

**CONSTRUCTIONS**

**Q.1)** To divide a line segment PQ in the ratio 5 : 7, first a ray PX is drawn so that  $\angle QPX$  is an acute angle and then at equal distances points are marked on the ray PX such that the minimum number of these points is

- (A) 5 (B) 7  
(C) 12 (D) 10

**Q.2)** To draw a pair of tangents to a circle which are inclined to each other at an angle of  $35^\circ$ , it is required to draw tangents at the end-points of those two radii of the circle, the angle between which is

- (A)  $145^\circ$  (B)  $130^\circ$   
(C)  $135^\circ$  (D)  $90^\circ$

**Q.3)** A draw a pair of tangents to a circle which are inclined to each other at an angle of  $65^\circ$ , it is required to draw tangents at the end points of those two radii of the circle, the angle between which is:

- (A)  $95^\circ$  (B)  $105^\circ$   
(C)  $110^\circ$  (D)  $115^\circ$

**Q.4)** Length of the tangent to a circle from a point 26 cm away from the centre is 24 cm. What is the radius of the circle?

- (A) 11 CM (B) 13 CM  
(C) 10 CM (D) 12 CM

**Q.5)** To construct a triangle similar to given  $\triangle ABC$  with its sides  $\frac{3}{7}$  of the corresponding sides of  $\triangle ABC$ , first draw a ray BX such that  $\angle CBX$  is an acute angle and X lies on the opposite side of A with respect to BC. Then locate points  $B_1, B_2, B_3,$  on BX equal distance and next step is to join :

- (A)  $B_4$ TO C (B)  $B_{10}$ TO C  
(C)  $B_6$ TO C (D)  $B_7$ TO C

**Q.6)** To draw a pair of tangents to a circle which are inclined to each other at an angle of  $45^\circ$  it is required to draw tangents at the end point of those two radii of the circle, the angle between which is :

- (A)  $105^\circ$  (B)  $135^\circ$   
(C)  $145^\circ$  (D)  $70^\circ$

**Q.7)** To divide a line segment AB in the ratio 5 : 6 draw a ray AX such that  $\angle BAX$  is an acute angle, then draw a ray BY parallel to AX and the points  $A_1, A_2, A_3, \dots$  and  $B_1, B_2, B_3, \dots$  are located at equal distances on ray AX and BY, respectively, Then the points joined are :

- (A)  $A_4$ AND  $B_5$  (B)  $A_5$ AND  $B_4$   
(C)  $A_5$ AND  $B_6$  (D)  $A_6$ AND  $B_5$

**Q.8)** To construct a triangle similar to given  $\triangle ABC$  with its sides  $\frac{8}{5}$  of the corresponding sides of  $\triangle ABC$ , draw a ray BX such that  $\angle CBX$  is an acute angle and X is one the opposite side of A with respect to BC. The minimum number of points to be located at equal distances on ray BX is :

- (A) 3 (B) 5  
(C) 8 (D) 13

**Q.9)** If two tangents are drawn at the end points of two radii of a circle which are inclined at  $120^\circ$  to each other, then the pair of tangents will be inclined to each other at an angle of

- (A)  $60^\circ$  (B)  $90^\circ$   
(C)  $100^\circ$  (D)  $120^\circ$

**Q.10)** To draw a pair of tangents to circle which are inclined to each other at angle of  $60^\circ$ , it is required to draw tangents at end points of those two radii of the circle, the angle between them should be :

- (A)  $60^\circ$  (B)  $90^\circ$   
(C)  $120^\circ$  (D)  $130^\circ$

**Q.11)** To divide line segment AB in the ratio A : b ( a, b

are positive integers), draw a ray AX so that  $\angle BAX$  is an acute angle and then mark points on ray AX at equal distances such that the minimum number of these points is

- (A) ab (B) Greater of a and b  
(C) (a + b) (D) (a + b - 1)

**Q.12)** To divide a line segment AB in the ratio p : q (p, q are positive integers), draw a ray AX so that  $\angle BAX$  is an acute angle and then mark points on ray AX at equal distances such that the minimum number of these points is :

