

What's Going On?

Checking In

Minds on

Polynomial Recap

Action!

20 Questions

Consolidation

Perimeter and Area

Learning Goal - I will review our Polynomial unit and will be able to problem solve with polynomials and equations.

Checking In

Please have yesterday's assigned questions on your desk.

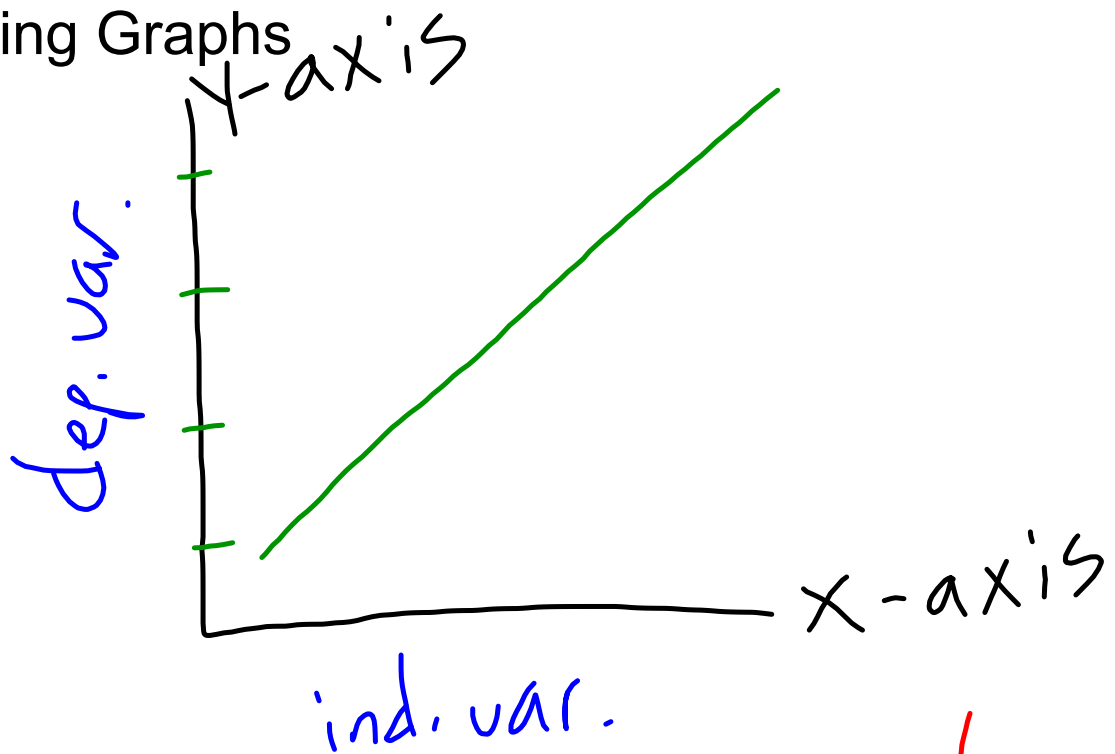
I will walk around and pick them up.

Please also have your calculator out for me to see.

