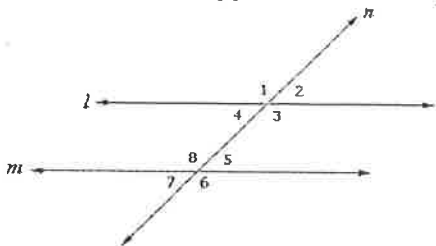


Properties, Postulates and Theorems Quiz

1. Which theorem supports the statement  $\angle 3 \cong \angle 8$ ?



- a. Same-Side Exterior Angle Theorem  
 b.  Alternate Interior Angle Theorem  
 c. Alternate Exterior Angle Theorem  
 d. Corresponding Angle Theorem

Use coordinate notation to determine the coordinates of the image.

2.  $\triangle JKL$  has vertices  $J(6, 2)$ ,  $K(1, 3)$ , and  $L(7, 0)$ . What are the vertices of the image after a dilation with a scale factor of 12 using the origin as the center of dilation?  $J'(72, 24)$   $K'(12, 36)$   $L'(84, 0)$
3.  $\triangle GHI$  has vertices  $G(0, 20)$ ,  $H(16, 24)$ , and  $I(12, 12)$ . What are the vertices of the image after a dilation with a scale factor of  $\frac{3}{4}$  using the origin as the center of dilation?  $G'(0, 15)$   $H'(12, 18)$   $I'(9, 9)$

Standardized Test Practice

4. What is the name of the reason that states, "If point  $Y$  is on  $\overline{XZ}$  and between points  $X$  and  $Z$ , then  $\overline{XY} + \overline{YZ} = \overline{XZ}$ ." Segment addition Postulate

- a.  Segment Addition Postulate  
 b. Angle Addition Postulate  
 c. Addition Property  
 d. definition of a midpoint

5. Which of the following statements is true?

- a.  A theorem has been proven.  
 b. A postulate is a statement that can be proven.  
 c. The reason for the first step of a proof is Substitution  
 d. A proof only requires definitions

6. Which of the following is an application of the addition Property?

- a. If  $m\angle A = 110^\circ$  and  $m\angle B = 110^\circ$ , then  $m\angle A = m\angle B$ .  
 b. If  $m\angle A = m\angle B$  and  $m\angle B = m\angle C$ , then  $m\angle A = m\angle C$ .  
 c.  If  $m\angle A = m\angle B$ , then  $m\angle A - m\angle C = m\angle B - m\angle C$ .  
 d. If  $m\angle A = m\angle B$ , then  $m\angle A + m\angle C = m\angle B + m\angle C$ .

Name: \_\_\_\_\_

ID: A

\_\_\_ 7. Which of the following is an application of the Substitution Property?

- a.  $m\angle A = m\angle A$
- b. If  $m\angle A = m\angle B$  and  $m\angle B = m\angle C$ , then  $m\angle A = m\angle C$ .
- c. If  $m\angle A = m\angle B$ , then  $m\angle A - m\angle C = m\angle B - m\angle C$ .
- d. If  $m\angle A = 88^\circ$  and  $m\angle B = 88^\circ$ , then  $m\angle A = m\angle B$ .

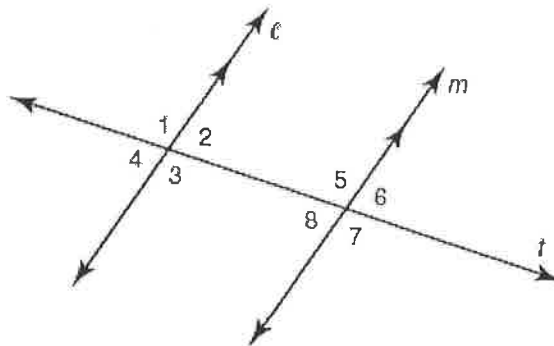
\_\_\_ 8. Which of the following is an application of the Transitive Property?

- a. If  $m\angle A = 110^\circ$  and  $m\angle B = 110^\circ$ , then  $m\angle A = m\angle B$ .
- b.  $m\angle A = m\angle A$
- c. If  $m\angle A = m\angle B$ , then  $m\angle A - m\angle C = m\angle B - m\angle C$ .
- d. If  $m\angle A = m\angle B$  and  $m\angle B = m\angle C$ , then  $m\angle A = m\angle C$ .

9. Read the proof of the Same-Side Exterior Angle Theorem.

Given:  $l \parallel m$

Prove:  $\angle 2$  and  $\angle 5$  are supplementary.



