

What you will learn about:
Parallel lines and Angles

Supplementary Angles

Complementary Angles

Vertical Angles

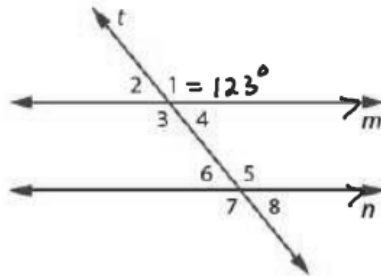
Linear Pairs

Parallel Lines

Transversal

Congruent

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



$$m\angle 1 = 123^\circ$$

$$m\angle 5 = 123$$

$$m\angle 2 = 57$$

$$m\angle 6 = 57$$

$$m\angle 3 = 123$$

$$m\angle 7 = 123$$

$$m\angle 4 = 57$$

$$m\angle 8 = 57$$

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.

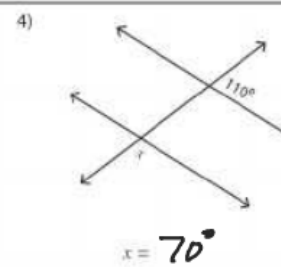
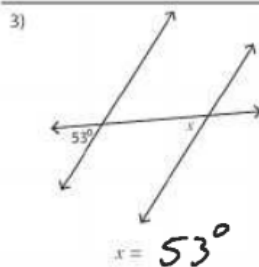
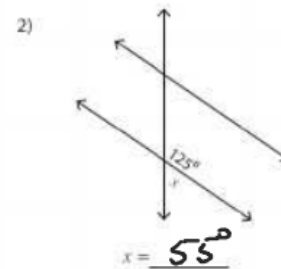
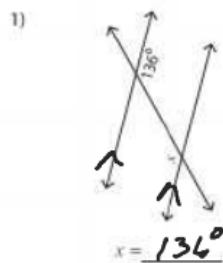
- i. Do the same pairs of numbered angles appear to be equal in measure?

- 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 .

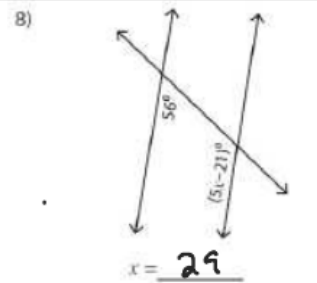
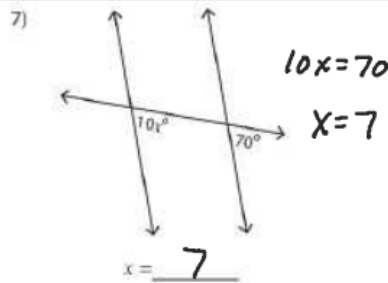
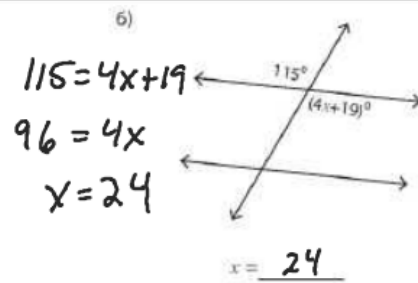
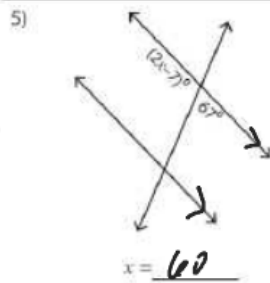


$$2x - 7 + 67 = 180$$

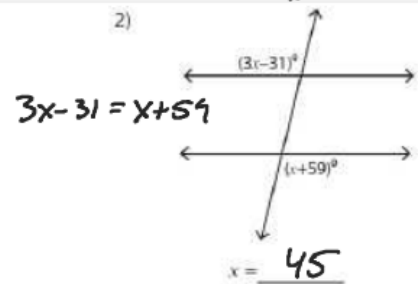
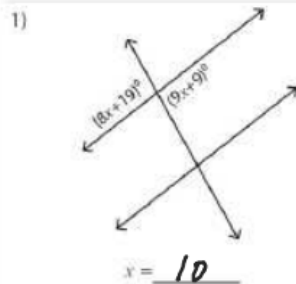
$$2x + 60 = 180$$

$$2x = 120$$

$$x = 60$$



$$8x + 19 = 9x + 9$$



$$5x - 33 + 6x + 4 = 180$$

$$11x - 29 = 180$$

$$11x = 209$$

