Hey Everyone!

Welcome to your 10th Work-From-Home week!

10 WEEKS!

My goodness time flies.... TEN WEEKS! That's longer than summer vacation!

I'm not even going to recognize you all when I see you again!

A team of Powerview staff went out and delivered graduation celebration signs to our 2020 grads this week. It was so heartwarming to get to see some of our students in real life, from a distance! But man oh mannnnn did it make me miss everyone 100 times more.

I hope you all enjoyed May long weekend, and took some time to get outside in the gorgeous sunshine!

(Looking back at my past letters I've written you, I laughed at how OBSESSED I am with telling you all to get outside!! OH WELL, I am totally comfortable with being a nature nerd...)

Mr. Schram and I took Mr. Icky (our puppy) on his first big canoeing adventure during May-long. (Grade 9s who went on the canoe trip this September might remember his first little adventure with the group!)

He was a very goooooooooood boyyyyyy sitting in the canoe real nice, and sleeping in the tent like a champ. Poor guy has tons of thick fur though, and it was HOT. He is also very scared of swimming (only walks in up to his tummy) so we put a sarong on him for a bit for shade, which made for a hilarious Big-Bad-Wolf pretending to be a grandma vibe.

Miss you tons,

Ms. Burns

9 Math

☐ Send Ms. Burns a message if you want a list of what you haven't handed in!

☐ Start where you left off last!

☐ U5 Booklet 4

☐ U5A4

9 math

Unit 5

Linear Relations

booklet 4

May 26th - June 2nd

Name:_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Visit www.burnspvw.weebly.com to help fill this booklet
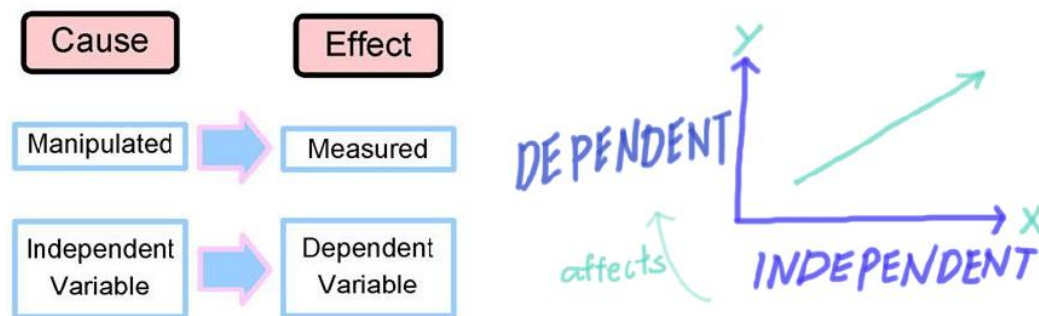
Putting it All Together

The goal of working with linear relations, is to **understand patterns in the world around us.**

To do so, we need to be able to recognize which variable controls the other.

There are two types of variables:

INDEPENDENT: It does not change, it controls the other variable.

DEPENDENT: It changes based on the other variable.

The **independent** variable will always be graphed on the **x-axis.**

The **dependent** variable will always be graphed on the **y-axis.**

Another essential skill is to be able to match language to mathematical operations. Some key terms within linear relations include:

PER - "$5 per day" → MULTIPLY 5 by # of days.

EACH- "10 candies each" → MULTIPLY 10 by # of people

FOR EVERY- "24 hours for every day" → MULTIPLY 24 by # of days.

PLUS- "$4 plus $1" → ADD 4 to 1

Independent vs. Dependent Variables

Read each statement below. Determine the two variables (in words) in each situation and identify each as independent or dependent variable.

1. How fast the grass grows depends on how much rain we get.

   independent:
   dependent:

2. The number of problems missed on a test determines your grade on the test.

   independent:
   dependent:

