

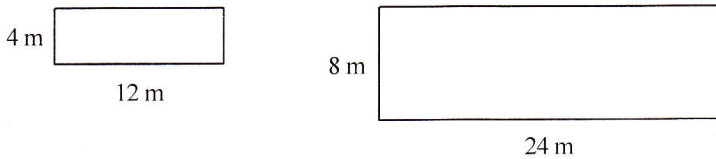
# 7.1-7.5 Study Guide

## Multiple Choice

Identify the choice that best completes the statement or answers the question.

- C 1. If  $\frac{x+3}{3} = \frac{y+2}{2}$ , then  $\frac{x}{3} =$  \_\_\_\_.
- a.  $y+1$                       b.  $\frac{y}{3}$                       c.  $\frac{y}{2}$                       d.  $y-1$

- B 2. The two rectangles are similar. Which is the correct proportion for corresponding sides?



- a.  $\frac{12}{8} = \frac{24}{4}$                       b.  $\frac{12}{4} = \frac{24}{8}$                       c.  $\frac{12}{4} = \frac{8}{24}$                       d.  $\frac{4}{12} = \frac{24}{8}$

- B 3. Complete this statement: A polygon with all sides the same length is said to be \_\_\_\_.
- a. regular                      b. equilateral                      c. equiangular                      d. convex

- B 4. Which description does NOT guarantee that a quadrilateral is a square?
- a. is both a rectangle and a rhombus  
 b. is a parallelogram with perpendicular diagonals  
 c. has all sides congruent and all angles congruent  
 d. has all right angles and has all sides congruent

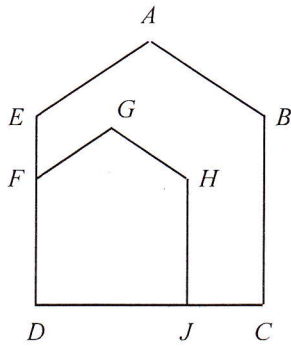
## Short Answer

5. The measure of two complementary angles are in the ratio 1 : 4. What are the degree measures of the two angles?  
 $1x + 4x = 90$   
 $5x = 90$   
 $x = 18$   
 18° & 72°
6. The ratio of length to width in a rectangle is 3 to 1. If the perimeter of the rectangle is 128 feet, what is the length of the rectangle?  
 $2x + 2(3x) = 128$   
 $8x = 128$   
 $x = 16$   
 $l = 3(16) = 48 \text{ ft}$
7. A salsa recipe uses green pepper, onion, and tomato in the extended ratio 1 : 3 : 9. How many cups of onion are needed to make 117 cups of salsa?  
 $x + 3x + 9x = 117$   
 $13x = 117$   
 $x = 9$   
 onion =  $3x = 3(9) = 27$

What is the solution of each proportion?

8.  $\frac{n-6}{3n} = \frac{n-5}{3n+1}$   
 $(n-6)(3n+1) = 3n(n-5)$   
 $3n^2 + n - 18n - 6 = 3n^2 - 15n + 6$   
 $-17n - 6 = -15n + 6$   
 $-2n = 12$   
 $n = -6$

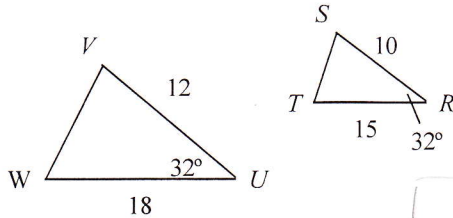
9.  $ABCDE \sim GHJDF$ . Complete the statements.



a.  $\angle H \cong \square \angle B$

b.  $\frac{GH}{DJ} = \frac{AB}{\square}$

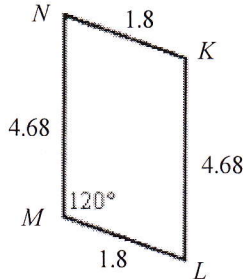
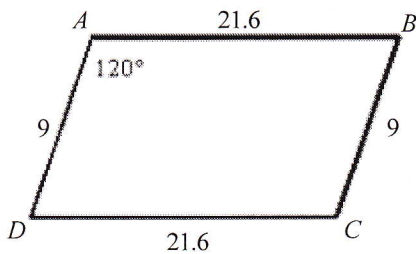
Are the polygons similar? If they are, write a similarity statement and give the scale factor.



