

Math 94	Individual Exam #3	Name: Solution Key
<p>1.) Solve: $4 + x = -6$ Isolate the x by subtracting 4 from both sides. $4 + x = -6$ $-4 \quad -4$ $x = -10$</p>	<p>2.) Solve: $\frac{3}{4}x = 12$ Isolate the x by multiplying both sides by the reciprocal. $\frac{4}{3} \cdot \frac{3}{4}x = \frac{12}{1} \cdot \frac{4}{3}$ The reciprocals cancel out to "1". On the right, cross cancel and multiply. $x = 16$</p>	<p>3.) Solve: $8 = \frac{-y}{2}$ Get rid of the fraction by multiplying both sides by 2. $2 \cdot 8 = \frac{-y}{2} \cdot \frac{2}{1}$ On the right side, the twos cancel. $16 = -y$ You must get rid of the negative in front of the "y" but dividing both sides by "-1". $\frac{16}{-1} = \frac{-y}{-1}$ $-16 = y$</p>
<p>4.) Write an algebraic equation to describe the situation: Tristan got \$12 an hour and a \$75 bonus for a total pay of \$200. Let h = the number of hours worked $12h + 75 = 200$</p>	<p>5.) Is -3 a solution? $3 - x = 0$ Plug the "-3" in to see if it makes the equation true. $3 - (-3) = 0$ $3 + 3 = 0$ Not a solution $6 \neq 0$</p>	
<p>6.) Translate the expression: The difference of the product of a number and three and five Difference is stated first then multiplication. _____ - _____ The first thing we are subtracting is the product of a number and 3, which is written as "3n". The second thing is five. $3n - 5$</p>	<p>7.) 76 is 27% of what number? (Round to the hundredths) Set up a percentage proportion to solve: $\frac{76}{B} = \frac{27}{100}$ Cross multiply to solve: $27B = 7600$ Divide by 27 and round $\frac{27}{27}B = \frac{7600}{27}$ $B = 281.48$</p>	
<p>8.) Simplify: $9x - (-2) + 3x + 10 - (-5x)$ Simplify by combining like terms. $9x + 3x - (-5x) - (-2) + 10$ $9x + 3x + 5x + 2 + 10$ $17x + 12$</p>	<p>9.) Simplify: $5 - 6(x + 2)$ Simplify by distributing the "-6" first. $5 + (-6)(x) + (-6)(2)$ Then combine like terms. $5 - 6x - 12$ $-6x + 5 - 12$ $-6x - 7$</p>	
<p>10.) Simplify: $5(x - 4) - 3(6x + 8)$ Simplify by distributing the "5" and the "-3" $(5)(x) + (5)(-4) + (-3)(6x) + (-3)(8)$ $5x - 20 - 18x - 24$ Then combine like terms $5x - 18x - 20 - 24$ $-13x - 44$</p>	<p>11.) Simplify: $-2(x^2 + 5x - 7)$ Simplify by distributing the "-2" $(-2)(x^2) + (-2)(5x) + (-2)(-7)$ $-2x^2 - 10x + 14$ There are no like terms to combine. $-2x^2 - 10x + 14$</p>	

