

# GEOMETRY UNIT 5

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Congruent Figures

# Warmup

- Don't Ask About the Test...
  - Just listen up!

# Congruent Figures

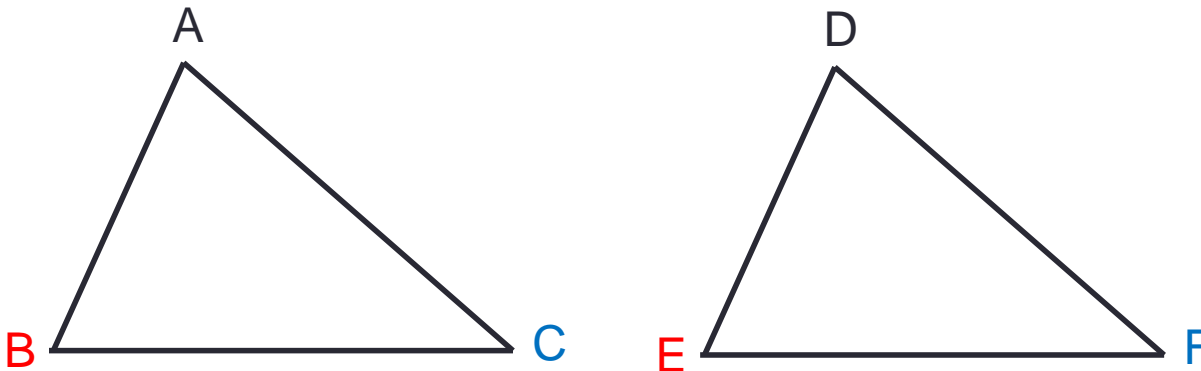
- **Content Objective**: Students will be able to use the properties of congruent triangles to gain an understanding of congruent polygons.
- **Language Objective**: Students will be able to write statements of congruent triangles in the appropriate order

# Congruent Figures

- Whenever two figures have the same size and shape, they are called **congruent**.
- We will be working with congruent triangles in this unit.

# Congruent Triangles

- I give you that  $\triangle ABC \cong \triangle DEF$



- In the diagram, the vertices match up like this

$$A \leftrightarrow D$$

$$B \leftrightarrow E$$

$$C \leftrightarrow F$$

- This will cause the sides and angles to match up like so:

*Corresponding angles*

$$\angle A \leftrightarrow \angle D$$

$$\angle B \leftrightarrow \angle E$$

$$\angle C \leftrightarrow \angle F$$

*Corresponding sides*

$$\overline{AB} \leftrightarrow \overline{DE}$$

$$\overline{BC} \leftrightarrow \overline{EF}$$

$$\overline{AC} \leftrightarrow \overline{DF}$$

# Definition of Congruent Triangles

The following statements are made true by having congruent triangles:

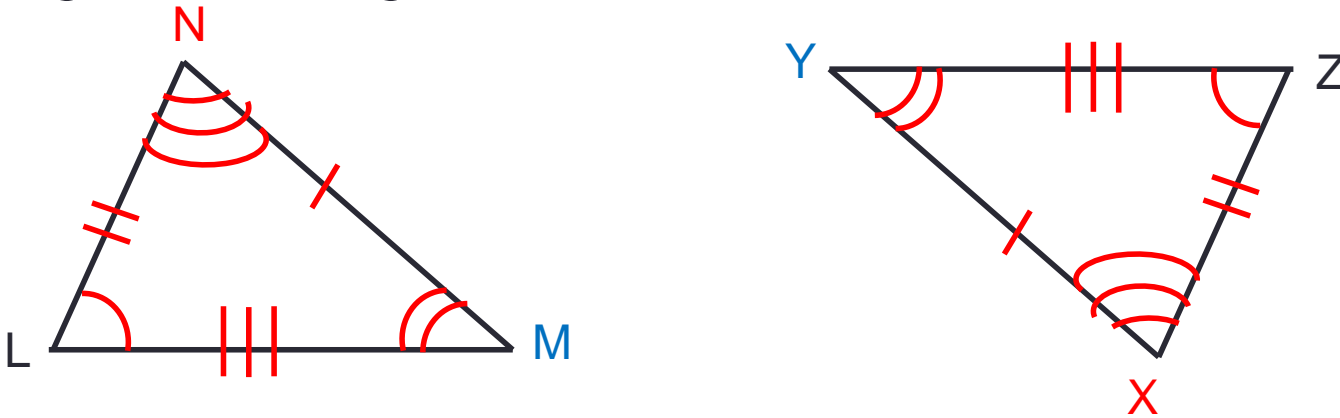
- Since congruent triangles have the same shape, then their corresponding angles are congruent.
- Since congruent triangles have the same size, then their corresponding sides are congruent.

\*These statements allow us to develop the following definition for *congruent triangles*:

- Two triangles are **congruent** if and only if their vertices can be matched up so that the *corresponding parts* (angles and sides) of the triangles are congruent.

# Examples of Congruent Triangles

- Use our definition of congruent Triangles to properly name the congruent triangles shown below.



- Match the congruent vertices by the marks:

$$L \leftrightarrow Z$$

$$M \leftrightarrow Y$$

$$N \leftrightarrow X$$

- We name the congruent triangles in order of their matching vertices:

$$\triangle LMN \cong \triangle ZYX$$

# The Importance of Corresponding Parts

- When using the definition of congruent triangles in a proof, the wording most commonly used is:
- **Corresponding Parts of Congruent Triangles are Congruent.**
- The Textbook shortens it to this:
  - **Corr. Parts of  $\cong \Delta$ 's are  $\cong$**
- I shorten it to this:
  - **CPCTC**

**YOU decide which one you want to use.**



# Exit Ticket

- Suppose  $\triangle BIG \cong \triangle CAT$ . Complete the following statements.

1.  $\angle G \cong$  \_\_\_\_\_

2. \_\_\_\_\_  $= m\angle A$

3.  $BI =$  \_\_\_\_\_

4. \_\_\_\_\_  $\cong \overline{AT}$

5.  $\triangle IGB \cong$  \_\_\_\_\_

6. \_\_\_\_\_  $\cong \triangle CTA$