3. How long I talk on my cell phone depends on the number of minutes on my calling plan.
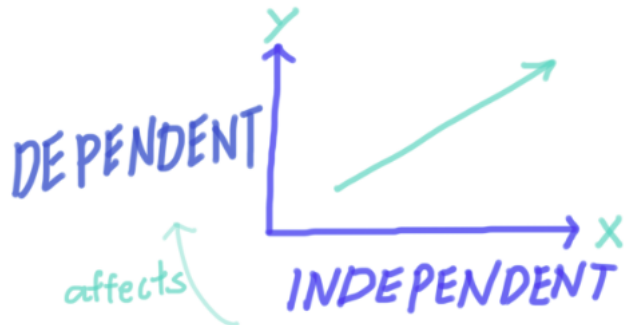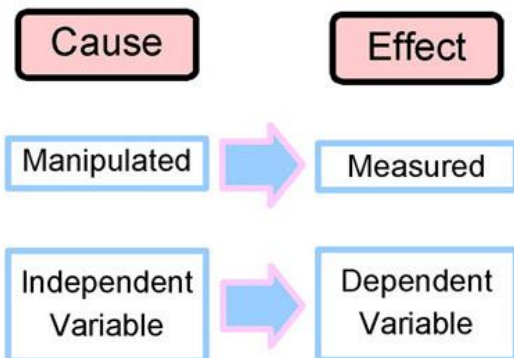
   independent:
   dependent:

4. The amount of money I make is a function of the number of hours I work.

   independent:
   dependent:

Cause	Effect
Manipulated ➡	Measured
Independent Variable ➡	Dependent Variable

DEPENDENT

affects

INDEPENDENT

5. You are given the following data on the relationship between John's test score and the number of hours he studies.

# of Hours John Studies	John's Test Score
0	55
1	65
2	75
3	85
4	95

a) What are the independent and dependent variables?

b) How are the independent and dependent variables related? Choose variables and write an equation to represent this table.

6. You are given the following data on the relationship between the number of dinner guests at Mary's house and the amount of time she will need to prepare dinner.

Number of Guests	Meal Preparation Time (min)
3	25
4	33
5	41
6	49
7	57

a) What are the independent and dependent variables?

b) How are the independent and dependent variables related? Choose variables and write an equation to represent this table.
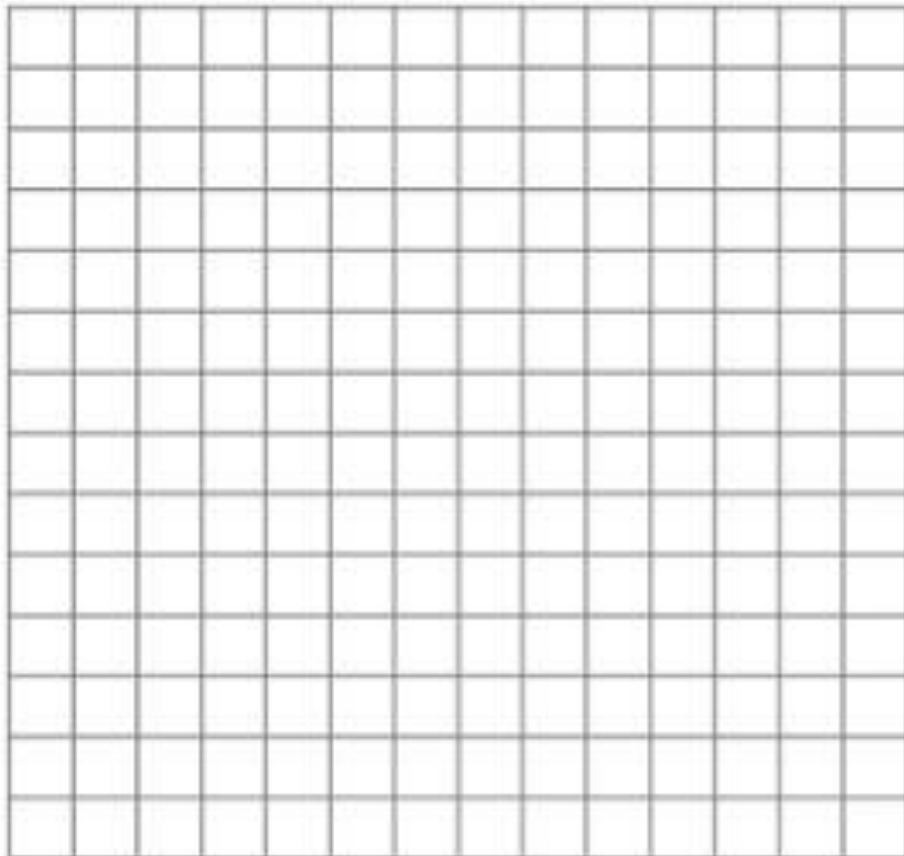
7. WORD PROBLEM!

A phone company charges a fixed cost of $10 per month, plus $0.25 per minute for long distance calling.
Create a table of values:

Write an equation that relates the monthly cost, C dollars, to t, the time in minutes:

Graph the linear relation:

$$y = mx + b$$

1. Suppose that the water level of a river is 34 feet and that it is receding at a rate of 0.5 foot per day. Write an equation for the water level, L, after d days. In how many days will the water level be 26 feet?

