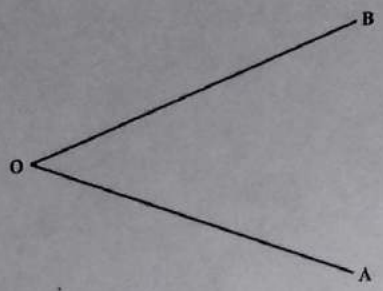

Figure 2.2(a)

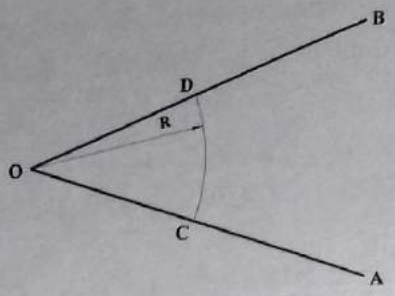

Figure 2.2(b)

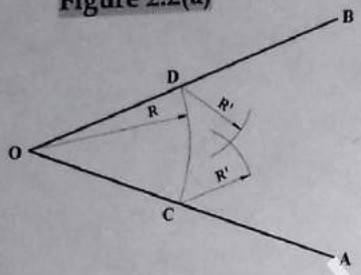

Figure 2.2(c)

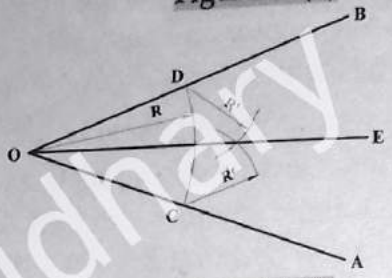

Figure 2.2(d)

2.1.3 Trisection of a Straight Line

- AB is the given straight line. *(Figure 2.3(a))*
- Draw straight line from ends A and B which are inclined at 30^0 to the given line. *(Figure 2.3(b))*
- Mark intersection of these lines as point C. Draw straight lines passing through point C and inclined at 60^0 to the given line, which intersect the given line at points D and E. *(Figure 2.3(c))*
- Then AD, DE and EB each equal one-third of the given line AB.

Figure 2.3(a)

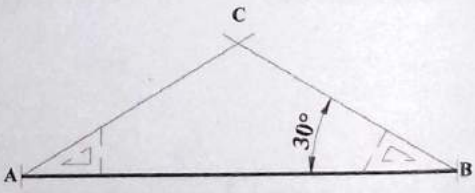

Figure 2.3(b)

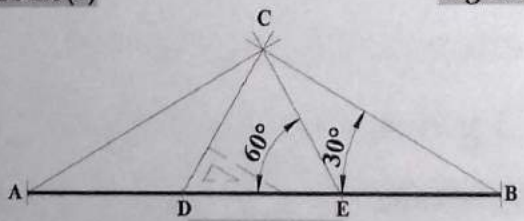

Figure 2.3(c)

2.1.4 Trisection of an Angle

- AOB is the given angle. *(Figure 2.4(a))*
- Mark any point C on line OB. Draw straight line CD passing through point C and perpendicular to OA. Draw straight line CE passing through C and parallel to OA. *(Figure 2.4(b))*
- Place scale passing through point O and mark point F on line CD and point G on line CE such that FG is twice OC. *(Figure 2.4(c))*
- Then angle GOA is equal to one-third of the given angle AOB. *(Figure 2.4(d))*

- Draw bisector OH of the remaining angle GOB to get three equal angles, i.e., ∢GOA = ∢GOH= ∢HOB. *(Figure 2.4(e))*

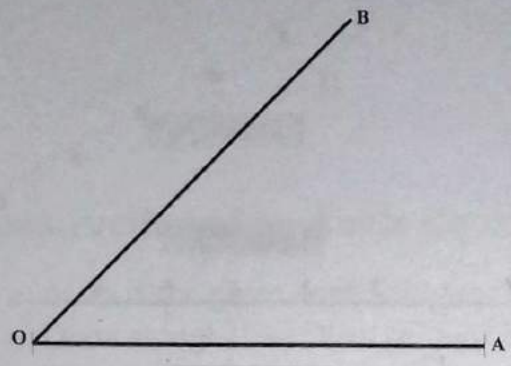

Figure 2.4(a)

