Name: _____ # _____

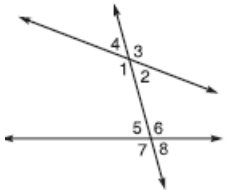
Geometry: Period _____
Ms. Pierre
Date: _____

Parallel Lines cut by a Transversal

Today's Objective

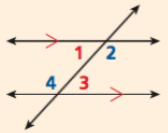
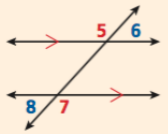
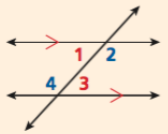
SWBAT prove and use theorems about the angles formed by parallel lines and a transversal.

A line that intersects two or more lines in a plane at a different point is called a _____



Types of Angles		
Angle	**Definition**	**Examples**
Interior	Lies between the two lines.	
Alternate Interior	On opposite sides of the transversal in between the two lines.	
Consecutive Interior	On the same side of the transversal.	
Exterior	Lies outside the two lines.	
Alternate Exterior	On opposite sides of the transversal outside the two lines.	

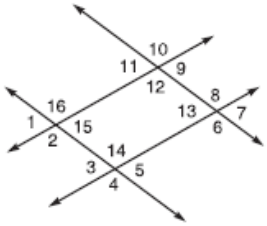
Theorems Parallel Lines and Angle Pairs

THEOREM	HYPOTHESIS	CONCLUSION
Alternate Interior Angles Theorem If two parallel lines are cut by a transversal, then the pairs of alternate interior angles are congruent.		
Alternate Exterior Angles Theorem If two parallel lines are cut by a transversal, the the two pairs of alternate exterior angles are congruent.		
Same-Side Interior Angles Theorem If two parallel lines are cut by a transversal, then the two pairs of same-side interior angles are supplementary.		

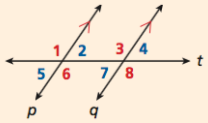
Example 1: Identifying Angle Pairs

***Identify each pair of angles as* alternate interior, alternate exterior, consecutive interior, *or* vertical.**

1. ∠6 and ∠10
2. ∠14 and ∠13
3. ∠14 and ∠6
4. ∠1 and ∠5
5. ∠12 and ∠15
6. ∠2 and ∠16



Postulate **Corresponding Angles Postulate**

POSTULATE	HYPOTHESIS	CONCLUSION
If two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent.		

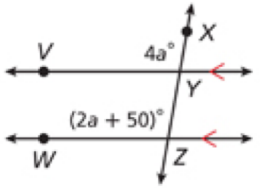
Suppose two lines in a plane are cut by a transversal. With enough information about the angles that are formed, you can decide whether the two lines are parallel.

IF	THEN
• Corresponding angles are _____ • Alternate interior angles are _____ • Alternate exterior angle are _____ • Consecutive Interior angles are _____ • The lines are _____ to the same line,	The lines are parallel.

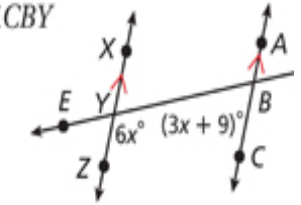
Example 2: Finding Angle Measures

Find the angle measure.

7. m∠*VYX*

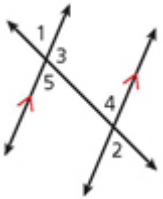


8. n m∠*CBY*



State the theorem or postulate that is related to the measures of the angl in each pair. Then find the angle measures.

9. m∠1 = (7*x* + 15)°, m∠2 = (10*x* − 9)°



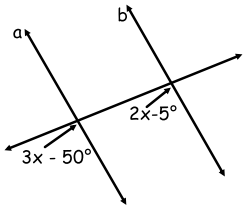
10. m∠3 = (23*x* + 11)°, m∠4 = (14*x* + 21)°

11. m∠1 = (6*x* + 24)°, m∠4 = (17*x* − 9)°

Guided Practice

In questions 1 – 4, assume $a \parallel b$. Find the value of x.

1.