Not drawn to scale.  
 $\angle U \cong \angle R$   
 $\frac{5 \cdot 10}{6 \cdot 12} = \frac{15}{18}$

Yes; SAS ~; scale factor  $\frac{5}{6}$   
 $\triangle RST \sim \triangle UVW$

10.



$\angle A \cong \angle M$   
 $\frac{1.8}{9} = \frac{4.68}{21.6}$   
 $\frac{1}{5} = \frac{13}{60} \times$

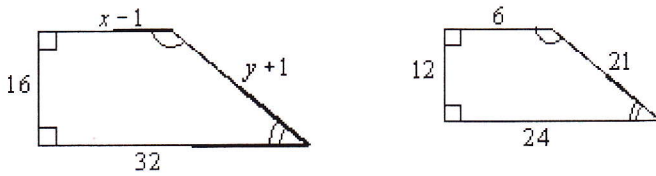
No

Not drawn to scale.

11.

The polygons are similar, but not necessarily drawn to scale. Find the value of  $x$ .

12.

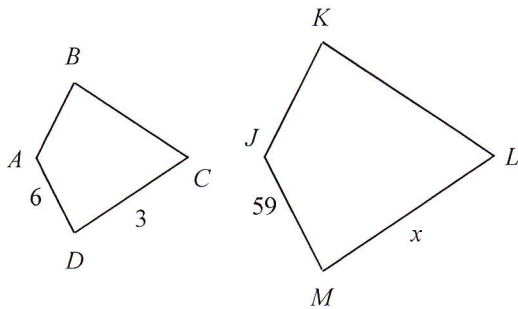


$$\frac{x-1}{6} = \frac{16}{12}$$

$$12x - 12 = 96$$

$$12x = 108$$

$$x = 9$$



$$\frac{6}{59} = \frac{3}{x}$$

$$6x = 177$$

$$x = 29.5$$

13.

14. You want to draw an enlargement of a design that is printed on a card that is 4 in. by 5 in. You will be drawing this design on a piece of paper that is  $8\frac{1}{2}$  in. by 11 in. What are the dimensions of the largest complete enlargement you can make?

$$8.5 \div 4 = 2.125$$

$$11 \div 5 = 2.2$$

$$\frac{4}{8.5} = \frac{5}{x}$$

$$4x = 42.5$$

$$x = 10.625$$

$$8\frac{1}{2} \text{ in} \times 10\frac{5}{8} \text{ in}$$

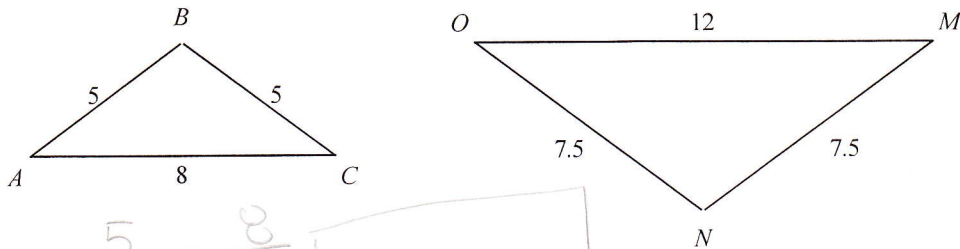
15. In a scale drawing of the solar system, the scale is 1 mm = 500 km. For a planet with a diameter of 5000 kilometers, what should be the diameter of the drawing of the planet?

$$\frac{1}{500} = \frac{x}{5000}$$

$$10 \text{ mm}$$

#14-17 State whether the triangles are similar. If so, write a similarity statement and the postulate or theorem you used.

16.

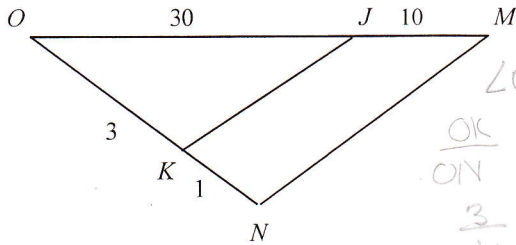


$$\frac{5}{7.5} = \frac{8}{12}$$

$$\frac{2}{3} = \frac{2}{3}$$

yes  
SSS ~  
 $\triangle ABC \sim \triangle MNO$

17.



$$\angle O \cong \angle O$$

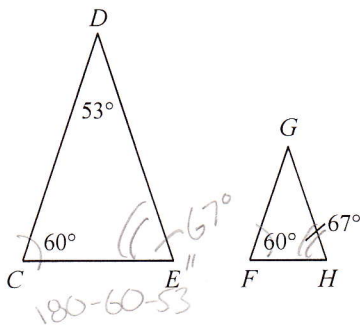
$$\frac{OK}{ON} = \frac{OJ}{OM}$$

$$\frac{3}{4} = \frac{10}{40}$$

$$\frac{3}{4} = \frac{3}{4} \checkmark$$

yes  
SAS ~  
ΔOMN ~ ΔOJK

18.

