* is



a 32

b 42

c 36

d 52

Solution:

$\left(a\right)$ 32

$(3x-8)^\circ+(x+10)^\circ+50^\circ=180^\circ$ (linear pair)

$\Rightarrow 4x^\circ+52^\circ=180^\circ$

$\Rightarrow 4x^\circ=128^\circ$

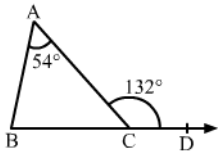
$\Rightarrow x^\circ=32^\circ$

$\therefore x=32$

Question:31

Mark ✓ against the correct answer

In Δ*ABC*, side *BC* has been produced to *D*. If ∠*ACD* = 132° and ∠*A* = 54°, then ∠*B* = ?



a 48°

b 78°

c 68°

d 58°

Solution:

$\left(b\right)$ 78°

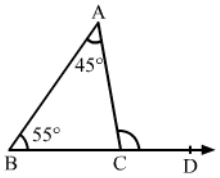
$\angle ACD=\angle ABC+\angle BAC$ (exterior angle property)

$\Rightarrow \angle ABC=132^\circ-54^\circ=78^\circ$

Question:32

Mark ✓ against the correct answer

In Δ*ABC*, side *BC* has been produced to *D*. If ∠*BAC* = 45° and ∠*ABC* = 55°, then ∠*ACD* = ?



a 80°

b 90°

c 100°

d 110°

Solution:

$\left(c\right)$ 100°

$\angle ACB=\angle ABC+\angle BAC$ (exterior angle property)

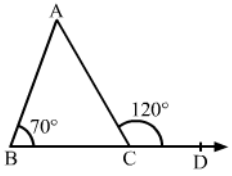
$=(45^\circ+55^\circ)$

$=100^\circ$

Question:33

Mark ✓ against the correct answer

In the given figure, side *BC* of Δ*ABC* is produced to *D* such that ∠*ABC* = 70° and ∠*ACD* = 120°. Then, ∠*BAC* = ?



a 60°

b 50°

c 70°

d 35°

Solution:

(b) 50°

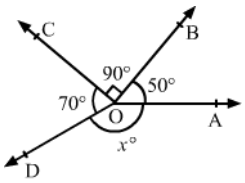
$$\angle BCA = 180^0 - 120^0 \left(\text{linear pair}\right)$$
$$= 60^0$$
$$\angle BAC = 180^0 - \left(60^0 + 70^0\right) \left(\text{angle sum property of triangles}\right)$$
$$= 50^0$$

Question:34

Mark ✓ against the correct answer

In the given figure, rays *OA*, *OB*, *OC* and *OD* are such that ∠*AOB* = 50°, ∠*BOC* = 90°, ∠*COD* = 70° and ∠*AOD* = *x*°.

Then, the value of *x* is



a 50°

b 70°

c 150°

d 90°

Solution:

(*c*) 150°

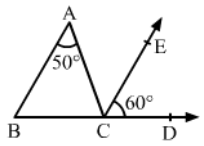
$$x^0 + 70^0 + 50^0 + 90^0 = 360^0 \left(\text{complete angle}\right)$$
$$\Rightarrow x^0 = 360^0 - 210^0$$
$$= 150^0$$

Question:35

Mark ✓ against the correct answer

In the given figure, ∠*A* = 50°, *CE* || *BA* and ∠*ECD* = 60°

Then, ∠*ACB* = ?



a 50°

b 60°

c 70°

d 80°

Solution:

(*c*) 70°

$$\text{Here, } \angle ACE = \angle BAC = 50^0 \left[\text{alternate angles}\right]$$
$$\angle ACB + \angle ACE + \angle DCE = 180^\circ \text{ (linear pair)}$$
$$\angle ACB = 180^0 - \left(50^\circ + 60^\circ\right)$$
$$= 180^\circ - 110^\circ$$
$$= 70^\circ$$

Question:36

Mark ✓ against the correct answer

In Δ*ABC*, if ∠*A* = 65° and ∠*C* = 85°, then ∠*B* = ?

a 25°

b 30°

c 35°

d 40°

Solution:

