Name Answers Date

Chapter 7 & 8 – Final Review

Identify each statement as true (T) or false (F). For many of the problems, it would help (but not necessary) to make a drawing or to do a counterexample.

1) If the three sides of one triangle are proportional to the three sides of another triangle, then the two triangles are similar. T

2) If two angles of one triangle are congruent to two angles of another triangle, then the two triangles are similar. T

3) If two sides of one triangle are proportional to the sides of another triangle, then the two triangles are similar. F

4) If the four angles of one quadrilateral are congruent to the four corresponding angles of another quadrilateral, then the two quadrilaterals are similar. F

5) An angle bisector in a triangle divides the opposite side into two segments whose lengths are in the same ratio as the corresponding adjacent sides. T

6) If two triangles are similar, then their corresponding altitudes, corresponding medians, and corresponding angle bisectors are proportional to their corresponding sides. T

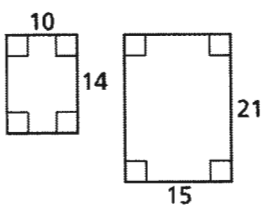
7) If a line parallel to one side of a triangle passes through the other two sides, then it divides them proportionally. T

8) If a line cuts two sides of a triangle proportionally, then it is parallel to the third side. T

9) If two or more lines pass through two sides of a triangle parallel to the third side, then they divide the two sides equally. F

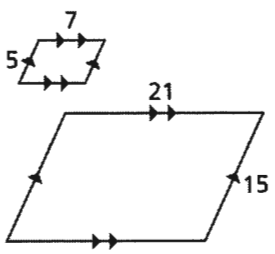
Determine whether the polygons are similar.

10)



Yes

11)



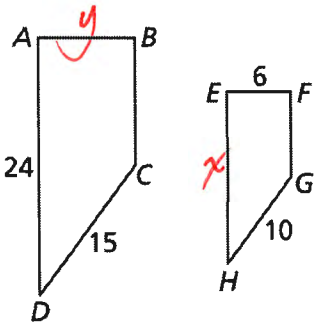
Yes

12) In the diagram, ABCD ~ EFGH. Find the following: (Show work)

a) Scale factor = $\frac{3}{2}$

b) EH = 16

c) AB = 9

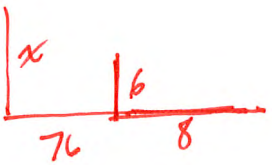


13) Your geometry class goes outside to measure the height of the school's flagpole. A student who is 5 feet tall stands up straight and casts a shadow that is 8 feet long. At the same time the flagpole casts a shadow that is 24 feet long. What is the height of the flagpole?

15 ft

$\frac{x}{5} = \frac{24}{8}$ $x = 15$ ft

14) The Cardon cactus found in the Sonoran Desert in Mexico is the tallest type of cactus in the world. Marco stand 76 feet from the cactus so that the tip of his shadow coincides with the tip of the cactus' shadow. Marcus is 6 feet tall and his shadow is 8 feet long. How tall is the Cardon cactus?

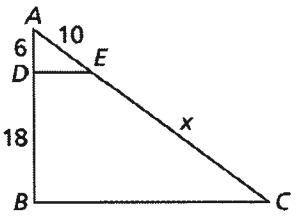


$\frac{x}{6} = \frac{84}{8}$

$x = 63$ ft

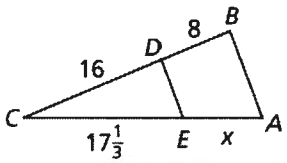
Find the value of x that makes the triangles similar

15)



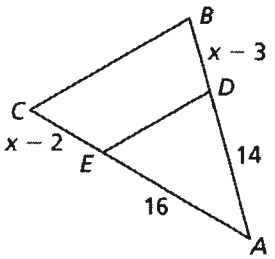
$x = 30$

16)



$x = 8\frac{2}{3}$

17)



$x = 10$

Simplify the following:

18) $\sqrt{28}$ $2\sqrt{7}$

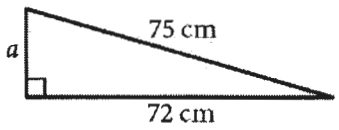
19) $6\sqrt{125}$ $30\sqrt{5}$

20) $-3\sqrt{72}+6\sqrt{52}-7\sqrt{128}$

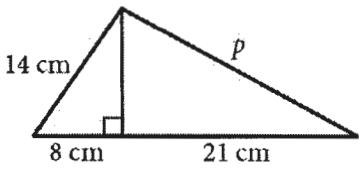
$= -74\sqrt{2}+12\sqrt{13}$

Find the missing side. Round to the nearest tenth place.

