Mth 096 – Beginning Algebra – Practice Exam 2 - Solutions

1.

a. 
$$3(x-1)+2(x+3) = 3x-3+2x+6 = 5x+3$$
  
b.  $7-2(x-5) = 7-2x+10 = 17-2x$  or  $-2x+17$   
c.  $3x^2-7x+4-8x^2-3-x = -5x^2-8x+1$ 

- 2. There are 3 terms in the expression.
- 3. -1 is the coefficient of *a*
- 4. To check, we substitute 6 for *x* in the equation:

$$3(6-6) - (6-2)^{?} = -2 - 6$$
  

$$3(0) - 4 \stackrel{?}{=} -8$$
  

$$-4 \neq -8$$

So no, it is not a solution.

- 5. 2x-3=5 2x=8 x=4add 3 to both sides divide both sides by 2
- 6. 3z = 4z 6 -z = -6 subtract 4z from both sides z = 6 divide both sides by -1

7.	4 + 3(3y - 5) = 2y - 11 + y	
	4 + 9y - 15 = 2y - 11 + y	distribute
	9y - 11 = 3y - 11	combine like terms
	9y = 3y	add 11 to both sides
	6y = 0	subtract 3y from both sides
	$y = \frac{0}{6} = 0$	divide both sides by 6

8. 
$$4t - 2(t - 3) = 12$$
$$4t - 2t + 6 = 12$$
$$2t + 6 = 12$$
$$2t = 6$$
$$t = 3$$
$$distribute$$
$$combine like terms$$
$$subtract 6 from both sides$$
$$divide both sides by 2$$

9. 3+2(y-2) = 4y-2(y-1) 3+2y-4 = 4y-2y+2 2y-1 = 2y+2 -1 = 2 *distribute combine like terms subtract 2y from both sides* 

Since –1 clearly does not equal 2, this is a contradiction – there are <u>no solutions</u>.

- 10. Let x = bill for food without tax. The general equation here is: food + tax = total bill. The equation is then:  $x + 0.08x = 91.80 \implies 1.08x = 91.80$
- 11. Looking at the problem, we can see that this is a *mixture* problem, so follow that strategy. The unknown here is the number of quarts of low-fat milk, so let x = number of quarts of low-fat (1.5%)



12. Since we are told that "one hiker walks 1.1 mph faster than the other", let's let s = the speed of the slower hiker. A quick drawing might look like:



Since this is a distance problem, we set up a table:

	rate	Х	time	=	distance
slower	S		2		2 <i>s</i>
faster	<i>s</i> + 1.1		2		2(s + 1.1)

Looking at the drawing, we can see that this is a "total distance" problem, so we add the two distances together to get the equation: 2s + 2(s + 1.1) = 11

13. Since we are given a description of one number in terms of another, we should let x = the first number. The second number is then 2x + 8 and the equation is then: x + (2x + 8) = 38. Solving for *x*, we see that the first number is 10, so the 2<sup>nd</sup> must be 28.

14. Since the pieces are in terms of the shorter pieces, we should let the length of the shorter piece be our variable: let x = length of the shorter piece. Then the length of the longest piece = 3x and the length of the middle-sized piece = x + 26. The rough equation is:

Solving for *x*, we see that x = 22, so the pieces are 22, 48, and 60 inches long.

15. The unknown in this problem is the daily rental charge, so let x = the daily rental charge. A rough equation would be:

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12$$

Solving for *x*, we see that x = 30, so the daily rental charge is \$30.

17. 
$$2(a-5)+3a > 6a-6$$
$$2a-10+3a > 6a-6$$
$$5a-10 > 6a-6$$
$$-10 > a-6$$
$$-4 > a \implies a < -4$$
$$\longleftarrow$$
$$-4 = 0$$
interval: 
$$(-\infty, -4)$$

0 interval: (0, 2] distribute combine like terms subtract 5a from both sides add 6 to both sides

18. 
$$2 < 3a + 2 \le 8$$
  
 $0 < 3a \le 6$   
 $0 < a \le 2$   
subtract 2 from all three parts  
 $divide all three parts by 3$   
 $\leftarrow$ 

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