LEARNING OBJECTIVE: We will calculate angle measures of parallel lines that are cut by transversals (G8M2L8)

two lines that never intersect. They are also the same distance apart.

CONCEPT DEVELOPMENT:

Transversal: A line that cuts through a pair of parallel lines.

Vertical Angles: The opposite angles created by the intersection of the transversal and a parallel line. *∡2≅∡3, ∡1≅∡4, ∡6≅∡7, ∡5≅∡8*
∡2 maps to ∡3 if you rotate 180° around point P.

Corresponding Angles: Angles on the same side of the transversal in corresponding positions.
∡2≅∡6, ∡1≅∡5, ∡3≅∡7, ∡4≅∡8
∡1 maps to ∡5 when you translate it along $\overrightarrow{PQ}$
Inside the parallel lines

opposite side of transversal

Alternate Interior Angles: Angles on opposite sides of the transversal on the inside of the parallel lines. *∡3≅∡6, ∡4≅∡5*
∡3 maps to ∡6 if you rotate it 180° around C.
C is midpoint of $\overline{PQ}$

Alternate Exterior Angles: Angles on opposite sides of the transversal on the outside of the parallel lines. *∡1≅∡8, ∡2≅∡7*
∡2 maps to ∡7 if you rotate it 180° around C.
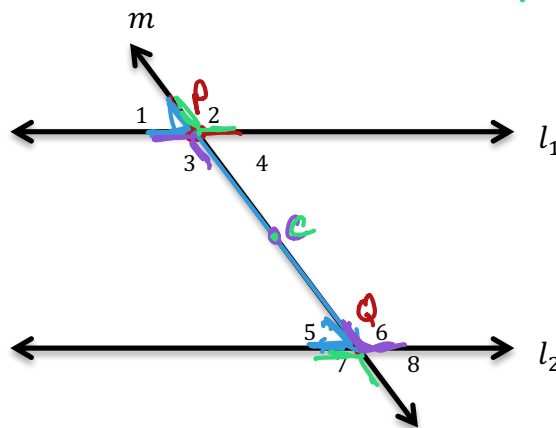
Theorem: When parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent, the pairs of alternate interior angles are congruent, and the pairs of alternate exterior angles are congruent.

Converse of the Above Theorem: If you know that corresponding angles (or alternate interior or alternate exterior) are congruent then you can be sure that the lines cut by a transversal are parallel.
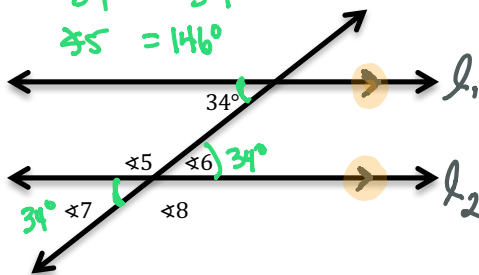

Guided Practice:

Steps for Determining the Angle Measures Involving Parallel Lines
1. Identify all corresponding, alternate interior and alternate exterior angles.
2. Determine the measure of angles according to the theorem described on page 1.
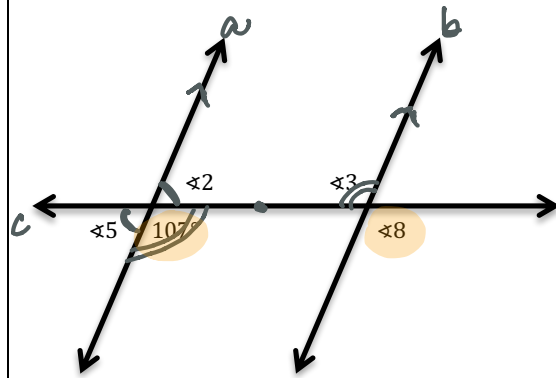
What are the angle measures for ∢ 5, ∢6, ∢7, and ∢8? ∢5+∢6 = 180° (Supplementary) ∢5+34 =180 −34 •34 ∢5 = 146° $l_1 \parallel l_2$ ∢7 = 34° (Corresponding) ∢6 = 34° (alt. int.) ∢5 = 146°, ∢8 = 146°	What are the angle measures for ∢2, ∢3, ∢5, and ∢8 ∢2+107=180 −107 −107 ∢2=73°, ∢5=73° ∢3=107° ∢8 =107°
What are the missing angle measures?	Fill in the missing angle measures.
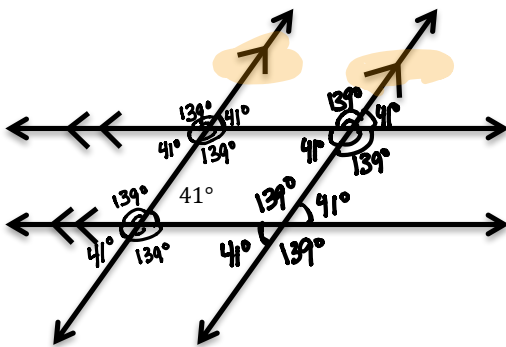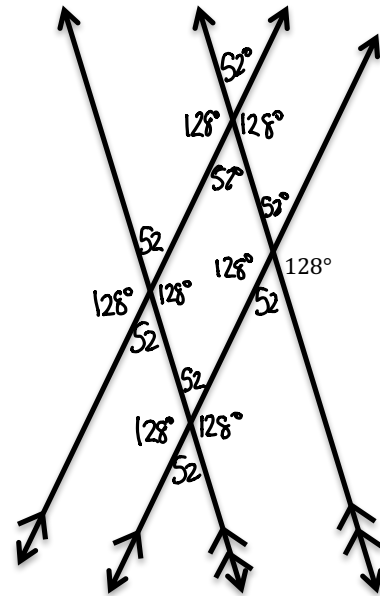
Independent Practice:

