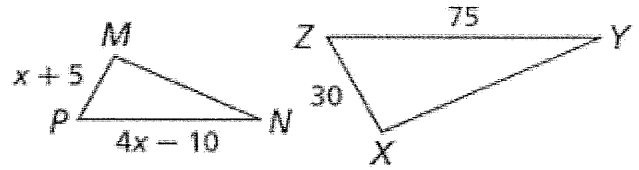1. Solve the proportion:

$$\frac{x-6}{4} = \frac{x-9}{2}$$

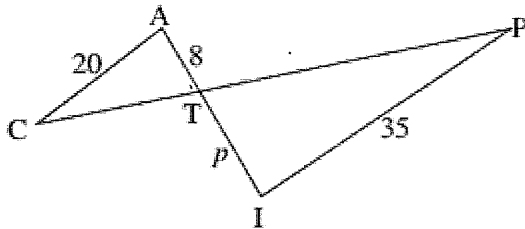2. Find MP

$$\triangle MNP \sim \triangle XYZ$$



3.

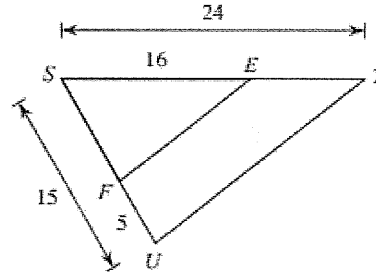If $\triangle CAT$ is similar to $\triangle PIT$ , what is the length of $p$?



4.



$\triangle STU \sim$ _____

A) not similar
B) similar; SAS similarity; $\triangle FES$
C) similar; SAS similarity; $\triangle SFE$
D) similar; SAS similarity; $\triangle SEF$

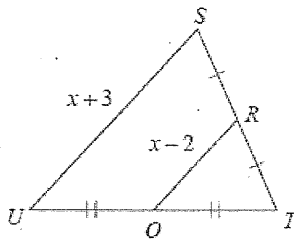5. Given that m and l are parallel lines, name the following pairs:

a) Angle 1 and angle 5: _____
b) Angle 2 and angle 7: _____
c) Angle 4 and angle 6: _____
d) Angle 1 and angle 5: _____
e) Angle 1 and angle 3: _____
f) Angle 6 and angle 7: _____
g) Angle 3 and angle 5: _____
h) Angle 3 and angle 6: _____
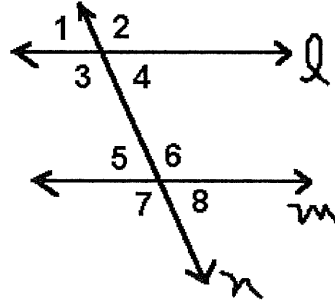


6. If measure of angle 5 = 67°, find measure of angle 3

7. If measure of angle 1 = 49°, find measure of angle 7

8) Find $RQ$

# 7 · Chapter 7 Mid-Chapter Test

*(Lessons 7-1 through 7-4)*

**Part I** *Write the letter for the correct answer in the blank at the right of each question.*

**9)** Polygon $ABCD$ is similar to polygon $PQRS$. Which proportion must be true?

A $\dfrac{AC}{AD} = \dfrac{PQ}{PS}$     B $\dfrac{BC}{CD} = \dfrac{QR}{RS}$     C $\dfrac{AB}{BD} = \dfrac{PQ}{QR}$     D $\dfrac{CD}{AB} = \dfrac{PQ}{RS}$    _____

**10)** This fall, 126 students participated in the soccer program, while 54 played volleyball. What was the ratio of soccer players to volleyball players?
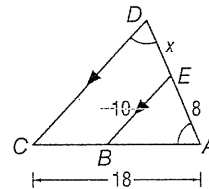
F $\dfrac{3}{4}$      G $\dfrac{3}{7}$      H $\dfrac{4}{3}$      J $\dfrac{7}{3}$    _____

**11)** The ratio of the measures of the angles of a triangle is 2:3:10. What is the least angle measure?

A 12      B 15      C 24      D 36    _____

**12)** Find the value of $x$.

F 2             H 6
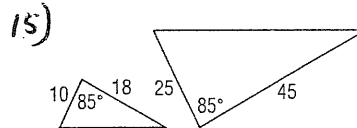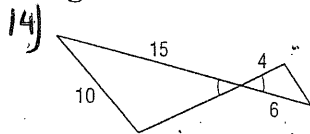
G 4.8          J 6.4    _____

**13)** Rectangle $ABCD \sim$ rectangle $EFGH$, the perimeter of $ABCD$ is 54 centimeters and the perimeter of $EFGH$ is 36 centimeters. What is the scale factor of $ABCD$ to $EFGH$?

