

Basic Geometrical Tools

Exercise 18.1

Question: 1

Construct the following angles using set- squares:

- (i) 45°
- (ii) 90°
- (iii) 60°
- (iv) 105°
- (v) 75°
- (vi) 150°

Solution:



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(i) 45°

Place 45° set- square.

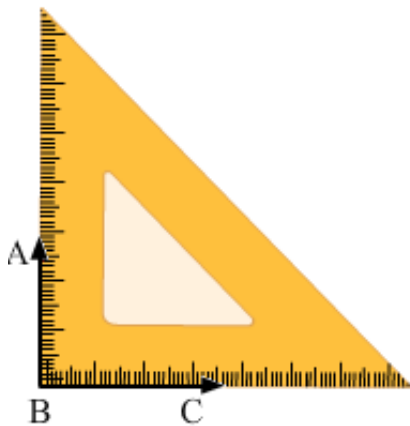
Draw two rays AB and AC along the edges from the vertex from the vertex of 45° angle of the set- square.

The angle so formed is a 45° angle.

$$\angle BAC = 45^\circ$$

(ii) 90°

Place 90° set -square as shown in the figure.



Draw two rays BC and BA along the edges from the vertex of 90° angle.

The angle so formed is 90° angle.

$$\angle ABC = 90^\circ$$

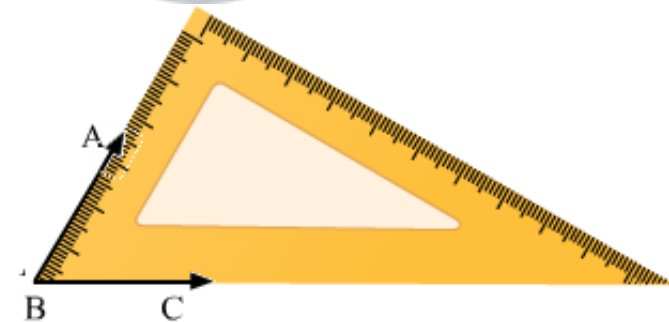
(iii) 60°

Place 30° set -square as shown in the figure.

Draw the rays BA and BC along the edges from the vertex of 60°

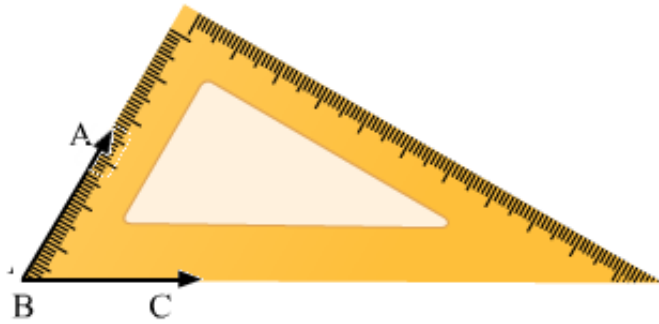
The angle so formed is 60°

$$\angle ABC = 60^\circ$$



(iv) 105°

Place 30° set -square and make an angle 60° by drawing the rays BA and BC as shown in figure.



Now place the vertex of 45° of the set -square on the ray BA as shown in figure and draw the ray BD.

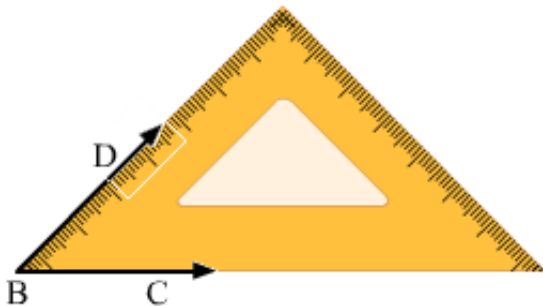
The angle so formed is 105°

Therefore, $\angle DBC = 105^\circ$



(v) 75°

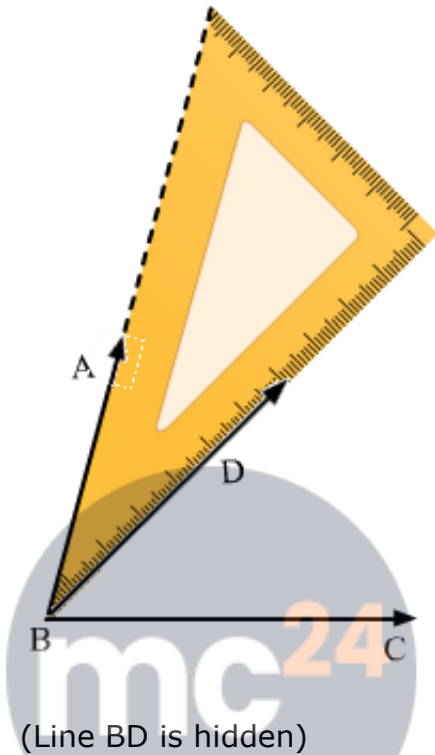
Place 45° set -square and make an angle of 45° by drawing the rays BD and BC as shown in the figure.



Now place the vertex of 30° of the set- square on the ray BD as shown in the figure and draw the ray BA.

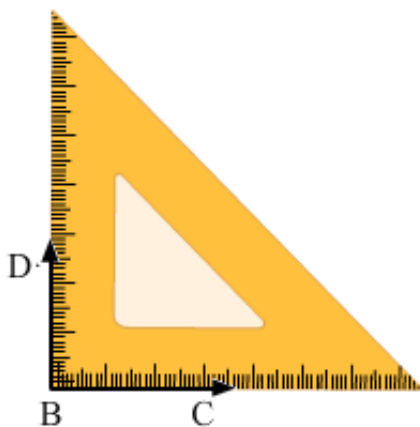
The angle so formed is 75° .

