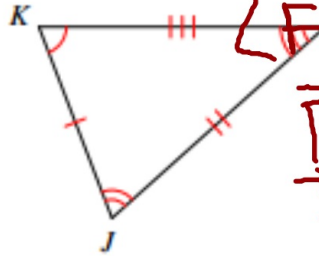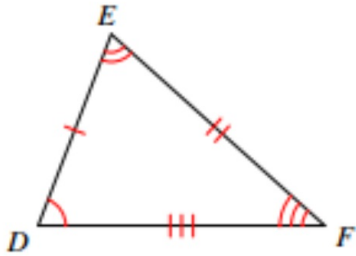# Warm-Up

Name at least two pairs of corresponding sides and two pairs of corresponding angles.

1) $\Delta DEF \cong \Delta KJI$

$\angle D \cong \angle K$
$\angle E \cong \angle J$
$\angle F \cong \angle I$

$\overline{DE} \cong \overline{KJ}$
$\overline{EF} \cong \overline{JI}$
$\overline{DF} \cong \overline{KI}$

---

complementary angles

Two angles that add up to 90°

40° → 50°

supplementary angles

two angles that add up to 180°

120° / 60°

adjacent angles

when two angles have a common side and a common vertex

$\angle ABC$ is adjacent to $\angle CBD$
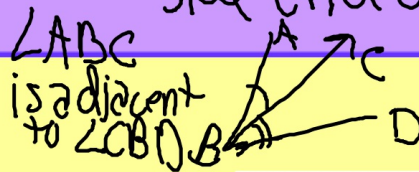
IF YOU GET 6 OUT OF 9, YOU WILL GET A TICKET!
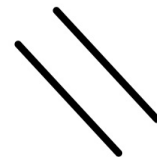
Congruent Triangles
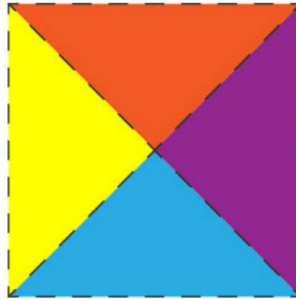
What is congruence?

Congruence is being exactly equal in size and shape.

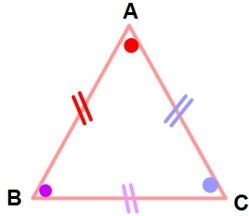### Example:

Two sides are congruent if they have exactly the same length.

Two angles are congruent if they have the same measure.

Definition of included angle and included side

A

B   C

An angle of a triangle is said to be included by two sides of this triangle if the intersection of the two sides is the vertex of the angle.

A side of a triangle is said to be included by the angles of the triangle whose

vertices are the endpoints of this side.
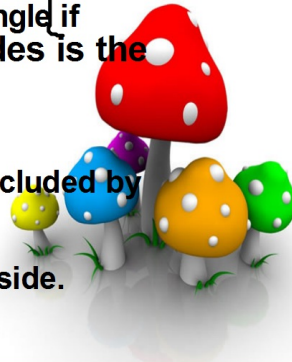
Rule 2

Example 1:

What is the angle included between sides BC and AC ?

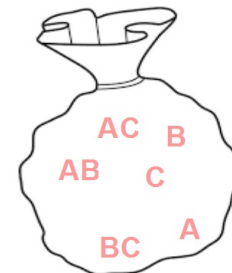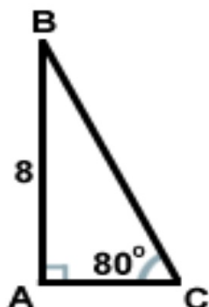$\angle C$

What is the side included between angles A and B?

AB

What is the angle included between sides AB and BC?

$\angle B$

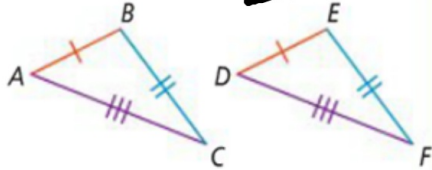What is the side included between angles B and C?

BC

B

8

80°

A   C

AC   B
AB   C
BC   A

SAS Theorem:

	Side-Angle-Side (SAS) Postulate	
Postulate If two sides and the included angle of one triangle are congruent to two sides and the included angle of another triangle, then the two triangles are congruent.	**If...** $\overline{AB} \cong \overline{DE}$ $\overline{AC} \cong \overline{DF}$ and $\angle A \cong \angle D$	**Then...** $\triangle ABC \cong \triangle DEF$

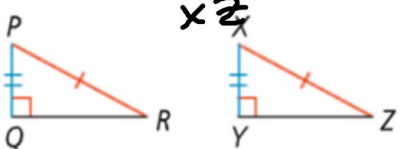|	Angle-Side-Angle (ASA) Postulate	
Postulate If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then the two triangles are congruent.	**If...** $\angle A \cong \angle D$ $\angle C \cong \angle F$ and $\overline{AC} \cong \overline{DF}$	**Then...** $\triangle ABC \cong \triangle DEF$

SSS Theorem:

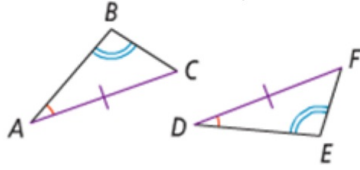| Side-Side-Side (SSS) Postulate		
Postulate If the three sides of one triangle are congruent to the three sides of another triangle, then the two triangles are congruent.	**If...** $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, and $\overline{AC} \cong \overline{DF}$	**Then...** $\triangle ABC \cong \triangle DEF$