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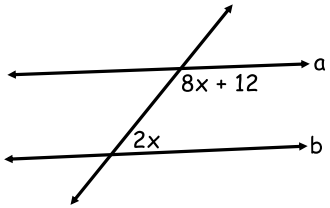

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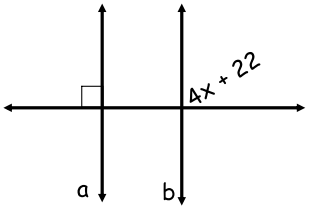

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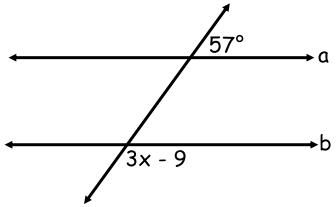
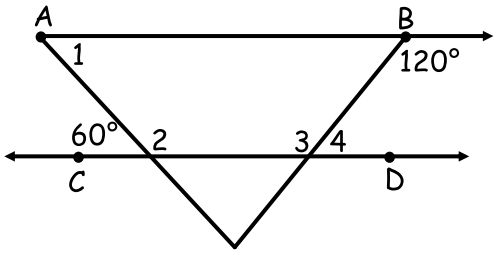


Question 5, $\overline{AB} \parallel \overline{CD}$, find the measure of each numbered angle.

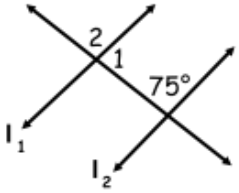
5.



Independent Practice

In questions 1-4, assume $l_1 \parallel l_2$. Find the measure of $\angle 1$ and $\angle 2$.

1.



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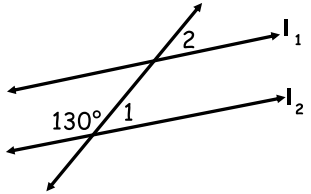

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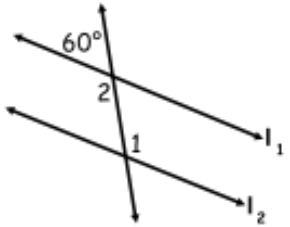

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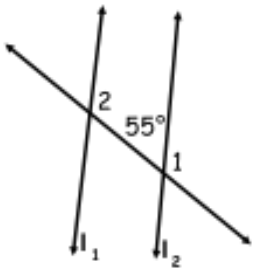
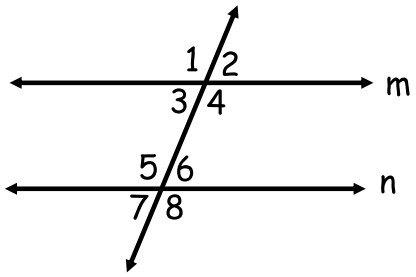


Given $m \parallel n$ and $m\angle 8 = 119°$, find the measures of all the numbered angles in the figure.

5. m∠8 = 119° , m∠1 = _____, m∠2 = _____, m∠3 = _____

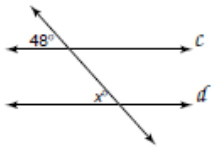
m∠4 = ____, m∠5 = _____, m∠6 = _____, m∠7 = _____



Homework

Find x so that c ∥ d.

1.



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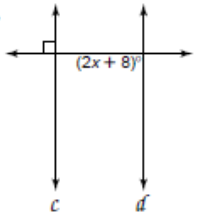

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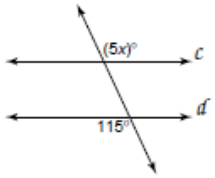

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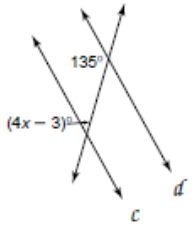

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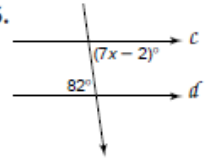

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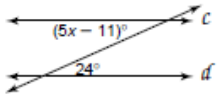

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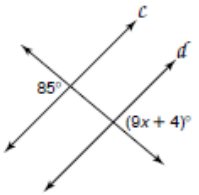

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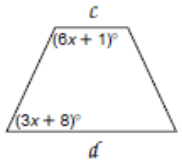

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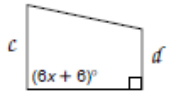
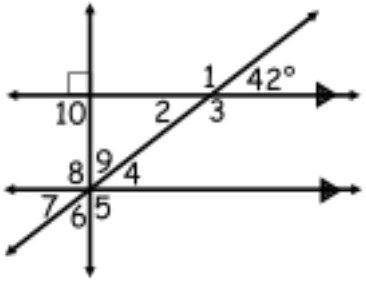


Find the measures of all labeled angles in the diagram.

10.