

take home 3 due tomorrow

"I know what we're going to do today."

Agenda:



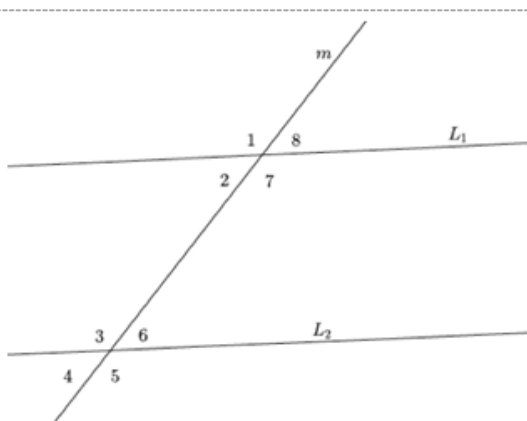
- 1) Warm up- I have who has
- 2) Lesson: Interior & Exterior Angles of Triangles
What is the sum of the angles in a triangle?
How do you calculate the measure of an exterior angle?
- 3) HW: Angles Ques (1-10)
- 4) Exit Ticket

Lesson Summary

Angles that are on the same side of the transversal in corresponding positions (above each of L_1 and L_2 or below each of L_1 and L_2) are called **corresponding angles**. For example, $\angle 2$ and $\angle 4$ are corresponding angles.

When angles are on opposite sides of the transversal and between (inside) the lines L_1 and L_2 , they are called **alternate interior angles**. For example, $\angle 3$ and $\angle 7$ are alternate interior angles.

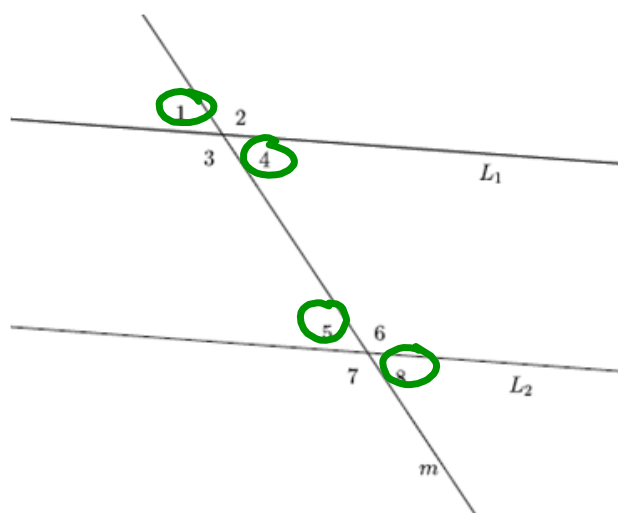
When angles are on opposite sides of the transversal and outside of the parallel lines (above L_1 and below L_2), they are called **alternate exterior angles**. For example, $\angle 1$ and $\angle 5$ are alternate exterior angles.



When parallel lines are cut by a transversal, any corresponding angles, any alternate interior angles, and any alternate exterior angles are equal in measure. If the lines are not parallel, then the angles are not equal in measure.

Homework

Use the diagram below to do Problems 1–6.



1. Identify all pairs of corresponding angles. Are the pairs of corresponding angles equal in measure? How do you know?
2. Identify all pairs of alternate interior angles. Are the pairs of alternate interior angles equal in measure? How do you know?
3. Use an informal argument to describe why $\angle 1$ and $\angle 8$ are equal in measure if $L_1 \parallel L_2$.

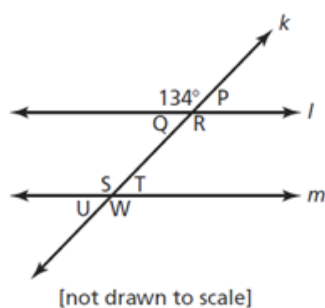
4. Assuming $L_1 \parallel L_2$ if the measure of $\angle 4$ is 73° , what is the measure of $\angle 8$? How do you know?