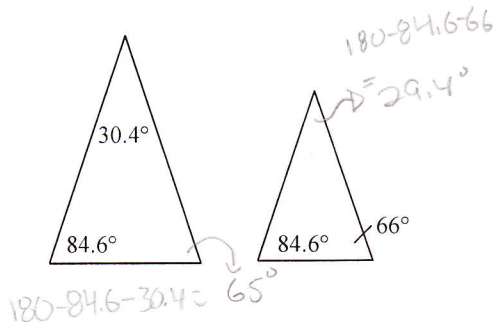


$$\angle C \cong \angle F$$

$$\angle E \cong \angle H$$

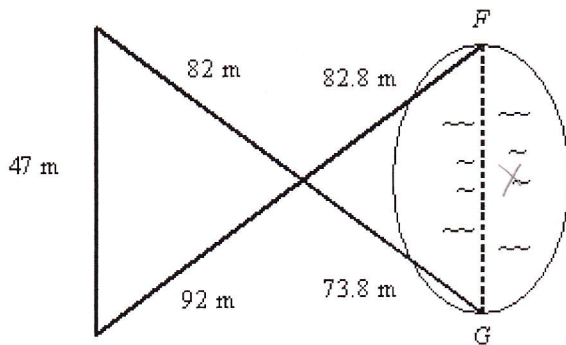
yes  
AA ~  
ΔCDE ~ ΔFGH

19.



no

20. Campsites  $F$  and  $G$  are on opposite sides of a lake. A survey crew made the measurements shown on the diagram. What is the distance between the two campsites? The diagram is not to scale.



smallest

$$\frac{73.8}{82} = \frac{82.8}{92}$$

$$\frac{9}{10} = \frac{9}{10}$$

$$\frac{9}{10} = \frac{x}{47}$$

$$423 = 10x$$

$$42.3 = x$$

42.3 m

Find the geometric mean of the pair of numbers.

21. 36 and 4

$$\frac{36}{x} = \frac{x}{4}$$

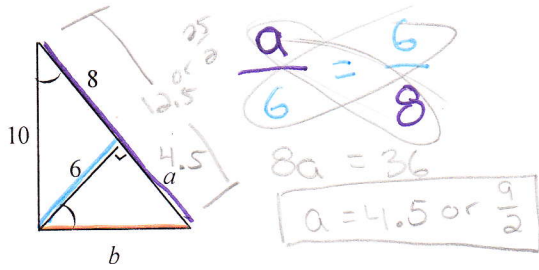
$$\sqrt{x^2} = \sqrt{144}$$

$$x = 12$$

#22-24 use Corollary 1 & 2 from 7.4

What are the values of  $a$  and  $b$ ?

22.



