

*AAT

Chapter 2: Quiz 2.1-2.3 Review (IC/HW)

Name: Key
Date: _____ Period: _____

1. Solve the equation.

$$7x - 28 = 6(x - 3)$$

$$7x - 28 = 6x - 18$$

$$x = 10$$

2. For what value of c is the number a a solution of the equation?

$$4x + 13 + 2c = 4c - 2x + 3; a = -2$$

$$4(-2) + 13 + 2c = 4c - 2(-2) + 3$$

$$-8 + 13 + 2c = 4c + 4 + 3$$

$$5 + 2c = 4c + 7$$

$$-2 = 2c$$

$$c = -1$$

3. Solve the formula for P .

$$\frac{L}{ya} = \frac{Pya}{ya}$$

$$P = \frac{L}{ya}$$

4. A consulting engineer's time is billed at \$62 per hour, and her assistant's time is billed at \$26 per hour. A customer received a bill for \$618 for a certain job. If the assistant worked 5 hours less than the engineer, how much time did each bill on the job?

$$(x-5)26 + 62x = 618$$

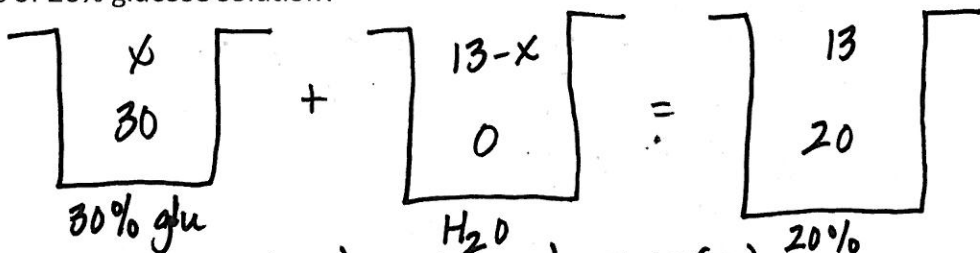
$$26x - 130 + 62x = 618$$

$$88x = 748$$

$$x = 8.5 \text{ hrs}$$

$$x - 5 = 3.5 \text{ hrs}$$

5. In a certain medical test designed to measure carbohydrate tolerance, an adult drinks 13 ounces of a 30% glucose solution. When the test is administered to a child, the glucose concentration must be decreased to 20%. How much 30% glucose solution and how much water should be used to prepare 13 ounces of 20% glucose solution?



$$x(30) + (13-x)0 = 13(20)$$

$$30x = 260;$$

$$x = 8\frac{2}{3} \text{ oz}; 13-x = 4\frac{1}{3} \text{ oz}$$

6. British sterling silver is a copper-silver alloy that is 7.5% copper by weight. How many grams of pure copper and how many grams of British sterling silver should be used to prepare 221 grams of a copper-silver alloy that is 14% copper by weight?

$$\begin{array}{|c|} \hline x \\ \hline \end{array} \begin{array}{|c|} \hline .075 \\ \hline \end{array} + \begin{array}{|c|} \hline 221-x \\ \hline \end{array} \begin{array}{|c|} \hline 1 \\ \hline \end{array} = \begin{array}{|c|} \hline 221 \\ \hline \end{array} \begin{array}{|c|} \hline .14 \\ \hline \end{array}$$

$$\begin{aligned} .075x + 1(221-x) &= .14(221) \\ .075x + 221 - x &= 30.94 \\ -.925x &= -190.06 \end{aligned}$$

$x = 205.5g$
 $221 - x = 15.5g$

7. A runner starts at the beginning of a runners' path and runs at a constant rate of 10 mi/hr. Five minutes later a second runner begins at the same point, running at a rate of 12 mi/hr and following the same course. How long will it take the second runner to reach the first?

$$r \cdot t = d$$

$$10t + 10\left(\frac{5}{60}\right) = 12t$$

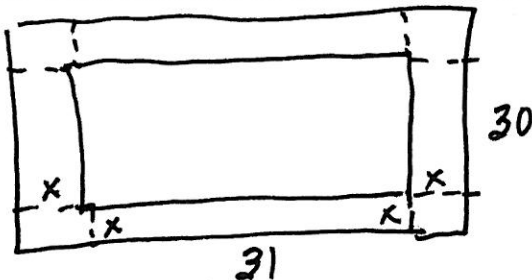
$$\frac{5}{6} = 2t$$

$$\frac{5}{12} = t$$

$$\frac{5}{12} \cdot 60 = 25 \text{ min}$$

- or -
 $10t = 12\left(t - \frac{1}{12}\right)$
 $t = \frac{1}{2}$
 $t = 30$
 $30 - 5 = 25 \text{ min}$

8. A rectangular plot of ground having dimensions 31 feet by 30 feet is surrounded by a walk of uniform width. If the total area of the walk & plot is 1640 ft², what is its width?



$$(31+2x)(30+2x) = 1640$$

$$930 + 60x + 62x + 4x^2 = 1640$$

$$4x^2 + 122x - 710 = 0$$

$$x = 5 \text{ or } x = -35.5$$

5 ft

9. Solve the equation by factoring.

$$15x^2 + 4x - 35 = 0$$

$$(5x-7)(3x+5) = 0$$

$$x = \frac{7}{5} \quad x = -\frac{5}{3}$$

10. Solve by completing the square.

$$4x^2 - 12x - 31 = 0$$

$$\frac{4x^2}{4} - \frac{12x}{4} = \frac{31}{4}$$

$$x^2 - 3x + \frac{9}{4} = \frac{31}{4} + \frac{9}{4}$$

$$\sqrt{\left(x - \frac{3}{2}\right)^2} = \sqrt{10}$$

$$x - \frac{3}{2} = \pm\sqrt{10}$$

$$x = \frac{3}{2} \pm \sqrt{10}$$