Minds on

Linear Relations

Making Graphs

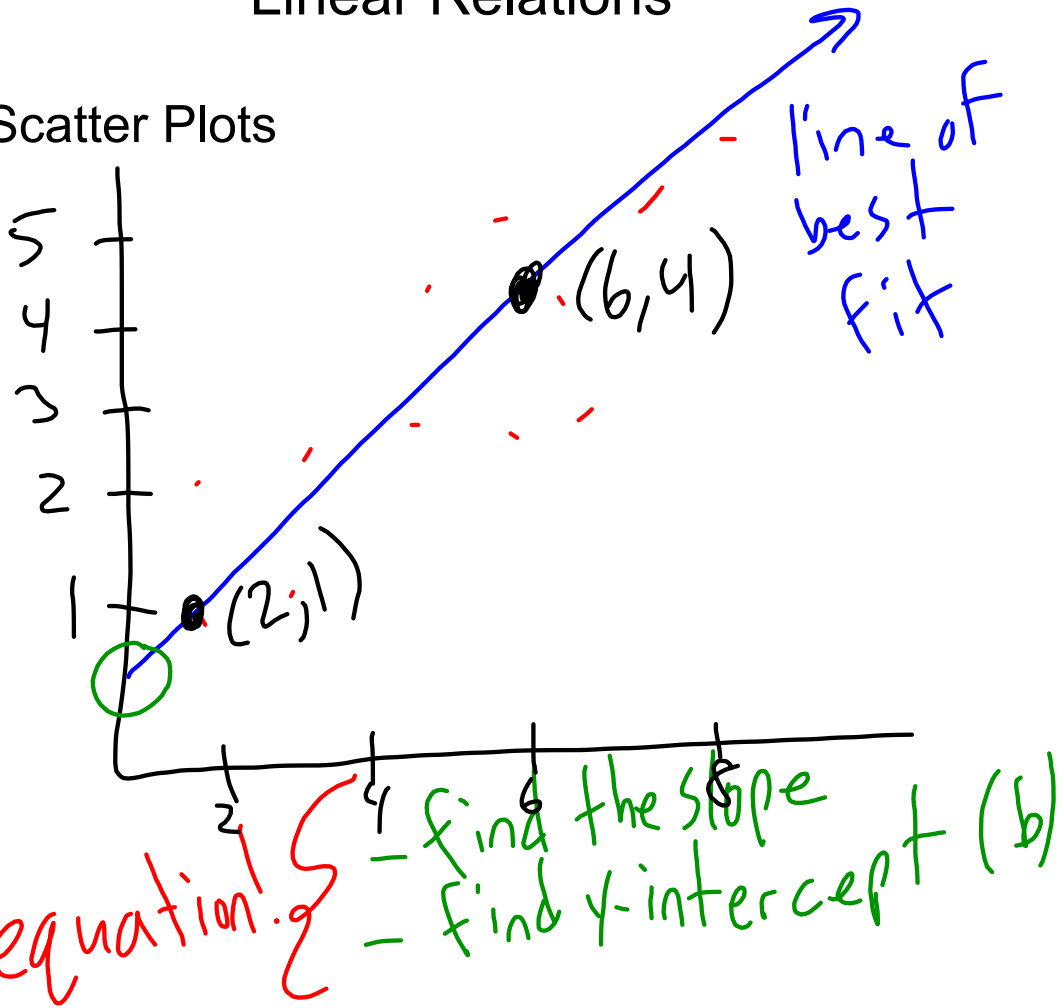


* use the numbers to figure out your scale!