- (A) P + Q (B) PQ  
(C) P + Q - 1 (D) GREATER OF P AND Q

**Q.13)** To divide a line segment AB of length 7.6cm in the ratio 5:8, a ray AX is drawn first such that  $\angle BAX$  forms an acute angle and then points A1, A2, A3, ... are located at equal distances on the ray AX and the point B is joined to:

- (A)A5 (B)A6  
(C)A10 (D)A13

**Q.14)** To construct a triangle similar to a given  $\Delta PQR$  with its sides  $\frac{5}{8}$  of the similar sides of  $\Delta PQR$ , draw a ray QX such that  $\angle QRX$  is an acute angle and X lies on the opposite side of P with respect to QR. Then locate points Q1, Q2, Q3, ... on QX at equal distances, and the next step is to join:

- (A)Q10 TO C (B)Q3 TO C  
(C)Q8 TO C (D)Q4 TO C

**Q.15)** To construct a triangle similar to a given  $\Delta PQR$  with its sides,  $\frac{9}{5}$  of the corresponding sides of  $\Delta PQR$  draw a ray QX such that  $\angle QRX$  is an acute angle and X is on the opposite side of P with respect to QR. The minimum number of points to be located at equal distances on ray QX is:

- (A)5 (B)9

- (C)10 (D)14

**Q.16)** To construct a triangle ABC and then a triangle similar to it whose sides are  $\frac{2}{3}$  of the corresponding sides of the first triangle. A ray AX is drawn where multiple points at equal distances are located. The last point to which point B will meet the ray AX will be:

- (A)A1 (B)A2  
(C)A3 (D)A4

**Q.17)** To divide a line segment AB in the ratio 4:7, a ray AX is drawn first such that  $\angle BAX$  is an acute angle and then points A1, A2, A3, ... are located at equal distances on the ray AX and the point B is joined to

- (A) A12 (B) A11  
(C) A10 (D) A9

**Q.18)** To draw a pair of tangents to a circle which are inclined to each other at an angle of  $60^\circ$ , it is required to draw tangents at end points of those two radii of the circle, the angle between them should be:

- (A)  $135^\circ$  (B)  $90^\circ$   
(C)  $60^\circ$  (D) 1200

**Q.19)** To draw a pair of tangents to a circle which are inclined to each other at an angle of  $35^\circ$ , it is required to draw tangents at the end points of those two radii of the circle, the angle between which is:

- (A)  $105^\circ$  (B)  $70^\circ$   
(C)  $140^\circ$  (D)  $145^\circ$

**Q.20)** By geometrical construction, it is possible to divide a line segment in the ratio:

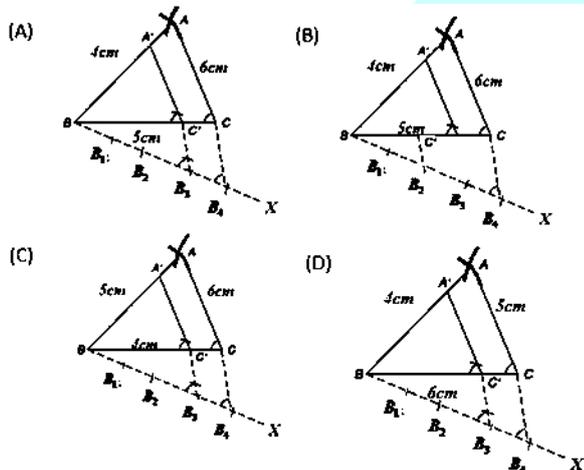
- (A)  $\sqrt{3} : \frac{1}{\sqrt{3}}$  (B)  $\sqrt{3} : \frac{1}{\sqrt{2}}$   
(C)  $\sqrt{3} : \sqrt{2}$  (D)  $\sqrt{3} : \frac{\sqrt{2}}{\sqrt{5}}$

