Provincial Department of Education – Sabaragamuwa – Week School

Subject - Mathematics

Week - 09

Grade - 10

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9th Lesson – Triangles I I

* Read the page number 97 of your textbook and find the answers of the following questions.

1) What is the requirement that a triangle to be a isosceles triangle.

2) What is meant by opposite angles.

3) Identify the isosceles triangle and according to them fill in the following table.
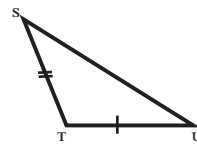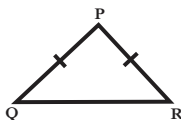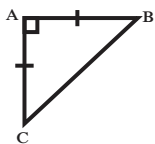
isosceles triangle	Equal two sides	Pair of opposite angles of the equal 2 sides

☞ **Activity 1 :**

- Draw the $ABC\Delta$ by taking $AB = AC = 6cm$.
- Separate the $ABC\Delta$.
- Fold the triangular laminar to coincide AB and CD sides each other.
- Now you can observe that $A\hat{B}C$ and $A\hat{C}B$ are coincide each other.
  According to above activity,

 If $\mathbf{AB = AC}$ **then** $\mathbf{A\hat{B}C = A\hat{C}B}$.
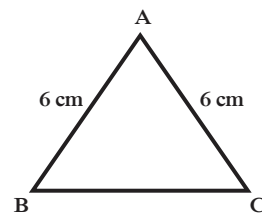
**Theorem: If two sides are equal in a triangle, the angles opposite the equal sides are equal.**

* Complete the exercise 9.1 in the page number 98 of your textbook.

In an isosceles triangle,
1. The perpendicular drawn from the apex to the opposite side (AD)
2. The bisector of the apex angle, (AD)
3. The straight line joining the apex to the midpoint of the opposite side (AD) and
4. The perpendicular bisector of the side opposite the apex, (AD) coincide with each other.
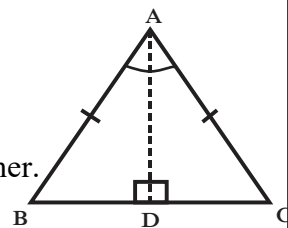
* Following is an incomplete proof of the theorem related to isosceles triangles. Fill in the blanks
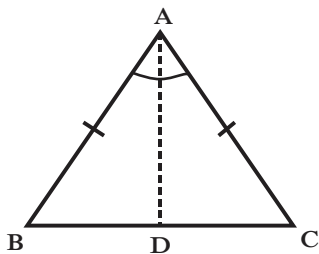
Data: in the $ABC\Delta$, $AB = AC$

To be proved : $A\hat{B}C = A\hat{C}B$

Construction:...

Proof: in the triangles ABD and ACD ,

$AB = AC$ (Data)

$B\hat{A}D = D\hat{A}C$ (The bisector of the $B\hat{A}C$ is AD)

$AD = AD$ (Common side)

$\therefore ABD\Delta \equiv ACD\Delta$ (................)

$A\hat{B}D = A\hat{C}D$ (corresponding elements of congruent Δ)

$\therefore A\hat{B}C = A\hat{C}B$

* Complete the Exercise 9.2 of your textbook

☞ **Activity 2 :**

- Draw 8cm straight line segment.
- Draw two 60^0 angles on the end points of the line segment using protractor.
- Produce the two arms of that angles up to intersect them each other.
- Separate that angle.
- Fold the triangular laminar to coincide $60°$ each other.
- You can observe that a pair of equal sides are coincide each other.
- You can understand that if two angles of the triangle are equal, then opposite sides are also equal.

60⁰ 60⁰
8 cm
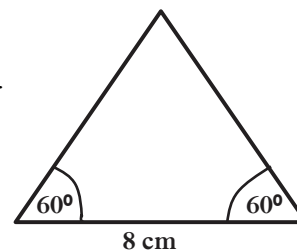
Theorem (Converse of the theorem on isosceles triangles):
The sides opposite equal angles of a triangle are equal.

* Complete the Exercise 9.3 of your textbook