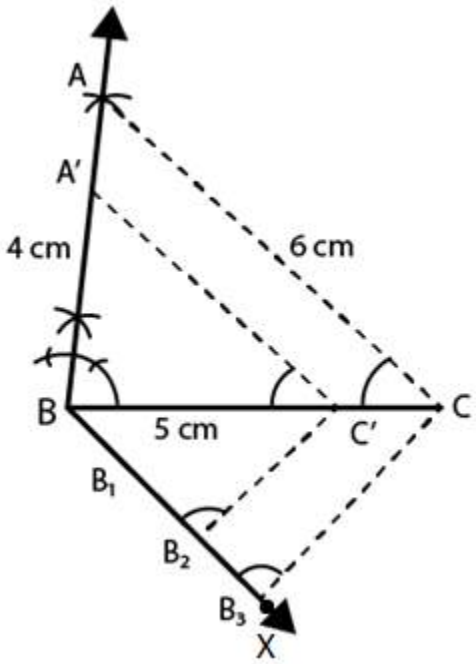
Exercise 11.2

1. Construct a triangle of sides 4 cm, 5 cm and 6 cm and then a triangle similar to it whose sides are (2/3) of the corresponding sides of it.

Solution:



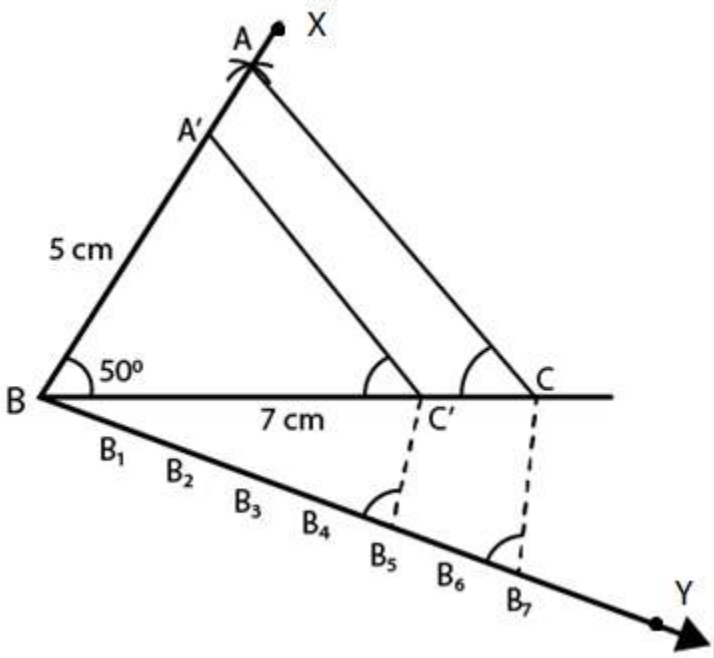
Steps of construction:

1. Draw a line segment BC = 5 cm.
2. With centre as B and radius 4 cm and with centre C and radius 6 cm, draw arcs from both points to intersect each other at A.
3. Now, join AB and AC. Then ABC is the triangle.
4. Draw a ray BX making an acute angle with BC and cut off 3 equal parts making $BB_1 = B_1B_2 = B_2B_3$.
5. Join B_3C.
6. Draw B_2 C' parallel to B_3C and C'A' parallel to CA.

Then, ΔA'BC' is the required triangle.

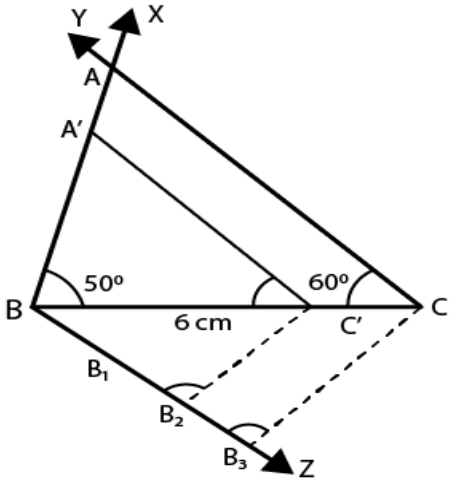
2. Construct a triangle similar to a given ΔABC such that each of its sides is $(5/7)^{th}$ of the corresponding sides of ΔABC. It is given that AB = 5 cm, BC = 7 cm and ∠ABC = 50°.