$\left(b\right)\ 30^{\circ}$

$\angle A+\angle B+\angle C=180^{0}$

$\Rightarrow \angle B=180^{0}-\left(65^{0}+85^{0}\right)$

$\Rightarrow \angle B=180^{0}-150^{0}$

$\Rightarrow \angle B=30^{0}$

Question:37

Mark ✓ against the correct answer

The sum of all angles of a triangle is

a 90°
b 100°
c 150°
d 180°

Solution:

$\left(d\right)\ 180^{0}$

Question:38

Mark ✓ against the correct answer

The sum of all angles of a quadrilateral is

a 180°
b 270°
c 360°
d 480°

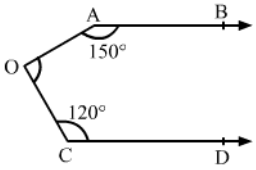
Solution:

$(c)\ 360^{0}$

Question:39

Mark ✓ against the correct answer

In the given figure, *AB* || *CD*. ∠*OAB* = 150° and ∠*OCD* = 120°.
Then ∠*AOC* = ?

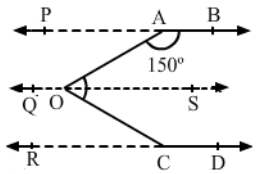


a 80°
b 90°
c 70°
d 100°

Solution:

$\left(b\right)\ 90^{\circ}$ Draw a parallel line through O and produce AB and CD on R and P, respectively.

$\therefore \angle OCD=\angle COQ=120^{0}\ (\text{alternate angles})$ $\angle COS=180^{0}-120^{0}\left(\text{linear pair}\right)=60^{0}$ Similarly

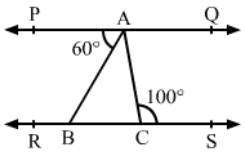


Question:40

Mark ✓ against the correct answer

In the given figure, *PQ* || *RS*. ∠*PAB* = 60° and ∠*ACS* = 100°.

Then ∠*BAC* = ?



a 40°

b 60°

c 80°

d 50°

Solution:

(a) 40°

$\angle \mathrm{PAC} = \angle \mathrm{ACS} = 100^0 \ \left[\text{alternate angles}\right]$

$\angle \mathrm{PAB} + \angle \mathrm{BAC} = 100^0$

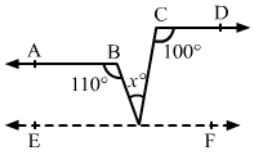
$\Rightarrow \angle \mathrm{BAC} = 100^\circ - 60^\circ = 40^\circ$

Question:41

Mark ✓ against the correct answer

In the given figure, *AB* || *CD* || *EF*, ∠*ABG* = 110°, ∠*GCD* = 100° and ∠*BGC* = *x*°.

Then *x* = ?



a 35

b 50

c 30

d 40

Solution:

(c) 30

Here, $\angle \mathrm{DCG} + \angle \mathrm{CGF} = 180^0 \ \left(\text{angles on the same side of a transversal line are supplementary}\right)$

$\Rightarrow \angle \mathrm{CGF} = 180^0 - 100^\circ = 80^\circ$

$\angle \mathrm{ABG} = \angle \mathrm{BGF} = 110^0 \quad \left[\text{alternate angles}\right]$

$\therefore x = 30$

$x^0 + \angle \mathrm{CGF} = 110^0$

$\Rightarrow x^0 = 110^0 - 80^0$

$\Rightarrow x^0 = 30^0$

Question:42

The sum of any two sides of a triangle is always

a equal to the third side

b less than the third side

c greater than or equal to the 3rd side

d greater than the 3rd side

Solution:

(d) greater than the 3rd side

Question:43

The diagonals of a rhombus

a are always equal

b never bisect each other

c always bisect each other at an acute angle

d always bisect each other at right angles

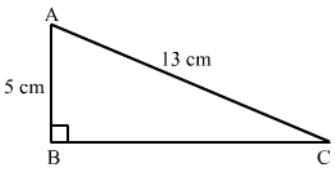
Solution:

(d) The diagonals of a rhombus always bisect each other at right angles.

