CBSE MCQs
Class 10 Maths
Chapter 11: Constructions

1. To divide a line segment AB in the ratio 5:7, first a ray AX is drawn so that ∠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) 10
(C) 11 (D) 12

Answer: (D)

Explanation: We know that to divide a line segment in the ratio m : n, first draw a ray AX which makes an acute angle BAX , then marked m+n points at equal distances from each other.
Here m = 5, n = 7
So minimum number of these point = m + n = 5 + 7 = 12

2. To divide a line segment AB in the ratio 4:7, a ray AX is drawn first such that ∠BAX is an acute angle and then points A_1, A_2, A_3, ... are located at equal distances on the ray AX and the point B is joined to

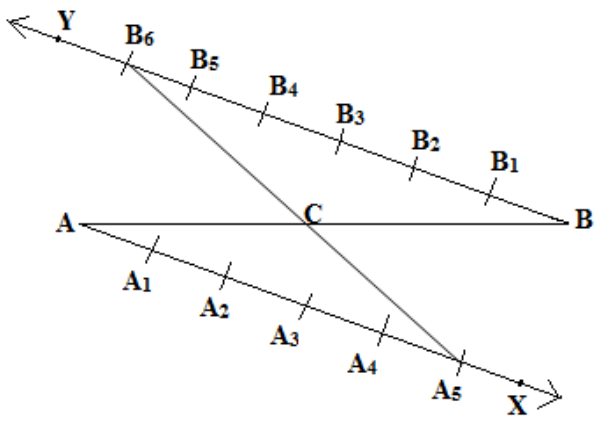
(A) A_{12} (B) A_{11}
(C) A_{10} (D) A_9

Answer: (B)
Explanation: Here minimum 4+7=11 points are located at equal distances on the ray AX and then B is joined to last point, i.e., A_{11}.

3. To divide a line segment AB in the ratio 5 : 6, draw a ray AX such that ∠BAX is an acute angle, then draw a ray BY parallel to AX and the points A_1, A_2, A_3, ... and B_1, B_2, B_3, ... are located at 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

Answer: (A)
Explanation: Observe the following figure:



4. To construct a triangle similar to a given ΔABC with its sides 3/7 of the corresponding sides of ΔABC, first draw a ray BX such that ∠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 at equal distances and next step is to join:

(A) B_{10} to C (B) B_3 to C

(C) B_7 to C (D) B_4 to C

Answer: (C)

Explanation: Here we locate points B_1,B_2,B_3,B_4,B_5,B_6 and B_7 on BX at equal distances and in next step join the last point B_7 to C

5. To construct a triangle similar to a given ΔABC with its sides 8/5 of the corresponding sides of ΔABC draw a ray BX such that ∠CBX is an acute angle and X is on 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) 5 (B) 8

(C) 13 (D) 3

Answer: (B)

Explanation: To construct a triangle similar to a given triangle with its sides m/n of the corresponding sides of given triangle ,the minimum number of points to be located at equal distance is equal to the greater of m and n in m/n.

Here, m/n = 8/5

So the minimum number of points to be located at equal distance on ray BX is 8.

6. To draw a pair of tangents to a circle which are inclined to each other at an angle of 60°, it is required to draw tangents at end points of those two radii of the circle, the angle between them should be:

(A) 135° (B) 90°

(C) 60° (D) 120^0

Answer: (D)

Explanation: The angle between them should be 120^0 because the figure formed by the intersection point of pair of tangents, the two end points of those two radii (at which tangents are drawn) and the centre of circle, is a quadrilateral. Thus the sum of the opposite angles in this quadrilateral must be 180^o.

7. To divide a line segment AB in the ratio p : q (p, q are positive integers), draw a ray AX so that ∠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) greater of p and q (B) p + q

(C) p + q – 1 (D) pq

Answer: (B)

Explanation: We know that to divide a line segment in the ratio m : n, first draw a ray AX which makes an acute angle BAX , then mark m + n points at equal distances from each other.

Here m = p, n = q

So minimum number of these points = m + n = p + q

8. To draw a pair of tangents to a circle which are inclined to each other at an angle of 35°, it is required to draw tangents at the end points of those two radii of the circle, the angle between which is:

(A) 105° (B) 70°

(C) 140° (D) 145°

Answer: (D)

Explanation: The angle between them should be 145^0 because the figure formed by the intersection point of pair of tangents, the two end points of those two radii (at which tangents are drawn) and the centre of circle, is a quadrilateral. Thus the sum of the opposite angles in this quadrilateral must be 180^o.

