Line and Angle Relationships

Warm Up

Find the complement of each angle measure.

1. 30° 60°

2. 42° 48°

Find the supplement of each angle measure.

3. 150° 30°

4. 82° 98°

Module 11

Essential ?

How can you use angles to identify lines, and find missing measures of angles?

Standard

MCC7.G.5: Use facts about supplementary, complementary, vertical, and adjacent angels in multi-step problem to write and solve simple equations for an unknown angle in a figure.

Line and Angle Relationships

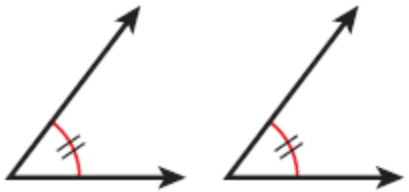
When lines, segments, or rays intersect, they form angles. If the angles formed by two intersecting lines measure 90°, the lines are **perpendicular lines**.

Some lines in the same plane do not intersect at all. These lines are **parallel lines**. Segments and rays that are part of parallel lines are also parallel.

Skew lines do not intersect, and yet they are also not parallel. They lie in different planes.

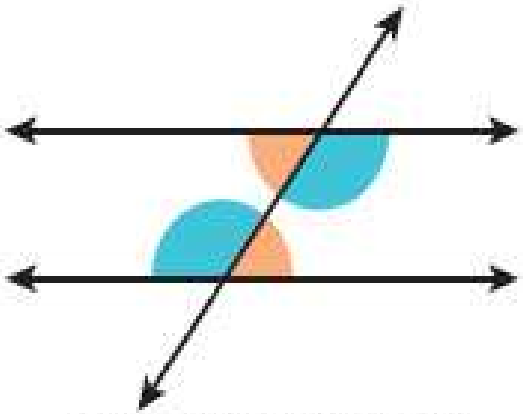
Reading Math

Angles with the same number of tick marks are congruent. The tick marks are placed in the arcs drawn inside the angles.

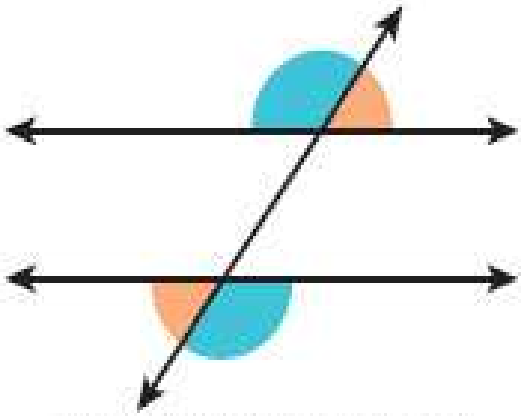


Line and Angle Relationships

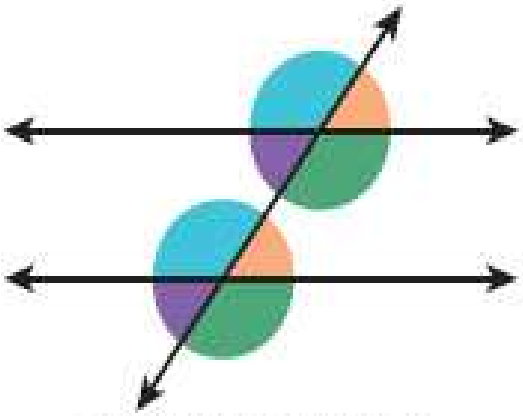
A **transversal** is a line that intersects two or more lines. Transversals to parallel lines form special angle pairs.



Alternate interior angles



Alternate exterior angles



Corresponding angles

Draw pictures onto guided notes page

Line and Angle Relationships

Copy into guided notes for each angle.

PROPERTIES OF TRANSVERSALS TO PARALLEL LINES

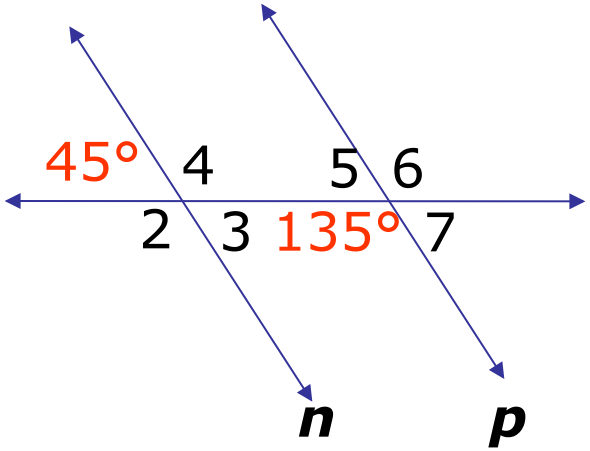
If two parallel lines are intersected by a transversal,

- corresponding angles are congruent,
- alternate interior angles are congruent,
- and alternate exterior angles are congruent.

