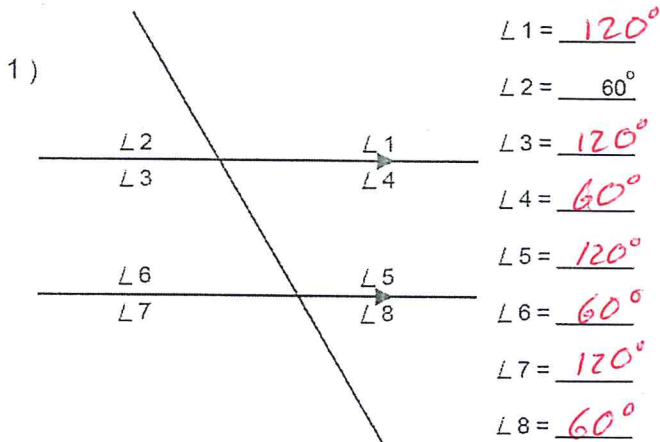


Grade 8 Math – Geometry **Identifying Angles and Angle Patterns in a Transversal**

Name: _____ Class: _____ Date: _____

For this diagram, determine the angle measure of each of the missing angles using the relationships of the angles given that the two horizontal lines are parallel.



What are the following patterns called?

Angle 1 and Angle 2: Adjacent

Congruent or Supplementary?