9. 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) $\sqrt{3}:\frac{\sqrt{2}}{\sqrt{5}}$

Answer: (A)

Explanation:

Ratio $\sqrt{3}:\frac{1}{\sqrt{3}}$ can also be written as 3:1

10. A pair of tangents can be constructed from a point P to a circle of radius 3.5 cm situated at a distance of _____ from the centre.

(A) 5cm (B) 2cm

(C) 3cm (D) 3.5cm

Answer: (A)

Explanation: The pair of tangents can be drawn from an external point only, so its distance from the centre must be greater than radius. Since only 5cm is greater than radius of 3.5cm. So the tangents can be drawn from the point situated at a distance of 5cm from the centre.

11. 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,…. and B_1, B_2, B_3,…. are located to equal distances on ray AX and BY, respectively. Then, the points joined are

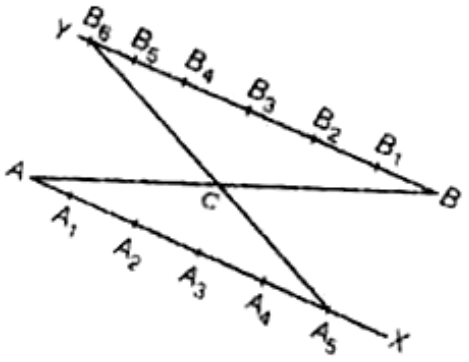
(A) A_5 and B_6 (B) A_6 and B_5

(C) A_4 and B_5 (D) A_5 and B_4

Answer: (A)

Explanation:

To divide line segment AB in the ratio 5:6.



Steps of construction

1. Draw a ray AX making an acute $\angle$BAX.

2. Draw a ray BY parallel to AX by taking $\angle$ABY equal to $\angle$BAX.

3. Divide AX into five (m = 5) equal parts AA_1, A_1A_2, A_2A_3, A_3A_4 and A_4A_5

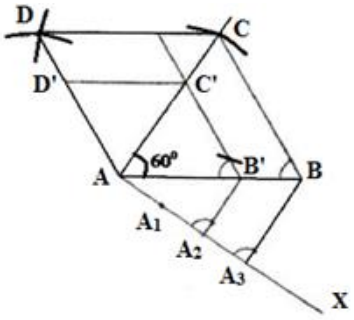
4. Divide BY into six (n = 6) equal parts and BB_1, B_1B_2, B_2B_3, B_3B_4, B_4B_5 and B_5B_6.

4. Join B_6A_5. Let it intersect AB at a point C.

Then, AC : BC = 5 : 6

12. A rhombus ABCD in which AB = 4cm and $\angle$ ABC = 60^{o}, divides it into two triangles say, ABC and ADC. Construct the triangle AB'C' similar to triangle ABC with scale factor 2/3. Select the correct figure.

(A)



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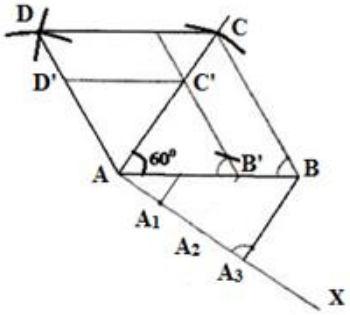
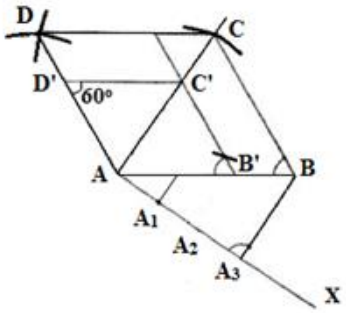
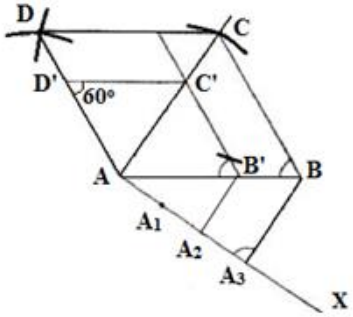


(C)



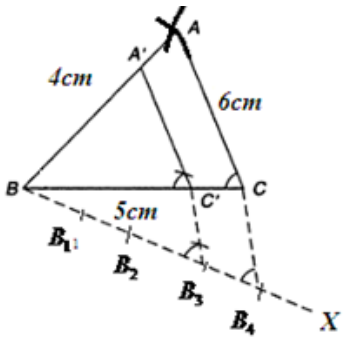
(D)



