11
Chapter

# Constructions

## Key Points

1. Construction should be neat and clean and There should be no doubling.
2. Construction should be as per a given scale factor which may be less than 1 or greater than 1 for a triangle similar to a given triangle.
3. Step of construction should be provided only when it is mentioned in the question.
4. We makes use of compass and ruler only but in case of non-standard angles, protractor can be used.

### VERY SHORT ANSWER TYPE QUESTIONS

1. To construct a triangle similar to a given $\Delta ABC$ with its sides $\frac{5}{3}$ of the corresponding sides of $\Delta ABC$, a ray BX is drawn such that CBX is an acute angle and X is on the opposite side od A with respect to BC. What is the minimum no. of points to be located at equal distances on ray BX.
2. To draw a pair of tangents to a circle which are inclined to each other at an angle of 30°. What should be the angle between two radii?
3. To constract a triangle similar to a given $\Delta ABC$ with its sides $\frac{2}{5}$ of the corresponding sides of $\Delta ABC$ , firstly a ray BX is drawn such that CBX is an acute angle and X lies on the opposite side of A with respect to BC then points $B_1, B_2, B_3$, are located on BX at equal distances Which two points will be joined in the next step.
4. To divide a line segment AB in the ratio 3:7, What is the minimum number of points marked on a ray AX at equal distances?
5. How many tangents can be drawn from a point lying inside a circle?

6. To divide a line segment AB in the ratio 4:5, a ray AX is drawn first such that $\angle BAX$ is an acute angle and then points $A_1$, $A_2$, $A_3$, ..... are located at equal distances on the ray AX which should be joined to B?

7. To divide a line segment AB in the ratio 4:5, the points $A_1$, $A_2$, $A_3$,....and $B_1$, $B_2$, $B_3$,.... are located at equal distances on the ray AX and BY respectively. Which two points should be joined to divide a line segment?

## LONG ANSWER TYPE QUESTIONS

8. AB is a line segment of length 8 cm. Locate a point C on AB such that $AC = \frac{1}{3} CB$.

9. Construct a $\Delta ABC$ in which AB = 6.5 cm, $\angle B = 60°$ and BC = 5.5 cm. Also construct a triangle AB'C' similar to $\Delta ABC$, whose each side is $\frac{3}{2}$ times the corresponding sides of $\Delta ABC$.

10. Construct a $\Delta ABC$ in which BC = 5 cm, CA = 6 cm and AB = 7. Construct a $\Delta A'BC'$ similar to $\Delta ABC$, each of whose side are times $\frac{7}{5}$ the corresponding sides of $\Delta ABC$.

11. Construct a triangle with side 4 cm, 5 cm, 7 cm. Then construct a triangle similar to it whose sides are $\frac{2}{3}$ of the corresponding sides of the given triangle.

12. Construct a right triangle in which sides (other than hypotenuse) are of lengths 8 cm and 6 cm. Then construct another triangle similar to this triangle whose sides are times the corresponding sides of the first triangle.

13. Construct a DABC in which BC = 8 cm, $\angle B = 45°$ cm and $\angle C = 30°$. Construct another triangle similar to DABC such that each side are $\frac{3}{4}$ of the corresponding sides of DABC

14. A triangle ABC is given such that AB = 15 cm, BC = 27 cm and $\Delta BAC = 50°$. Draw another triangle A'BC' similar to $\Delta ABC$ with sides BA' and BC' equal to 25 cm and 45 cm respectively. Find the scale factor.

15. Draw a pair of tangents to a circle of radius 6 cm which are inclined to each other at an angle of 60°. Also justify the construction.
16. Construct a triangle ABC in which AB = 5 cm, $\angle B = 60°$ and attitude CD = 3 cm. Construct a $\Delta AQR \sim \Delta ABC$ such that each sides is 1.5 times that of the corresponding sides of $\Delta ABC$.
17. Draw an isosceles tntABC with AB=AC and base BC=7cm, vertical angle is 120°. Construct $\Delta AB'C' \sim \Delta ABC$ with its sides $1\frac{1}{3}$ times of the corresponding sides of $\Delta ABC$.
18. Draw a circle of radius 3 cm. From a point 5 cm from the centre of the circle, draw two tangents to the circle. Measure the length of each tangent.
19. Draw a circle of radius 4 cm with centre O. Draw a diameter POQ. Through P or Q draw a tangent to the circle.
20. Draw two circle of radius 5 cm and 3 cm with their centres 9 cm apart. From the centre of each circle, draw tangents to other circles.
21. Draw two circles of radii 6 cm and 4 cm. From a point on the outer circle, draw a tangent to the inner circle and measure its length.
22. Draw a circle of radius 3 cm. Take two points P and Q on one of its extended diameter each at a distance of 7 cm from its centre. Draw tangents to the circle from these two points.
23. Draw a line segment PQ = 10 cm. Take a points A on PQ such that $\frac{PA}{PQ} = \frac{2}{5}$ Measure the length of PA and AQ
24. Draw an equilateral triangle $f'PQR$ with side 5cm. Now construct $\Delta PQ'R'$ such that $\frac{PQ}{PQ'} = \frac{1}{2}$.
25. Draw a line segment of length 8 cm and divided it in the ratio 5:8. Meeasure the two parts.

26. Students of a school staged a rally for cleanliness campaign. They walked through the lanes AB, BC and CA which form a triangle. Construct a triangle ABC with sides AB = 7 cm, BC = 7.5 cm abd CA = 6.5 cm. Construct a $\Delta$ similar to $\Delta ABC$ whose sides are of the corresponding sides of $\Delta ABC$. What value represents here?

27. Amit has a triangu;ar piece of land ABC with base BC = 4.2 m, $\angle A = 45°$ and altitude through A is 2.5 cm. He wants to purchase another piece of land similar to the earlier triangle with scale factor $\frac{1}{2}$ and donate this to vridhashram. Construct triangle using above dimensions. What value represents here? What qualities of Gandhiji would you like to construct within you?

28. Draw a line segment of length 8 cm divided it in the ratio 3:4. Dividing joint families into nuclear families is good or bad. Give reson in support of your answer.

29. Draw a circle of radius 5 cm. Draw tangents from the end points of its diameter. What do you you observe?

    If each tangent represents the quality of a human being, Find out the qualites that should be adopted for a better human being.