

8 June 2020

MODERN LANGUAGE SCHOOL <sup>(3)</sup> & COLLEGE ISLAMABAD

Unit # 10

Mathematics

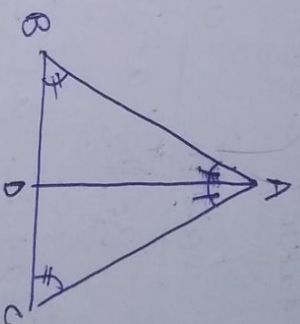
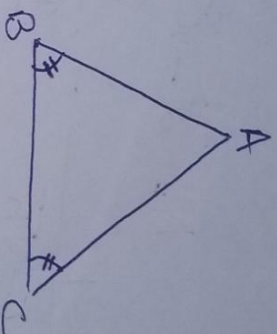
Class 8<sup>th</sup> / 9<sup>th</sup>

Theorem 10.1.2. If two angles of a triangle are congruent, then the sides opposite to them are also congruent.

Given: In  $\triangle ABC$   
 $\angle B \cong \angle C$

To Prove:  $\overline{AB} \cong \overline{AC}$

Construction: Draw the bisector of  $\angle A$ , meeting  $BC$  at point  $D$ .



Statements

In  $\triangle ABD \leftrightarrow \triangle ACD$

$\overline{AD} \cong \overline{AD}$

$\angle B \cong \angle C$

$\angle BAD \cong \angle CAD$

$\therefore \triangle ABD \cong \triangle ACD$

Hence

$\overline{AB} \cong \overline{AC}$

Reasons

Common

Given.

construction

S.A.A  $\cong$  S.A.A

corresponding sides of congruent triangles.

2

Statements

But

$$\angle C \cong \angle DFE$$

$$\therefore \angle DFE \cong \angle MFE$$

This is possible iff

D and M are at

the same point and

$$ME \cong \overline{DE}$$

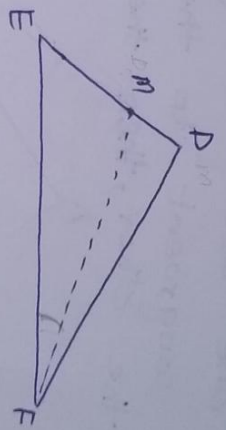
Hence from (i), (ii), and (iv) we have

$$\triangle ABC \cong \triangle DEF$$

Reasons

Given,

Both congruent to  $\angle C$



$$\overline{AB} \cong \overline{ME} \text{ (construction)}$$

$$\overline{ME} \cong \overline{DE} \text{ (proved)}$$

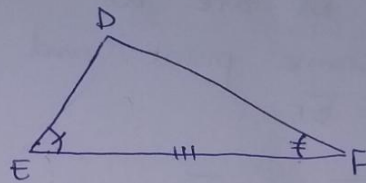
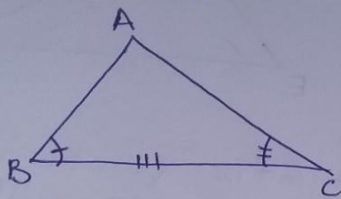
S.A.S postulate.

Activity:

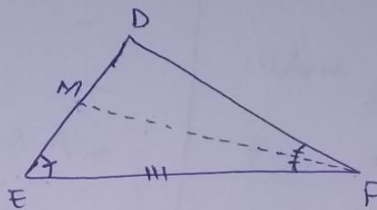
- Try to do the same theorem by taking triangle XYZ and RST.
- Do the examples by your self.

Unit # 10 : Congruent triangles.

Theorem 10.1.1: In any correspondence of two triangles if one side and any two angles of one triangle are congruent to the corresponding side and angles of the other, then the triangles are congruent. (A.S.A = A.S.A)



After Construction →



Given: In  $\triangle ABC \leftrightarrow \triangle DEF$   
 $\angle B \cong \angle E$ ,  $\overline{BC} \cong \overline{EF}$ ,  $\angle C \cong \angle F$

To Prove:  $\triangle ABC \cong \triangle DEF$

Construction: Suppose  $\overline{AB} \not\cong \overline{DE}$ . Take a point M on  $\overline{DE}$  such that  $\overline{AB} \cong \overline{ME}$ . Join M to F.

Proof

Statements

In  $\triangle ABC \leftrightarrow \triangle MEF$

$\overline{AB} \cong \overline{ME}$  — (i)

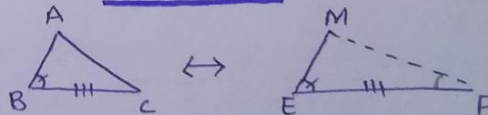
$\overline{BC} \cong \overline{EF}$  — (ii)

$\angle B \cong \angle E$  — (iii)

$\therefore \triangle ABC \cong \triangle MEF$

So  $\angle C \cong \angle MFE$

Reasons



Construction

Given

Given

S.A.S postulate

Corresponding angles of congruent triangles.