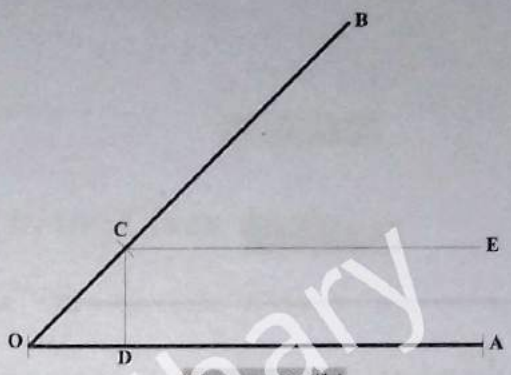

Figure 2.4(b)

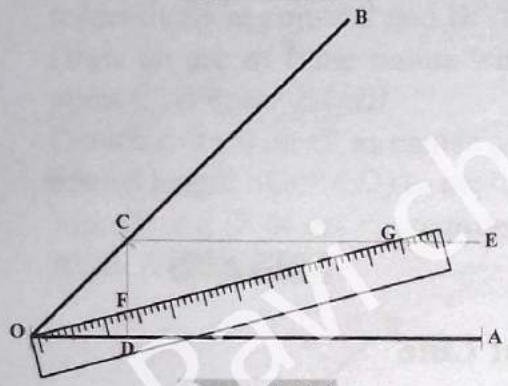

Figure 2.4(c)

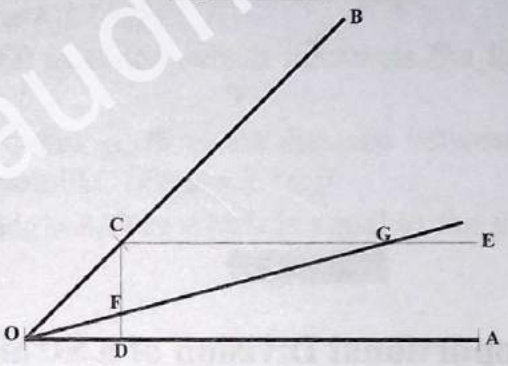

Figure 2.4(d)

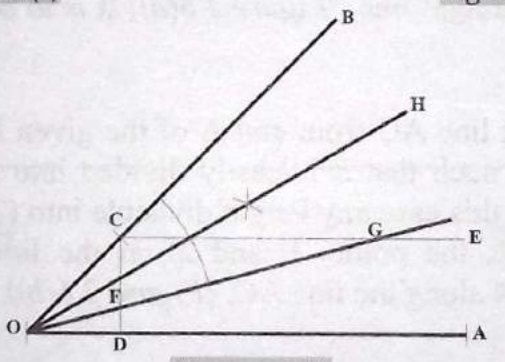

Figure 2.4(e)

2.1.5 Division of a Straight Line into any Number of Equal Parts

- AB is the given straight line. *(Figure 2.5(a))* It is to be divided into any number of equal parts (say 7).
- Draw any straight line AC from end A of the given line at any inclination. Select the length of AC such that it is easily divided into 7 equal parts by a common scale (A divider or compass may be used to mark seven equal segments on line AC). Mark the dividing points on the line AC is 1', 2', 3' .. 6'. *(Figure 2.5(b))*
- Join B and C. *(Figure 2.5(c))*
- Draw straight lines passing through 1', 2', 3' .. 6' and parallel to the line BC, which intersect the given line respectively at 1, 2, 3 … 6. *(Figure 2.5(d))*
- Then A1 = 12 = 23= 34 = 45 = 56 = 6B.

