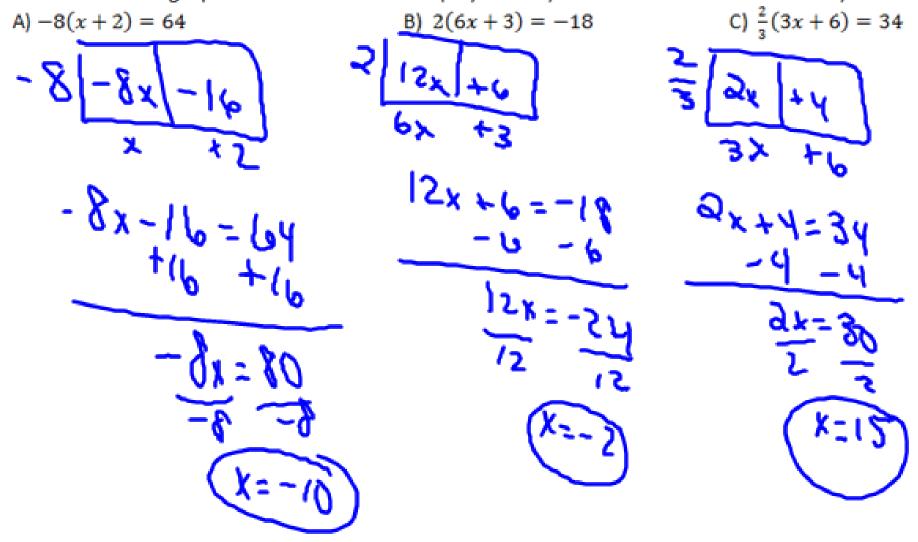Get out your homework from yesterday and have it ready to check.

Classwork - Writing Equations Day 2

Solve the following equations. Remember to simplify before you solve! Show work and check your solutions.

A) $-8(x + 2) = 64$

$$-8 \boxed{-8x \quad -16}$$
$$x \qquad +2$$

$$-8x - 16 = 64$$
$$+16 \quad +16$$
$$\overline{}$$
$$\frac{-8x}{-8} = \frac{80}{-8}$$

$$\boxed{x = -10}$$

B) $2(6x + 3) = -18$

$$2 \boxed{12x \quad +6}$$
$$6x \qquad +3$$

$$12x + 6 = -18$$
$$ -6 \quad -6$$
$$\overline{}$$
$$\frac{12x}{12} = \frac{-24}{12}$$

$$\boxed{x = -2}$$

C) $\frac{2}{3}(3x + 6) = 34$

$$\frac{2}{3} \boxed{2x \quad +4}$$
$$3x \qquad +6$$

$$2x + 4 = 34$$
$$ -4 \quad -4$$
$$\overline{}$$
$$\frac{2x}{2} = \frac{30}{2}$$

$$\boxed{x = 15}$$

D) $5(x+2) + 3 = 58$

$5 \,\lfloor\, 5x \mid +10$

$x \qquad +2$

$5x \underbrace{+10}\underbrace{+3} = 58$

$5x + 13 = 58$

$-13 \quad -13$

$$\frac{5x}{5} = \frac{45}{5}$$

$\boxed{x = 9}$

E) $-2(x+4) - 4x = 28$

$-2 \,\lfloor\, -2x \mid -8$

$x \qquad +4$

$\boxed{-2x} \cdot 4 \,\boxed{-4x} = 28$

$-6x - 8 = 28$

$+8 \quad +8$

$$\frac{-6x}{-6} = \frac{36}{-6}$$

$\boxed{x = -6}$

1) Simplify and THEN solve the following one-step equations. Make sure to show inverse operations on BOTH sides and WORK DOWN. SHOW ALL WORK. Guess and Check is not a method to use anymore.