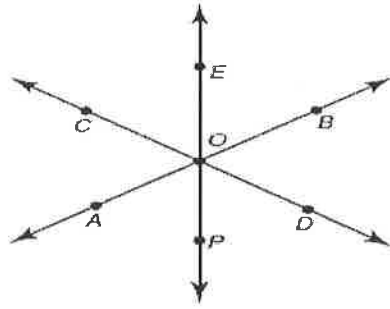
Statements

1. $l \parallel m$	1. Given
2. $\angle 1 \cong \angle 5$	2. Corresponding Angle Theorem
3. $m\angle 1 = m\angle 5$	3. _____
4. $\angle 1$ and $\angle 2$ are a linear pair.	4. Definition of a linear pair
5. $\angle 1$ and $\angle 2$ are supplementary.	5. Linear Pair Postulate
6. $m\angle 1 + m\angle 2 = 180^\circ$	6. Definition of Supplementary Angles
7. $m\angle 5 + m\angle 2 = 180^\circ$	7. _____
8. $l \parallel m$ .	8. Definition of Supplementary Angles

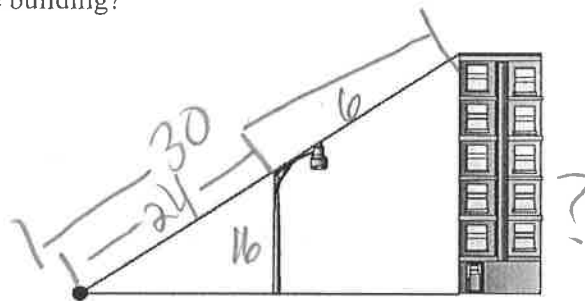
What are the two missing statements in the proof?

- a. (2) corresponding angle theorem  
(8) substitution
- b. (3) same side angle theorem  
(7) substitution
- c. (3) definition of congruent angles  
(7) substitution
- d. (3) definition of complementary angles  
(7) supplementary angle theorem

10. The figure shows intersecting lines. Which choice shows vertical angles?



- a.  $\angle AOC$  and  $\angle BOD$   
 b.  $\angle COE$  and  $\angle EOD$   
 c.  $\angle COE$  and  $\angle BOD$   
 d.  $\angle COE$  and  $\angle EOB$
11. A 30-foot-long support wire for a 16 foot high streetlight runs from the top corner of a building to a point on the ground, forming a straight line. The length of the wire from the top of the building to the top of the street light is 6 feet. How tall is the building?



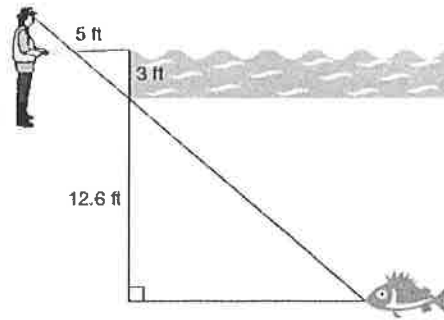
- a. 32 feet  
 b. 20 feet  
 c. 48 feet  
 d. 16 feet

$$\frac{30}{x} = \frac{24}{16}$$

$$\frac{480}{24} = \frac{24x}{24}$$

$$x = 20$$

12. Victoria holds a 5 foot long fishing pole. The fishing line extends 3 feet to the water's surface and then another 12.6 feet to a hook. How far is the fish from the hook?



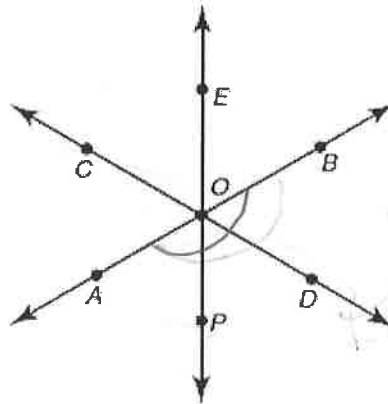
$$\begin{array}{r} 12.6 = 3 \\ \times \quad 5 \\ \hline \end{array}$$

$$3x = 63$$

- a. 21 ft
- b. 27 ft
- c. 24.6 ft
- d. 30.6 ft

$$\begin{array}{r} 3x = 63 \\ \hline 3 \quad 3 \\ \hline x = 21 \end{array}$$

13. The figure shows intersecting lines. Which are supplementary angles?



- a.  $\angle COE$  and  $\angle EOP$
- b.  $\angle AOD$  and  $\angle BOD$
- c.  $\angle AOD$  and  $\angle BOE$
- d.  $\angle COE$  and  $\angle DOP$

14. Two angles are complementary. The smaller angle is  $25^\circ$  less than the larger angle. What is the measure of the larger angle?