Answer: (A)

13. 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 ΔABC, correct figure is:

(A)



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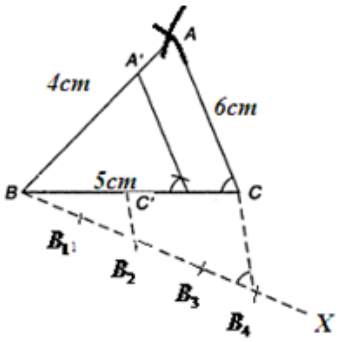
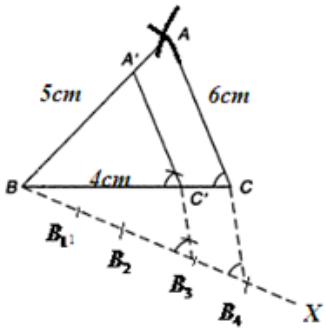


(C)



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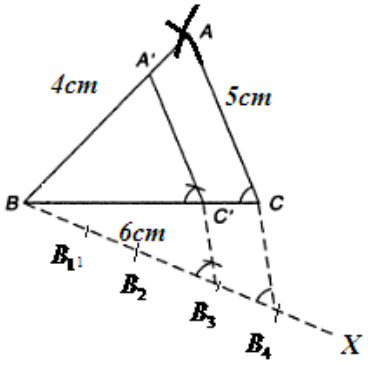
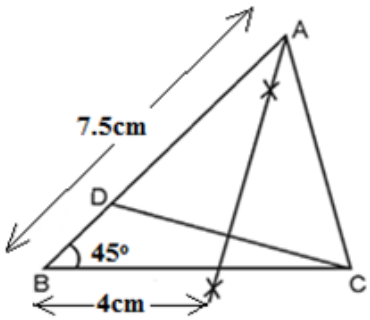


Answer: (D)

14. For ΔABC in which BC = 7.5 cm, ∠B =45^0 and AB – AC = 4, select the correct figure.

(A)



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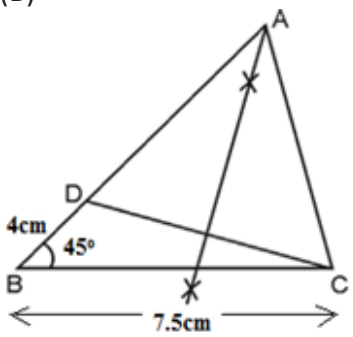

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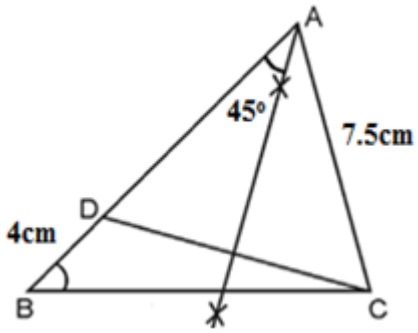
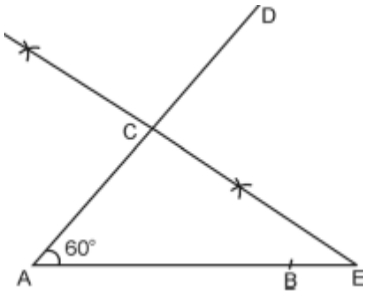


(D) None of these

Answer: (B)

15. Draw the line segment AB = 5 cm. From the point A draw a line segment AD = 6cm making an angle of 60^0 with AB. Draw a perpendicular bisector of AD. Select the correct figure.

(A)



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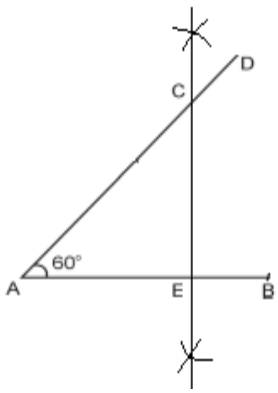

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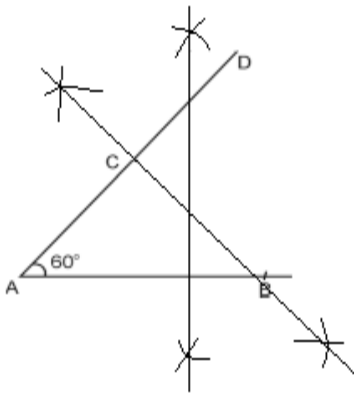

(D) None of these

Answer: (A)