Question:44

Mark ✓ against the correct answer

In ΔABC, $\angle B = 90°$, $AB = 5$ cm and $AC = 13$ cm. Then, BC = ?



a 8 cm

b 18 cm

c 12 cm

d none of these

Solution:

c 12 cm

$$\text{In a right angle triangle:}$$
$$AC^2 = AB^2 + BC^2 \quad \text{(Pythagoras theorem)}$$
$$\Rightarrow BC^2 = 13^2 - 5^2$$
$$\Rightarrow BC^2 = 169 - 25$$
$$\Rightarrow BC^2 = 144$$
$$\Rightarrow BC = \pm 12$$

The length cannot be negative. $\therefore BC = 12$ cm

Question:45

Mark ✓ against the correct answer

In a ΔABC, it is given that $\angle B = 37°$, and $\angle C = 29°$. Then, $\angle A$ = ?

a 86°

b 66°

c 114°

d 57°

Solution:

c 114°

$$\text{In triangle ABC:}$$
$$\angle A + \angle B + \angle C = 180^0$$
$$\Rightarrow \angle A = 180^0 - \left(37^0 + 29^0\right)$$
$$\Rightarrow \angle A = 180^0 - \left(66^0\right)$$
$$= 114^0$$

Question:46

Mark ✓ against the correct answer

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

a 84°

b 98°

c 105°

d 91°

Solution:

c 105° Suppose the angles of a triangle are $2x$, $3x$ and $7x$.

$$\text{Sum of the angles of a triangle is } 180^\circ.$$
$$2x + 3x + 7x = 180$$
$$\Rightarrow 12x = 180$$
$$\Rightarrow x = 15^0$$
$$\text{Measure of the largest angle} = 15^0 \times 7 = 105^0$$

Question:47

Mark ✓ against the correct answer

In a ΔABC, if $2\angle A = 3\angle B = 6\angle C$, then $\angle B$ = ?

a 30°

b 90°

c 60°

d 45°

Solution:

c $60^\circ Given: 2\angle A = 3\angle B$ or $\angle A = \frac{3}{2}\angle B 3\angle B = 6\angle C$, or $\angle C = \frac{1}{2}\angle B$

$$\text{In a } \triangle ABC:$$
$$\angle A + \angle B + \angle C = 180^0$$
$$\Rightarrow \frac{3}{2}\angle B + \angle B + \frac{1}{2}\angle B = 180^0$$
$$\Rightarrow \frac{3\angle B + 2\angle B + \angle B}{2} = 180^0$$
$$\Rightarrow \frac{6\angle B}{2} = 180^0$$
$$\Rightarrow \angle B = \frac{360^0}{6}$$
$$\Rightarrow \angle B = 60^0$$

Question:48

Mark ✓ against the correct answer

In a Δ*ABC*, if ∠*A* + ∠*B* = 65° and ∠*B* +∠*C* = 140°. Then, = ∠*B*?

a 25°

b 35°

c 40°

d 45°

Solution:

$(a)\ 25^\circ \text{Given}: \angle A + \angle B = 65^\circ \angle A = 65^\circ - \angle B \quad \ldots(i) \angle B + \angle C = 140^\circ \angle C = 140^\circ - \angle B \quad \ldots(ii) \text{In } \Delta ABC: \angle A + \angle B + \angle C = 180$

Question:49

Mark ✓ against the correct answer

In a Δ*ABC*, ∠*A* – ∠*B* = 33° and ∠*B* –∠*C* = 18°. Then, = ∠*B*?

a 35°

b 55°

c 45°

d 57°

Solution:

b 55°

$$\text{In } \triangle ABC:$$
$$\angle A + \angle B + \angle C = 180^0 \quad \ldots(i)$$
$$\text{Given:}$$
$$\angle A - \angle B = 33^0 \Rightarrow \angle A = \angle B + 33^0 \quad \ldots(ii)$$
$$\angle B - \angle C = 18^0 \Rightarrow \angle C = \angle B - 18^0 \quad \ldots(iii)$$
$$\text{Using } (ii) \text{ and } (iii) \text{ in equation } (i):$$
$$\Rightarrow \angle B + 33^0 + \angle B + \angle B - 18^0 = 180^0$$
$$\Rightarrow 3\angle B + 15^0 = 180^0$$
$$\Rightarrow 3\angle B = 165^0$$
$$\Rightarrow \angle B = \frac{165^0}{3} = 55^0$$

Question:50

Mark ✓ against the correct answer

The angles of a triangle are (3*x*)° ,(2*x* – 7)° and (4*x* – 11)°. Then, *x* = ?

