Double Block Algebra Name:

**Using information from a word problem**. Following these steps will help you in deciding where to substitute values into your formulas/functions.

Identify your variables. Underline what each variable represents.

Are you given a function/formula? Draw a rectangle around it.

Circle what you are given. Which variable will that replace?

Substitute the value you are given into the formula and solve/evaluate.

Example 1a. A sample of 400 ladybugs increases at a rate of 45 ladybugs each week. This can be modeled by the function $n(w) = 400 + 45w$, where w is the number of weeks you have the ladybugs and $n(w)$ is the number of ladybugs. According to the model, how many ladybugs will there be after 8 weeks?

Compare that to the following problem:

Ex. 1b. A sample of 400 ladybugs increases at a rate of 45 ladybugs each week. This can be modeled by the function $n(w) = 400 + 45w$, where w is the number of weeks you have the ladybugs and $n(w)$ is the number of ladybugs. According to the model, how many weeks have gone by if you have 895 ladybugs?

How are the problems the same? Different?

Ex. 2a Students in an algebra class have bought a 25 lb bag of candy and are eating it at a rate of .45 lbs per hour. This situation is represented by the equation $c = 25 - .45h$, where c is the amount of candy left and h is the number of hours they are eating it. For how many hours were the students eating the candy if they 21.7 lbs left?

Ex. 2b. Students in an algebra class have bought a 25 lb bag of candy and are eating it at a rate of .45 lbs per hour. This situation is represented by the equation $c = 25 - .45h$, where c is the amount of candy left and h is the number of hours they are eating it. How much candy will they have left after 24 hours?

Ex 3a. The height of a basketball being thrown at 14 ft/sec from 5 feet off the ground is modeled by the function $h(t) = -7t^2 + 2.1t + 5$, where h is the height in feet and t is the time in seconds that the ball is in the air. According the model, what is the height after 2 seconds?

Ex 3b. The height of a basketball being thrown at 14 ft/sec from 5 feet off the ground is modeled by the function $h(t) = -7t^2 + 2.1t + 5$, where h is the height in feet and t is the time in seconds that the ball is in the air. According the model, write an equation (but don't solve) to find how long the ball is in the air when it is 1 foot from the ground.

Ex 4a. The number of bacteria doubles every hours. If you begin with 250 bacteria, this situation can be modeled by the function $b(t) = 250(2)^t$ , where b(t) is the number of bacteria and t is the number of hours. How many bacteria will there be after 3 hours?
Ex 4b. The number of bacteria doubles every hours. If you begin with 250 bacteria, this situation can be modeled by the function $b(t) = 250(2)^t$ , where b(t) is the number of bacteria and t is the number of hours. Write an equation to show how many hours it takes to get 10,000 bacteria.

5. Let $f(x) = \frac{3}{4}x - 4$. Evaluate $f(12)$.

Variables:

6. Let $g(r) = 5((r - 3)^2 + 1)$. Evaluate $g(-2)$.

Variables:

7. Let $f(x) = \frac{3}{4}x - 4$. Evaluate when $f(x) = 32$

Variables:

8. Given that $m(p) = 3(2p - 8)$, find p if $m(p) = -54$.

Variables:

9. Let $g(a) = 3a - 12 + 5a - 6$. If $g(a) = -15$, find a.

Variables:

10. Find m if $r(m) = 7$ and $r(m) = 5m + 14 - 9m$.

Variables:

11. Find $h(-8)$ if $h(d) = 4d^2 - 6d + 7$.

Variables:

12. Let $g(x) = \frac{2}{3}x + 12$. Evaluate $g(7)$.

Variables:

Homework:

1. For the first 10 seconds, the distance traveled by a 3 year old gweeto can be modeled by the function $d(t) = \frac{1}{2} t^2 + 5t - 2$, where t is time in seconds and d(t) is the distance in feet. How far will the gweeto travel in 4 seconds?

2a. Tommy has \$85 in his account and deposits \$23 each week. This situation can be represented by the equation $a = 85 + 23w$ where a is the amount in the account and w is the number of weeks. How many weeks does it take Tommy to have \$375?

2b. How much will Tommy have in his account at the end of 1 month?

3a. A sunflower grows an average of 3.5 inches per week. If our initial measurement is 6 inches, its height can be modeled by the equation $h(w) = 3.5w + 6$, where h(w) is the height of the sunflower and w is the number of weeks. How tall will it be after 5 weeks?

3b. When will it be 72 inches tall?

4a. Let $g(x) = 5x^2 - 2x + 14$. Evaluate g(3).

4b. Write an equation to find x if $g(x) = 25$.

5a. Let $f(x) = \frac{5}{8}x + 3$. Find x if $g(x) = 22$.

5b. Evaluate g(-10).

6a. A balloon is falling at a rate of 4 feet per minute. It is initially 120 feet above the ground. This scenario can be modeled by the function $h(t) = 120 - 4t$ where h(t) is the height of the balloon and t is the time in minutes. How high is it after 15 minutes?

6b. When will it be 5 feet from the ground?