

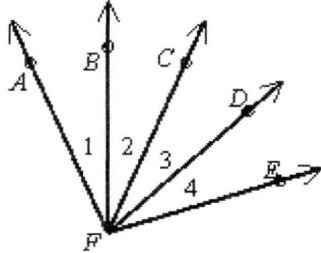


Fill in each missing reason.

B

6. Given:  $m\angle 1 = m\angle 3$

Prove:  $m\angle AFC = m\angle DFB$



$m\angle 1 = m\angle 3$	a. Given
$m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$	b. Addition Property of Equality
$m\angle 1 + m\angle 2 = \angle AFC$	c. ? Angle Addition Post.
$m\angle 3 + m\angle 2 = \angle DFB$	
$\angle AFC = \angle DFB$	d. Substitution Property

- |                                  |  |
|----------------------------------|--|
| a. Addition Property of Equality | c. Multiplication Property of Equality |
| b. Angle Addition Postulate      | d. Division Property of Equality       |

D

7. Name the Property of Equality that justifies the statement:

If  $p = q$ , then  $p - r = q - r$ .

- |                            |                         |
|----------------------------|-------------------------|
| a. Reflexive Property      | c. Symmetric Property   |
| b. Multiplication Property | d. Subtraction Property |

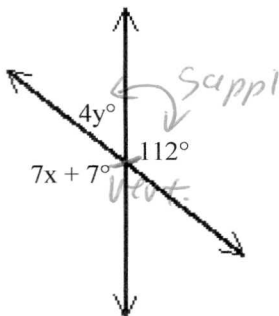
D

8.  $\angle DFG$  and  $\angle JKL$  are complementary angles.  $m\angle DFG = x + 5$ , and  $m\angle JKL = x - 9$ . Find the measure of each angle.

a. $\angle DFG = 47, \angle JKL = 53$	c. $\angle DFG = 52, \angle JKL = 48$	$(x+5) + (x-9) = 90$
b. $\angle DFG = 47, \angle JKL = 43$	d. $\angle DFG = 52, \angle JKL = 38$	$2x - 4 = 90$
	$m\angle DFG = 47 + 5 = 52$	$2x = 94$
	$m\angle JKL = 47 - 9 = 38$	$x = 47$

A

9. Find the values of  $x$  and  $y$ .



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- |                      |                      |
|----------------------|----------------------|
| a. $x = 15, y = 17$  | c. $x = 68, y = 112$ |
| b. $x = 112, y = 68$ | d. $x = 17, y = 15$  |

$7x + 7 = 112$  (vert  $\angle$ 's)  
 $7x = 105$   
 $x = 15$

$4y + 112 = 180$  (suppl  $\angle$ 's)  
 $4y = 68$   
 $y = 17$

## Short Answer

10. Solve for
- $x$
- . Justify each step.

$$4x - 9 = 99 \quad x = 27$$

$$\begin{array}{l} 4x - 9 = 99 \\ 4x = 108 \quad \text{Add POE} \\ x = 27 \quad \text{Div POE} \end{array}$$

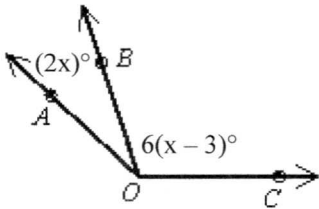
11. Write the converse of the statement. If the converse is true, write
- true*
- ; if not true, provide a counterexample.

If  $x = 4$ , then  $x^2 = 16$ .

If  $x^2 = 16$  then  $x = 4$   
false:  $x = -4$

Fill in each missing reason.