2. Seth's father is thinking of buying his son a six-month movie pass for $40. With the pass, matinees cost $1.00. If matinees are normally $3.50 each, how many times must Seth attend in order for it to benefit his father to buy the pass?

3. For babysitting, Nicole charges a flat fee of $3, plus $5 per hour. Write an equation for the cost, C, after h hours of babysitting. How much money will she make if she baby-sits 5 hours?

4. A plumber charges $25 for a service call plus $50 per hour of service. Write an equation in slope-intercept form for the cost, C, after h hours of service. What will be the total cost for 8 hours of work? 10 hours of work?

5. Rufus collected 100 pounds of aluminum cans to recycle. He plans to collect an additional 25 pounds each week. Write an equation for pounds, P, of aluminum cans after w weeks. How long will it take Rufus to collect 400 pounds of cans?

6. A canoe rental service charges a $20 transportation fee and $30 dollars an hour to rent a canoe. Write an equation representing the cost, y, of renting a canoe for x hours. What is the cost of renting the canoe for 6 hours?

7. A caterer charges $120 to cater a party for 15 people and $200 for 25 people. Assume that the cost, y, is a linear function of the number of x people. Write an equation for this function. How much would a party for 40 people cost?

8. Attorney A charges a fixed fee on $250 for an initial meeting and $150 per hour for all hours worked after that. Write an equation. Attorney B charges $150 for the initial meeting and $175 per hour. Find the charge for 26 hours of work for each attorney. Which is the better deal?

9. A water tank already contains 55 gallons of water when Baxter begins to fill it. Water flows into the tank at a rate of 8 gallons per minute. Write an equation to model this situation. Find the volume of water in the tank 25 minutes after Baxter begins filling the tank.

10. A video rental store charges a $20 membership fee and $2.50 for each video rented. Write a linear equation (y=mx+b) to model this situation. If 15 videos are rented, what is the revenue? If a new member paid the store $67.50 in the last 3 months, how many videos were rented?

U5:A4 Linear relations
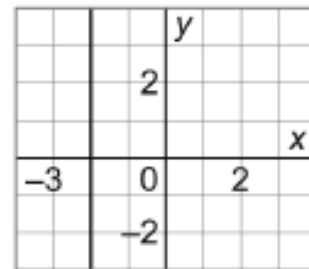
1. .

   Which equation below describes each graph?

   a)

   b)
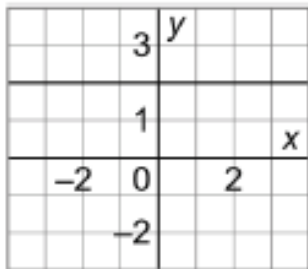
   i) $x = 2$ **ii)** $x = -2$
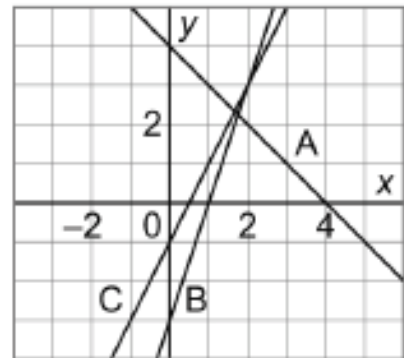   **iii)** $y = 2$ **iv)** $y = -2$

2. .

   Match each equation with a graph on this grid.
   a) $y = 2x - 1$
   b) $y = -x + 4$
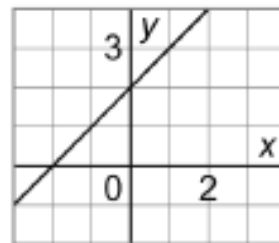   **c)** $y = 3x - 3$

3. .

   Which equation describes this graph? Justify your answers.
   a) $y = x + 2$
   b) $y = -x + 2$
   c) $y = x - 2$

4. A water tank already contains 55 gallons of water when Baxter begins to fill it. Water flows into the tank at a rate of 8 gallons per minute.
   a) Write an equation to model this situation.

   [2]

   b) Find the volume of water in the tank 25 minutes after Baxter begins filling the tank.

   [2]

5. A video rental store charges a $20 membership fee and $2.50 for each video rented.
   a) Write a linear equation (y=mx+b) to model this situation.

   [2]

   b) If 15 videos are rented, what is the revenue?

   [2]

   c) If a new member paid the store $67.50 in the last 3 months, how many videos were rented?

   [2]