**EXERCISE 14.2** **PAGE NO: 278**

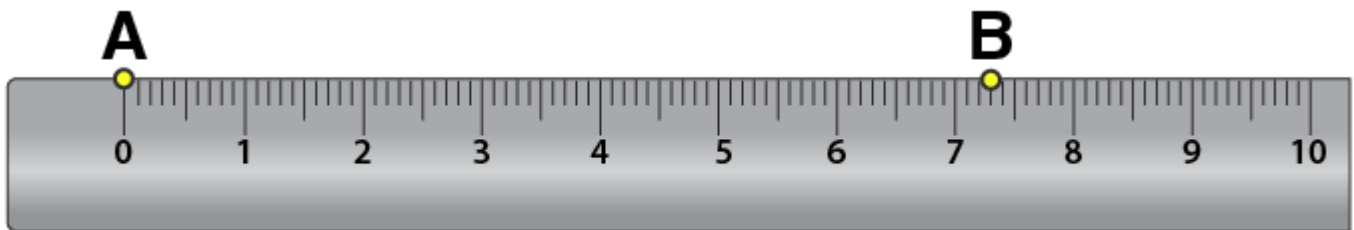**1. Draw a line segment of length 7.3 cm using a ruler.**

**Solutions:**

Using a ruler, we can draw a line segment of length 7.3 cm as follows

Step 1: Mark a point A on the sheet

Step 2: Place 0 mark of ruler at point A

Step 3: At 7.3 cm on ruler, mark a point B on the sheet

Step 4: Now join A and B

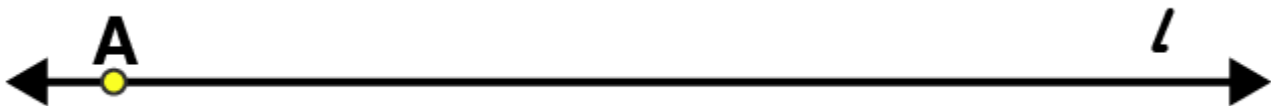Here $\overline{AB}$ is the required line segment.

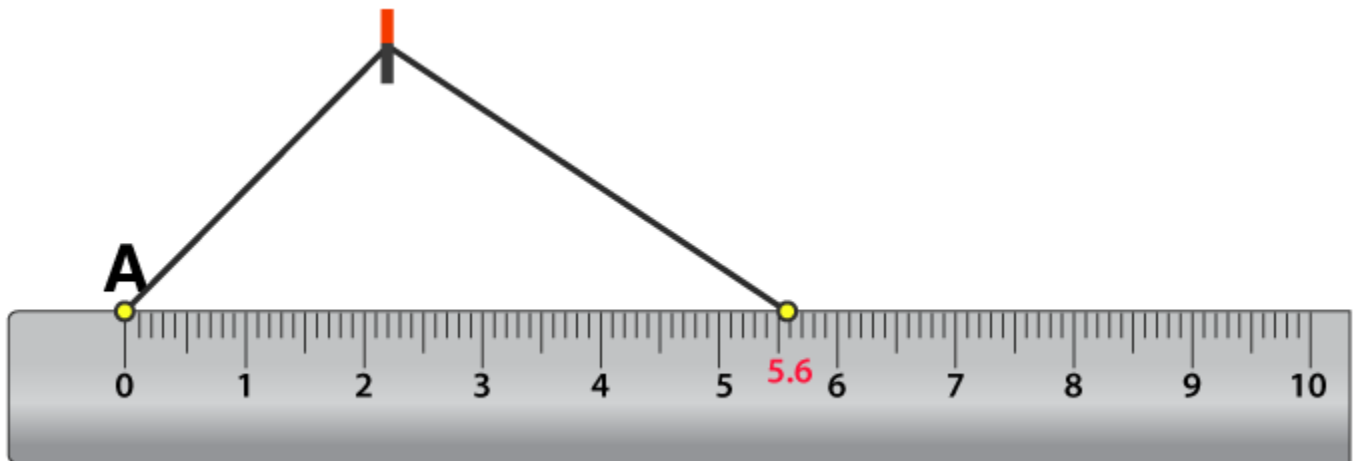**2. Construct a line segment of length 5.6 cm using ruler and compasses.**

**Solutions:**

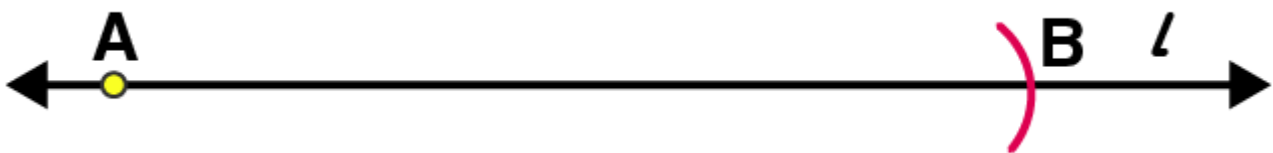By using a ruler and compasses, we may draw a line segment of length 5.6 cm as follows

Step 1: Draw a line l and mark a point A on this line l.