Supplementary

Angle 1 and Angle 3: Opposite

congruent

Angle 1 and Angle 5: Corresponding

congruent

Angle 1 and Angle 8: Same Side Exterior

Supplementary

Angle 1 and Angle 7: Alternating Exterior

congruent

Angle 1 and Angle 4: Adjacent

Supplementary

Angle 4 and Angle 1: Adjacent

Supplementary

Angle 4 and Angle 6: Alternating Interior

congruent

Angle 4 and Angle 3: adjacent

supplementary

Angle 4 and angle 5: Same Side Interior Consecutive

supplementary

Angle 4 and Angle 8: Corresponding

congruent

Angle 4 and Angle 2: Opposite

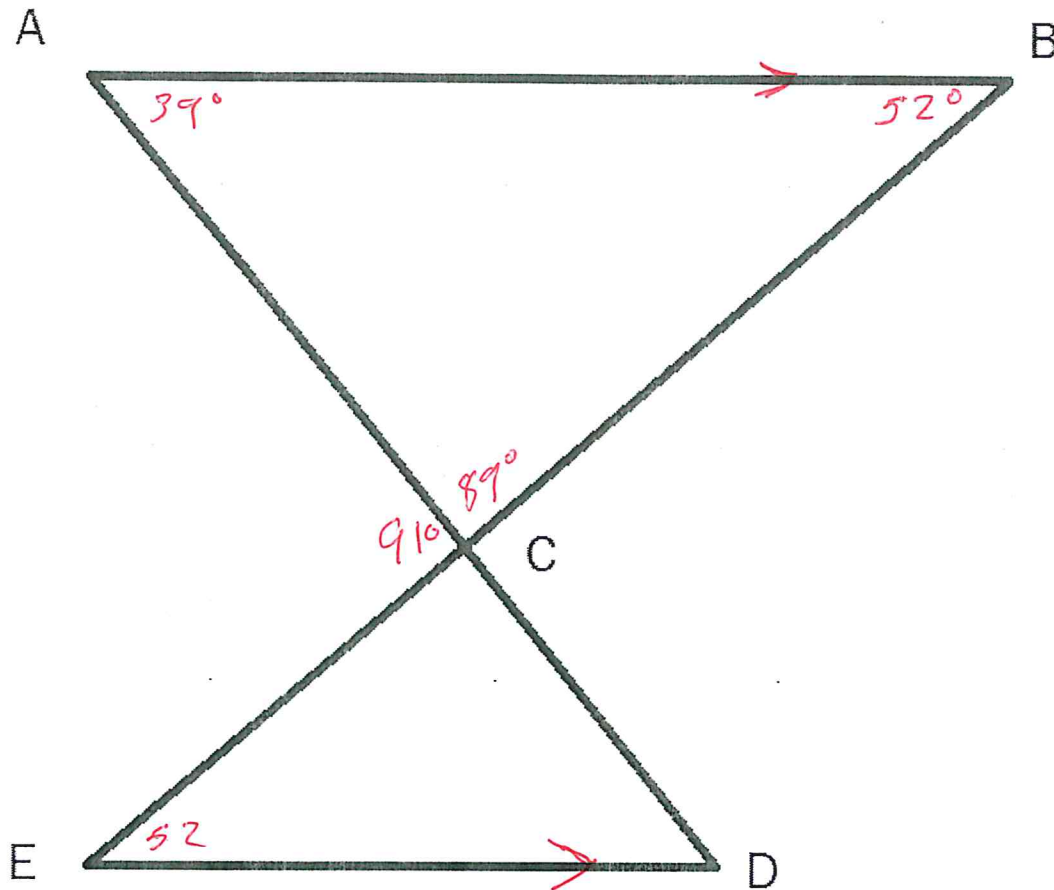
congruent

Label the following figure.

$\angle ABC$ is 52°

$\angle ACE$ is 91°

Line AB is Parallel to Line ED



What are the Following Angle Measures and Why?

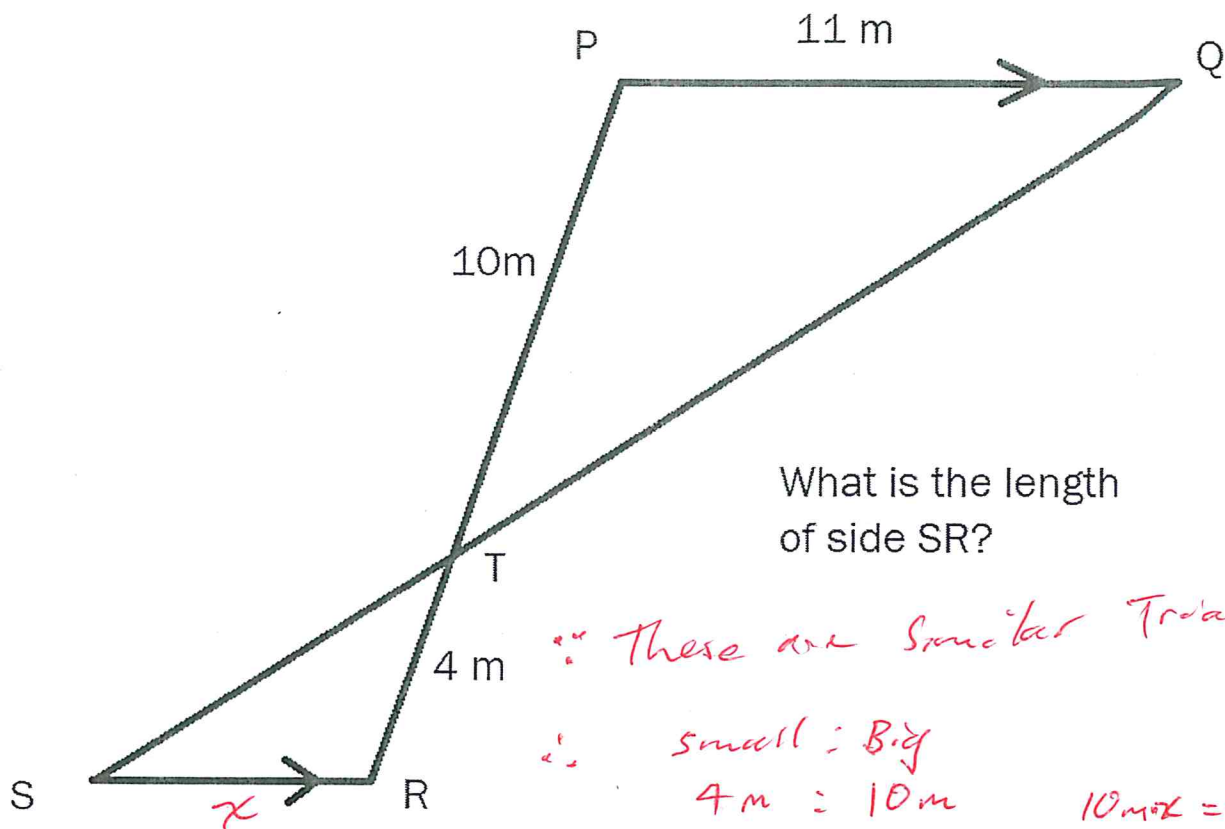
$\angle ACB$? 89 $^\circ$ because Supplementary Angles $180^\circ - 91^\circ = 89^\circ$

