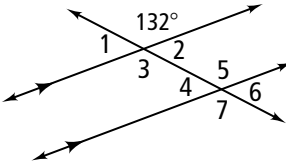


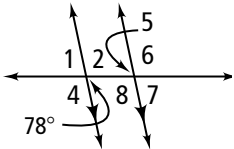
Practice

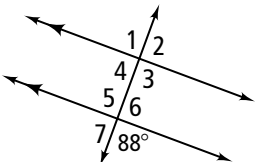
Form G

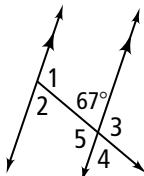
Properties of Parallel Lines

Identify all the numbered angles that are congruent to the given angle. Justify your answers.

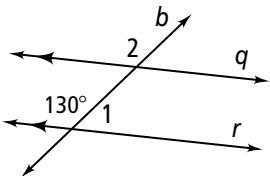
1.  $\angle 3$; vert. \sphericalangle are \cong ;
 $\angle 5$; corresp. \sphericalangle are \cong ;
 $\angle 7$; alt. ext. \sphericalangle are \cong .

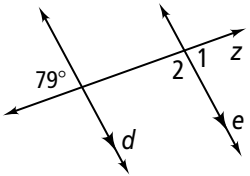
2.  $\angle 1$; vert. \sphericalangle are \cong ;
 $\angle 5$; alt. int. \sphericalangle are \cong ;
 $\angle 7$; corresp. \sphericalangle are \cong .

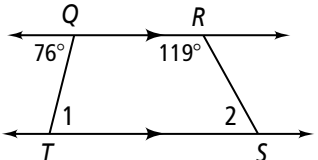
3.  $\angle 5$; vert. \sphericalangle are \cong ;
 $\angle 3$; corresp. \sphericalangle are \cong ;
 $\angle 1$; alt. ext. \sphericalangle are \cong .

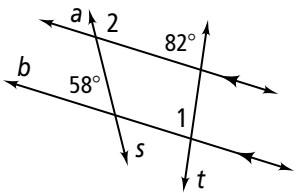
4.  $\angle 4$; vert. \sphericalangle are \cong ;
 $\angle 2$; alt. int. \sphericalangle are \cong .

Find $m\angle 1$ and $m\angle 2$. Justify each answer.

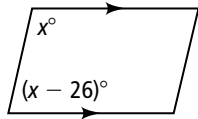
5.  $m\angle 1 = 50$; \sphericalangle that form a linear pair are suppl.;
 $m\angle 2 = 130$;
 corresp. \sphericalangle are \cong .

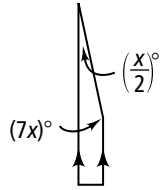
6.  $m\angle 1 = 79$; alt. ext. \sphericalangle are \cong ;
 $m\angle 2 = 101$; \sphericalangle that form a linear pair are suppl.

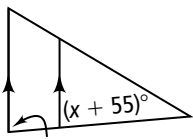
7.  $m\angle 1 = 76$; alt. int. \sphericalangle are \cong ;
 $m\angle 2 = 61$;
 same-side int. \sphericalangle are suppl.

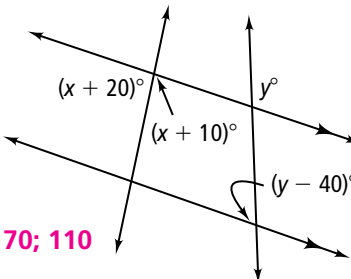
8.  $m\angle 1 = 82$;
 corresp. \sphericalangle are \cong ;
 $m\angle 2 = 122$;
 the 58° \sphericalangle and the \sphericalangle below $\angle 2$ are alt. int. \sphericalangle and are \cong .
 Because $\angle 2$ and the \sphericalangle below it form a linear pair, they are suppl.

Algebra Find the value of x and y . Then find the measure of each labeled angle.

9.  103 ; 77 ; 103°

10.  24 ; 12 ; 168

11.  30 ; 85 ; 85

12.  75 ; 95 ; 85 ; 70 ; 110

Practice (continued)

Form G

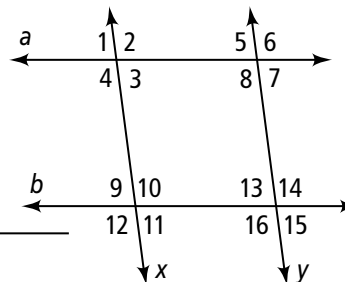
Properties of Parallel Lines

13. Write a two-column proof.

Given: $a \parallel b, x \parallel y$

Prove: $\angle 4$ is supplementary to $\angle 15$.

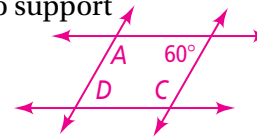
Answers may vary. Sample:



Statements	Reasons
1) $x \parallel y; a \parallel b$	1) Given
2) $\angle 15 \cong \angle 9$	2) Alt. ext. angles are \cong .
3) $m\angle 15 = m\angle 9$	3) Definition of congruent
4) $\angle 9$ and $\angle 4$ are suppl.	4) Same-side int. \angle s are suppl.
5) $m\angle 9 + m\angle 4 = 180$	5) Def. of suppl. \angle s
6) $m\angle 15 + m\angle 4 = 180$	6) Substitution property
7) $\angle 15$ and $\angle 4$ are suppl.	7) Def. of suppl. \angle s

14. **Visualization** One pair of parallel lines intersect a second pair of parallel lines. One of the angles of intersection has a measure of 60. How can you determine the measure of the four interior angles? Draw a sketch to support your answer.

Answers may vary. Sample: If the measure of the given angle is 60, then $m\angle A$ and $m\angle C$ are both 120 because same-side interior angles are supplementary. Because $\angle C$ and $\angle D$ are also supplementary, $m\angle D$ is 60.



15. **Error Analysis** Which solution for the figure at the right is incorrect? Explain.

$$2x - 40 = x + 10$$

$$2x - 40 + (x + 10) = 180$$

$$x - 40 = 10$$

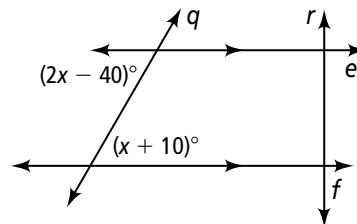
$$3x - 30 = 180$$

$$x = 50$$

$$3x = 210$$

$$x = 70$$

Second solution; the angles are alternate interior angles, which means they are congruent.



16. A zip line consists of a pulley attached to a cable that is strung at an angle between two objects. In the zip line at the right, one end of the cable is attached to a tree. The other end is attached to a post parallel to the tree. What is the measure of $\angle 1$? What type of angle pair do $\angle 1$ and the given angle represent?

115°; alternate interior angles