Solution:



Steps of construction:
1. Draw a line segment BC = 7 cm.
2. Draw a ray BX making an angle of 50° and cut off BA = 5 cm.
3. Join AC. Then ABC is the triangle.
4. Draw a ray BY making an acute angle with BC and cut off 7 equal parts making $BB_1 = B_1B_2 = B_2B_3 = B_3B_4 = B_4B_s = B_5B_6 = B_6B_7$
5. Now, join B_7 and C
6. Draw B_5C' parallel to B_7C and C'A' parallel to CA.
Then, ΔA'BC' is the required triangle.

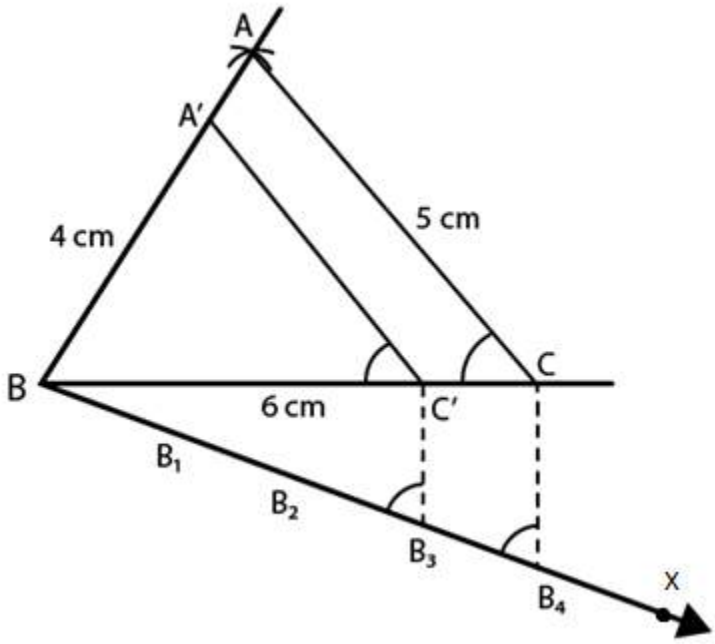
3. Construct a triangle similar to a given ΔABC such that each of its sides is (2/3)rd of the corresponding sides of ΔABC. It is given that BC = 6 cm, ∠B = 50° and ∠C = 60°.
Solution:



Steps of construction:

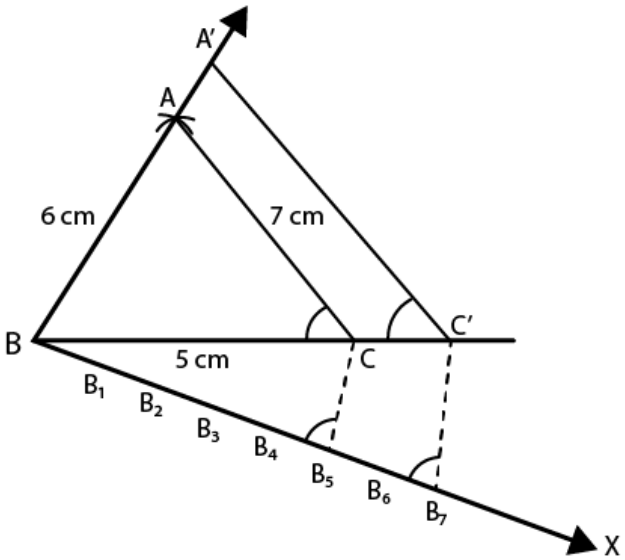
1. Draw a line segment BC = 6 cm.
2. Draw a ray BX making an angle of 50° and CY making 60° with BC which intersect each other at A. Then, ABC is the triangle.
3. From B, draw another ray BZ making an acute angle below BC and then cut off 3 equal parts making $BB_1 = B_1B_2 = B_2B_3$
4. Now, join B_3C.
5. From B_2, draw B_2C' parallel to B_3C and $C'A'$ parallel to CA.
Then $\Delta A'BC'$ is the required triangle.

4. Draw a ΔABC in which BC = 6 cm, AB = 4 cm and AC = 5 cm. Draw a triangle similar to ΔABC with its sides equal to $(3/4)^{th}$ of the corresponding sides of ΔABC.
Solution:



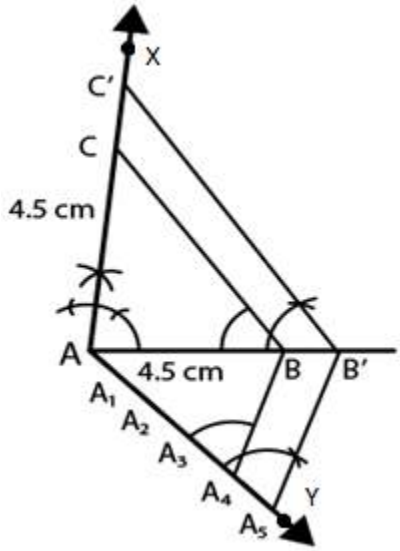
Steps of construction:
1. Draw a line segment BC = 6 cm.
2. With centre as B and radius 4 cm and with C as centre and radius 5 cm, draw arcs intersecting each other at A.
3. Join AB and AC. Then, ABC is the triangle.
4. Draw a ray BX making an acute angle with BC and cut off 4 equal parts making $BB_1 = B_1B_2 = B_2B_3 = B_3B_4$.
5. Join B_4 and C.
6. From B_3 draw C' parallel to B_4C and from C', draw C'A' parallel to CA.
Then $\Delta A'BC'$ is the required triangle.

5. Construct a triangle with sides 5 cm, 6 cm and 7 cm and then another triangle whose sides are $(7/5)^{th}$ of the corresponding sides of the first triangle.
Solution:



Steps of construction:
1. Draw a line segment BC = 5 cm.
2. With B as centre and radius 6 cm and with C as centre and radius 7 cm, draw arcs intersecting each other at A.
3. Now, join AB and AC. Then, ABC is the triangle.
4. Draw a ray BX making an acute angle with BC and cut off 7 equal parts making $BB_1 = B_1B_2 = B_2B_3 = B_3B_4 = B_4B_5 = B_5B_6 = B_6B_7$.
5. Join B_5 and C.
6. From B_7, draw B_7C' parallel to B_5C and $C'A'$ parallel CA.
Then, $\Delta A'BC'$ is the required triangle.

6. Draw a right triangle ABC in which AC = AB = 4.5 cm and ∠A = 90°. Draw a triangle similar to ΔABC with its sides equal to (5/4)th of the corresponding sides of ΔABC.
Solution:



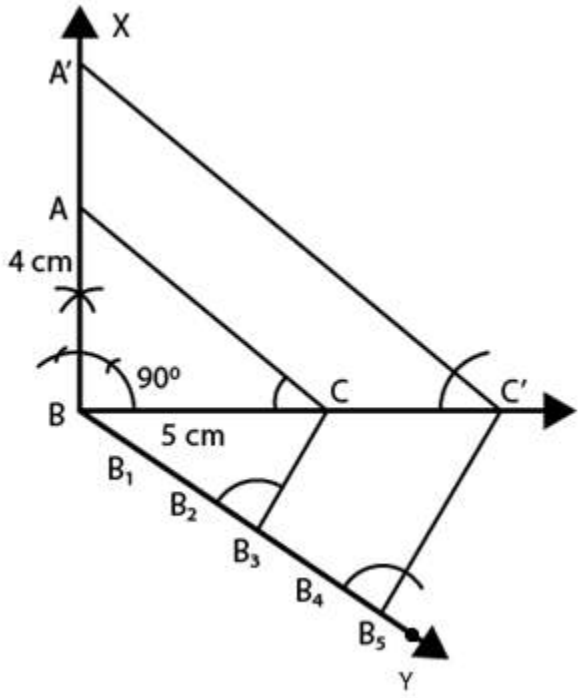
Steps of construction:

1. Draw a line segment AB = 4.5 cm.
2. At A, draw a ray AX perpendicular to AB and cut off AC = AB = 4.5 cm.
3. Now, join BC. Then, ABC is the triangle.
4. Draw a ray AY making an acute angle with AB and cut off 5 equal parts making $AA_1 = A_1A_2 = A_2A_3 = A_3A_4 = A_4A_5$
5. Join A_4 and B.
6. From A_5, draw A_5B' parallel to A_4B and $B'C'$ parallel to BC.

Then, $\Delta AB'C'$ is the required triangle.

7. Draw a right triangle in which the sides (other than hypotenuse) are of lengths 5 cm and 4 cm. Then construct another triangle whose sides are 5/3 times the corresponding sides of the given triangle.

Solution:



Steps of construction:

1. Draw a line segment BC = 5 cm.
2. At B, draw perpendicular BX and cut off BA = 4 cm.
3. Now, join AC. Then, ABC is the triangle
4. Draw a ray BY making an acute angle with BC and cut off 5 equal parts making $BB_1 = B_1B_2 = B_2B_3 = B_3B_4 = B_4B_5$
5. Join B_3 and C.
6. From B_5, draw B_5C' parallel to B_3C and $C'A'$ parallel to CA.

Then, $\Delta A'BC'$ is the required triangle.