A) $\frac{x}{6} = -3 + 4$

$6 \cdot \frac{x}{6} = -3 \cdot 6$

$x = -18$

B) $9x - 2x = -4 + 18$

$\frac{7x}{7} = \frac{14}{7}$

$x = 2$

C) $14 - 20 + x = -8 + 3$

$-6 + x = -5$
$+6 \qquad +6$

$x = 1$

D) $2 - 11 = \frac{x}{3}$

$3 \cdot -9 = \frac{x}{3} \cdot 3$

$-27 = x$

E) $-5x + x = -8 + 32$

$\frac{-4x}{-4} = \frac{24}{-4}$

$x = -6$

F) $7 - 19 = -11 + x + 8$

$-12 = x - 3$
$+3 \qquad +3$

$-9 = x$

2) Solve the following equations that have fractions as coefficients. SHOW ALL WORK

A) $-\frac{1}{4}x = 7$

B) $\frac{2}{5}x = 16$

C) $-\frac{2}{3}x = 18$

D) $\frac{3}{8}x = -21$

4. $\frac{-1x}{4} = 7 \cdot 4$

$-1x = 28$
$\overline{-1} \quad \overline{-1}$

$\boxed{x = -28}$

5. $\frac{2x}{5} = 16 \cdot 5$

$\frac{2x}{2} = \frac{80}{2}$

$\boxed{x = 40}$

3. $\frac{-2x}{3} = 18 \cdot 3$

$\frac{-2x}{-2} = \frac{54}{-2}$

$\boxed{x = -27}$

8. $\frac{3x}{8} = -21 \cdot 8$

$\frac{3x}{3} = \frac{-168}{3}$

$\boxed{x = -56}$

3) Solve the following 2-step equations. SHOW ALL WORK (9 problems on the back)

A) $8x + 10 = -22$

$\underline{-10 \quad\quad -10}$

$\frac{8x}{8} = \frac{-32}{8}$

$\boxed{x = -4}$

B) $-3x - 7 = 32$

$\underline{\quad\quad +7 \quad +7}$

$\frac{-3x}{-3} = \frac{39}{-3}$

$\boxed{x = -13}$

C) $\frac{t}{4} + 2 = -8$

$\underline{\quad -2 \quad -2}$

$4 \cdot \frac{t}{4} = -10 \cdot 4$

$\boxed{t = -40}$

D) $-9 + 6x = 33$

$$+9 \qquad +9$$

$$6x = 42$$
$$\frac{6x}{6} = \frac{42}{6}$$

$$\boxed{x = 7}$$

E) $\frac{x}{5} - 7 = 10$

$$+7 \quad +7$$

$$5 \cdot \frac{x}{5} = 17 \cdot 5$$

$$\boxed{x = 85}$$

F) $\frac{1}{3}x + 8 = 2$

$$-8 \quad -8$$

$$3 \cdot \frac{1x}{3} = -6 \cdot 3$$

$$\boxed{x = -18}$$

G) $-x + 13 = 19$

$$-13 \quad -13$$

$$-x = 6$$
$$\frac{-x}{-1} = \frac{6}{-1}$$

$$\boxed{x = -6}$$

H) $\frac{1}{2}x - 3 = -5$

$$+3 \quad +3$$

$$2 \cdot \frac{1x}{2} = -2 \cdot 2$$

$$\boxed{1x = -4}$$

I) $-\frac{1}{4}x + 15 = 18$

$$-15 \quad -15$$

$$4 \cdot \frac{-1x}{4} = 3 \cdot 4$$

$$\frac{-1x}{-1} = \frac{12}{-1}$$

$$\boxed{x = -12}$$

J) $9.1x + 20 = 192.9$

$$\underline{\quad -20 \quad -20 \quad}$$

$$\frac{9.1x}{9.1} = \frac{172.9}{9.1}$$

$$\boxed{x = 19}$$

K) $\frac{4}{5}x + 8 = 16$

$$\underline{\quad -8 \quad -8 \quad}$$

$$5 \cdot \frac{4x}{5} = 8 \cdot 5$$

$$\frac{4x}{4} = \frac{40}{4}$$

$$\boxed{x = 10}$$

L) $-\frac{3}{7}x - 4 = 23$

$$\underline{\quad +4 \quad +4 \quad}$$

$$7 \cdot \frac{-3x}{7} = 27 \cdot 7$$

$$\frac{-3x}{-3} = \frac{189}{-3}$$

$$\boxed{x = -63}$$

1) Heather works at her job and earns $7.50 each hour. Create an **equation** to show the connection between hours she works and total cost. *earnings*

A) Create a table to show the connection between hours and Total Cost.