HL Theorem:

Hypotenuse-Leg (HL) Theorem		
Theorem If the hypotenuse and a leg of one right triangle are congruent to the hypotenuse and a leg of another right triangle, then the triangles are congruent.	**If...** $\triangle PQR$ and $\triangle XYZ$ are right triangles, $\overline{QP} \cong \overline{YX}$, and $\overline{PR} \cong \overline{XZ}$	**Then...** $\triangle QPR \cong \triangle YXZ$

AAS Theorem:

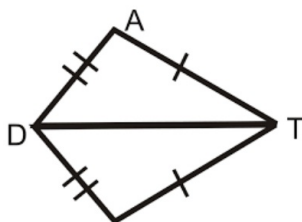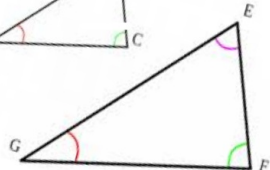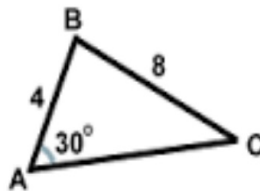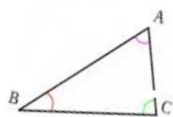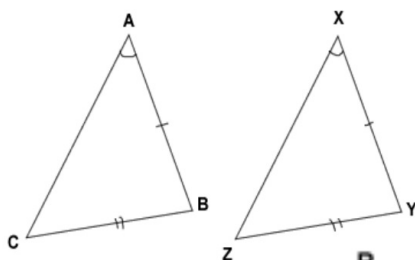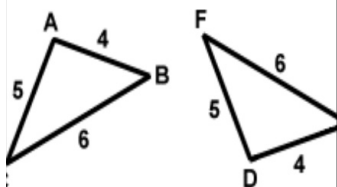| Angle-Angle-Side (AAS) Postulate		
Postulate	**If...**	**Then...**
If two angles and a nonincluded side of one triangle are congruent to two angles and the corresponding nonincluded side of another triangle, then the triangles are congruent.	$\angle A \cong \angle D$ $\angle B \cong \angle E$ and $\overline{AC} \cong \overline{DF}$	$\triangle ABC \cong \triangle DEF$

.

There is no AAA postulate.

There is no SSA postulate:

Example 2:

Move the congruent triangles to the right side

Example 3:

In the figure above, the two triangles are congruent by:

$\triangle ABC \cong \triangle XYZ$ by ASA

To see the answer fill the circle with black color
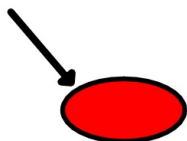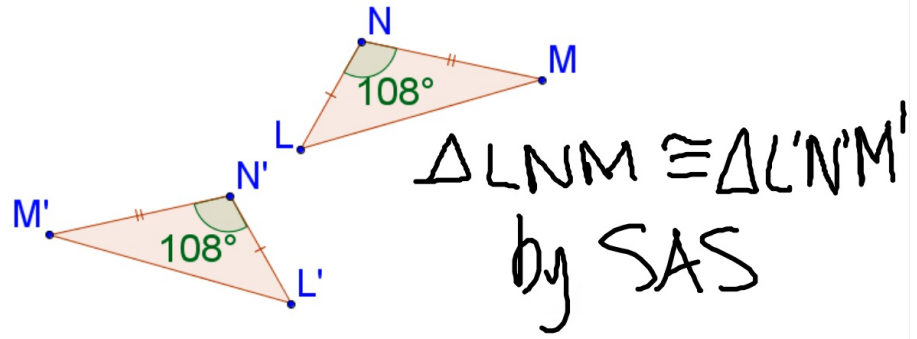
Example 4:

N

M

108°

L

N'

M'
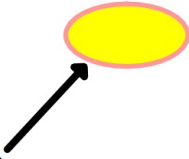
108°

L'

$\triangle LNM \cong \triangle L'N'M'$
by SAS
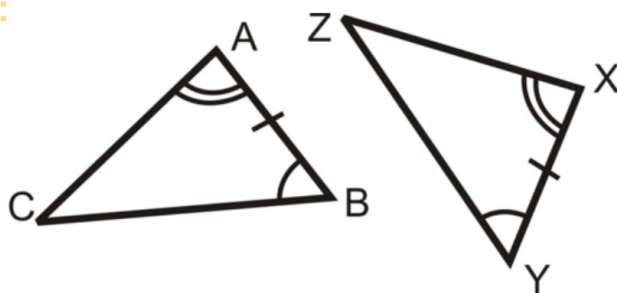
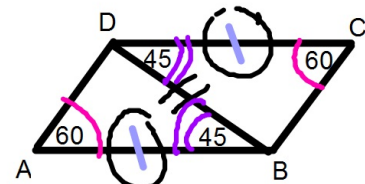**In the figure above, the two triangles are congruent by:**

To see the
answer fill
the circle
with black
color.

Example 5:

Which two triangles in the adjacent figure are congruent? why?

$\triangle ABD \cong \triangle CDB$
by SAS or ASA

D   C
45   60

A   B
60   45

Kahoot! (Exit Ticket)

1. You may use your phones or Chromebooks.
2. Your first name and last initial!
3. 10 questions.
4. Let's have fun!

https://play.kahoot.it/#/?quizId=efb25033-9bab-43d1-8445-4884b63382e5