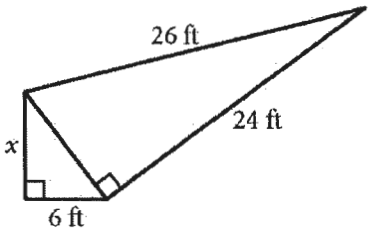
21) $a =$ 21 cm



22) $p \approx$ 23.9 cm



23) $x =$ 8 ft



24) Find the height of an equilateral triangular with side length 9 cm.

$4.5\sqrt{3} \approx 7.8$ cm

25) List the Pythagorean triples (Primitives):

3-4-5 7-24-25

5-12-13 8-15-17

Determine whether or not a triangle with the given side lengths is a right triangle.

26) 76, 120, 98

No

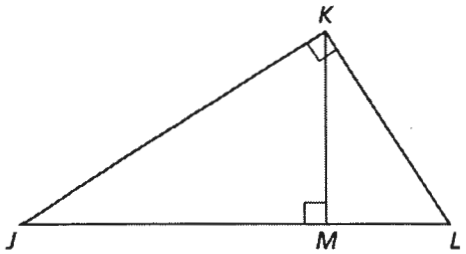
27) 221, 204, 85

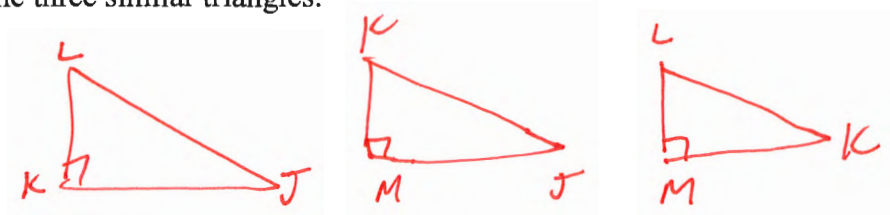
Yes

28) $\sqrt{14}$, $\sqrt{30}$, 4

Yes

29) Write a similarity statement for the three similar triangles:

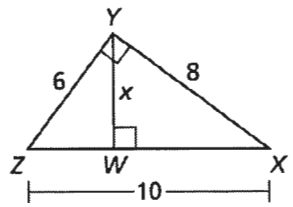




$\triangle LKJ \sim \triangle KMJ \sim \triangle LMK$

Find the value of x.

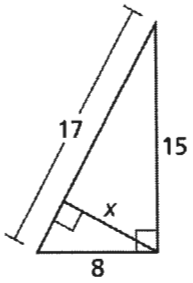
30)



$\frac{6}{x} = \frac{10}{8}$

$x = 4.8$

31)

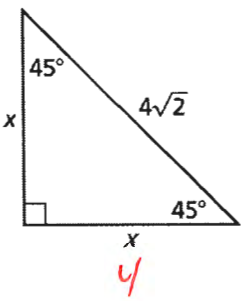


$\frac{8}{x} = \frac{17}{15}$

$x \approx 7.1$

Find the value of the variables. Write your answers in simplest radical form.

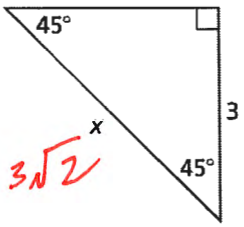
32)



4

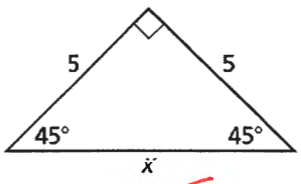
4

33)



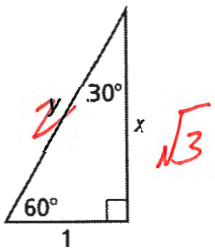
$3\sqrt{2}$

34)



$5\sqrt{2}$

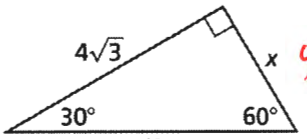
35)



2

$\sqrt{3}$

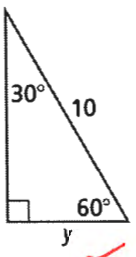
36)



4

8

37)



$5\sqrt{3}$

5

38) What is the distance formula? Distance = $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

Find the distance between the points.

39) (5, 6) and (1, 3)

$= 5$

40) (3, 5) and (4, -1)

$= \sqrt{37}$

Complete the following trigonometric ratios for what they represent.

41) $\sin x =$ opp / hyp

42) $\cos x =$ adj / hyp

43) $\tan x =$ opp / adj

44) What is sin 40° to the nearest ten-thousands place?