5. Assuming $L_1 \parallel L_2$, if the measure of $\angle 3$ is 107° degrees, what is the measure of $\angle 6$? How do you know?

6. Assuming $L_1 \parallel L_2$, if the measure of $\angle 2$ is 107° , what is the measure of $\angle 7$? How do you know?

For questions 7-9.

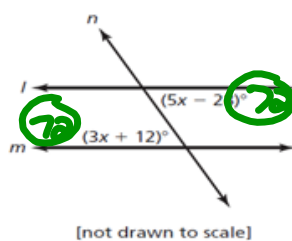
In the diagram below, line l and line m are parallel, and line k is a transversal.



7. What is the measure of angle P?
8. Are angles S and P equal in measure? Explain your reasoning.
9. What is the measure of angle T?

10. Solve for x in the diagram below.

In the diagram below, line l and line m are parallel.



$$5x - 28 = 3x + 12$$

$$\underline{-3x}$$

$$2x - 28 = 12$$

$$\underline{+28}$$

$$2x = 40$$

$$\underline{\div 2}$$

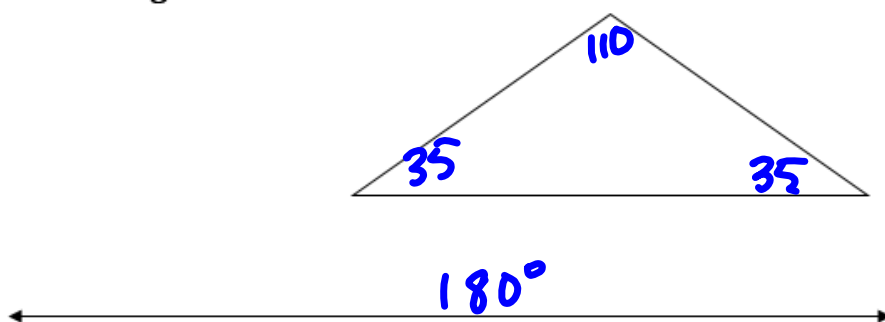
$$x = 20$$

7-4 – TRIANGLE INTERIOR/EXTERIOR ANGLE THEOREMS

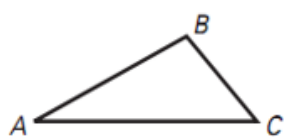
Geometry

Aim: SWBAT use Triangle Interior and Exterior Angle Sum Theorem to find missing angles of triangles.

Notes: Which is greater- the measure of a straight angle or the sum of the angles of a triangle?

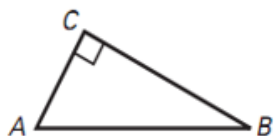


TRIANGLE SUM THEOREM



angles in a \triangle
add to 180°

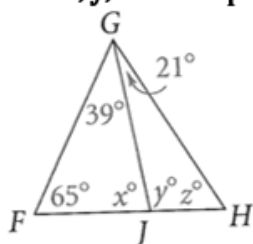
COROLLARY TO THE TRIANGLE SUM THEOREM



Right triangle,
2 acute angles add to 90°

Finding angle measures of triangles

Find x , y , and z . Explain.



Example 1

$x =$
 $y =$
 $z =$

76
104
55

$$x + 39 + 65 = 180$$

$$x + 104 = 180$$

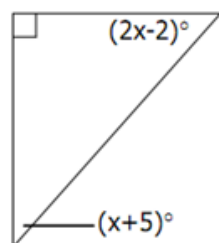
$$x = 76$$

$$\begin{array}{r} 16 \\ x \end{array} \bigg| 48$$

$$76 + y = 180$$

$$y = 104$$

Find x .



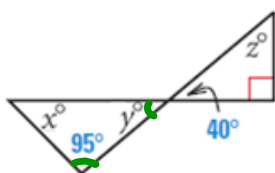
$$2x - 2 + x + 5 = 90$$

$$\begin{array}{r} 3x + 3 = 90 \\ -3 \quad -3 \end{array}$$

$$\begin{array}{r} 3x = 87 \\ \underline{3} \quad \underline{3} \end{array} \quad x = 29$$

Find the value of each variable. Show your work.

