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**CBSE Objective Questions Exam 2019-2020**
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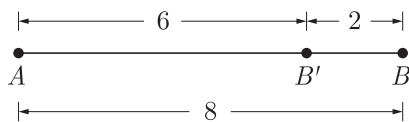
# CHAPTER 11

## Constructions

## 1. OBJECTIVE QUESTIONS

**1.** Given a triangle with side $AB = 8$ cm. To get a line segment $AB' = \frac{3}{4}$ of $AB$, it required to divide the line segment $AB$ in the ratio.
(a) $3 : 4$      (b) $4 : 3$
(c) $1 : 3$      (d) $3 : 1$

**Ans :** (d) $3 : 1$

Given, $AB = 8$ cm

$$AB' = \frac{3}{4} \text{ of } AB$$



$$= \frac{3}{4} \times 8 = 3 \times 2 = 6 \text{ cm}$$

and $BB' = AB - AB' = 8 - 6 = 2$

$$AB' : BB' = 6 : 2 = 3 : 1$$

Hence, the line segment $AB$ should be divided in $3 : 1$.

**2.** To divide a line segment $AB$ in the ratio $3 : 4$, we draw a ray $AX$, so that $\angle BAX$ is an acute angle and then mark the points on ray $AX$ at equal distances such that the minimum number of these points is
(a) $3$      (b) $4$
(c) $7$      (d) $10$

**Ans :** (c) $7$

Minimum number of these points $= 3 + 4 = 7$

**3.** To divide a line segment $AB$ in the ratio $2 : 5$, first a ray $AX$ is drawn, so that $\angle BAX$ is an acute angle and then at equal distance points are marked on the ray $AX$ such that the minimum number of these point is
(a) $2$      (b) $5$
(c) $4$      (d) $7$

**Ans :** (d) $7$
We know that, to divide a line segment $AB$ in the ratio $m : n$, first draw a ray $AX$ which makes an acute $\angle BAX$ then, marked $m + n$ points at equal distance.
Here, $m = 2, n = 5$
Minimum number of these points $= 2 + 5 = 7$

**4.** To divide a line segment $AB$ in ratio $m : n$ ($m, n$ are positive integers), draw a ray $AX$ to that $\angle BAX$ is an acute angle and the mark point on ray $AX$ at equal distances such that the minimum number of these points is
(a) greater of $m$ and $n$      (b) $m + n$
(c) $m + n - 1$      (d) $m \, n$

**Ans :** (b) $m + n$
To divide a line segment in the ratio $m : n$, the maximum number of the points to mark are $m + n$.

**5.** The sides of a triangle (in cm) are given below. In which case, the construction of triangle is not possible.
(a) $8, 7, 3$      (b) $8, 6, 4$
(c) $8, 4, 4$      (d) $7, 6, 5$

**Ans :** (c) $8, 4, 4$
We know that, in a triangle sum of two sides of triangle is greater than the third side. Here, the sides of triangle given in option (c) does not satisfy this condition. So, with these sides the construction of a triangle is not possible.

**6.** To draw a pair of tangents to a circle which are inclined to each other at an angle of $55°$, it is required to draw tangents at the end points of these two radii of the circle, the angle between two radii is
(a) $105°$      (b) $70°$
(c) $125°$      (d) $135°$

**Ans :** (c) $125°$

According to the question we can draw the following diagram.
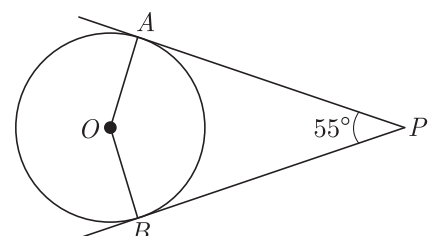
From figure,

$$\angle AOB + \angle APB = 180°$$
$$\angle AOB = 180° - \angle APB$$
$$= 180° - 55° = 125°$$

7. From the following ratios, a line segment cannot be devided into $A$ ratio.

(a) $A \to \sqrt{5} : \dfrac{1}{\sqrt{5}}$      (b) $A \to \dfrac{1}{\sqrt{5}} : \dfrac{1}{\sqrt{5}}$

(c) $A \to \dfrac{2}{\sqrt{5}} : \dfrac{\sqrt{5}}{\sqrt{2}}$      (d) $A \to \dfrac{1}{5} : 1$

**Ans :** (c) $A \to \dfrac{2}{\sqrt{5}} : \dfrac{\sqrt{5}}{\sqrt{2}}$

Since,

**(a)** $\sqrt{5} : \dfrac{1}{\sqrt{5}} = 5 : 1$

**(b)** $\dfrac{1}{\sqrt{5}} : \dfrac{1}{\sqrt{5}} = 1 : 1$

**(c)** $\dfrac{2}{\sqrt{5}} : \dfrac{\sqrt{5}}{\sqrt{2}} = 2\sqrt{2} : 5$

**(d)** $\dfrac{1}{5} : 1 = 1 : 5$

Since, (a), (b) and (d) are the ratio of 2 integers. So, it is possible to divide a line segment into these points.