A $\dfrac{2}{3}$      B $\dfrac{3}{2}$      C $\dfrac{3}{5}$      D $\dfrac{5}{3}$    _____

**Part II**

For Questions 6 and 7, determine whether each pair of triangles is similar. Justify your answer.
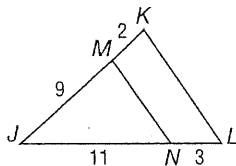
**14)**                 **15)**
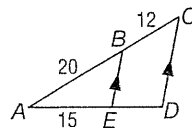
_____

_____

**16)** Determine whether $\overline{MN} \parallel \overline{KL}$.    **17)** Find $DE$.
Justify your answer.

_____

_____

**18)** **RECTANGLES** A rectangle has a perimeter of 14 inches. A similar rectangle has a perimeter of 10 inches. If the length of the larger rectangle is 4 inches, what is the length of the smaller rectangle? Round to the nearest tenth.

_____

# Similarity Test Review #3  Key

**1.** Solve the proportion:

$$\frac{x-6}{4} = \frac{x-9}{2}$$

$$2(x-6) = 4(x-9)$$

$$2x-12 = 4x-36$$

$$24 = 2x$$

$$\boxed{12 = x}$$
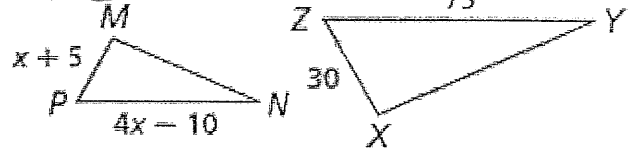
**2.** Find MP

$$75(x+5) = 30(4x-10)$$
$$75x + 375 = 120x - 300$$
$$675 = 45x$$
$$x = 15$$
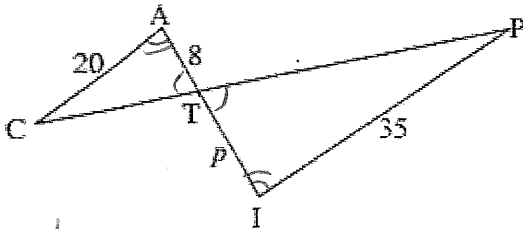
$$\frac{x+5}{30} = \frac{4x-10}{75}$$

$\triangle MNP \sim \triangle XYZ$

$MP = \boxed{20}$



**3.**

If $\triangle CAT$ is similar to $\triangle PIT$, what is the length of $p$?
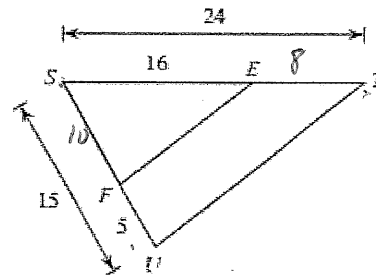


$$\frac{p}{8} = \frac{35}{20}$$

$$\frac{p}{8} = \frac{7}{4}$$

$$4p = 56$$

$$\boxed{p = 14}$$

**4.**



$$\frac{8}{16} = \frac{5}{10} = \frac{1}{2} \checkmark$$

$\triangle STU \sim \triangle SEF$  $\boxed{D}$

A) not similar
B) similar, SAS similarity; $\triangle FES$
C) similar, SAS similarity; $\triangle SFE$
D) similar, SAS similarity; $\triangle SEF$

**5.** Given that m and l are parallel lines, name the following pairs:



a) Angle 1 and angle 5: Corresponding
b) Angle 2 and angle 7: alt. exterior
c) Angle 4 and angle 6: consecutive interior
d) Angle 1 and angle 5: corresponding
e) Angle 1 and angle 3: linear pair
f) Angle 6 and angle 7: vertical angles
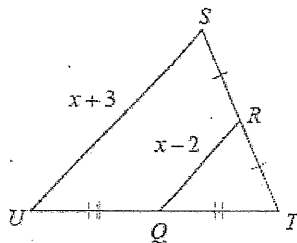g) Angle 3 and angle 5: consecutive interior

h) 3 and 6    alt. interior
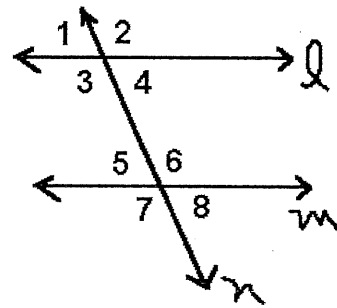
**6.** If measure of angle 5 = 67°, find measure of angle 3

$$180 - 67 = \boxed{113}$$

**7.** If measure of angle 1 = 49°, find measure of angle 7

$$180 - 49 \quad \boxed{131°}$$

**8)** Find $RQ$



$$2(x-2) = x+3$$

$$2x-4 = x+3$$

$$\underline{x = 7}$$

$$RQ = 7-2 = \boxed{5}$$

## 7 Chapter 7 Mid-Chapter Test

SCORE _____

*(Lessons 7-1 through 7-4)*

**Part I** *Write the letter for the correct answer in the blank at the right of each question.*

9) Polygon $ABCD$ is similar to polygon $PQRS$. Which proportion must be true?