a 18

b 20

c 22

d 30

Solution:

c 22

$$\text{Sum of the angles of a triangle is } 180^\circ.$$
$$(3x)^\circ + (2x - 7)^\circ + (4x - 11)^\circ = 180^\circ$$
$$\Rightarrow 9x^\circ - 18^\circ = 180^\circ$$
$$\Rightarrow 9x^\circ = 198^\circ$$
$$\Rightarrow x^\circ = 22^\circ$$
$$\Rightarrow x = 22$$

Question:51

Mark ✓ against the correct answer

Δ*ABC* is 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

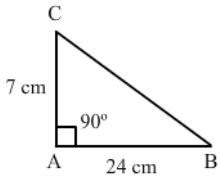
Solution:

c 25 cm

In a right angle triangle ABC:

$$AC^2 = BC^2 + AB^2$$
$$\Rightarrow BC^2 = 24^2 + 7^2$$
$$\Rightarrow BC^2 = 576 + 49$$
$$\Rightarrow BC^2 = 625$$
$$\Rightarrow BC = \pm 25 \text{ cm}$$

Since the length cannot be negative, we will negelect -25. $\therefore$ BC = 25 cm



Question:52

Mark ✓ against the correct answer

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:

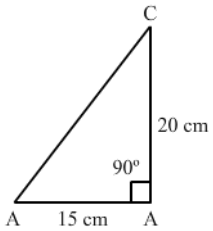
b 25 m

In right triangle ABC:

$$AC^2 = AB^2 + BC^2$$
$$= 15^2 + 20^2$$
$$\Rightarrow AC^2 = 625$$
$$\Rightarrow AC = \pm 25$$

Since the length cannot be negative, we will negelect -25.

$\therefore$ Length of the ladder = 25 m



Question:53

Mark ✓ against the correct answer

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

a 13 m
b 14 m
c 15 m
d 12.8 m

Solution:

(a) 13 m Suppose there are two poles AE and BD. EC = AB = 12 m $\left(\text{ABCE is a rectangle}\right)$ AE = BC = 6 m $\left(\text{ABCE is a rectangle}\right)$ DC = B

Question:54

Mark ✓ against the correct answer

Δ*ABC* is an isosceles triangle with ∠*C* = 90° and *AC* = 5 cm. Then, *AB* = ?

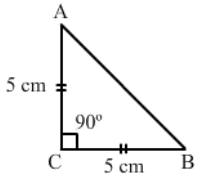
a 2.5 cm

b 5 cm

c 10 cm

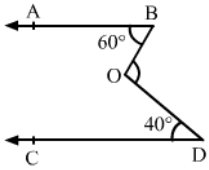
d

Solution:

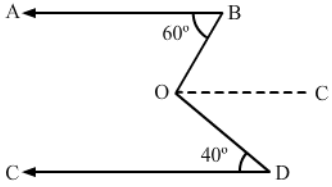


Question:55

In the given figure, $AB \parallel CD$, $\angle ABO = 60°$ and $\angle CDO = 40°$. Then, find $\angle BOD$.

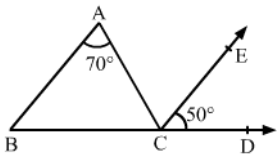


Solution:



Question:56

In the given figure, $CE \parallel BA$. If $\angle BAC = 70°$ and $\angle ECD = 50°$, find $\angle ACB$.

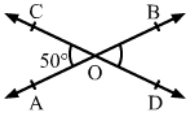


Solution:

Question:57

In the given figure, two straight lines AB and CD intersect at a point O such that $\angle AOC = 50°$.

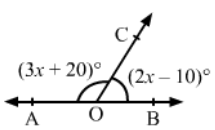
Find: i $\angle BOD$ ii $\angle BOC$.



Solution:

Question:58

In the given figure, AOB is a straight line and OC is ray such that $\angle AOC = (3x + 20)°$ and $\angle BOC = (2x - 10)°$. Find the value of x and hence find i $\angle AOC$ and $\angle BOC$.



Solution:

Question:59

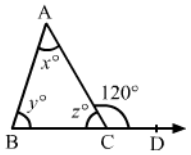
In a ΔABC, If $\angle A = 65°$, $\angle B = 45°$, find $\angle C$.

Figure

Solution:

Question:60

In the given figure, $x : y = 2 : 3$ and $\angle ACD = 120°$. Find the values of x,y and z.



