

O.P.JINDAL SCHOOL SAVITRI NAGAR

Class: IX

Worksheet (2020-21)

Subject: Maths

Topic: Congruence of triangles

What is Congruence?

- In geometry, two figures or objects are congruent if they have the same shape and size, or if one has the same shape and size as the mirror image of the other.
- A combination of rigid motions, namely a translation, a rotation, and a reflection is also permitted in Congruence. Translation means sliding, Rotation means turning and Reflection means Flipping. If two figures can be overlapped using translation, rotation or reflection then they are congruence
- It has come from Latin word congruence "agree, correspond with"

Difference between Congruence and Similarity

Two Figures are similar if the objects differ in size but not in shape while in congruence size and shape remains same.

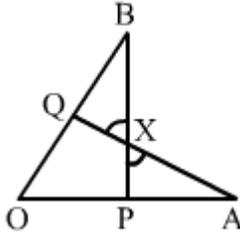
How to tell if triangles are congruent

Any triangle is defined by six measures (three sides, three angles). But you don't need to know all of them to show that two triangles are congruent. Various groups of three will do. Triangles are congruent if:

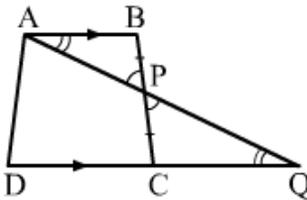
1. **SSS** (side side side)
All three corresponding sides are equal in length.
See Triangle Congruence (side side side).
2. **SAS** (side angle side)
A pair of corresponding sides and the included angle are equal.
See Triangle Congruence (side angle side).
3. **ASA** (angle side angle)
A pair of corresponding angles and the included side are equal.
See Triangle Congruence (angle side angle).
4. **AAS** (angle angle side)
A pair of corresponding angles and a non-included side are equal.
See Triangle Congruence (angle angle side).
5. **HL** (hypotenuse leg of a right triangle)
Two right triangles are congruent if the hypotenuse and one leg are equal.
See Triangle Congruence (hypotenuse leg).
6. **AAA does not work.**

Assignment

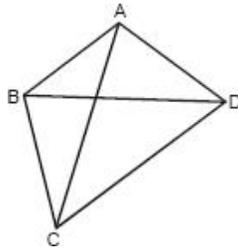
- Q1.** In the given figure, $OA = OB$ and $OP = OQ$. Prove that (i) $PX = QX$, (ii) $AX = BX$.



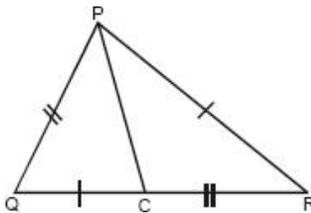
- Q2.** In the given figure, $ABCD$ is a quadrilateral in which $AB \parallel DC$ and P is the midpoint of BC . On producing, AP and DC meet at Q . Prove that (i) $AB = CQ$, (ii) $DQ = DC + AB$.



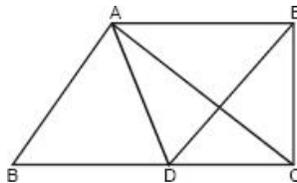
- Q3.** $ABCD$ is a quadrilateral in which $AD = BC$ and $\angle DAB = \angle CBA$. Prove that $\triangle ABD \cong \triangle BAC$.



- Q4.** In the given figure, triangles PQC and PRC are such that $QC = PR$ and $PQ = CR$. Prove that $\angle PCQ = \angle CPR$.



- Q5.** In the given figure, $AB = AD$, $AC = AE$ and $\angle BAD = \angle EAC$, then prove that $BC = DE$.



NOTE: This worksheet is prepared from home.