# QB365 <br> Important Questions - Constructions <br> 9th Standard CBSE 

Mathematics
Reg.No.:

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Time : 01:00:00 Hrs

Total Marks : 50

## Section-A

1) Construct an equilateral triangle, given its side and justify the construction.
2) Construct an equilateral triangle with one side 6 cm .
3) Construct an equilateral triangle LMN , one of whose sides is 5 cm . Bisect $\angle M$ of the triangle.
4) Draw an angle of $40^{\circ}$ with a protractor and then construct an angle $80^{\circ}$ using ruler and compass.
5) Draw a line segment $A B=5 \mathrm{~cm}$. From the point $A$ draw a line segment $A D=6 \mathrm{~cm}$ making an angle of $60^{\circ}$. Draw perpendicular bisector of AD.
6) (i)Construct a $\triangle A B C$ in which $A B=5.8 \mathrm{~cm}, B C+C A=8.4 \mathrm{~cm}$ and $B=60^{\circ}$
(ii)Measure AC
(iii)Measure BC
(iv)Is $\mathrm{ACV}+\mathrm{BC}=8.4 \mathrm{~cm}$ ?
(v)Meenu says that $\angle A C B=84^{\circ}$. Verify by measurement.Can you say that Meenu is right?Which value is depicted by Meenu's statement?
7) (i) Construct a triangle $A B C$ in which $B C=5$ ern, $\angle B=45^{\circ}$ and $A B-A C=2.8 \mathrm{~cm}$.
(ii) Measure $A B$.
(iii)Measure AC
(iv) Verify that $A B-A C=2.8 \mathrm{em}$.
(v)Hari comments that $\angle A C B=112^{\circ}$. Is he true? Which value is depicted by comment of Hari?
8) (i) Construct a triangle PQR with base
$P Q=8.4 \mathrm{em}, \mathrm{LP}=45^{\circ}$ and
$P R-Q R=2.8 \mathrm{~cm}$.
(ii) Measure PR.
(iii) Measure QR.
(i\') Verify that PR - QR = 2.8 em .
(v) Gaffar says that LPQR $=85^{\circ}$. Is he correct? Which value is depicted by his statement?

## Section-B

(ii) Measure AC
(iii) Measure $A B$.
(iv) Verify that $A C-A B=3 \mathrm{em}$.
(v) Apala ponders that $\mathrm{L} B A C=\mathrm{J} 38^{\circ}$.Is she correct? Find by measurement. Which value is depicted by her ponderation?

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## Section-A

1) 

Given: Side (say 4 cm ) of an equilateral triangle.
Required: To construct the equilateral triangle and justify the construction.
Steps of Construction:

1. Take a ray $A X$ with initial point $A$. From $A X$, cut off $A B=4 \mathrm{~cm}$.

2. Taking A as centre and radius (= 4 em ), draw an arc of a circle, which intersects AX, say at a point B.
3. Taking B as centre and with the same radius as before, draw an arc intersecting the previously drawn arc, say at a point $C$.
4. Draw the ray $A E$ passing through $C$.
5. Draw the ray BF passing through e. Then $\Delta A B C$ is the required triangle with given side 4 cm .

## Steps of Construction

1. Draw $\mathrm{BC}=6 \mathrm{~cm}$.
2. With $B$ as centre and 6 cm as radius, draw an arc on one side of $B C$.
3. With $C$ as centre and 6 cm as radius, draw another arc on the same side of $B C$ to intersect the former arc at A.
4. Join AB and AC . Then, $\Delta \mathrm{ABC}$ is the required equilateral triangle.

3) 

Steps of Construction

1. Draw a line segment $M N=5 \mathrm{~cm}$.
2. With $M$ as centre and 5 cm as radius, draw an arc on one side of $M N$.
3. With N as centre and 5 cm as radius, draw another arc on the same side of MN to intersect the former arc at L.
4. Join LM and LN. Then, $\Delta \mathrm{LMN}$ is the required equilateral triangle.

5. Taking M as centre and any radius, draw an arc to intersect the line segments MN and ML at P and Q respectively.
6. Next, taking P and Q as centres and with 1 the radius more than $\frac{1}{2} \mathrm{PQ}$, draw arcs to intersect each other, say at R.
7. Draw the ray MR. This ray MR is the required bisector of the $\angle M$.

Steps of Construction

1. Draw an angle $A O B=40^{\circ}$ with a protractor.
2. Taking $O$ as centre and some radius, draw an arc of a circle, which intersects $O A$ at $P$ and $O B$ at $Q$.

