EXERCISE 10.1

Choose the correct answer from the given four options:

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

Solution:

(D) 12

According to the question,

A line segment AB in the ratio 5:7

So, A:B = 5:7

Now,

Draw a ray AX making an acute angle ∠BAX,

Mark A+B points at equal distance.

So, we have A=5 and B=7

Hence, minimum number of these points = A+B = 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

Solution:

(B) A_{11}

According to the question,

A line segment AB in the ratio 4:7

So, A:B = 4:7

Now,

Draw a ray AX making an acute angle BAX

Minimum number of points located at equal distances on the ray,

AX = A+B = 4+7= 11

A_1, A_2, A_3, ... are located at equal distances on the ray AX.

Point B is joined to the last point is 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

Solution:

(A) A_5 and B_6

According to the question,

A line segment AB in the ratio 5:7

So, A:B = 5:7

Steps of construction:

1. Draw a ray AX, an acute angle BAX.

2. Draw a ray BY ||AX, angle ABY = angle BAX.
3. Now, locate the points A_1,A_2,A_3,A_4 and A_5 on AX and B_1,B_2,B_3,B_4,B_5 and B_6 (Because A:B = 5:7)
4. Join A_5B_6.
A_5B_6 intersect AB at a point C.
AC:BC= 5:6