

## C3 Partial Variation

- Graph a linear relation using a table of values.
- Identify slope and y-intercept of a linear relation.
- Determine the equation of a linear relation.

Apr 18-11:28 AM

## Warm Up

**Complete:** *Investigating Lines (Partial Variation) Handout*

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**Debrief Investigation:**

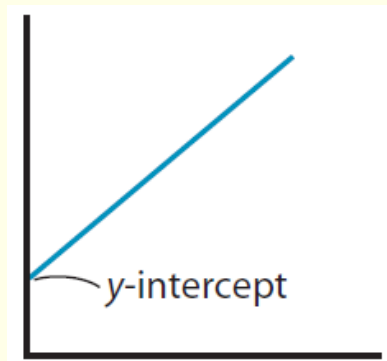
The following slides will review important concepts from the investigation such as:

- Partial Variation
- Determine Linear Equations

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## Partial Variation

**Partial Variation:** a linear relation where the y-intercept is **not** zero.



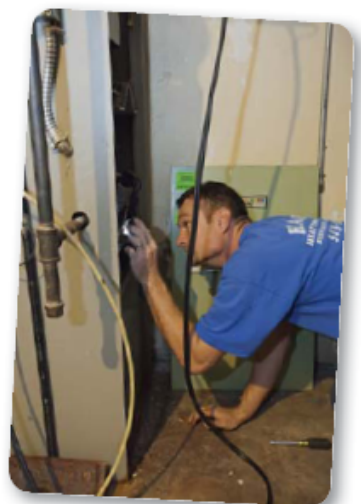
Partial Variation relationships involve a fixed amount (y-intercept) and a rate of change.

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## Example (Board Work)

Colton repairs heating and air-conditioning systems. When he is out on a service call, he charges a service call fee of \$75 plus \$65 per hour for his labour.

- What are the initial value and the rate of change?
- Create a table of values for the cost of 0 h to 5 h of Colton's services. How does your table show the initial value and the rate of change?
- Predict what a graph of the table of values would look like.
- What does Colton charge for a job that takes 1.5 h? Show your work.
- Explain why the cost of a 2-h repair is not double the cost of a 1-h repair.



Practice: pg. 148: 4, 7

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## Example (Board Work)

Taneeka borrowed \$400 from her parents to help pay for a driver training course. She needs to have a driver's licence to apply for a job that she wants after she graduates. She has an after-school job and agrees to pay her parents back at a rate of \$50 at the end of each week. Taneeka is keeping track of how much she owes her parents on a weekly basis.

Week	What I Owe
0	\$400
1	\$350
2	\$300
3	\$250

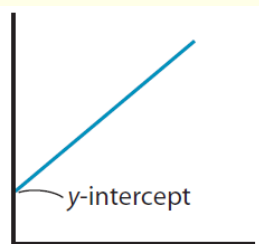
- What are the initial value and the rate of change?
- Create a scatter plot of the data.
- How does your graph show the initial value and the rate of change?
- How do you know that the graph represents a partial variation relationship?
- Suppose she paid back \$80/week. How would the graph compare to the one in part b)?

Practice: pg. 151: Your Turn  
pg. 153: 5

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## Determine Linear Equations

For a partial variation linear relation the following equation may be used.



$$y = mx + b$$

y = vertical axis variable (dependent)  
x = horizontal axis variable (independent)  
m = slope  
b = constant / fixed amount (y-intercept)

**Example:** The cost for a banquet is \$30 per person plus a fixed rental fee of \$200.

$$C = 30n + 200$$

A ski resort has a 30 cm base of snow. They are making new snow at a rate of 4 cm per hour.

$$S = 4t + 30$$

How does this connect with the Investigation you did?

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## Example

Cassie decides to lease a car for her new job. She makes a down payment of \$1700 and payments at the end of each month of \$233 for three years.

- a) Write an equation to model the relationship between the total amount spent on the lease and time.
- b) Use the equation to determine
  - what Cassie will have paid by the end of the first year
  - the total amount she will spend over the three-year lease
- c) Predict and draw what a graph of the equation would look like.  
What do you notice?
- d) Write an equation to model only the amount spent in monthly payments over three years.  
How do you know this relationship is no longer a partial variation?

**Practice:** pg. 155: Your Turn  
pg. 157: 7  
pg. 158: 1, 2

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