- a.  $55^\circ$
- b.  $62.5^\circ$
- c.  $57.5^\circ$
- d.  $32.5^\circ$

$$x + x - 25 = 90$$

$$\begin{array}{r} 2x - 25 = 90 \\ +25 \quad 25 \\ \hline \end{array}$$

$$2x = 115$$

$$\boxed{x = 57.5}$$

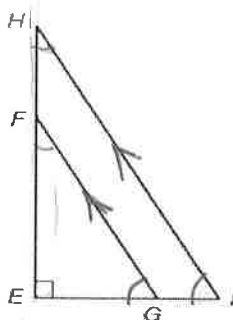
$$2.8 = 2.8$$

$$\frac{115}{2} = 57.5$$

15. Two angles are supplementary. The smaller angle is half the measure of the larger angle. What is the measure of the larger angle?

- a.  $90^\circ$
  - b.  $60^\circ$
  - c.  $30^\circ$
  - d.  $120^\circ$**
- $x + \frac{1}{2}x = 180$   
 $1.5x = 180$   
 $x = 120$

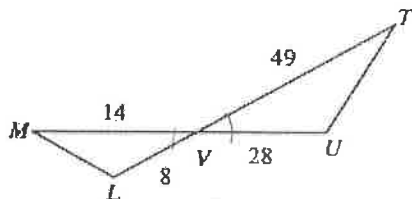
16. Which of these can complete a proof that right triangles  $EFG$  and  $EHI$  are similar if given  $FG \parallel HI$ ?



Statement	Reason
1. $\angle FEG = \angle HEI$	1. Reflexive Property
2. $\angle EFG = \angle EHI$	2. Corresponding angles are congruent when a transversal cuts sets of parallel lines.
3. Triangle $EFG$ and $EHI$ are similar.	3. ???

- ~~a. Triangle Sum Theorem~~
- b. Angle-Angle Similarity Theorem**
- c. Alternate Interior Angle Theorem
- ~~d. Angle Bisector Theorem~~

17. Determine if the two triangles are similar and if so, by what theorem?



$\frac{14}{8} = \frac{49}{28}$   
 $1.75 = 1.75$  ✓  
 yes SAS Similarity Theorem  
 $\frac{49}{14} = \frac{28}{8}$  or  $3.5 = 3.5$

**Keep It in Proportion**  
**Theorems About Proportionality**

**Vocabulary**

Match each definition to its corresponding term.

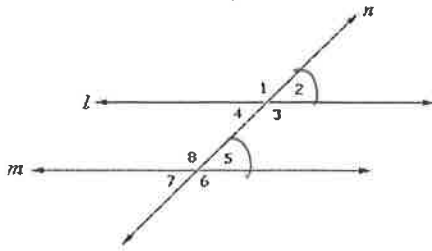
- a. If a line parallel to one side of a triangle intersects the other two sides, then it divides the two sides proportionally.
- b. A bisector of an angle in a triangle divides the opposite side into two segments whose lengths are in the same ratio as the lengths of the sides adjacent to the angle.
- c. If a line divides two sides of a triangle proportionally, then it is parallel to the third side.
- d. The midsegment of a triangle is parallel to the third side of the triangle and half the measure of the third side of the triangle
- e. If three parallel lines intersect two transversals, then they divide the transversals proportionally.

e 18. Proportional Segments Theorem

a 19. Triangle Proportionality Theorem

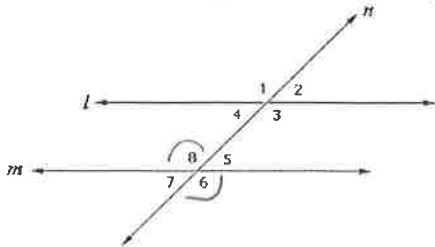
b 20. Angle Bisector/Proportional Side Theorem

c 21. Which theorem supports the statement  $\angle 2 \cong \angle 5$ ?



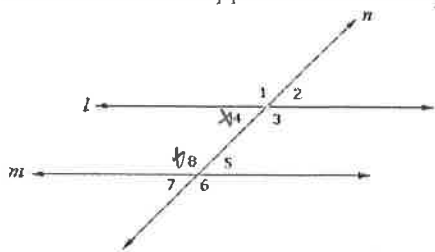
- a. Alternate Exterior Angle Theorem
- b. Same-Side Exterior Angle Theorem
- c. Corresponding Angle Theorem
- d. Vertical Angle Theorem

\_\_\_ 22. Which theorem supports the statement  $\angle 6 \cong \angle 8$ ?