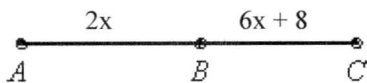
12. Given:
- $m\angle AOC = 150$



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$$\begin{array}{ll} m\angle AOB + m\angle BOC = m\angle AOC & \text{a. } \underline{\angle \text{Add Post}} \\ 2x + 6(x - 3) = 150 & \text{b. } \underline{\text{Subst POE}} \\ 2x + 6x - 18 = 150 & \text{c. } \underline{\text{Distrib Prop}} \\ 8x - 18 = 150 & \text{d. } \underline{\text{Simplify}} \\ 8x = 168 & \text{e. } \underline{\text{Add POE}} \\ x = 21 & \text{f. } \underline{\text{Div POE}} \end{array}$$

13. Given:
- $AC = 32$



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$$\begin{array}{ll} AB + BC = AC & \text{a. } \underline{\text{Seg Add Post}} \\ 2x + 6x + 8 = 32 & \text{b. } \underline{\text{Subst POE}} \\ 8x + 8 = 32 & \text{c. } \underline{\text{Simplify}} \\ 8x = 24 & \text{d. } \underline{\text{Subt POE}} \\ x = 3 & \text{e. } \underline{\text{Div POE}} \end{array}$$

Essay

14. Assume that the following statements are true.

- i. If Cecil makes his bed, then it is morning. <sup>2</sup>
- ii. If it is 8 p.m., then Tami brushes her teeth. <sup>3</sup>
- iii. If it is morning, then Ted listens to the radio. <sup>4</sup>
- iv. If it is afternoon, then Jeanette takes her daily swim.
- v. Cecil makes his bed.

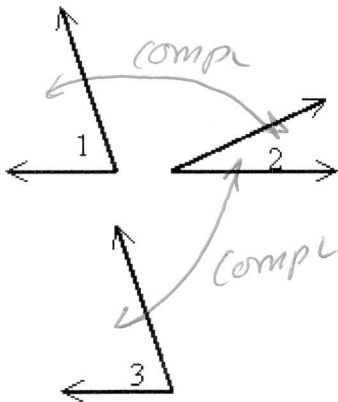
... but we don't know if she brushes in the morning ...  
 DAILY IMPLIES 1 per day => not swimming

For each statement below, write *must be true*, *may be true*, or *not true*. Use only the information given above. Explain your answers.

- a. Ted listens to the radio. TRUE (4)
- b. Tami does not brush her teeth. MAYBE (3)
- c. Jeanette takes her daily swim. NOT TRUE (5)

15. **Given:**  $\angle 1$  and  $\angle 2$  are complementary, and  $\angle 2$  and  $\angle 3$  are complementary.

**Prove:**  $\angle 1 \cong \angle 3$

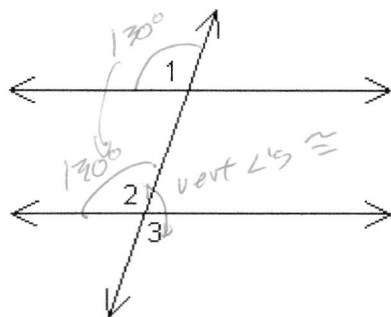


PLAN: -- 2 sets compl L's to same L's  
 - use subst then subst.

PROOF:  $\angle 1, \angle 2$  compl      Given  
 $m\angle 1 + m\angle 2 = 90$       defn compl L's  
 $\angle 3, \angle 2$  compl      Given  
 $m\angle 3 + m\angle 2 = 90$       defn compl L's  
 $90 = 90$       Reflex PoE  
 $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$       Subst PoE  
 $m\angle 1 = m\angle 3$       Subst PoE  
 $\angle 1 \cong \angle 3$       defn  $\cong$  L's

Fill in each missing reason.

16. **Given:**  $\angle 1 \cong \angle 2$ ,  $m\angle 1 = 130$   
**Prove:**  $m\angle 3 = 130$



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- |   |                      |
|---|----------------------|
| $\angle 1 \cong \angle 2$ , $m\angle 1 = 130$ | a. <u>GIVEN</u>      |
| $m\angle 2 = 130$                             | b. <u>SUBST POE</u>  |
| $\angle 2 = \angle 3$                         | c. <u>Vert ∠'s ≅</u> |
| $m\angle 3 = 130$                             | d. <u>SUBST. POE</u> |

Other

17. Write the two conditional statements that form the given biconditional. Then decide whether the biconditional is a good definition. Explain.

Three points are collinear if and only if they are coplanar.

If 3 pts are collinear then they are coplanar

If 3 pts are coplanar then they are collinear

Not Good defn.  
 coplanar  
 3 pts may not be collinear

