

**Algebra CC**  
**Assignment #18**  
**Solving Linear Equations with Unspecified Constants** EMI 2.7  
**\* Optional**

1. When  $\frac{3(x-k)}{w} = 4$  is solved for  $x$  in terms of  $w$  and  $k$ , its solution is which of the following? Show the algebraic manipulations you used to get your answer.

(1)  $\frac{4}{3}w + k$                       (2)  $k - \frac{3w}{4}$                       (3)  $k - \frac{4}{3}w$                       (4)  $\frac{4}{3} + w - k$

2. Solve the following equations for  $x$ . It may help to make up an equation with numbers and solve it to the side to make sure you are not making any mistakes.

(a)  $a(x+b) - c = d$                       \*(b)  $\frac{e(x+c)}{b} = 2$                       (c)  $rx + qx - d = gc$

(d)  $2ax - b = cx + d$                       \* (e)  $zx = 5g(2x - c)$

3. In physics the following formula relates your distance above the ground,  $d$ , relative to how long,  $t$ , an object has been in the air:

$$d = v_0t + \frac{1}{2}at^2$$

- (a) Solve the formula for  $a$ , the acceleration due to gravity.

Hint:  $v_0$  is a single variable.

- (b) Using your manipulated equation, find the value of  $a$  if  $d = 80$ ,  $v_0 = 50$  and  $t = 8$ .

\*note: an acceleration towards the ground is negative.

- \*4. When traveling abroad many of the units used are different. One of the most common is the unit of temperature namely Fahrenheit versus Celsius. The conversion between the 2 temperatures is as follows.

$$C = \frac{5}{9}(F - 32)$$

- (a) Using the formula above convert  $50^\circ$  Fahrenheit to Celsius.

- (b) This conversion formula is very useful if you are given Fahrenheit, but less useful if you know a Celsius temperature. Solve the above equation for Fahrenheit,  $F$ , and then convert  $50^\circ$  Celsius into Fahrenheit. Is there a large difference in Fahrenheit and Celsius?

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- R1. A new pizza shop is going to print menus. Each menu costs \$0.50 to print. The owners have a \$2500 budget for the menus. How many menus can they afford to print?

- R2. Write a word phrase for the expression  $4(j + 7)$

- R3. Factor:  $18x - 18y$

\*R4. Factor:  $12m - 6$

\*R5. Arrange the following in order from least to greatest:  $1.75\pi$ ,  $5.01$ ,  $\sqrt{25}$ ,  $5.11$

R6. Multiply  $(2x^2 - 1)(3x + 4)$

\*R7. Simplify:  $\frac{2}{3}(6x - 12)$

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1. (1)

2. (a)  $x = \frac{d+c}{a} - b$

(b)  $x = \frac{2b}{e} - c$

(c)  $x = \frac{gc+d}{r+q}$

(d)  $x = \frac{d+b}{2a-c}$

(e)  $x = \frac{-5gc}{z-10g}$

R1. 5000 menus

R2. Four times the sum of a number and seven.

R3.  $18(x - y)$

R4.  $6(2m - 1)$

R5.  $\sqrt{25}$ ,  $5.01$ ,  $5.11$ ,  $1.75\pi$

R6.  $6x^3 + 8x^2 - 3x - 4$

R7.  $4x - 8$

3. (a)  $a = \frac{2(d - v_0 t)}{t^2}$

(b)  $a = -10$

4. (a)  $10^\circ$

(b)  $F = \frac{9}{5}C + 32$ ,  $122^\circ$ , *very large difference.*