Label and identify the pairs of corresponding angles. Determine the angle measurements. a b c d e 52° f g	Is angle ∢2 congruent to ∢6? How can you tell? ∢1 ∢2 ∢3 ∢4 ∢5 ∢6 ∢7 ∢8
Fill in the rest of the angle measurements, and make a claim about the lines that are cut by the transversal. a b 56° c d e f 56° g h	What are the rest of the angle measurements? k j l m 143° o n p q
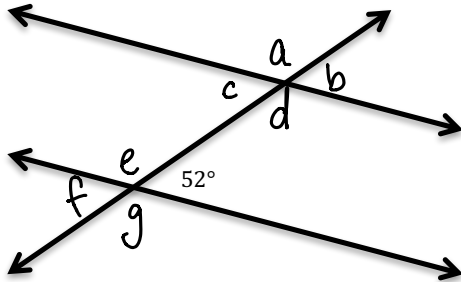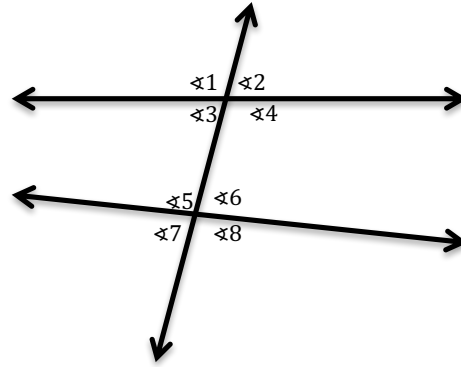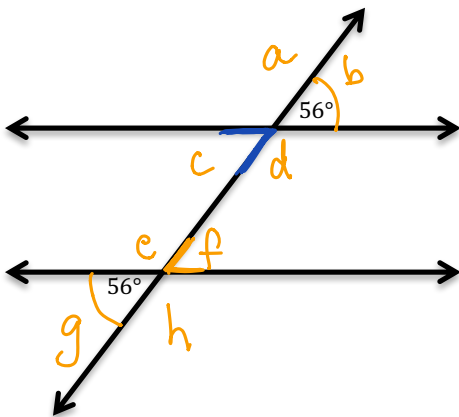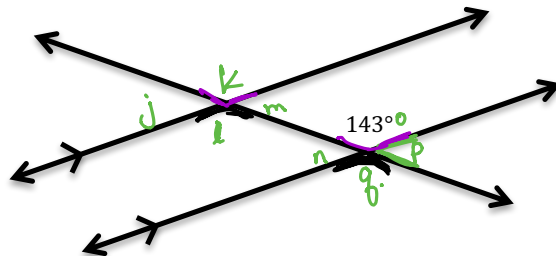
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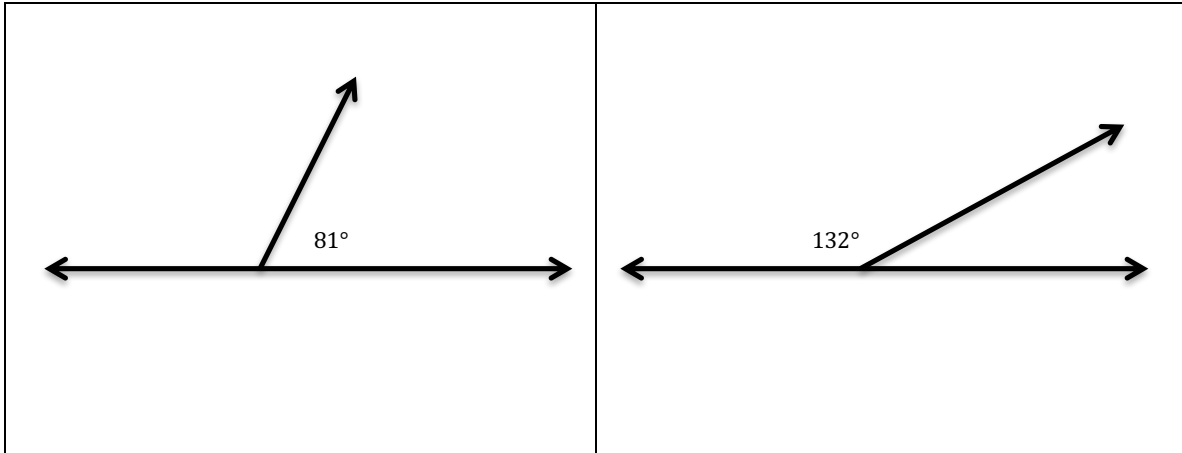
Mr. Rogove   Date:_____

Activating Prior Knowledge:
We know how to calculate the angle measures of corresponding angles.

Closure:
Exit Ticket From lesson 12 Engage NY.

Teacher Notes:

Homework is from Drexel Math Forum—Problem of the Week #3231-Analyzing Angles