1.



$$z = 50$$

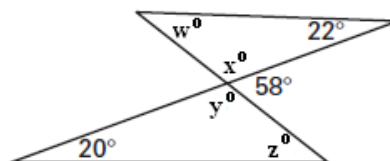
$$y = 40$$

$$x + 95 + 40 = 180$$

$$x + 135 = 180$$

$$x = 45$$

2.



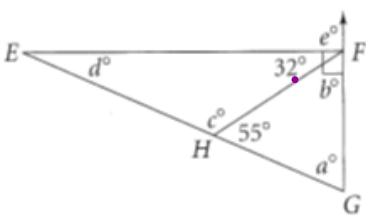
$$x = y = 122$$

$$20 + y + z = 180$$

$$22 + x + w = 180$$

$$122 + w = 180$$

3.



$$e = 90$$

$$b = 58$$

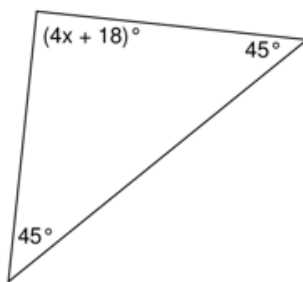
$$c = 125$$

$$\begin{array}{r} 11 \\ 32 \\ \hline 43 \end{array}$$

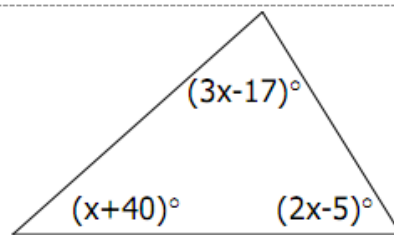
$$\begin{array}{r} 180 \\ - 55 \\ \hline 125 \end{array}$$

Find x.

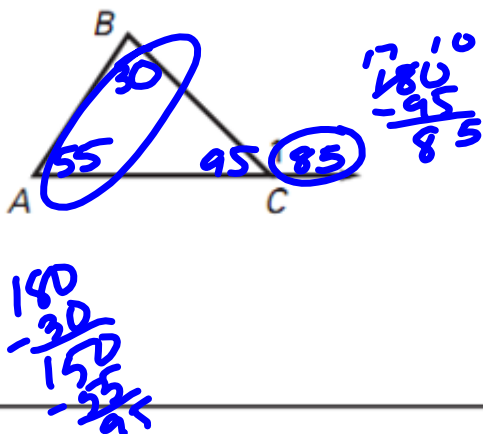
4.



5.



TRIANGLE EXTERIOR ANGLE THEOREM



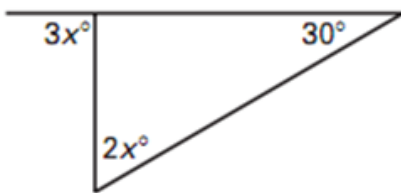
Sum of
2 Remote interior
angles = exterior
angle

Exa

Using the Exterior Angle Theorem to find missing angles

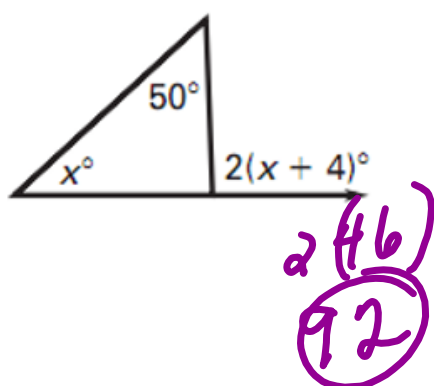
Measure of exterior angle = sum of 2 Remote Interior \angle s

Find x.



$$\begin{aligned}
 3x &= 2x + 30 \\
 \cancel{-2x} \quad &\quad \cancel{-2x} \\
 x &= 30
 \end{aligned}$$