3. Taking $P$ as centre and radius $Q P$, draw an arc of a circle, which intersects the arc drawn in step 2 , say at a point $R$.
4. Join OR and produce to form a ray Oc. Then, $\angle C O B=80^{\circ}$
5) 

## Steps of Construction

1. Draw a line segment $A B=5 \mathrm{~cm}$.
2. Taking A as centre and some radius, draw an arc of a circle, which intersects $A B$, say at a point $P$.
3. Taking $P$ as centre and with the same radius as before, draw an arc intersecting the previously draw arc, say at a point E .
4. Draw the ray AC passing through E .
5. From ray $A C$, cut off $A D=6 \mathrm{~cm}$. Then, $\angle D A B$ is the required angle of $60^{\circ}$ such that $A D=6 \mathrm{~cm}$.
6. Now, taking $A$ and $D$ as centres and radius 1 more than $\frac{1}{2} A D$, draw arcs on both sides of the line segment AD (to intersect each other).

7. Draw the base $A B=5.8$ ern.
8. At the point $A$, make an angle, say $X A B=60^{\circ}$.
9. Cut a line segment $A D$ equal to $B C+C A=8.4 \mathrm{~cm}$ from the ray $B X$.
4.Join DB
5.Make an angle DBY equal to ADB.
10. Let $B Y$ intersect $A D$ at $C$. Then, $A B C$ is the required triangle.

(ii)By measurement, $\mathrm{AC}=3.4 \mathrm{em}$
(iii) By measurement, $\mathrm{BC}=5 \mathrm{~cm}$
(iv) $\mathrm{Yes}!A C+B C=3.4+5=8.4 \mathrm{~cm}$
(v) By measurement, $\angle \mathrm{ACB}=84^{\circ}$

Meenu is right.
The value 'exactness' is depicted by Meenu's statement.

1. Draw the base $B C=5 \mathrm{em}$.
2. At point $B$ make an angle $X B C=45^{\circ}$.
3. Cutthelinesegment $B D=A B-A C(=2.8 \mathrm{crn})$ from the ray $B X$.
4. Join DC.
5. Draw the perpendicular bisector, say PQofDC.
6. Let it intersect $B X$ at a point $A$.
7. Join AC.

Then, $A B C$ is the required triangle.

(ii) By measurement, $A B=13 \mathrm{~cm}$
(iii) By measurement, $\mathrm{AC}=10.2 \mathrm{~cm}$
(iv) $A B-A C=13-10.2=2.8 \mathrm{~cm}$
(v) Yes! Hari is true as by measurement $\angle A C B=112^{\circ}$.

The value 'wise' is depicted by comment of Hari.

1. Draw the base $\mathrm{PQ}=8.4 \mathrm{em}$.
2. At point $P$ make an angle say $X P Q=45^{\circ}$.
3. Cut the line segment $\mathrm{PD}=2.8$ ern from rayPX.
4. Join $D Q$ and draw the perpendicular bisector of $D Q$.
5. Let it intersect $P X$ at a point $R$. Join $R Q$. Then $P Q R$ is the required triangle.

(ii) By measurement, $\mathrm{PR}=10 \mathrm{~cm}$
(iii) By measurement, $\mathrm{QR}=7.2 \mathrm{~cm}$
(iv) $\mathrm{PR}-\mathrm{QR}=10-7.2=2.8 \mathrm{~cm}$
(v) By measurement,
$\angle P Q R=54^{\circ}$
$\therefore$ Gaffar is correct.
$\therefore$ The value 'intelligence' is depicted by his statement.

## Section-B

9) (i) Steps of Construction
1. Draw the base $B C=5 " 7$
2. At point $B$ make $X B C=30^{\circ}$.
3. Cut the line segment $=3 \mathrm{~cm}$ iron the line $B X$ extended II opposite side of line segment $B e$.
4. Join $D C$ and draw the perpendicular bisector, say PQ of De.
5. Let $P Q$ intersect $B X$ at $A$. Join $A C$.Then, $A B C$ is the required triangle.

(ii) By measurement, $\mathrm{AC}=4.5 \mathrm{~cm}$
(iii) By measurement, $\mathrm{AB}=1.5 \mathrm{~cm}$
(iv) $\mathrm{AC}-\mathrm{AB}=4.5-1.5=3 \mathrm{em}$
(v) The value 'ponderance' is depicted by her ponderation.
