SM2 THEOREMS 7-2 (Distance and Triangle Congruence)

The Pythagorean Theorem:
IF the triangle is a right triangle,
THEN the lengths of the sides are related by: $a^2 + b^2 = c^2$

Theorem is a statement that has been proven to be true.

Theorems are usually written in
"IF _hypothesis__, THEN _conclusion___" format.

Theorem: IF (it is a) dog, THEN (it) barks

Converse of
the Theorem: IF _it barks___, THEN _it is a dog__________

If the hypothesis is true then we know the conclusion is true.

We exchange the hypothesis and conclusion to get a converse.

The converse of Pythagorean theorem is also the true (but this doesn't work for all theorems).

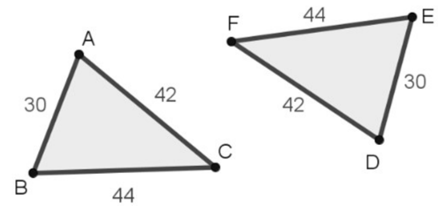
Pythagorean Theorem
IF the relationship between the side of a triangle make the following statement true, $a^2 + b^2 = c^2$
THEN the it is a right triangle.

SM2 THEOREMS 7-2 (Continued)

Side-Side-Side (SSS) Congruency Axiom: if all three pairs of corresponding sides of a triangle are congruent, then the triangles are congruent

$\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}, and\ \overline{CA} \cong \overline{FD}$

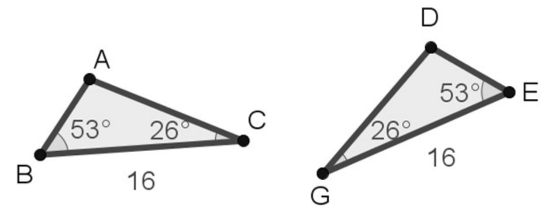
Therefore, $\Delta ABC \cong \Delta DEF$ by **SSS**



Angle-Side-Angle (ASA) Congruency Axiom: if two angles and their included side are congruent, then the two triangles are congruent.

$\angle ABC \cong \angle DEG$; $\overline{BC} \cong \overline{EG}$; $\angle BCA \cong \angle EGD$

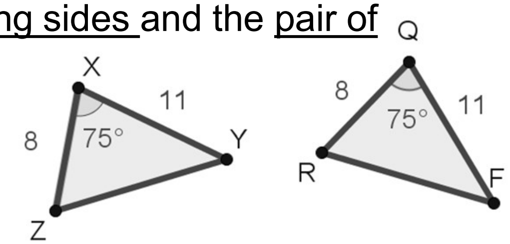
Therefore, $\Delta ABC \cong \Delta DEG$ by **ASA**



Side-Angle-Side (SAS) Congruency Axiom: if two pairs of corresponding sides and the pair of included angles are congruent, then the triangles are congruent.

$\overline{XZ} \cong \overline{QR}$, $\angle ZXY \cong \angle RQF$, and $\overline{XY} \cong \overline{QF}$

Therefore, $\Delta XYZ \cong \Delta QFR$ by **SAS**



Angle-Angle-Side (AAS) Congruency Axiom: If two pairs of corresponding angles are congruent and one pair of corresponding sides are congruent (which are NOT the included side), then the two triangles are congruent.

$\angle ZXY \cong \angle EFD$, $\angle XYZ \cong \angle FDE$, $\overline{XZ} \cong \overline{FE}$

Therefore, $\Delta XYZ \cong \Delta FDE$ by **AAS**