Step 2: On the zero mark of the ruler, place the compasses. Now extend the compasses to place the pencil up to the 5.6 cm and mark.

Step 3: Place the pointer of compasses on point A and draw an arc to cut l at B. Now, $\overline{AB}$ is the line segment of 5.6 cm length.



**3. Construct $\overline{AB}$ of length 7.8 cm. From this, cut off $\overline{AC}$ of length 4.7 cm. Measure $\overline{BC}$.**
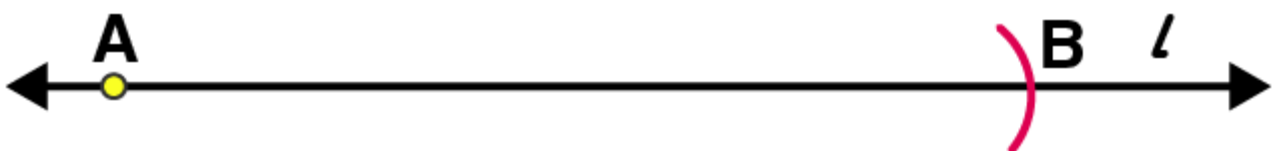
**Solutions:**

Step 1: Draw a line l and mark a point A on it.



Step 2: By adjusting the compasses up to 7.8 cm, while putting the pointer of compasses on point A draw an arc to cut l on B

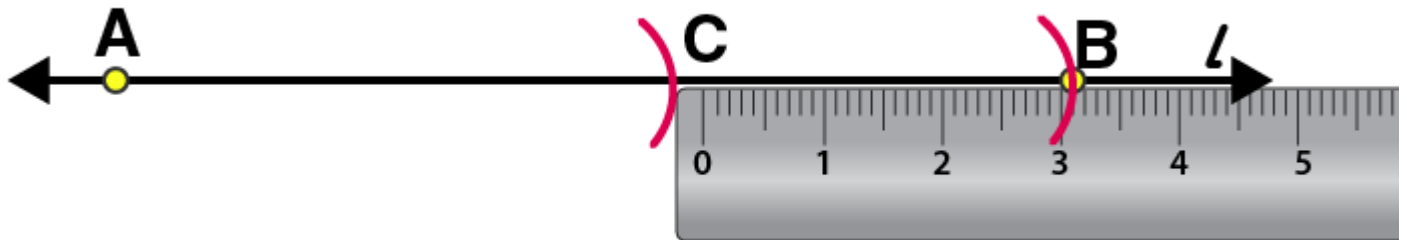$\overline{AB}$ is the line segment of 7.8 cm

Step 3: By adjusting the compasses up to 4.7 cm, draw an arc to cut l on C, while putting the pointer of compasses on point A.

$\overline{AC}$ is the line segment of of 4.7 cm

**A** $\qquad$ **)C** $\qquad$ **)B** $\quad l$

Step 4: Now, place the ruler in such a way that 0 mark of the ruler will match with the point C.

**A** $\qquad$ **)C** $\qquad$ **)B** $\quad l$

0    1    2    3    4    5

Now read the position of point B. It will be 3.1 cm.
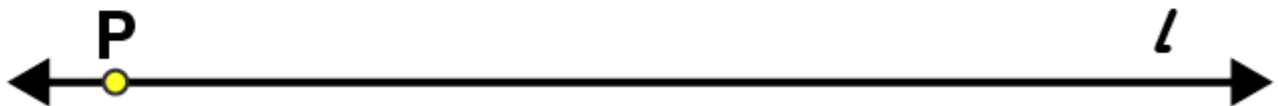
$\overline{BC}$ is 3.1 cm

**4. Given $\overline{AB}$ of length 3.9 cm, construct $\overline{PQ}$ such that the length of $\overline{PQ}$ is twice that of $\overline{AB}$. Verify by measurement.**
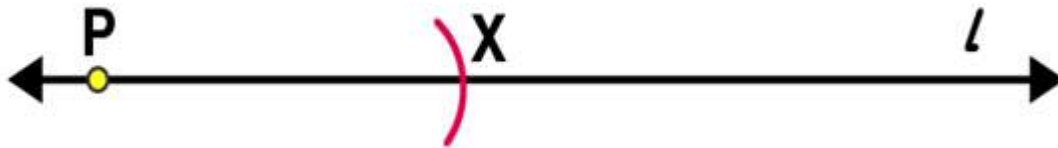
**P** $\qquad$ **X** $\qquad$ **Q**