**Q.21)** To divide a line segment AB in the ratio 5:6, draw a

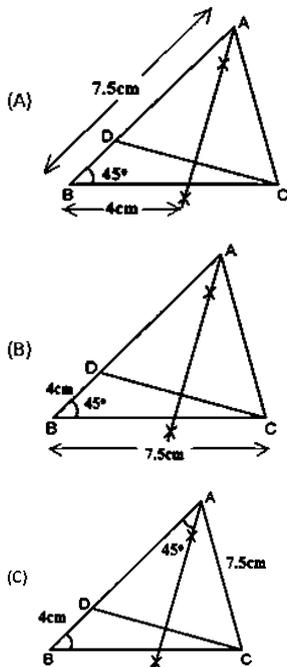
ray AX such that  $\angle BAX$  is an acute angle, then draw a ray BY parallel to AX and the points  $A_1, A_2, A_3, \dots$  and  $B_1, B_2, B_3, \dots$  are located to equal distances on ray AX and BY, respectively. Then, the points joined are

- (A)  $A_5$  and  $B_6$             (B)  $A_6$  and  $B_5$   
(C)  $A_4$  and  $B_5$             (D)  $A_5$  and  $B_4$

**Q.22)** A triangle ABC is such that  $BC = 6$  cm,  $AB = 4$  cm and  $AC = 5$  cm. For the triangle similar to this triangle with its sides equal to  $(3/4)$ th of the corresponding sides of  $\triangle ABC$ , correct figure is:

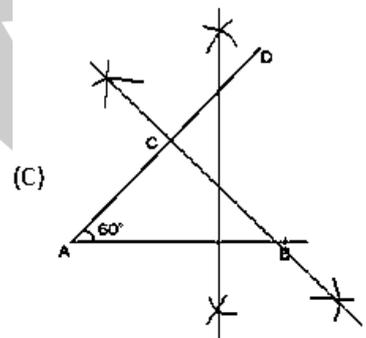
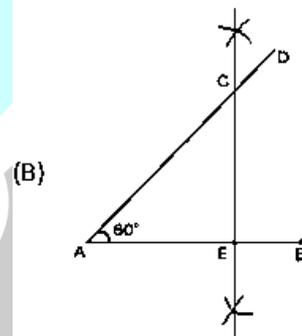
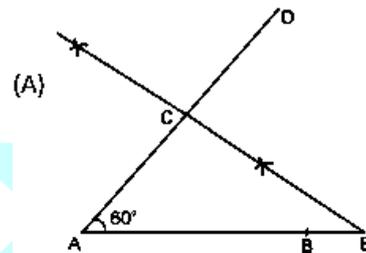


**Q.23)** For  $\triangle ABC$  in which  $BC = 7.5$  cm,  $\angle B = 45^\circ$  and  $AB - AC = 4$ , select the correct figure.



(D) None of these

**Q.24)** Draw the line segment  $AB = 5$  cm. From the point A draw a line segment  $AD = 6$  cm making an angle of  $60^\circ$  with AB. Draw a perpendicular bisector of AD. Select the correct figure.



(D) None of these

**Q.25)** Arrange the following steps of construction for constructing a  $\triangle ABC$  in which  $AB = 4$  cm,  $\angle B = 60^\circ$  and altitude  $CL = 3$  cm and then construct  $\triangle ADE$  similar to  $\triangle ABC$  such that each side of  $\triangle ADE$  is  $3/2$  times that of the corresponding side of  $\triangle ABC$   
Steps of Construction

**Step I: Join CA. Thus,  $\triangle ABC$  is obtained.**

**Step II: Draw  $DE \parallel BC$ , cutting AC produced at E.**

**Step III: Extend AB to D such that  $AD = 3/2 AB = (3/2 \times 4) \text{ cm} = 6 \text{ cm}$ .**

**Step IV: Draw a line segment  $AB = 4 \text{ cm}$ .**

**Step V: Draw a line  $GH \parallel AB$  at a distance of 3 cm, intersecting BP at C.**

**Step VI: Construct  $\angle ABP = 60^\circ$**

- (A) IV, VI, V, I, III, II  
 (B) IV, V, VI, I, III, II  
 (C) IV, V, I, III, II, VI  
 (D) V, IV, VI, III, I, II

**Q.26)** Arrange the following steps of construction while constructing a triangle of scale  $AB=2.3 \text{ cm}$ ,  $BC=5 \text{ cm}$  and  $AC=2.9 \text{ cm}$  such that each of its sides is  $2/3^{\text{rd}}$  of the corresponding side of the  $\triangle ABC$  Steps of Construction

