

Verify that In a Triangle, Longer Side Has the Greater Angle

OBJECTIVE

To verify experimentally that in a triangle, the longer side has the greater angle opposite to it.

Materials Required

1. Cardboard
2. Coloured glazed papers
3. White paper
4. Tracing paper
5. Scissors
6. Geometry box
7. Sketch pens
8. Adhesive

Prerequisite Knowledge

Concept of triangle and its properties.

Theory

For concept of triangle and its properties refer to Activity 12.

Procedure

1. Take a cardboard of suitable size and by using adhesive, paste a white paper on it.
2. Cut out a $\triangle ABC$ from a glazed paper and by using adhesive, paste it on cardboard, (see Fig. 15.1)

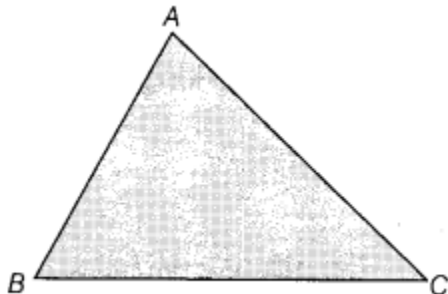


Fig. 15.1

3. Measure the lengths of all the three sides of $\triangle ABC$ and identify that which of them is longest.

4. All the three angles of a triangle are to be marked, (see Fig. 15.2)

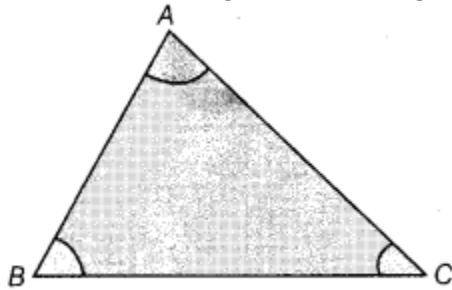


Fig. 15.2

5. Using a tracing paper, make the cut out of the angle opposite to the longest side SC, i.e. $\angle A$. (see Fig. 15.3)

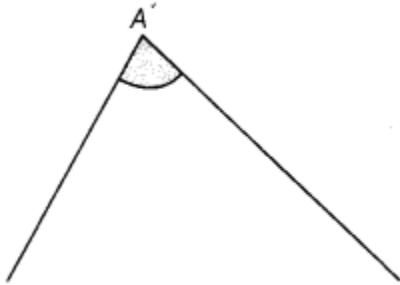


Fig. 15.3

6. Compare the cut out of the angle with remaining angles. (see Fig. 15.4)

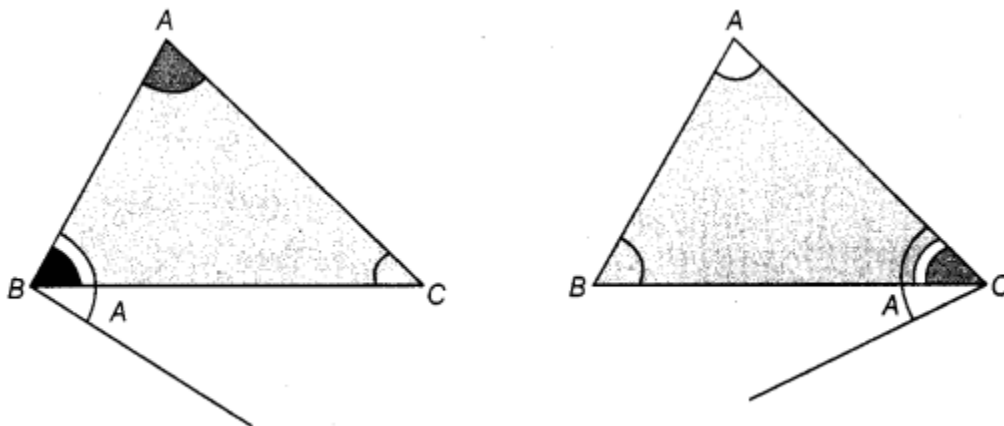


Fig. 15.4

Demonstration

We came to know that $\angle A > \angle B$ and $\angle A > \angle C$, $BC > AC$,

So, we get since $\angle A > \angle B$

Also, $BC > AB$, since $\angle A > \angle C$

Thus, we observe that the angle belongs to longer side is greater than the angle opposite to other side.

Observation

Length of side AB = , Length of side BC = , Length of side CA =

Measure of the angle opposite to the longest side =

Measure of the other two angles = and

The angle opposite to the side is than either of the other two angles.

Result

We have verified experimentally that in a triangle, the longest side has the greater angle opposite to it.

Application

The result can be useful in different geometrical problems.

Viva Voce

Question 1:

In the right angled triangle, which one is the longest side?

Answer:

Hypotenuse

Question 2:

Does sum of any two sides of a triangle is always smaller than the third side?

Answer:

No, because the sum of any two sides of a triangle is always greater than the third side.

Question 3:

Is it possible to draw a triangle having sides 7 cm, 3 cm and 10 cm?

Answer:

No, because the sum of any two sides of a triangle is always greater than the third side.

Question 4:

Which type of triangle, have any two sides equal?

Answer:

Isosceles triangle

Question 5:

Which type of triangle, have all sides equal?

Answer:

Equilateral triangle

Question 6:

Does the longer side has the smaller angle opposite to it in a triangle?

Answer:

No, the longer side has the greater angle opposite to it in a triangle.

Question 7:

If in $\triangle ABC$, $\angle A > \angle B$, then what can you say about the opposite sides of $\angle A$ and $\angle B$?

Answer:

$BC > AC$, because $\angle A$ is greater than $\angle B$, so side opposite to $\angle A$ will also be greater than the side opposite to $\angle B$.

Question 8:

Which type of triangle, have all sides unequal?

Answer:

Scalene triangle

Suggested Activity

Verify experimentally the relation between unequal sides of a triangle and the angles opposite to them.