GW PS 8.1 & 8.2

Name: **Group #:**

1) For each pair of terms, determine if they are like or unlike terms. If they are unlike, describe how you know this.

a) xy and $2yx$ **b)** xy and $2y^2x$ **c)** 1 and 2 **d)** xy^2z and xy^2

2) For each group of terms, circle the like terms**.**

a) $ab, \ -17ab, \ 4ba, \ 6a, \ 9by$

b) $1, \ 17, \ 17x, \ b, \ -257$

c) $xyz, \ xy^2z^3, \ ab^2c^3, \ xy^2z, \ -1.9y^2z^3x$

d) $3st, \ 5ST, \ ST, \ -2.7TS, \ TSA$

3) Simplify each expression.

a) $9 - 2x - 5 + 3 =$

b) $-9(3y) =$

c) $(13 + 5x) - 3 =$

d) $7(y + 3) =$

e) $2(15x + 21y) =$

f) $(a - 2)(4) =$

g) $-9(2 + g) =$

h) $(b - 5)(-4) =$

i) $6(2x + y - z) =$

j) $-(m - n) =$

k) $2(m - 3) - 2m =$

l) $-5(2a - 3b) - 2(6a + b) =$

4) Solve each equation and check the solution:

a) $x + 9 = 7$

b) $\frac{x}{5} = 3$

c) $\frac{7}{3}x = 2$

d) $10 = -5t$

e) $2p + 1 = 5$

f) $2 = -x$

5) Open desmos.com. Consider the equation $5 = \frac{4}{5}x - 3$. If $x = a$ is a solution to this equation, then we should be able to check it in the original equation and get a true equation. That is, $5 = \frac{4}{5}a - 3$ would be a true equation. Now, look back and forth between the two equations below for a while…

$$5 = \frac{4}{5}a - 3 \text{ and } y = \frac{4}{5}x - 3$$

Doesn't the equation on the left look like what would happen if you substituted the coordinate pair $(a, 5)$ into the equation on the right (ie, replace x with a and replace y with 5)? … But we have already decided that $5 = \frac{4}{5}a - 3$ is a true equation… But this means that when we substitute the coordinate pair $(a, 5)$ into the equation $y = \frac{4}{5}x - 3$, we again get a true equation… But this means that $(a, 5)$ is a solution to the equation $y = \frac{4}{5}x - 3$… But this means that $(a, 5)$ is a point on the line given by $y = \frac{4}{5}x - 3$. Waddya think? You think we can find out what a is by graphing the line $y = \frac{4}{5}x - 3$, finding the point on the line that has 5 as its $y-$coordinate, and then looking at the left coordinate to see what x equals when y equals 5? To help eyeballing this, the text suggests graphing the line $y = 5$ in the same coordinate plane as the line $y = \frac{4}{5}x - 3$.

a) So what's the solution to $5 = \frac{4}{5}x - 3$?*

$x =$

Check your solution:

b) Use the same strategy to solve $-7 = \frac{4}{5}x - 3$*

$x =$

Check your solution:

*if you skipped the reading up above, don't solve these algebraically – go back up there and read the statement, then write your answer here.

6) I haven't figured out how to explain why this one works the way it does yet, so I'm just going to ask you to try solving

$$4x - 3 = \frac{1}{2}x + 4$$

by graphing both the lines $y = 4x - 3$ and $y = \frac{1}{2}x + 4$ in the same coordinate plane, using that to make your best guess as to what the solution is, and then checking this proposed solution in the original equation.

Proposed solution: $x =$

Check:

7) Solve each equation and check the solution:

a) $5(x-1)-2(x+3)=4$

b) $2x+6=-15-5x$

8) In a study of graduating college students, the number of students who said they are expecting to stay at their next full-time job for 3-5 years was 5645, which was about 43% of the students surveyed. What was the total number of students surveyed?

9) If 67% of the students at a local high school like pizza, and the number of students there that like pizza is 2,680, then how many students are enrolled at the high school?

10) The table to the right contains solutions to the equation $y=-\frac{2}{7}x-3$. Use it to solve the equations:

a) $1=-\frac{2}{7}x-3$

$x=$

Check:

b) $-5=-\frac{2}{7}x-3$

$x=$

Check:

x	y
-21	3
-14	1
-7	-1
0	-3
7	-5