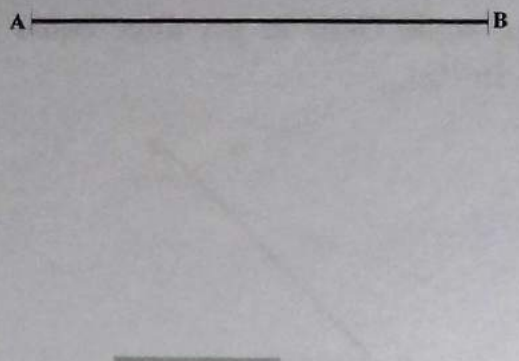

Figure 2.5(a)

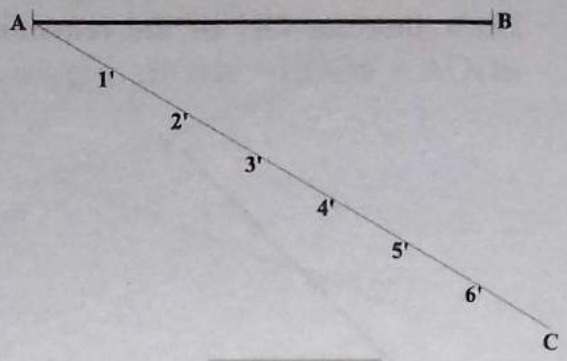

Figure 2.5(b)

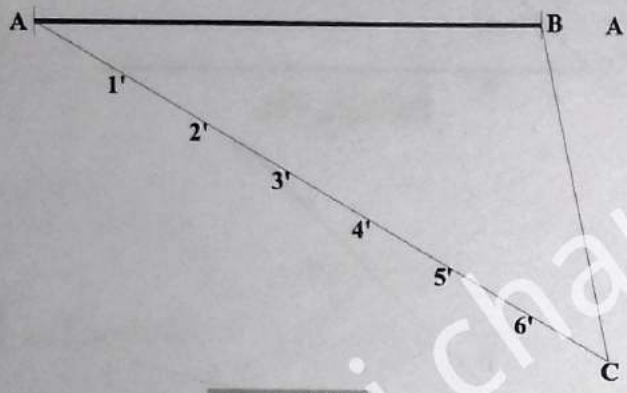

Figure 2.5(c)

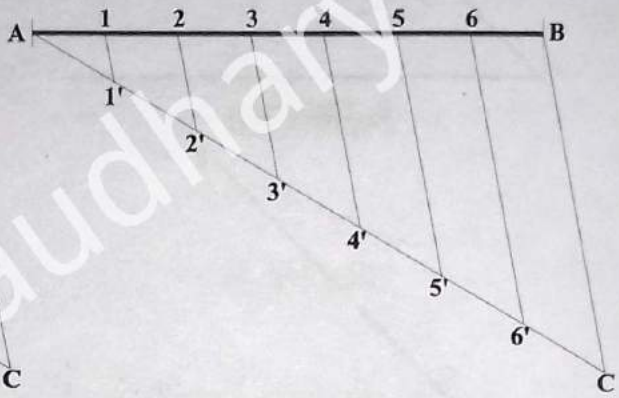

Figure 2.5(d)

2.1.6 Proportional Division of a Straight Line

- AB is the given straight line. *(Figure 2.6(a))* It is to be divided into any proportion (say 2:3:4).
- Draw any straight line AC from end A of the given line at any inclination. Select the length of AC such that it is easily divided into the required proportion by a common scale. In this case any length divisible into (2+3+4= 9) equal parts will be convenient. Mark the points 1' and 2' on the line AC such that they are in proportion of 2:3:4 along the line AC. *(Figure 2.6(b))*
- Join B and C. *(Figure 2.6(c))*
- Draw straight lines passing through 1', and 2' and parallel to the line BC, which intersect the given line respectively at 1 and 2. *(Figure 2.6(d))*
- Then points 1 and 2 divide the given line AB in the proportion of 2:3:4.

