Name: __Key_____

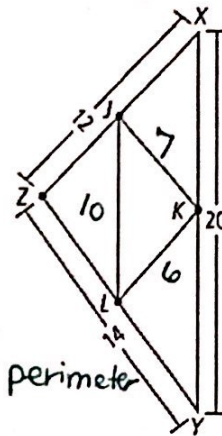## Unit 5: Triangle Segment Relationships Review Guide

1. Use the following diagram to answer the following:

a. JK = __7__

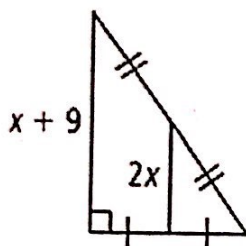b. KL = __6__

c. JL = __10__

d. XK = __10__

e. JZ = __6__

f. How does the perimeter of triangle XYZ compare to triangle JKL?

The perimeter of $\triangle$JKL is $\frac{1}{2}$ of triangle XYZ's perimeter

Perimeter of $\triangle$XYZ = 46

Perimeter of $\triangle$JKL = 23

2. Solve for x:

$2(2x) = x + 9$
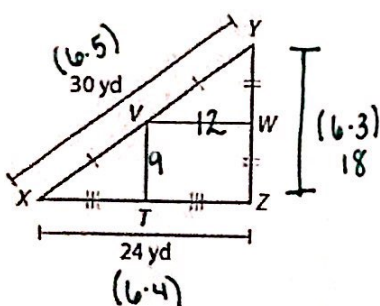
$4x = x + 9$

$3x = 9$

$x = 3$

Remember

$\frac{1}{2}$ Big = Small

2 Small = Big

3. A city park will be shaped like a right triangle and there will be two pathways for pedestrians, show by VT and VW in the diagram. The park planner only wrote two lengths on his sketches as shown. Based on the diagram, what will be the length of the two pathways?
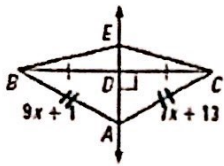
$24^2 + b^2 = 30^2$

$576 + b^2 = 900$

$b^2 = 324$

$b = 18$ yd

$\overline{WV} + VT$

$12 + 9$

$\boxed{21 \text{ yd.}}$

(6.5)

30 yd

12

9

(6.3)

18

24 yd

(6.4)

4. Name the type of segment relationship shown in the picture. Then find the length of AB.
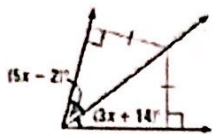
$$9x + 1 = 7x + 13$$
$$2x = 12$$
$$x = 6$$

$$AB = 9(6) + 1$$
$$\boxed{AB = 55}$$

perpendicular
bisector

5. Name the type of segment relationship shown in the picture. Then solve for x.

$$5x - 2 = 3x + 14$$
$$2x = 16$$
$$\boxed{x = 8}$$

angle bisector

6. Use the diagram shown and the given information to decide whether $\overline{YW}$ is a perpendicular bisector, angle bisector, a median, or an altitude of ΔXYZ. There may be more than one right answer.

a. $\overline{YW} \perp \overline{XZ}$ altitude

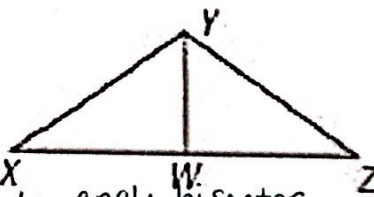b. $\overline{XW} \cong \overline{ZW}$ median

c. ΔXYW ≅ ΔZYW median, angle bisector
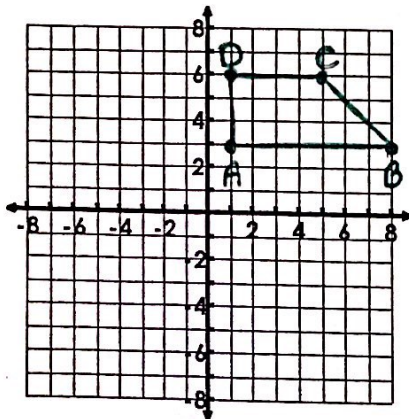
d. ∠XYW ≅ ∠ZYW angle bisector

e. $\overline{YW} \perp \overline{XZ}$ and $\overline{XW} \cong \overline{ZW}$ perpendicular bisector, median, altitude, angle bisector

f. $\overline{YW} \perp \overline{XZ}$ and $\overline{XY} \cong \overline{ZY}$ perpendicular bisector, altitude, median, angle bisector
   → This is enough to prove the triangles are congruent

7. Trapezoid ABCD is formed by A(1, 3), B(8, 3), C(5, 6), and D(1, 6). What is the length of the diagonal side?
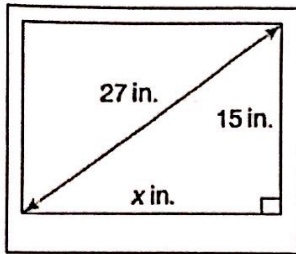
$$(\overline{CB})^2 = 3^2 + 3^2$$
$$\sqrt{\overline{CB}^2} = \sqrt{18}$$
$$\boxed{\overline{CB} = 4.2}$$

8. Nick sells his old television in his neighborhood's garage sale. It has a rectangular screen with a diagonal measure of 27 inches. A potential buyer is concerned about the television fitting in the 24-inch square opening of his entertainment center. Will the TV fit?

27 in. · 15 in. · x in.

$$x^2 + 15^2 = 27^2$$
$$x^2 + 225 = 729$$
$$x^2 = 504$$
$$x = 22.4$$

It will fit as it is only 22.4 inches.

9. Determine whether you can construct a triangle with the following side lengths:

a. 6+7>11   b. 3+6>9   c. 35+120>125   d. 28+34>39

yes   no   yes   yes

10. What are possible values for the third side of the triangle?

a. 5, 12

$$5 + 12 > x$$
$$17 > x$$
$$x < 17$$

$$x + 5 > 12$$
$$x > 7$$

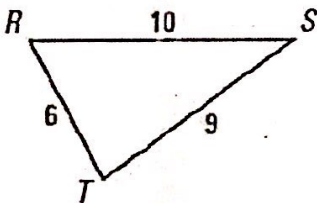$$\boxed{7 < x < 17}$$

b. 10, 23

$$10 + 23 > x$$
$$33 > x$$
$$x < 33$$

$$x + 10 > 23$$
$$x > 13$$

$$\boxed{13 < x < 33}$$

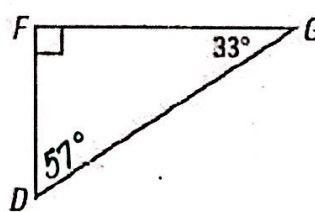11. List the sides and/or angles in order from least to greatest.

a.

R — 10 — S, 6, 9, T

$\angle S, \angle R, \angle T$
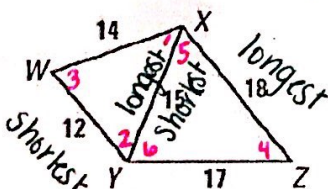
$\overline{RT}, \overline{ST}, \overline{RS}$

b.

F, 33°, G, 57°, D

$\angle G, \angle D, \angle F$

$\overline{FD}, \overline{FG}, \overline{DG}$

12. List all six angles in order from least to greatest.

14, X, W, 3, longest, 5, shortest, 15, 18, longest, 12, 2, 6, shortest Y, 17, 4, Z

$$\angle WXY , \angle WYX, \angle W / \angle Z, \angle YXZ, \angle XYZ$$

1   2   3   4   5   6