$$\frac{12.5}{b} = \frac{b}{4.5}$$

$$\sqrt{b^2} = \sqrt{56.25}$$

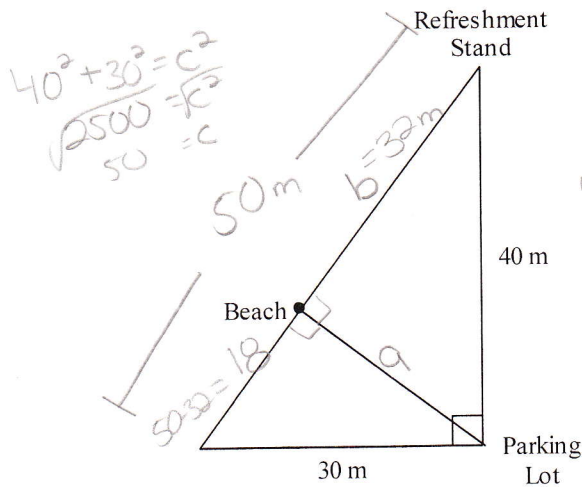
$$b = 7.5 \text{ or } \frac{15}{2}$$

$$\frac{25}{b} = \frac{b}{4.5}$$

$$\sqrt{b^2} = \sqrt{\frac{225}{4}}$$

$$b = \frac{15}{2}$$

23. Jason wants to walk the shortest distance to get from the parking lot to the beach.



$$\frac{50}{40} = \frac{40}{b}$$

$$50b = 1600$$

$$b = 32$$

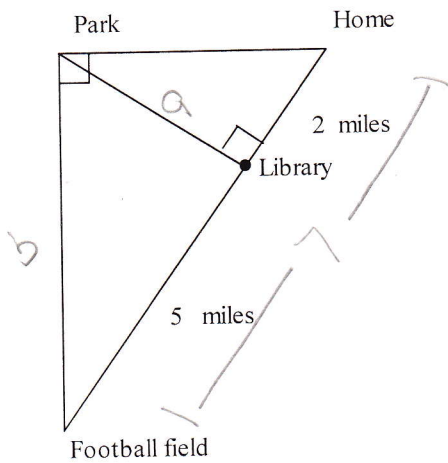
$$\frac{32}{a} = \frac{a}{18}$$

$$\sqrt{a^2} = \sqrt{576}$$

$$a = 24$$

- a. How far is the spot on the beach from the parking lot?  $24 \text{ m}$
- b. How far will his place on the beach be from the refreshment stand?  $32 \text{ m}$

24. Kristen lives directly east of the park. The football field is directly south of the park. The library sits on the line formed between Kristen's home and the football field at the exact point where an altitude to the right triangle formed by her home, the park, and the football field could be drawn. The library is 2 miles from her home. The football field is 5 miles from the library.



a

$$\frac{5}{a} = \frac{a}{2}$$

$$a^2 = 10$$

$$a = \sqrt{10} \text{ mi}$$

or

$$a \approx 3.2 \text{ mi}$$

b

$$\frac{7}{b} = \frac{b}{5}$$

$$b^2 = 35$$

$$b = \sqrt{35} \text{ mi}$$

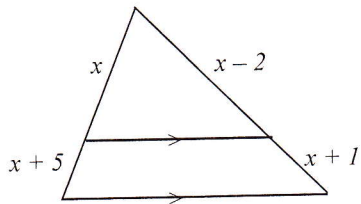
or

$$b \approx 5.9 \text{ mi}$$

- a. How far is library from the park?  
 b. How far is the park from the football field?

25. What is the value of x?

#25-28  
Side Splitter Thm



$$\frac{x}{x+5} = \frac{x-2}{x+1}$$

$$x(x+1) = (x+5)(x-2)$$

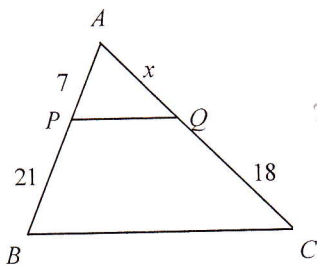
$$x^2 + x = x^2 - 2x + 5x - 10$$

$$x = 3x - 10$$

$$-2x = -10$$

$x = 5$

26. What is the value of x, given that  $\overline{PQ} \parallel \overline{BC}$ ?

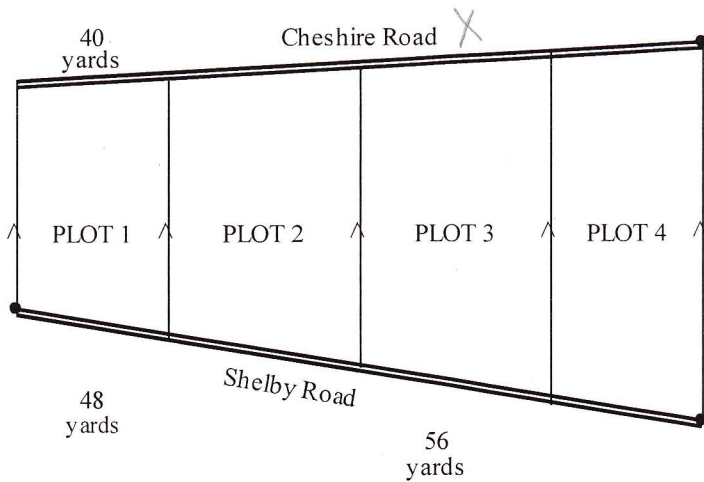


$$\frac{7}{21} = \frac{x}{18}$$

$$21x = 126$$

$x = 6$

27. Plots of land between two roads are laid out according to the boundaries shown. The boundaries between the two roads are parallel. What is the length of Plot 3 along Cheshire Road?