$\angle BAC$? 39 $^\circ$ because Interior Triangle sum $180^\circ - 89^\circ - 52^\circ = 39^\circ$

$\angle CED$? 52 $^\circ$ because alternating interior angles

$\angle ECD$? 89 $^\circ$ because supplementary to 91° $180^\circ - 91^\circ = 89^\circ$

$\angle CDE$? 39 $^\circ$ because interior alternating angles to $\angle BAC$



∴ These are Similar Triangles

∴ small : Big
 $4m : 10m$
 $x : 11m$

$$10m \cdot x = 4m \times 11m$$

$$\frac{10m \cdot x}{10m} = \frac{44m^2}{10m}$$

$$x = 4.4m$$

The length of SR is 4.4m

How do we know that ΔPQT and ΔTRS are similar triangles? Explain your thinking.

$\angle Q$ is ~~similar~~ ^{congruent} to $\angle S$ due to alternating interior angles

$\angle P$ is ~~similar~~ ^{congruent} to $\angle R$ due to alternating ^{interior} Angles

$\angle STR$ is congruent to $\angle PTQ$ due to opposite Angles

Since Triangles have 3 angles congruent, the Triangles are similar.

Name : _____

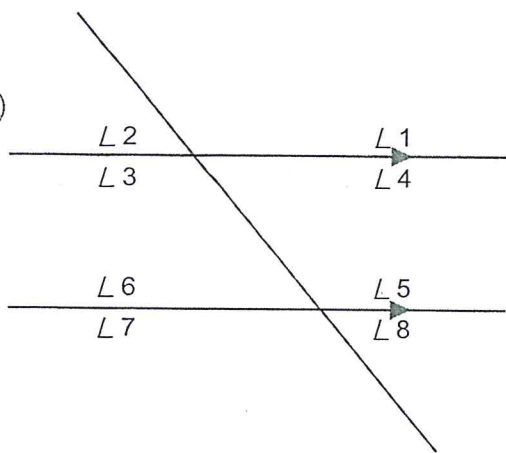
Score : _____

Teacher : _____

Date : _____

Find all of the missing angles.

1)



$\angle 1 = 129^\circ$

$\angle 2 = 51^\circ$

$\angle 3 = 129^\circ$

$\angle 4 = 51^\circ$

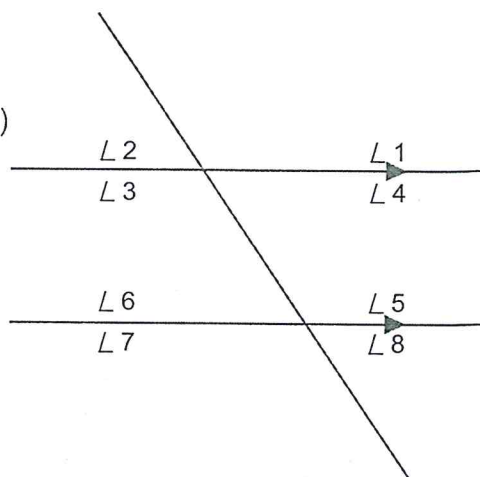
$\angle 5 = 129^\circ$

$\angle 6 = 51^\circ$

$\angle 7 = 129^\circ$

$\angle 8 = 51^\circ$

2)



$\angle 1 = 124^\circ$

$\angle 2 = 56^\circ$

$\angle 3 = 124^\circ$

$\angle 4 = 56^\circ$

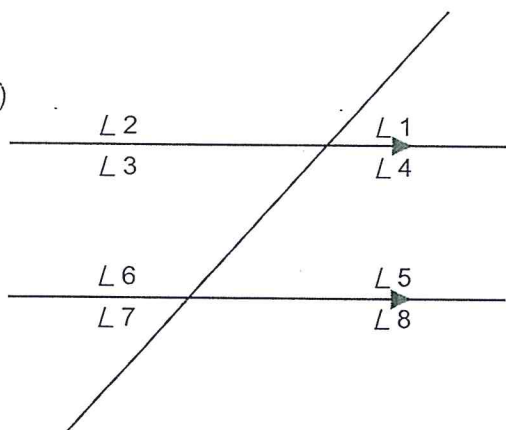
$\angle 5 = 124^\circ$

$\angle 6 = 56^\circ$

$\angle 7 = 124^\circ$

$\angle 8 = 56^\circ$

3)