A $\dfrac{AC}{AD} = \dfrac{PQ}{PS}$    B $\dfrac{BC}{CD} = \dfrac{QR}{RS}$    C $\dfrac{AB}{BD} = \dfrac{PQ}{QR}$    D $\dfrac{CD}{AB} = \dfrac{PQ}{RS}$

B

$\dfrac{126}{54} = \dfrac{7}{3}$

10) This fall, 126 students participated in the soccer program, while 54 played volleyball. What was the ratio of soccer players to volleyball players?

F $\dfrac{3}{4}$    G $\dfrac{3}{7}$    H $\dfrac{4}{3}$    J $\dfrac{7}{3}$

J

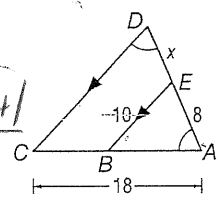11) The ratio of the measures of the angles of a triangle is 2:3:10. What is the least angle measure?

$15x = 180$
$x = 12$

A 12    B 15    C 24    D 36

C

$2(12) = 24$

12) Find the value of $x$.

F 2
G 4.8
H 6
J 6.4

$\dfrac{8}{10} = \dfrac{8+x}{18}$

$\dfrac{4}{5} = \dfrac{8+x}{18}$

$40 + 5x = 72$    $5x = 32$

$x = 6.4$

$\dfrac{AE}{EB} = \dfrac{DA}{AC}$

J

$AEB \sim \triangle DAC$
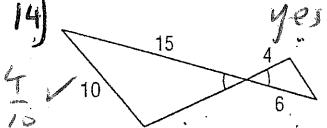
13) Rectangle $ABCD \sim$ rectangle $EFGH$, the perimeter of $ABCD$ is 54 centimeters and the perimeter of $EFGH$ is 36 centimeters. What is the scale factor of $ABCD$ to $EFGH$?

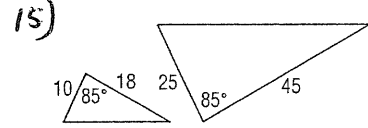A $\dfrac{2}{3}$    B $\dfrac{3}{2}$    C $\dfrac{3}{5}$    D $\dfrac{5}{3}$

$\dfrac{54}{4} = 17.5$    $\dfrac{36}{4}$

13.5

A

$\dfrac{9}{13.5} = \dfrac{2}{3}$

**Part II**

For Questions 6 and 7, determine whether each pair of triangles is similar. Justify your answer.
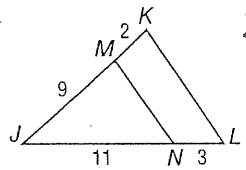
$\dfrac{10}{25} = \dfrac{18}{45}$ (14) yes

14) yes

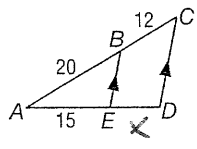$\dfrac{6}{15} = \dfrac{4}{10}$

15) 

15) yes

16) Determine whether $\overline{MN} \parallel \overline{KL}$. Justify your answer.

$\dfrac{2}{9} = \dfrac{3}{11}$
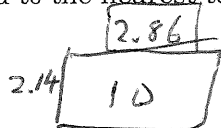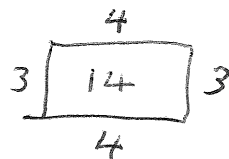
No

16) No

17) Find $DE$.

$\dfrac{x}{15} = \dfrac{12}{20}$

$\dfrac{x}{15} = \dfrac{3}{5}$

$5x = 45$
$x = 9$

18) RECTANGLES A rectangle has a perimeter of 14 inches. A similar rectangle has a perimeter of 10 inches. If the length of the larger rectangle is 4 inches, what is the length of the smaller rectangle? Round to the nearest tenth.

$\dfrac{14}{4} = 3.5$

$\dfrac{10}{4} = 2.5$

$7/5$

2.86 in.

$\approx 2.9$ in.