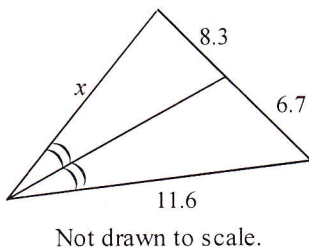
$$\frac{48}{56} = \frac{40}{x}$$

$$48x = 2240$$

$$x = 46.6 \text{ or } 41\frac{2}{3} \text{ yds}$$

or  
about 47 yds

28. What is the value of  $x$  to the nearest tenth?



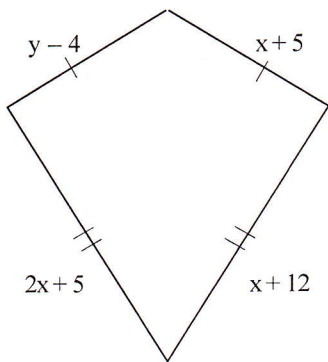
$$\frac{8.3}{6.7} = \frac{x}{11.6}$$

$$96.28 = 6.7x$$

$$x = 14.4$$

A  $\angle$  bisector thm

29. Find the values of the variables and the lengths of the sides of this kite.



$$y-4 = x+5$$

$$y-4 = 7+5$$

$$y-4 = 12$$

$$y = 16$$

$$2x+5 = x+12$$

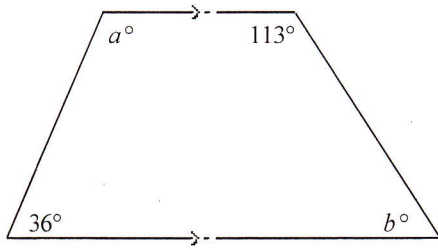
$$-x-5 = -x-5$$

$$x = 7$$

$$\text{sides: } 12 \text{ \& } 19$$

#29-34 distributive practice Ch 6

30. Find the values of  $a$  and  $b$ . The diagram is not to scale.



$$\begin{array}{r} a + 36 = 180 \\ -36 \quad -36 \\ \hline \end{array}$$

$$\boxed{a = 144}$$

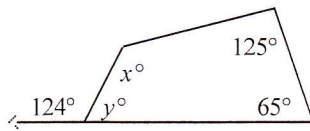
$$\begin{array}{r} b + 113 = 180 \\ -113 \quad -113 \\ \hline \end{array}$$

$$\boxed{b = 67}$$

31. What is the sum of the angle measures of a 36-gon?  $(n-2)180 = (36-2)180 = 34 \cdot 180$

$$= \boxed{6120^\circ}$$

32. Find the missing values of the variables. The diagram is not to scale.



$$\begin{array}{r} 124 + y = 180 \\ -124 \quad -124 \\ \hline \end{array}$$

$$\boxed{y = 56}$$

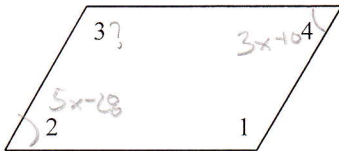
$$x + y + 125 + 65 = 360$$

$$x + 56 + 125 + 65 = 360$$

$$\begin{array}{r} x + 246 = 360 \\ -246 \quad -246 \\ \hline \end{array}$$

$$\boxed{x = 114}$$

33. For the parallelogram, if  $m\angle 2 = 5x - 28$  and  $m\angle 4 = 3x - 10$ , find  $m\angle 3$ . The diagram is not to scale.



$$\begin{array}{r} 5x - 28 = 3x - 10 \\ -3x \quad +28 \quad -3x \quad +28 \\ \hline \end{array}$$

$$2x = 18$$

$$x = 9$$

$$\angle 2 + \angle 3 = 180$$

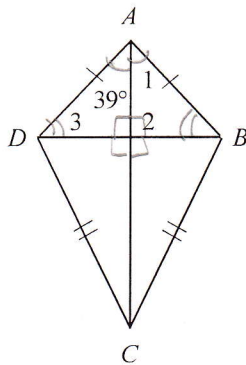
$$5x - 28 + \angle 3 = 180$$

$$5(9) - 28 + \angle 3 = 180$$

$$\begin{array}{r} 17 + \angle 3 = 180 \\ -17 \quad -17 \\ \hline \end{array}$$

$$\boxed{\angle 3 = 163^\circ}$$

34. Find  $m\angle 1$  and  $m\angle 3$  in the kite. The diagram is not to scale.



$$\angle 3 + 90 + 39 = 180$$

$$\angle 3 + 129 = 180$$

$$\boxed{\begin{array}{l} \angle 3 = 51^\circ \\ \angle 1 = 39^\circ \end{array}}$$