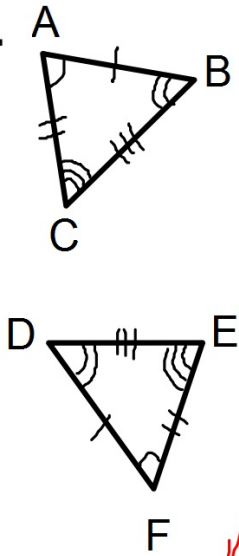


Bellwork

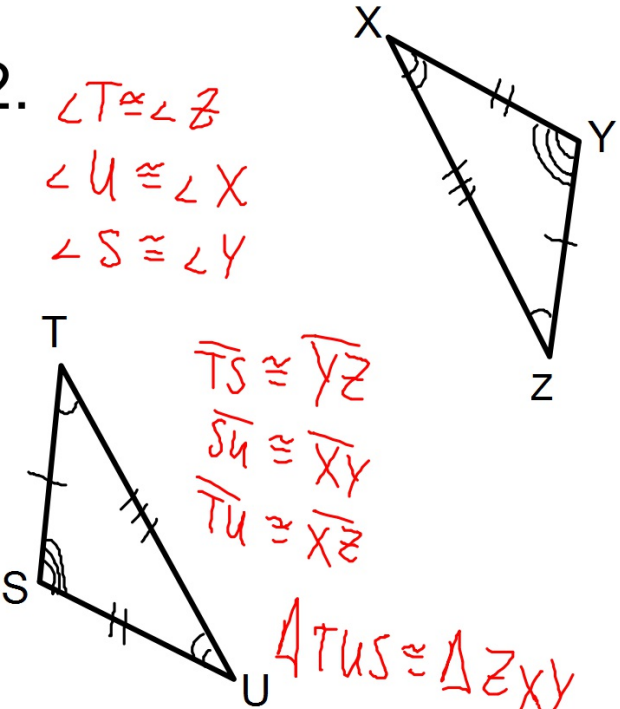
Write a Congruence Statement for each of the following:

1.



$\angle A \cong \angle F$
 $\angle B \cong \angle D$
 $\angle C \cong \angle E$
 $\overline{AB} \cong \overline{FD}$
 $\overline{BC} \cong \overline{DE}$
 $\overline{AC} \cong \overline{FE}$
 $\triangle ABC \cong \triangle FDE$

2.



$\angle T \cong \angle Z$
 $\angle U \cong \angle X$
 $\angle S \cong \angle Y$
 $\overline{TS} \cong \overline{YZ}$
 $\overline{SU} \cong \overline{XY}$
 $\overline{TU} \cong \overline{XZ}$
 $\triangle TUS \cong \triangle ZXY$

Parallel Lines

Definitions:

Parallel Lines - 2 lines that don't intersect and are coplanar.

Transversal - A line that intersects two or more coplanar lines at different points.

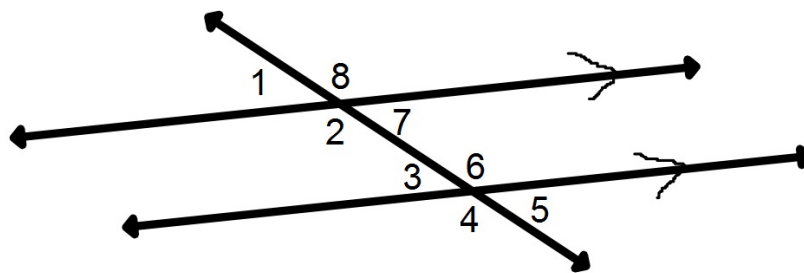
Denoted by...

1. $a \parallel b$ means "a is parallel to b"
2. Arrows in the middle of two or more lines implies that the lines are parallel.

Angles Formed by Lines Cut by a Transversal

1. Corresponding Angles:
2 angles with corresponding positions.
2. Alternate Interior Angles:
2 angles inside the 2 lines but on opposite sides of the transversal.
3. Alternate Exterior Angles:
2 angles outside the 2 lines and on opposite sides of the transversal.
4. Same Side Interior Angles:
2 angles inside the 2 lines and on the same side.
5. Vertical Angles:
Opposite angles of 2 intersecting lines.

Identifying The Types of Angles



1. List the pairs of Corresponding Angles.
1&3, 2&4, 5&7, and 6&8
2. List the pairs of Alternate Interior Angles.
2&6 and 3&7
3. List the pairs of Alternate Exterior Angles.
1&5 and 4&8
4. List the Same Side Interior Angles.
2&3 and 6&7
5. List the pairs of Vertical Angles.
1&7, 2&8, 3&5, and 4&6

Theorems To Remember

If 2 parallel lines are cut by a transversal...

1. Corresponding Angles Postulate:

Then pairs of corresponding angles are congruent.