**Solutions:**

We can draw a line segment $\overline{PQ}$ such that the length of $\overline{PQ}$ is twice that of $\overline{AB}$ as follows
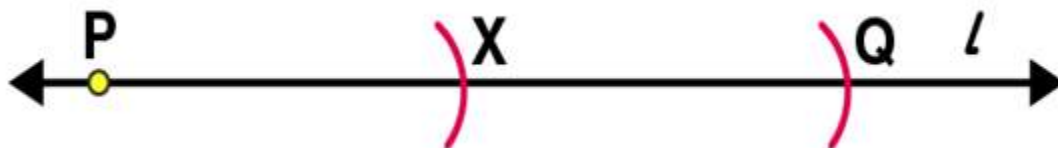
(1) Draw a line l and mark a point P on it. Let AB be the given line segment of 3.9 cm.

**A** _____ **B**



(2) By adjusting the compasses up to the length of AB, place the pointer of compasses at point P and draw an arc to cut the line at X.



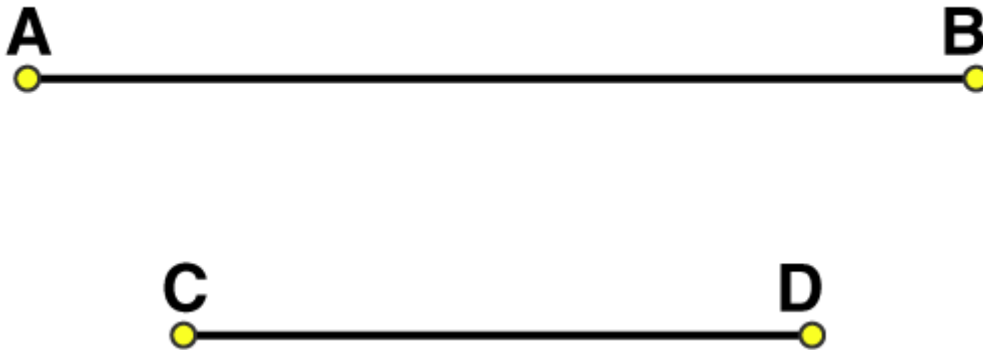(3) Again place the pointer on point X, draw an arc to cut line l at point Q.



$\overline{PQ}$ is the required line segment. Using the ruler we may measure the length of $\overline{PQ}$ which comes to 7.8 cm.

**5. Given $\overline{AB}$ of length 7.3 cm and $\overline{CD}$ of length 3.4 cm, construct a line segment $\overline{XY}$ such that the length of $\overline{XY}$ is equal to the difference between the lengths of $\overline{AB}$ and $\overline{CD}$. Verify by measurement.**
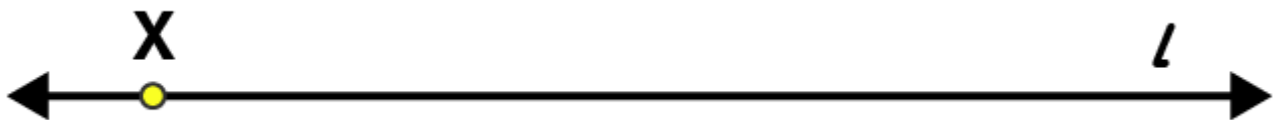
**Solutions:**

(1) Given $\overline{AB}$ = 7.3 cm and $\overline{CD}$ = 3.4 cm

A ●━━━━━━━━━━━━━━━━━━━━━━━━━━━━━● B

C ●━━━━━━━━━━━━━━━━━● D

(2) Adjust the compasses up to the length of CD and put the pointer of compasses at point A, draw an arc to cut AB at point P.

A ●━━━━━━━━━━━━━━━━━) P ━━━━━━━━━━━━━● B

(3) Adjust the compasses up to the length of PB. Draw a line l and mark a point X on it.

◀━━━━━X━━━━━━━━━━━━━━━━━━━━━━━━━▶ l

(4) By placing the pointer of compasses at point X, draw an arc to cut the line at Y.

◀━━━━━X━━━━━━━━━━━━━) Y ━━━━━━━━━━━▶ l

$\overline{XY}$ is the required line segment

Now, difference between the lengths of $\overline{AB}$ and $\overline{CD}$ = 7.3 – 3.4 = 3.9 cm

Using the ruler we may measure the length of $\overline{XY}$ which comes to 3.9 cm.