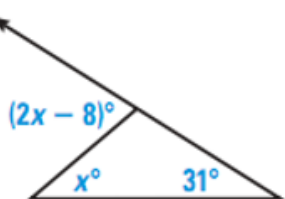
Find the measure of the exterior angle shown.



$$\begin{aligned}
 2(x+4) &= x+50 \\
 2x+8 &= x+50 \\
 \underline{-x} \quad \underline{-x} & \\
 x+8 &= 50 \\
 \underline{-8} \quad \underline{-8} & \\
 x &= 42
 \end{aligned}$$

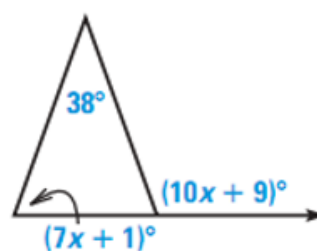
Find x.

6.



$$\begin{array}{r} 2x - 8 = x + 31 \\ -x \quad \quad -x \\ \hline x - 8 = 31 \\ +8 \quad +8 \\ \hline x = 39 \end{array}$$

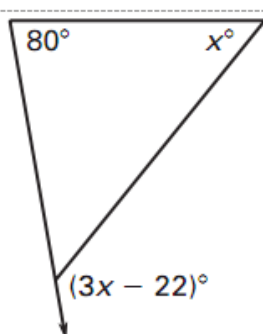
7.



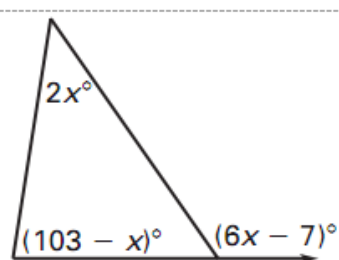
$$7x + 1 + 38 = 10x + 9$$

Find the measure of the exterior angle shown.

8.



9.



7-4 – TRIANGLE INTERIOR/EXTERIOR ANGLE THEOREMS

HOMEWORK

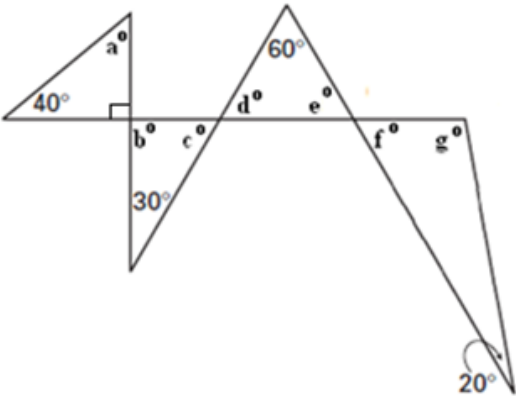
Geometry

Aim: SWBAT use Triangle Interior and Exterior Angle Sum Theorem to find missing angles of triangles by writing an solving equations.

Find the value of each variable. Explain.

1.		2.	
3.		4.	
5.			

5.



Find x.

<div data-bbox="229 719 264 752">6.</div> <div data-bbox="320 719 478 1003"> </div>	<div data-bbox="791 719 826 752">7.</div> <div data-bbox="858 719 1141 965"> </div>
---	---

Find x.

<div data-bbox="240 734 264 763" data-label="Text"> <p>8.</p> </div> <div data-bbox="301 734 585 994" data-label="Diagram"> <p>A triangle with interior angles labeled 60°, $2x^\circ$, and 94°. The 94° angle is at the top vertex, the 60° angle is at the bottom-left vertex, and the $2x^\circ$ angle is at the bottom-right vertex.</p> </div>	<div data-bbox="778 734 802 763" data-label="Text"> <p>9.</p> </div> <div data-bbox="826 734 1299 972" data-label="Diagram"> <p>An inverted triangle with interior angles labeled $(6x-7)^\circ$, $(103-x)^\circ$, and $2x^\circ$. The $(6x-7)^\circ$ angle is at the top-left vertex, the $(103-x)^\circ$ angle is at the top-right vertex, and the $2x^\circ$ angle is at the bottom vertex.</p> </div>
---	---

10 Find the measure of each numbered angle below. Explain your reasoning.