Therefore, $\angle ABC = 75^\circ$



(vi) 150°

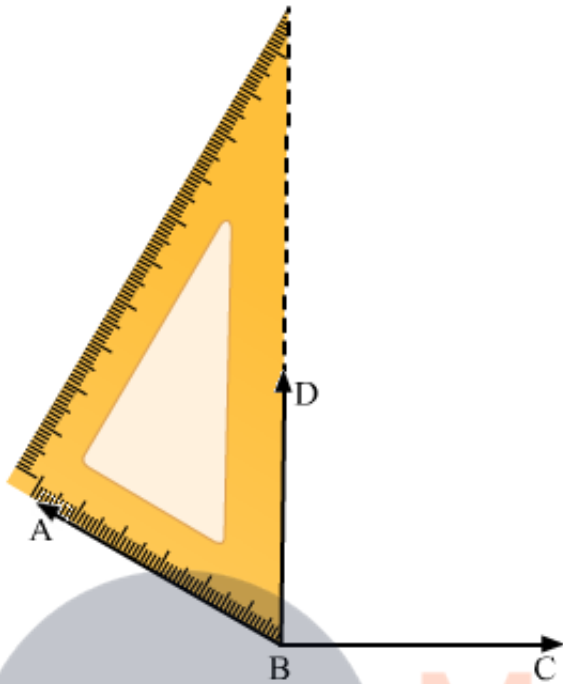
Place the vertex of 45° of the set – square and make angle of 90° by drawing the rays BD and BC as shown in the figure



Now, place the vertex of 30° of the set –square on the ray BS as shown in the figure and draw the ray BA

The angle so formed is 150° .

Therefore, $\angle ABC = 150^\circ$



Question: 2

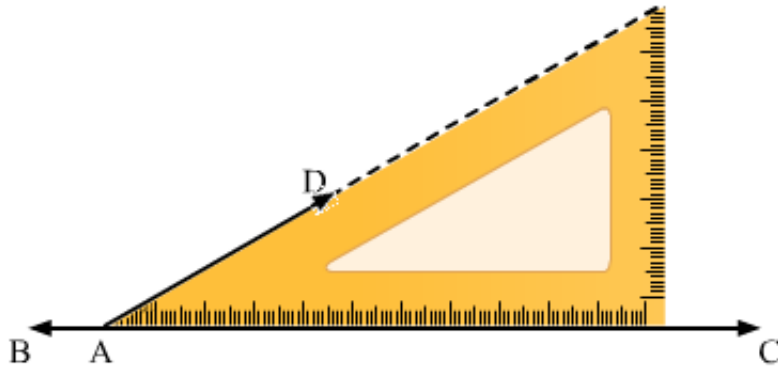
Given a line BC and a point A on it, construct a ray AD using set – squares so that $\angle DAC$ is

- (i) 30°
- (ii) 150°

Solution:

(i) Draw a line BC and take a point A on it. Place 30° set –square on the line BC such that its vertex of 30° angle lies on point A and one edge coincides with the ray AB as shown in figure

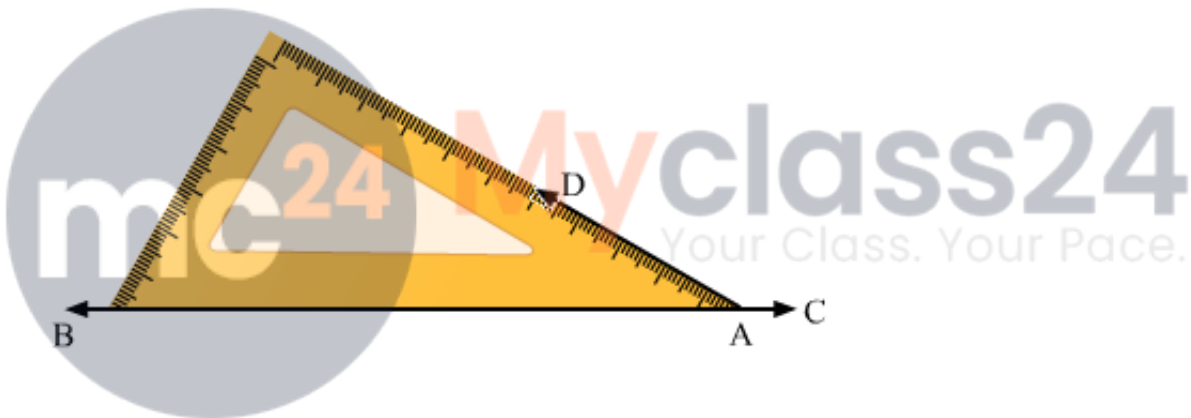
Draw the ray AD.



Thus $\angle DAC$ is the required angle of 30°

(ii) Draw a line BC and take a point A on it. Place 30° set -square on the line BC such that its vertex of 30° angle lies on point A and one edge coincides with the ray AB as shown in the figure.

Draw the ray AD.



Therefore, $\angle DAB = 30^\circ$

We know that angle on one side of the straight line will always add to 180°

Therefore, $\angle DAB + \angle DAC = 180^\circ$

Therefore, $\angle DAC = 150^\circ$