Solution:

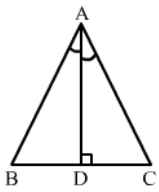
Question:61

Two legs of a right triangle are 8 cm and 15 cm long. Find the length of the hypotenuse of the triangle.

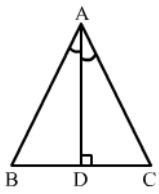
Solution:

Question:62

In the adjoining figure, ABC is a triangle in which AD is the bisector of $\angle A$. If $AD \perp BC$, show that ΔABC is isosceles.



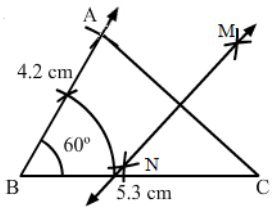
Solution:



Question:63

Construct a ΔABC in which $BC = 5.3$ cm, $\angle B = 60°$ and $AB = 4.2$ cm. Also, draw the perpendicular bisector of AC.

Solution:



Question:64

Mark ✓ against the correct answer

The supplement of 35° is

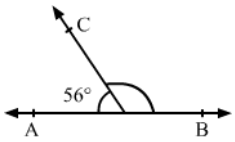
a 55°
b 65°
c 145°
d 165°

Solution:

Question:65

Mark ✓ against the correct answer

In the given figure, AOB is a straignt line, $\angle AOC = 56°$ and $\angle BOC = x°$. The value of x is



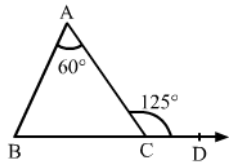
a 34
b 44
c 144
d 124

Solution:

Question:66

Mark ✓ against the correct answer

In ΔABC, side BC has been produced to D such that $\angle ACD = 125°$ and $\angle BAC = 60°$. Then $\angle ABC$ = ?



a 55°
b 60°
c 65°
d 70°

Solution:

Question:67

Mark ✓ against the correct answer

In a ΔABC, If $\angle B = 40°$ and $\angle C = 35°$, then $\angle A$ = ?

a 50°
b 55°
c 105°
d 150°

Solution:

Question:68

Mark ✓ against the correct answer

In a ΔABC, If $2\angle A = 3\angle B = 6\angle C$, then $\angle B$ = ?

a 30°
b 45°
c 60°
d 90°

Solution:

Question:69

Mark ✓ against the correct answer

In a ΔABC, If $A - B = 33°$ and $B - C = 18°$, then $\angle B$ = ?

a 35°
b 55°
c 45°

d $57°$

Solution:

Question:70

Mark ✓ against the correct answer

ΔABC is an isosceles right triangle in which $\angle A = 90°$ and $BC = 6$ cm. Then $AB = ?$

a

b

c

d

Solution:

Question:71

Fill in the blanks.

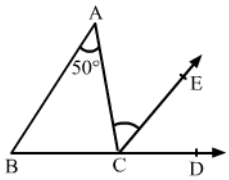
i The sum of the angles of a triangle is ..... .

ii The sum of any two sides of a triangle is always ..... than the third side.

iii In ΔABC, if $\angle A = 90°$, then BC^2 = ... + ...

iv In ΔABC, $AB = AC$ and $AD \perp BC$, then BD = ...

v In the given figure, side BC of ΔABC is produced to D and $CE \parallel BA$. If $\angle BAC = 50°$ then $\angle ACE$ = ...



Solution:

i The sum of the angles of a triangle is $\underline{180°}$.

ii The sum of any two sides of a triangle is always $\underline{\text{greater}}$ than the third side.

iii In ΔABC, if $\angle A = 90°$, then:

$BC^2 = \underline{(AB^2)} + \underline{(BC^2)}$

iv In ΔABC:

$AB = AC$

$AD \perp BC$

Then, $BD = \underline{DC}$

v In the given figure, side BC of ΔABC is produced to D and $CE \parallel BA$.

If $\angle BAC = 50°$, then $\angle ACE = 50°$.

Question:72

Write 'T' for true and 'F' for false

i If two parallel lines are cut by a transversal, then the alternate interior angles are equal.

ii If two lines intersect each other, then the vertically opposite angles are equal.

iii Each acute angle of an isosceles right triangle measures $60°$.

iv A right triangle cannot have an obtuse angle.

Solution:

Typesetting math: 73%