Angle relationship video

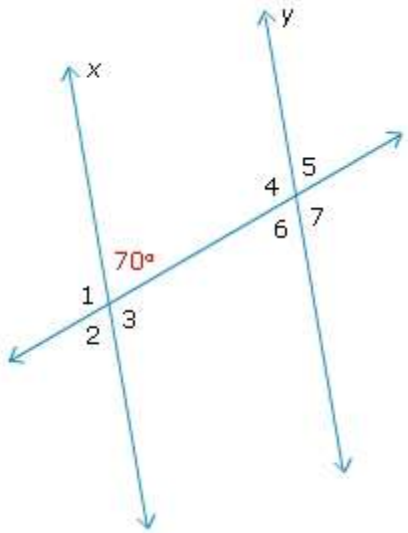
Check It Out: Example 2B

Line *n* ||line *p*. Find the measure of the angles.



Lesson Quiz for Student Response Systems

4. In the figure, line *x* || line *y*. Identify the measures



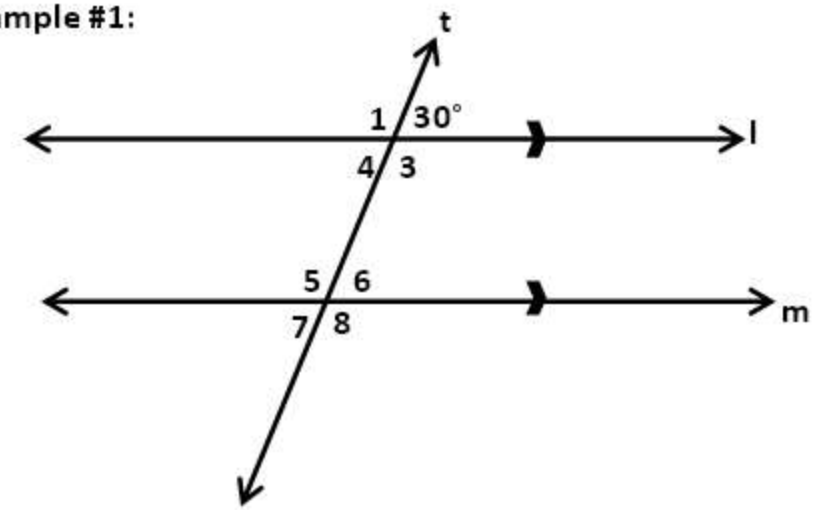
○

Geometry
Guided Notes
Transversals

Name: _____

Date: _____ **Period:** _____

Example #1:



Example #2:

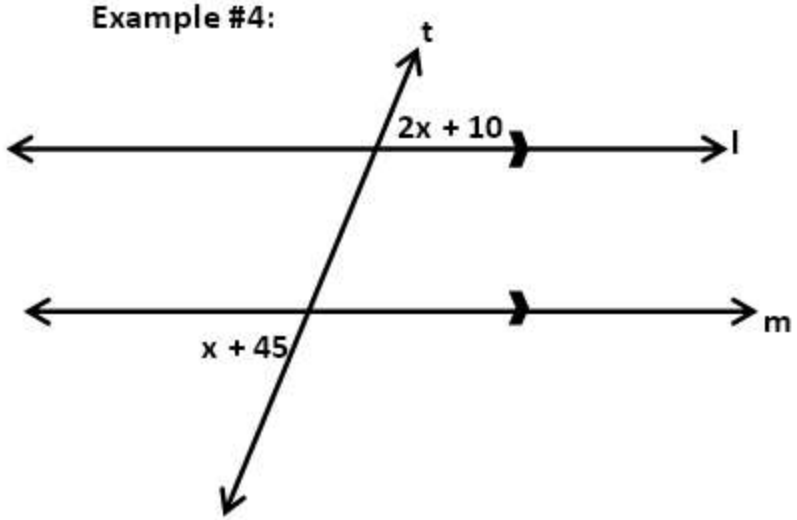
Using angle relationships to solve for x.