8. To divide a line segment $AB$ is the ratio $6 : 7$, a ray $AX$ is drawn first such that $\angle BAX$ is an acute angle and then points $A_1, A_2, A_3, \dots\dots$ are located equal distances on the ray $AX$ and the point $B$ is joined with

(a) $A_{12}$      (b) $A_{13}$

(c) $A_{10}$      (d) $A_{11}$

**Ans :** (b) $A_{13}$

He maximum number of points $= 5 + 7 = 12$
In this process, once line $AX$ is drawn, it is divided into 12 equal parts using a pair of compasses. The points are marked from point a towards $X$. The last point is then joined to point B to form line $XB$. Lines are then drawn parallel to $XB$ and passing through the points that were marked on $AX$. These lines can be drawn using set squares to ensure they are parallel. These parallel lines will divide line $AB$ into 12 equal parts. So, to divide the line in the ratio 5:7, the first five portions will be taken and the last 7 left as shown in the attached figure.
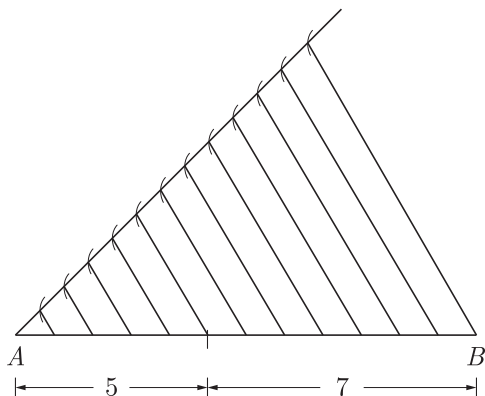


9. The ratio of the sides of the triangle to be constructed with the corresponding sides of the given triangle is known as

(a) scale factors      (b) length factor

(c) side factor      (d) $K$-factor

**Ans :** (a) scale factors

The ratio of the sides of the triangle to be constructed with the corresponding sides of the given triangle is known as scale factor.

10. To divide a line segment $AB$ in the ratio $3 : 5$ first a ray $AX$ is drawn so that $\angle BAX$ is an acute angle and then at equal distances points are marked on the ray $AX$ such that the minimum number of these points is

(a) 8      (b) 9

(c) 10      (d) 11
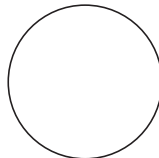
**Ans :** (a) 8

Minimum number of points $= 3 + 5 = 8$

## 2. FILL IN THE BLANK

1. Two points on a line segment are marked such that the three parts they make are equal then we say that the two points .......... the line segment.
**Ans :** Trisect

2. Two circles are drawn with same centre then the .......... circle have bigger radius.
**Ans :** Outer

3. Only two .......... can be drawn to a circle from an external point.
**Ans :** Tangents

4. A curve made by moving one point at a fixed distance from another is called ..........
**Ans :** Circle

## 3. MATCHING QUESTIONS

**DIRECTION :** Given below question contains statements given in two columns which have to be matched. Statements (A, B, C, D) in Column-I have to be matched with statements (p, q, r, s, ..........) in Column-II.

1. To draw tangents from an exterior point $P$ to a circle, drawn using a bangle, each step of continue diagram in random order is given in column I and how to draw each steps of continue diagram is written in different random order in column II match the items in two columns.

|     | Column-I |     | Column-II |
| --- | --- | --- | --- |
| (A) |  | (p) | Draw a circle using a bangle |

| | Column-I | | Column-II |
|---|---|---|---|
| (B) |  <br> $P$  $A$  $B$ | (q) | Draw perpendicular bisector of $RB$, which intersects $RB$ at $O$. |
| (C) |  <br> $Q$ $S$ $R$ $P$ $O$ $A$ $B$ $T$ | (r) | Draw a secant $PAB$ intersecting the circle at $A$ and $B$. |
| (D) |  <br> $Q$ $R$ $P$ $O$ $A$ $B$ | (s) | Produce $AP$ to $R$, such that $PA = PR$. |
| (E) |  <br> $R$ $P$ $O$ $A$ $B$ | | Draw $PQ$ perpendicular to $RB$ at $P$ which intersects the semi-circle drawn with centre $O$ and radius $OR$ at $Q$. |

**Ans :** (A) − p, (B) − r, (C) − u, (D) − t, (E) − q

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