**Step I: On BE, cut off 3 equal parts making  $B_1, B_2$  and  $B_3$**

**Step II: Now, draw  $C'A'$  parallel to CA. Then,  $\triangle A'BC'$  is the required A whose sides are of the corresponding sides of the  $\triangle ABC$**

**Step III: From point B draw an arc of 2.3 cm and from point C draw an arc of 2.9 cm cutting each other at point A.**

**Step IV: Take  $BC=5 \text{ cm}$**

**Step V: Join  $B_3C$  and from  $B_2$  draw  $B_2C'$  parallel to  $B_3C$ , such that  $BC$  is  $2/3$  of  $BC$ .**

**Step VI: On B make an acute  $\angle CBE$  downwards.**

**Step VII: Join AB and AC. Then ABC is the required triangle.**

- (A) IV, III, VII, I, VI, V, II  
 (B) IV, V, I, VI, III, VII, II  
 (C) IV, III, VII, VI, I, V, II  
 (D) IV, VII, III, VI, V, I, II

**Q.27)** Arrange the steps of construction while constructing pair of tangents to a circle of radius 5 cm from a point 12 cm away from its centre. Steps of Construction

**Step I: Join OA and bisect it. Let P is the mid-point of OA.**

**Step II: Join AB and AC. AB and AC are the required tangents. Length of tangents = 11 cm**

**Step III: With O as centre, draw a circle of radius 5 cm.**

**Step IV: Taking P as centre and PO as radius, draw a circle intersecting the given circle at the points B and C.**

**Step V: Take a point A at a distance of 12 cm from O.**

- (A) III, V, I, IV, II (B) III, V, IV, I, II  
 (C) II, V, IV, III, I (D) II, IV, II, I, III

**Q.28)** Which of the following steps of construction is INCORRECT while drawing a tangent to a circle of radius 5 cm and making an angle of  $30^\circ$  with a line passing through the centre. Steps of Construction

**Step I: Draw a circle with centre O and radius 2.5 cm**

**Step II: Draw a radius OA of this circle and produce it to B.**

**Step III: Construct an angle  $\angle AOP$  equal to the complement of  $30^\circ$  i.e. equal to  $150^\circ$**

**Step IV: Draw perpendicular to OP at P which intersects OA produced at Q.**

Clearly, PO is the desired tangent such that  $\angle OQP = 30^\circ$

- (A) Both I and III (B) Only III  
 (C) Both III and IV (D) Only I

**Q.29)** Arrange the following steps of construction while constructing a pair of tangents to a circle of radius 3 cm from a point 10 cm away from the centre of the circle.

steps of Construction

Step I: Bisect the line segment OP and let the point of bisection be M.

Step II: Taking M as centre and OM as radius, draw a circle. Let it intersect the given circle at the point Q and R.

Step III: Draw a circle of radius 3 cm.

Step IV: Join PQ and PR.

Step V: Take an external point P which is 10 cm away from its centre. Join OP.

(A) III, V, I, II, IV    (B) III, I, V, IV, II

(C) III, V, I, IV, II    (D) III, V, II, I, IV

Q.30) Which of the following steps is INCORRECT to construct a tangent to the circle of radius 5 cm at the point P on it without using the centre of the circle. Steps of Construction

Step I: Draw a circle of radius 5 cm.

Step II: Mark a point P on it.

Step III: Draw any chord PQ.

Step IV: Take a point R in the minor arc QP.

Step V: Join PR and RQ.

Step VI: Make  $\angle QPT = \angle PRQ$ .

Step VII: Produce TP to T. Then, PT is the required tangent at P.

(A) Step II                      (B) Step IV

(C) Step VI                      (D) None of these

**Answer Sheet**

Q.1	C	Q.11	C	Q.21	A
Q.2	A	Q.12	A	Q.22	D
Q.3	D	Q.13	D	Q.23	B
Q.4	C	Q.14	C	Q.24	A
Q.5	D	Q.15	B	Q.25	A
Q.6	B	Q.16	A	Q.26	C
Q.7	C	Q.17	B	Q.27	A
Q.8	C	Q.18	D	Q.28	A
Q.9	A	Q.19	D	Q.29	A
Q.10	C	Q.20	A	Q.30	B