$\angle 1 = 49^\circ$

$\angle 2 = 131^\circ$

$\angle 3 = 49^\circ$

$\angle 4 = 131^\circ$

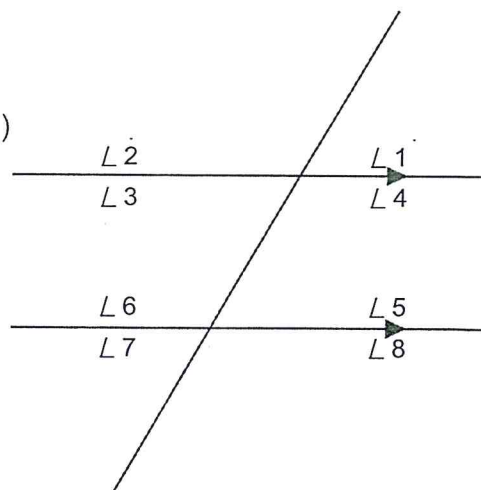
$\angle 5 = 49^\circ$

$\angle 6 = 131^\circ$

$\angle 7 = 49^\circ$

$\angle 8 = 131^\circ$

4)



$\angle 1 = 60^\circ$

$\angle 2 = 120^\circ$

$\angle 3 = 60^\circ$

$\angle 4 = 120^\circ$

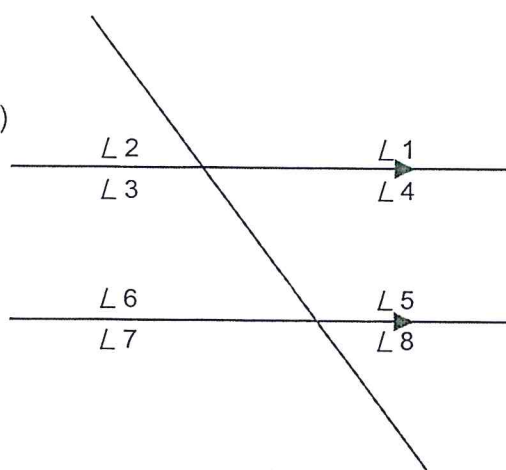
$\angle 5 = 60^\circ$

$\angle 6 = 120^\circ$

$\angle 7 = 60^\circ$

$\angle 8 = 120^\circ$

5)



$\angle 1 = 126^\circ$

$\angle 2 = 54^\circ$

$\angle 3 = 126^\circ$

$\angle 4 = 54^\circ$

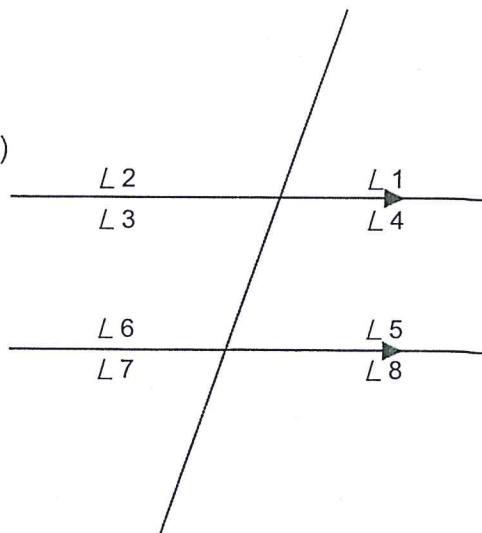
$\angle 5 = 126^\circ$

$\angle 6 = 54^\circ$

$\angle 7 = 126^\circ$

$\angle 8 = 54^\circ$

6)



$\angle 1 = 71^\circ$

$\angle 2 = 109^\circ$

$\angle 3 = 71^\circ$

$\angle 4 = 109^\circ$

$\angle 5 = 71^\circ$

$\angle 6 = 109^\circ$

$\angle 7 = 71^\circ$

$\angle 8 = 109^\circ$

