

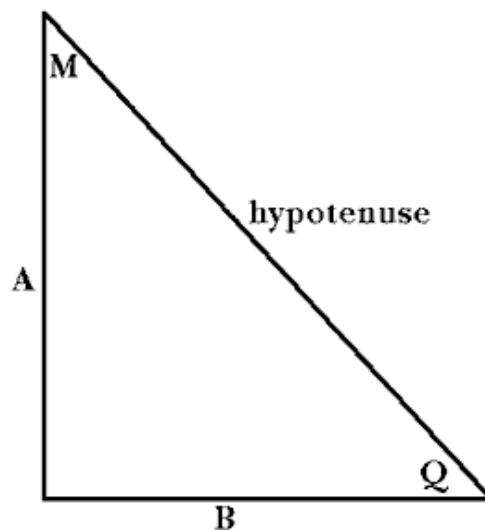
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## NCERT Class 9 Solutions: Triangles (Chapter 7) Exercise 7.4 – Part 1

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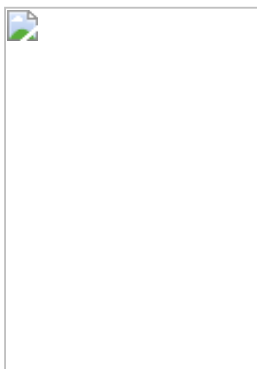
Hypotenuse triangle



The length of the hypotenuse of a right triangle can be found using the Pythagorean Theorem, which states that the square of the length of the hypotenuse equals the sum of the squares of the lengths of the other two sides.

1. Show that in a right angled triangle, the hypotenuse is the longest side.

Solution:



Given,  $\triangle ABC$  is a triangle right angled at B.

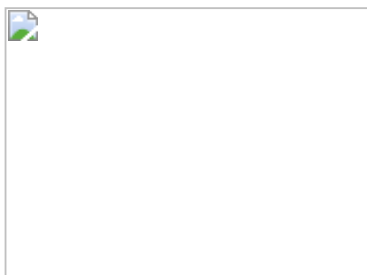
- Now,

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\Rightarrow \angle A + \angle C = 90^\circ \text{ and } \angle B = 90^\circ. (\because \triangle ABC \text{ is a triangle right angled at B})$$

- Since, B is the largest angle of the triangle, the side opposite to it must be the largest.
- So, BC is the hypotenuse which is the largest side of the right angled triangle ABC.

Q-2 In the figure, sides AB and AC of  $\triangle ABC$  are extended to points P and Q respectively. Also,  $\angle PBC < \angle QCB$ . Show that  $AC > AB$ .



Solution:

Given,

$$\angle PBC < \angle QCB$$

- Now,

$$\angle ABC + \angle PBC = 180^\circ \Rightarrow \angle ABC = 180^\circ - \angle PBC$$

- also,

$$\angle ACB + \angle QCB = 180^\circ$$

$$\Rightarrow \angle ACB = 180^\circ - \angle QCB$$

- Since,  $\angle PBC < \angle QCB$  therefore,  $\angle ABC > \angle ACB$
- Thus,  $AC > AB$  as sides opposite to the larger angle is larger.