Topic 3-1: Dependent + Independent Variables

- <u>Dependent Variable</u>: changes in response to other variables.
- <u>Independent variable</u>: causes the dependent variable to change.

What does it mean for one quantity to depend on another?

1.) An orchard sells apples by the pound. Each day the number of pounds (p) of apples sold and the amount of money (m) taken in is recorded.

    m = dependent variable

    p = independent variable (because how many pounds sold determines or changes the amount of money made)

2.) The height (h) of a plant and the amount of water (w) it receives.

    h = dependent

    w = independent

Topic 3-2: Patterns and Equations

- How can you find a pattern to write and solve an equation?

Number, n	Cost, c
3	$16.50
4	$22.00
5	$27.50
6	?

- Write a rule + an equation that tells a pattern.
- Find the price of one ticket, p, when 3 tickets cost $16.50

$$3p = \$16.50$$
$$\div 3 \qquad \div 3 \qquad \text{inverse operation} \atop \text{divide by three}$$

$$p = \$5.50$$

- One ticket costs $5.50

RULE - The total cost, c, is $5.50 times the number of tickets, n.

EQUATION - $c = 5.50 \times n$ or $c = 5.5n$

ANSWER - $c = 5.5(6)$
$c = 33$ 6 tickets cost $33.00.

Topic 3-3: More Patterns + Equations

- How can you use patterns to solve an equation that has more than one operation?

1. $y = 2x - 7$
   $y = 2(7) - 7$
   $y = 14 - 7$
   $y = 7$

x	4	5	6	7	8	x
Y	1	3	5	?	?	Y

* substitute 7 and 8 for the variable x to solve for y.

   $y = 2x - 7$
   $y = 2(8) - 7$
   $y = 16 - 7$
   $y = 9$

2. $t = 5d + 5$
   $t = 5(3) + 5$
   $t = 15 + 5$
   $t = 20$

d	0	1	2	3	4
t	5	10	15	?	?

   $t = 5d + 5$
   $t = 5(4) + 5$
   $t = 20 + 5$
   $t = 25$

Topic 3-4: Problem Solving
Use Reasoning

Helpful Hints: Plan + Solve
                 Make a table/chart

Applying Math Practices:
1. What am I asked to find?
2. What else can I try?
3. How are quantities related?
4. How can I explain my work?
5. How can I use math to model the problem?
6. Can I use tools to help?
7. Is my work precise?
8. Why does this work?
9. How can I generalize?