2. Alternate Interior Angles Theorem:

Then pairs of alternate interior angles are congruent.

3. Alternate Exterior Angles Theorem:

Then pairs of alternate exterior angles are congruent.

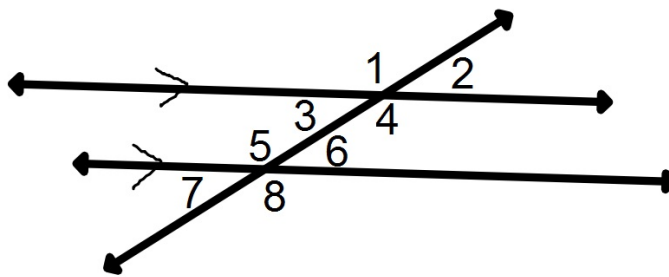
4. Same-Side Interior Angles Theorem:

Then same-side interior angles are supplementary.

5. Vertical Angles Congruence Theorem:

Vertical angles are congruent.

Example



1. Identify each of the following:

A. All Corresponding Angles. **1&5, 3&7, 2&6, and 4&8**

B. All Alternate Interior Angles. **3&6 and 4&5**

C. All Alternate Exterior Angles. **1&8 and 2&7**

D. All Same-Side Interior Angles. **3&5 and 4&6**

E. All Vertical Angles. **1&4, 2&3, 5&8, and 6&7**

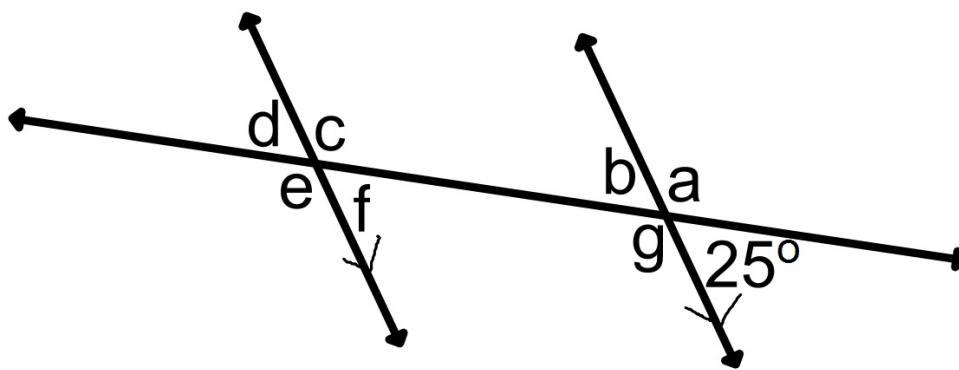
2. What angles are congruent to angle 1?

4 (Vertical Angle)

5 (Corresponding Angle)

8 (Alternate Exterior Angle)

Example



2. Find the measure of all missing angles.

$$a = 180 - 25 = \mathbf{155^\circ}$$

$$b = \mathbf{25^\circ}$$
 (Vertical angle to the given angle)

$$c = \mathbf{155^\circ}$$
 (Corresponding angle to a)

$$d = \mathbf{25^\circ}$$
 (Corresponding angle to b)

$$e = \mathbf{155^\circ}$$
 (Vertical angle to angle c)

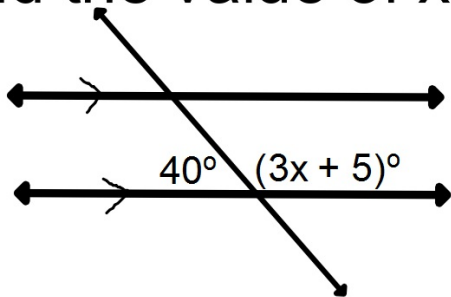
$$f = \mathbf{25^\circ}$$
 (Corresponding angle to the given angle)

$$g = \mathbf{155^\circ}$$
 (Vertical angle to angle a)

Example

Find the value of x:

3.



$$40 + 3x + 5 = 180$$

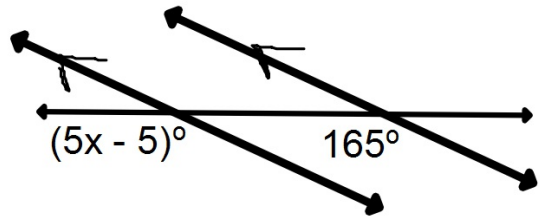
$$45 + 3x = 180$$

$$\begin{array}{r} -45 \\ \hline \end{array} \quad \begin{array}{r} -45 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{135}{3}$$

$$x = 45$$

4.



$$5x - 5 = 165$$

$$\begin{array}{r} +5 \\ \hline \end{array} \quad \begin{array}{r} +5 \\ \hline \end{array}$$

$$\frac{5x}{5} = \frac{170}{5}$$

$$x = 34$$