

What you will learn about:  
Parallel lines and Angles

Supplementary Angles

Complementary Angles

Vertical Angles

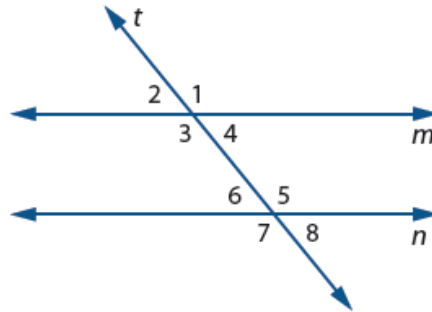
Linear Pairs

Parallel Lines

Transversal

Congruent

In the diagram below  $m \parallel n$  with transversal  $t$ .



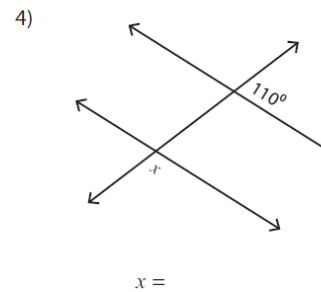
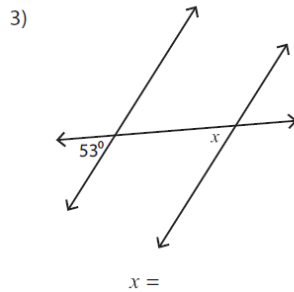
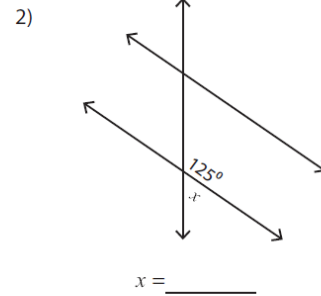
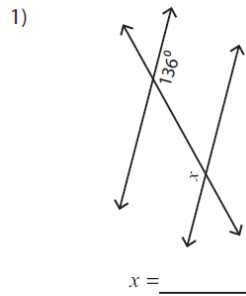
1. In the preceding diagram, the angles at each point of intersection are numbered so that they can be easily identified.
  - a. What pairs of angles, if any appear to be equal in measure?
  
  
  
  
  
  
  
  
  
  
  - b. What angle pairs appear to be supplementary? (Supplementary angles need not be linear pairs.)
  
  
  
  
  
  
  
  
  
  
  - c. Draw another pair of parallel lines and a transversal with a different slope from the one above. Number the angles as in the figure above.
    - i. Do the same pairs of numbered angles appear to be equal in measure?
  
  
  
  
  
  
  
  
  
  
    - ii. Do the same pairs of numbered angles appear to be supplementary?

Angles that are in the same relative position with respect to each parallel line and the transversal are called **Corresponding Angles**. In the diagram on the previous page angles 1 and 5 are corresponding angles.

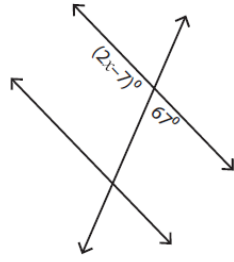
2. Examine the diagram you drew for Part C of Problems 1.
  - a. Name 3 other pairs of corresponding angles besides angles 1 and 5.
  - b. Suppose  $m\angle 1 = 123^\circ$  (read the measure of angle 1 is 123 degrees.) Find the measure of as many other angles as you can in your diagram.

Assuming all lines that look parallel are parallel.

Find the value of  $x$ .

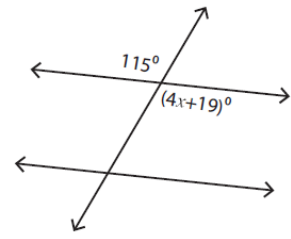


5)



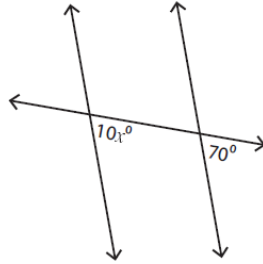
$x = \underline{\hspace{2cm}}$

6)



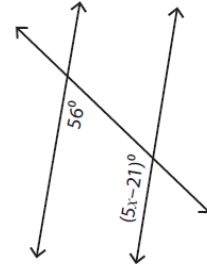
$x = \underline{\hspace{2cm}}$

7)



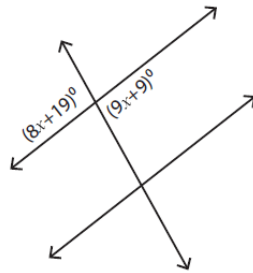
$x = \underline{\hspace{2cm}}$

8)



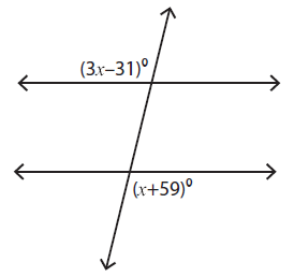
$x = \underline{\hspace{2cm}}$

1)



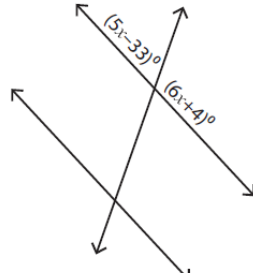
$x = \underline{\hspace{2cm}}$

2)



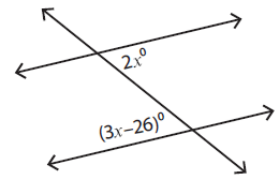
$x = \underline{\hspace{2cm}}$

3)



$x = \underline{\hspace{2cm}}$

4)



$x = \underline{\hspace{2cm}}$

# Proofs Using Lines Parallel

Linear Pair Postulate

Definition of Perpendicular Lines.

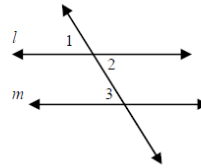
Right Angle

## Parallel Lines Proof Worksheet

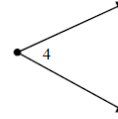
Name \_\_\_\_\_

Write a 2 column or flow proof on your own paper.

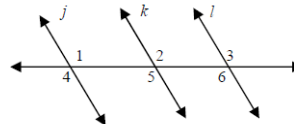
1. Given:  $l \parallel m$ ;  $\angle 2 \cong \angle 4$   
Prove:  $\angle 4 \cong \angle 3$



2. Given:  $l \parallel m$ ;  $\angle 1 \cong \angle 4$   
Prove:  $\angle 3 \cong \angle 4$



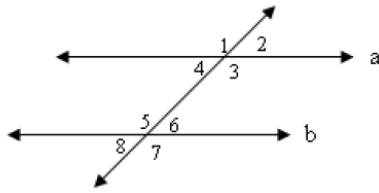
3. Given:  $j \parallel k, k \parallel l$   
Prove:  $\angle 1 \cong \angle 3$



4. Given:  $j \parallel k, k \parallel l$   
Prove:  $\angle 1 \cong \angle 6$

# Proving Parallel Lines

Given:  $m\angle 1 = m\angle 7$   
Prove:  $\angle 3 \cong \angle 5$



Given:  $g \parallel h$ ,  $\angle 1 \cong \angle 2$

Prove:  $p \parallel r$