- a. Corresponding Angle Theorem
- b. Alternate Exterior Angle Theorem
- c. Vertical Angle Theorem
- d. Same-Side Exterior Angle Theorem

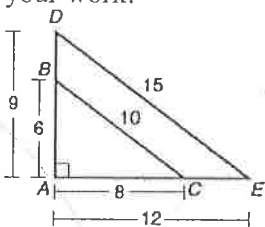
23. Which theorem supports the statement  $\angle 4 + \angle 8 = 180^\circ$ ?



- a. Alternate Interior Angle Theorem
- b. Same-Side Exterior Angle Theorem
- c. Same-Side Interior Angle Theorem
- d. Alternate Exterior Angle Theorem

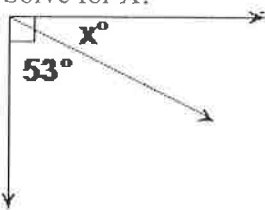
**End of Chapter Test**

24. Triangles  $ABC$  and  $ADE$  share angle  $A$  and  $\overline{AB}$  and  $\overline{AC}$ . Determine if triangle  $ABC$  is similar to  $ADE$ . Show your work!



$$\frac{9}{6} = \frac{12}{8} = \frac{15}{10}$$

25. Solve for X:

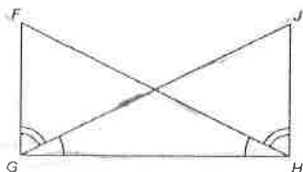


$$90 - 53 = 37$$

- a. 37
- b. 28
- c. 127
- d. 32

Determine whether there is enough information to prove that each pair of triangles are congruent by ASA or AAS. Write the congruence statements to justify your reasoning.

26.  $\triangle FGH \stackrel{?}{\cong} \triangle JHG$

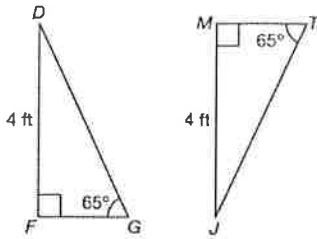


$$\overline{GH} \cong \overline{GH}$$

ASA

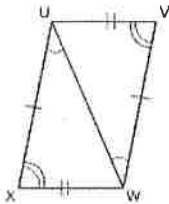


27.  $\triangle DFG \stackrel{?}{\cong} \triangle JMT$



AAS

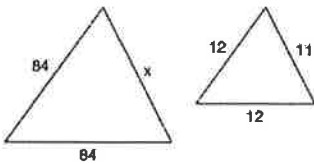
28. Which would be a key step in proving that  $\triangle VUW$  is congruent to  $\triangle XUW$  based on  $\overline{UW}$ ?



- a. Substitution Property
- b. Triangle Inequality Theorem

- c. Reflexive Property
- d. Vertical Angle Theorem

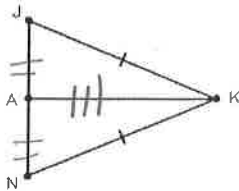
29. Assuming that the triangles are similar, find the missing side:



$$\frac{84}{12} = \frac{x}{11}$$

$$x = 77$$

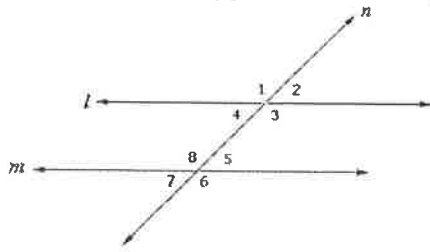
30. If  $\overline{AK}$  bisects  $\overline{JN}$ , determine what theorem *best* proves that  $\triangle AJK \cong \triangle ANK$ ?



- a. Not enough information
- b. SSS

- c. ASA
- d. AAS

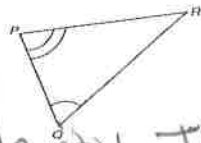
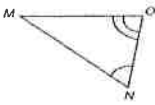
31. Which theorem supports the statement  $\angle 2 \cong \angle 7$ ?



- a. Same-Side Exterior Angle Theorem
- b. Alternate Interior Angle Theorem
- c. Corresponding Angle Theorem
- d. Alternate Exterior Angle Theorem

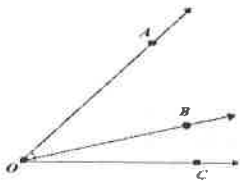
Determine whether each pair of triangles is similar. Explain your reasoning.

32.



Yes  
Angle  
Angle Similarity Theorem

33.  $\angle AOB + \angle BOC = \angle AOC$  demonstrates which property?



- a. Addition Property
- b. Segment Addition Postulate
- c. Linear Pair Postulate
- d. Angle Addition Postulate

**Big and Small**

**Dilating Triangles to Create Similar Triangles**

**Vocabulary**

Define the term in your own words.

34. similar triangles

triangles that have congruent corresponding angles and the corresponding sides are proportional.