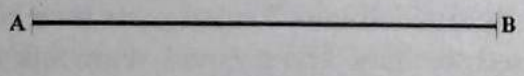

Figure 2.6(a)

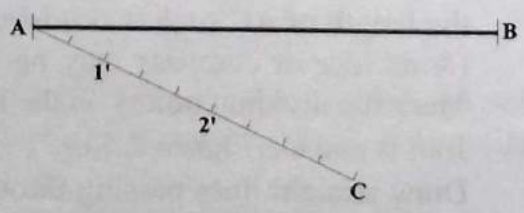

Figure 2.6(b)

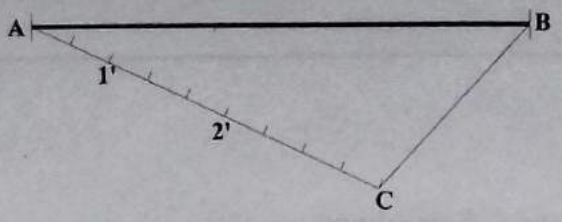

Figure 2.6(c)

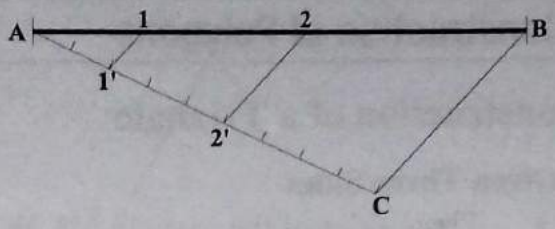

Figure 2.6(d)

2.1.7 Construction of an Angle Equal to the Given Angle

- AOB is the given angle. *(Figure 2.7(a))*
- Draw straight line O'A'. *(Figure 2.7(b))*
- Draw an arc of any radius with O as center which intersect the lines OA and OB respectively at points C and D. *(Figure 2.7(c))*
- Draw an arc of same radius with O' as center which intersects the line O'A' at point C'. *(Figure 2.7(d))*
- Draw an arc with C' as center and radius equal to the distance between C and D (chord length of arc CD) to get the point D'. *(Figure 2.7(e))*
- Join O' and D' to get the required angle A'O'B' which is equal to the given angle AOB. *(Figure 2.7(f))*

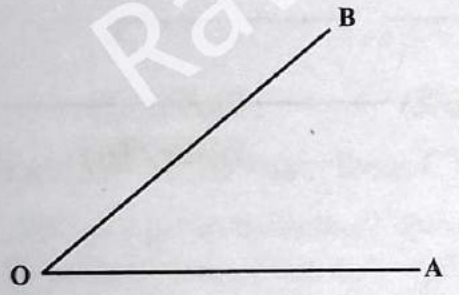

Figure 2.7(a)

Figure 2.7(a)

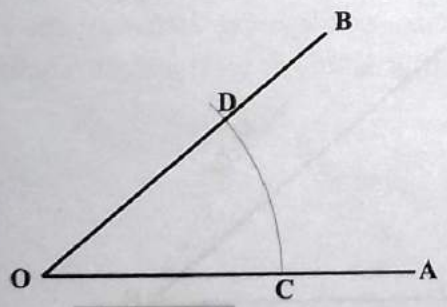

Figure 2.7(c)

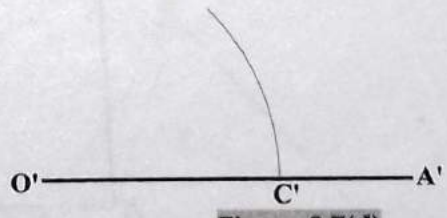

Figure 2.7(d)

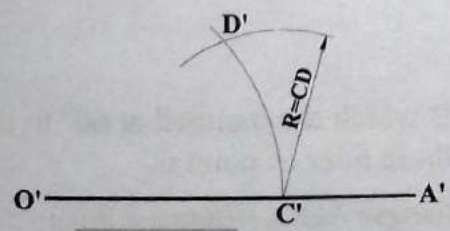

Figure 2.7(e)

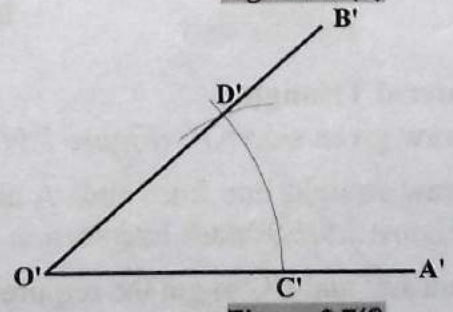

Figure 2.7(f)