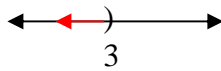
<p>12.) Solve: $3x - 10x = -x - 12$ Start by combining like terms on the left side. $-7x = -x - 12$ Move the "x's" to the same side by adding "x" $-7x = -x - 12$ $+x \quad +x$ $-6x = -12$ Divide both sides by "-6" $\frac{-6}{-6}x = \frac{-12}{-6}$ $x = 2$</p>	<p>13.) Solve: $3x + x + 7 = 7$ Start by combining like terms on the left side. $4x + 7 = 7$ Move the "7's" to the same side by subtracting "7" $4x + 7 = 7$ $-7 \quad -7$ Divide both sides by "4" $4x = 0$ $\frac{4}{4}x = \frac{0}{4}$ $x = 0$</p>
<p>14.) Solve: $\frac{x}{-5} - 4 = -2$ $\frac{x}{-5} - 4 = -2$ First add "4" to both sides. $+4 \quad +4$ $\frac{x}{-5} = 2$ Then multiply both sides by "-5". $\frac{-5}{1} \cdot \frac{x}{-5} = \frac{2}{1} \cdot \frac{-5}{1}$ $x = -10$</p>	<p>15.) Solve: $-3(x - 4) = 2x - 6 - 7x$ First distribute to get rid of the parenthesis. Then combine the like terms on the right side. $(-3)(x) + (-3)(-4) = 2x - 7x - 6$ $-3x + 12 = -5x - 6$ Then use the addition property of equality to move the "x's" to the left and the constant terms to the right. $-3x + 12 = -5x - 6 \quad \rightarrow \quad 2x + 12 = -6$ $+5x \quad +5x \quad \rightarrow \quad -12 \quad -12$ $2x = -18$ Divide both sides by "2" $x = -9$</p>
<p>16.) Solve: $.7y - .02 = .3y - 5$ Subtract .3y from both sides. Add .02 to both sides: $.4y = -4.98$ Divide both sides by ".4" $\frac{.4}{.4}y = \frac{-4.98}{.4}$ $y = -12.45$</p>	<p>17.) Solve: $\frac{3}{4}x - \frac{1}{2} = \frac{1}{3}$ Add one-half to both side and multiply by 4 thirds. $\frac{3}{4}x - \frac{1}{2} + \frac{1}{2} = \frac{1}{3} + \frac{1}{2} \quad \rightarrow \quad \frac{3}{4}x = \frac{5}{6}$ $\frac{4}{3} \cdot \frac{3}{4}x = \frac{5}{6} \cdot \frac{4}{3}$ (Reduce) $x = \frac{10}{9}$</p>
<p>18.) Solve for p: $A = \frac{3p}{b}$ To isolate the "p", multiply both sides by b and divide both sides by 3. $b \cdot A = \frac{3p}{b} \cdot \frac{b}{1}$ $bA = 3p$ $\frac{1}{3} \cdot \frac{Ab}{1} = \frac{3p}{1} \cdot \frac{1}{3}$ $\frac{Ab}{3} = p$</p>	<p>19.) Solve for y: $2x + 3y = 9$ Subtract "2x" then divide by "3" $3y = -2x + 9$ $\frac{3y}{3} = \frac{-2x + 9}{3}$ $y = \frac{-2x + 9}{3}$</p>

20.) **Solve and graph:** $2x - 7 < -1$

Add 7 and divide by 2. Don't flip the arrow.

$$2x < 6$$

$$x < 3$$



21.) **Solve and graph:** $3(k - 3) \geq 8k + 1$

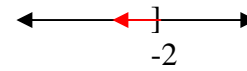
First Distribute. $3k - 9 \geq 8k + 1$

Subtract "8K" and add "9" to both sides.

$$-5k \geq 10$$

Divide both sides by "-5" and flip the arrow.

$$k \leq -2$$



22.) **Solve:**

Tracy starts with 25 clients and plans to add 14 new clients each month. How many months will it take to reach her goal of 95 clients?

Let m = the number of months.

$$25 + 14m = 95$$

Subtract 25 from both sides and divide by 14.

$$m = 5$$

23.) **Solve:**

The Hanover Bridge is 175 ft. shorter than the Dover Bridge. Together, the bridges are 1875 ft. How long is each bridge?

Let D = length of the Dover Bridge

$D - 175$ = length of the Hanover Bridge

The two bridges together equal 1875 feet.

$$D + D - 175 = 1875$$

$$2D - 175 = 1875$$

Add 175 to both sides and divide by 2.

$$D = 1025 \text{ ft. (the length of the Dover bridge)}$$

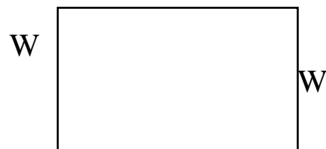
Subtract 175 to find the length of the Hanover bridge

$$H = 850 \text{ ft. (the length of the Hanover bridge)}$$

24.) **Solve:**

The frame Sandee is building requires 36 in. of wood. If the length is three less than twice as long as the width, what are the dimensions of the frame?

$$2W - 3$$



$$2W - 3$$

Add up all of the sides and set them equal to 36

$$6W - 6 = 36$$

Add six to both sides then divide both sides by 6.

$$6W = 42$$

$$W = 7 \text{ (the width)}$$

Plug 7 into $2W - 3$ to find the length.

$$L = 11 \text{ (the length)}$$

25.) **Solve:**

Melody sold 35 tickets. She charged \$8 for kids, and \$10 for adults and took in a total of \$318. How many of each type of ticket did she sell?

Let K = number of kids tickets sold

$35 - K$ = number of adult tickets sold

Multiply the number of tickets by the value of the ticket. Then add the amounts together to get the total income.

$$8K + 10(35 - K) = 318$$

Distribute and combine like terms on the left.

$$8K + 350 - 10K = 318$$

$$-2K + 350 = 318$$

Subtract 350 from both sides and divide by "-2"

$$-2K = -32$$

$$K = 16 \text{ (Number of kids tickets sold)}$$

Subtract 16 from 35 to find number of adult tickets sold.

$$A = 19 \text{ (Number of Adult tickets sold)}$$