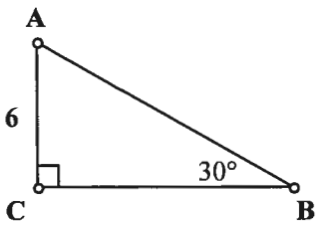
.6428

45) Find x to the nearest degree:

$\cos x = .2179$

$x \approx 77°$

46) For the following, express your answer exactly. DO NOT ROUND (Please rationalize denominators).

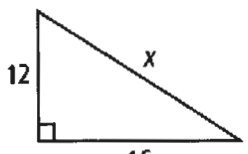


a) tan B = $\frac{\sqrt{3}}{3}$

b) sin B = $\frac{1}{2}$

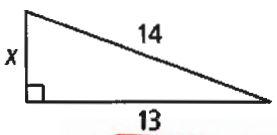
Find the value of x. Express your answer in simplest radical form.

47)



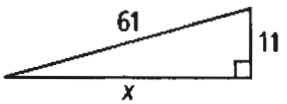
$x = 20$

48)



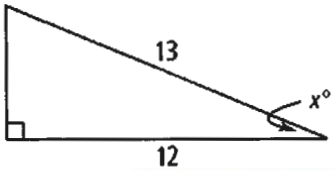
$x = 3\sqrt{3}$

49)



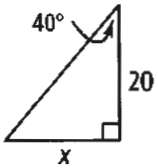
$x = 60$

50)



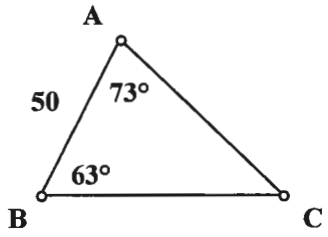
$x = 23°$

51)



$x \approx 16.8$

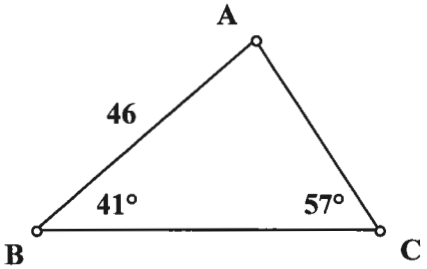
52) Find the length of side BC to the nearest unit.



$\frac{\sin 44^\circ}{50} = \frac{\sin 73^\circ}{x}$

$x \approx 69$

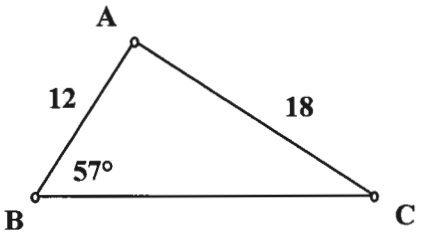
53) Find the length of side AC to the nearest unit.



$\frac{\sin 57^\circ}{46} = \frac{\sin 41}{x}$

$x = 36$

54) Find the measure of angle A to the nearest degree.

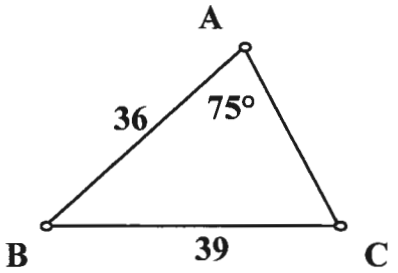


$\frac{\sin 57^\circ}{18} = \frac{\sin C}{12}$

$m\angle C \approx 34^\circ$

$m\angle A \approx 89^\circ$

55) Find the measure of angle B to the nearest degree.

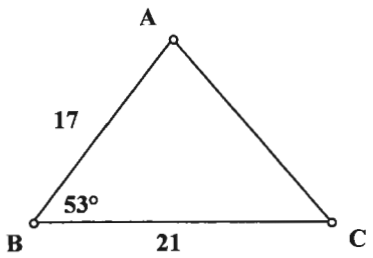


$\frac{\sin 75^\circ}{39} = \frac{\sin C}{36}$

$m\angle C = 63^\circ$

$m\angle B = 42^\circ$

56) Find the measure of side AC.

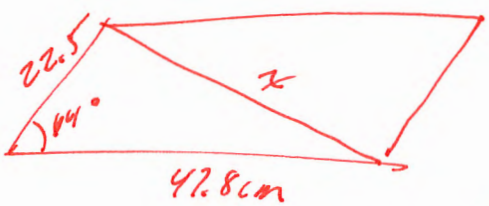


$x^2 = 17^2 + 21^2 - 2(17)(21)\cos 53^\circ$

$x^2 \approx 300.3$

$x \approx 17.3$

57) A parallelogram has side lengths 22.5 cm and 47.8 cm. One angle measures 116°. What is the length of the shorter diagonal?



$x^2 = 22.5^2 + 47.8^2 - 2(22.5)(47.8)\cos 64$

$x^2 \approx 1848.2$

$x \approx 43$ cm