Hours	Total Cost
0	0
1·7.5	7.50
2·7.5	15
3·7.5	22.50
4·7.5	30
5·7.5	37.50

Define Variable
h → hours

Variable ——→ h

$7.50 \cdot h$

B) Write an equation to describe the relationship between hours and total cost. *Earnings*

$7.50 \cdot \underline{\quad} \; hours = \text{Total Cost}$

C) If Heather makes a total of $240, create an equation to find the number of hours she worked. Solve your equation.

$$\frac{7.50h}{7.50} = \frac{240}{7.50}$$

$$h = 32 \; hours$$

2) Max and Jim are running at the same speed. Jim has a 20 foot head start and is always this distance ahead of Max.

A) Create a table to show the connection between Max and Jim's distance.

Max's Distance (ft)	Jim's Distance (ft)
0 +20	20
5 +20	25
10 +20	30
15	35
20	40
25	45
m	m+20

Variable →

Define Variable
m → Max's Distance

B) Write an equation to describe the relationship between Max and Jim's distance

$$m + 20 = \text{Jim's Distance}$$

C) If Jim is 80 feet from the starting line, create an equation to find how many feet Max is away from the starting line. Solve your equation.

$$m + 20 = 80$$
$$-20 \quad -20$$
$$m = 60 \text{ feet}$$

3) There class full of students and the teacher breaks them up into 2 equal groups.

A) Create a table to show the connection between total # of student and the size of each group.

# of total students	# of students in group
10	5
12	6
14	7
16	8
t	t ÷ 2

Variable →

Define Variable
t → total students

B) Write an equation to describe the relationship between the total # of student and the size of each group.

$$t \div 2 = \text{\# in each group}$$

C) If there are 14 people in each group, create an equation to find how many total students are there in the class. Solve your equation.

$$2 \cdot \frac{t}{2} = 14 \cdot 2$$
$$t = 28 \text{ students}$$

4) Sammie has $35 in her bank account. She deposits $15 per week into the account and continues to do deposit the same amount every week that follows.

A) Create a table to show the connection between the number of weeks and amount of money she has saved.

# of weeks	Money in account
0	35
1	50
3	80
7	140
Variable → W	

Define Variable
W → #of weeks

B) Write an equation to describe the relationship between the number of weeks and amount of money she has saved.

$$15 \cdot weeks + 35 = \text{Money in account}$$

C) If there she has $215 in her account, create an equation to find how many weeks has she been saving for. Solve your equation.

$$15w + 35 = 215$$
$$-35 \quad -35$$
$$\frac{15w}{15} = \frac{180}{15}$$
$$w = 12 \text{ weeks}$$

5) Jessica is making bracelets and plans to sell them for $3 each. She has to spend $20 of her own money on supplies before making the bracelets.

A) Create a table to show the connection between the number of bracelets sold and how much money she has made.

Bracelets sold	Profit
0	-20
5	-5
10	10
15	25
Variable → b	

Define Variable
b → #of bracelets sold

B) Write an equation to describe the relationship between the number of bracelets sold and how much money she has made.

$$3 \cdot bracelets - 20 = \text{Profit}$$

C) If she made a profit of $130, create an equation to find the number of bracelets she sold. Solve your equation.

$$3b - 20 = 130$$

6) Blake is renting a car and the rental company charges a fee of $45 just to rent the car. Blake then also has to pay $0.10 for every mile that he drives on top of the $45 fee.

A) Create a table to show the connection between the number of miles driven and how much it costs Blake to rent the car.

B) Write an equation to describe the relationship between the number of miles driven and how much it costs Blake to rent the car.

= Total Cost

Miles driven	Total Cost
0	
20	
45	
98	
Variable ⟶	

C) If Blake's total cost to rent the car is $57.50, create an equation to find how many miles he drove the car. Solve your equation

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Define Variable
_____ → #of miles driven