Geometry
Guided Notes
Transversals

Name: _____

Date: _____ **Period:** _____

Example #4:

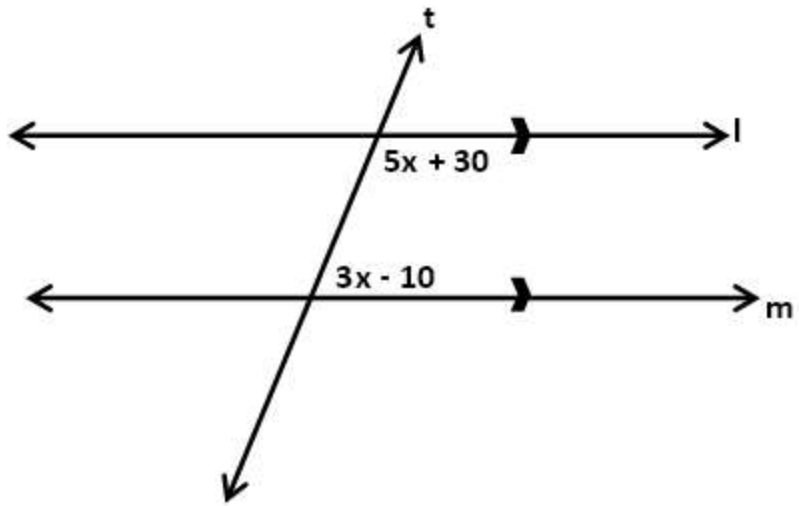


1. Identify angle relationships
   -Alternate Exterior (Sum = 180)
2. Set up equation
   $x + 45 + 2x + 10 = 180$
3. Solve equation
   $x + 45 + 2x + 10 = 180$
   $3x + 55 = 180$ (Combine like terms)
   $3x = 125$ (inverse operation; subtract 55 both sides)
   $x = 41.67$ (inverse operation; divide 3 both sides)

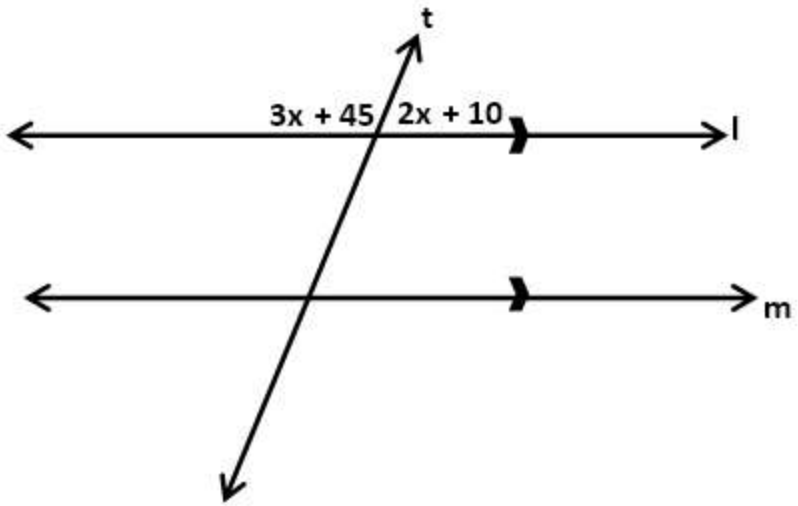
Example #5:

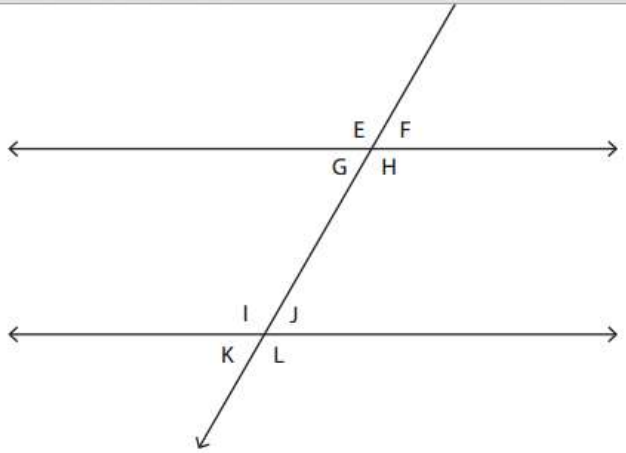
video

Example #5:



Example #2:





1) ∠J and ∠F are _____

2) ∠E and ∠G are _____

3) ∠J and ∠K are _____

4) ∠G and ∠I are _____

5) ∠H and ∠L are _____

6) ∠K and ∠E are _____

7) ∠F and ∠K are _____

8) ∠H and ∠G are _____

9) ∠E and ∠H are _____

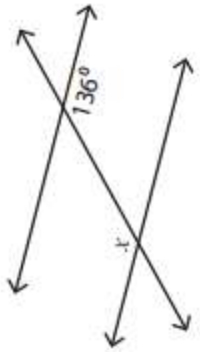
10) ∠G and ∠J are _____

Name : _____ Score : _____

Angles in Transversal

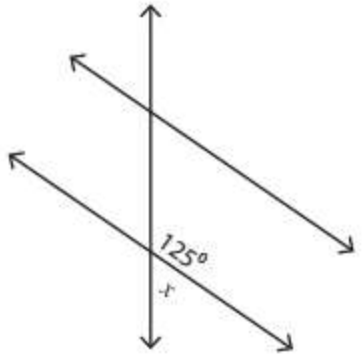
Find the value of x.

1)



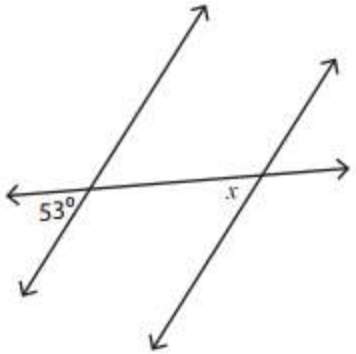
$x =$ _____

2)



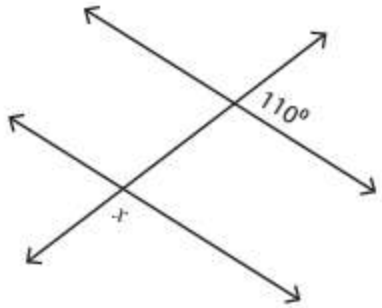
$x =$ _____

3)



$x =$ _____

4)



$x =$ _____

5)

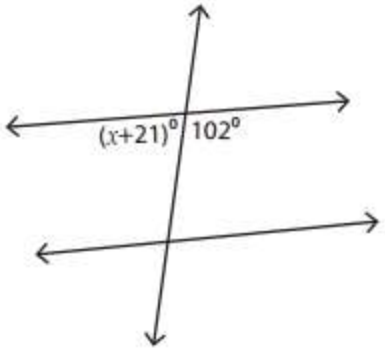
6)

Name : _____ Score : _____

Angles in Transversal

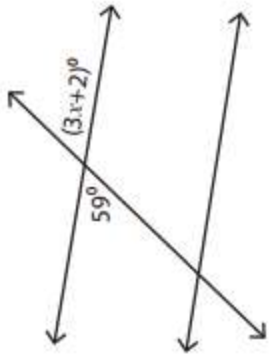
Find the value of x.

1)



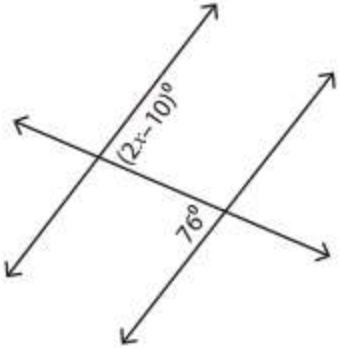
$x =$ _____

2)



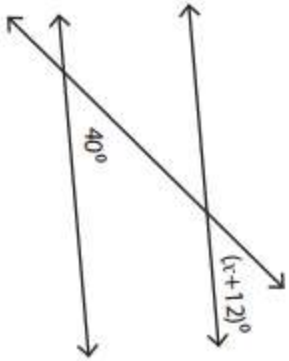
$x =$ _____

3)



$x =$ _____

4)



$x =$ _____

5)

6)