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Linear Relations

Scatter Plots



$$Y = \frac{3}{4}x + 0.5$$

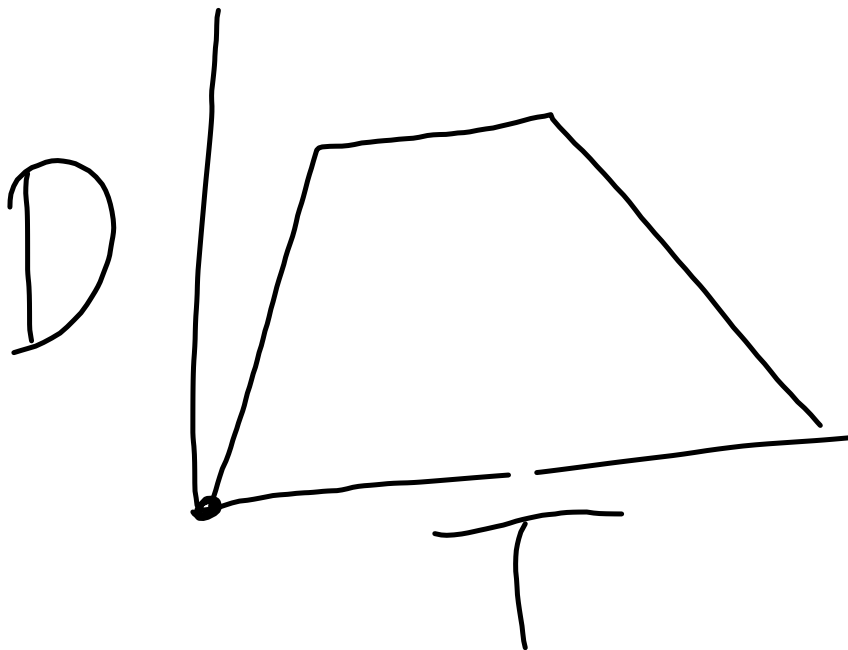
$$Y = 0.75x + 0.5$$

$$Y = \frac{3}{4}x + 0.6$$

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Linear Relations

Distance-Time Graphs

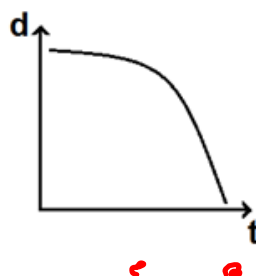


Starts at "home". Moves away from home at a constant speed. Stops for a bit. Returns home at a constant speed, slower than their original speed.

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The distance time graph shown below represents

- A. Constant speed
- B. No movement
- C. Increasing speed
- D. Decreasing speed



The person is increasing in speed moving towards home!

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Linear Relations

Working with Graphs

Common Mistakes

- Switching rise and run! The y's rise!
- Counting grid!!!!!!!!!!!!!!!!!!!! DON'T DO IT
- Switching x-axis and y-axis
- Not leaving enough room for line
- Switching slope and y-intercept in equation

Minds on

Linear Relations

First Differences

The first differences are the "differences" between consecutive y-values with evenly spaced x-values.

If the first differences of a relation are constant, the relation is linear!

Minds on

Dave starts with \$200 in his bank account. Every week he deposits \$25.

a) **Table of Values** (3 marks)
(include the first differences)

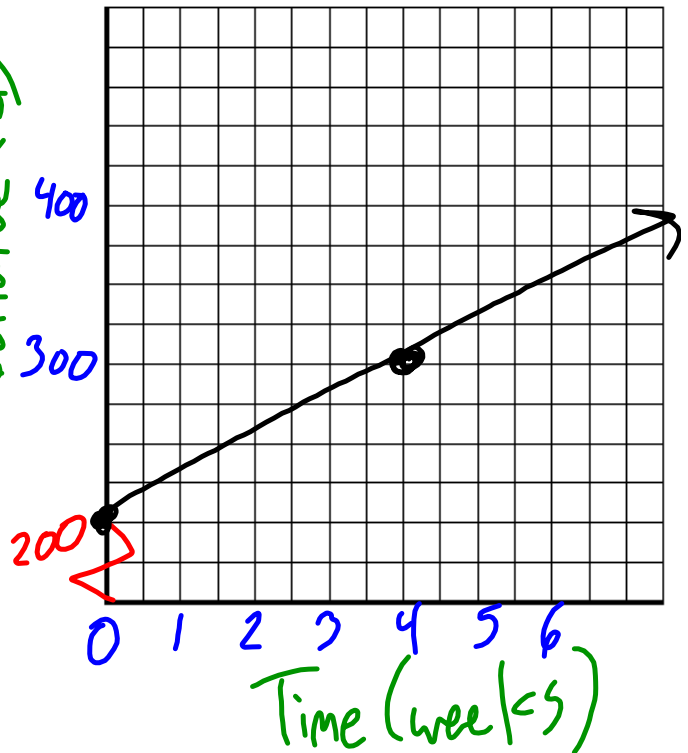
Week(s)	Amount of Money	First Differences
0	200	
1	225	25
2	250	25
3	275	25
4	300	25
5	325	25

all same
↓
linear

Balance (\$) 400
300
200

b) **Graph.** (4 marks)

Be sure to use a scale that uses as much of the graph area as possible.



Minds on

Linear Relations

c) Equation (3 marks):

$$B = 25w + 200$$

d) Determine the slope as a rate of change (2 marks)

$$\$25/\text{week}$$

e) Determine the balance in account after 1 year (52 weeks) (1 mark)

$$B = 25(52) + 200$$

$$B = 1500$$

f) How many weeks does it take for the account to reach \$2,500? (2 marks)

$$B = 2500$$

$$2500 = 25w + 200$$

-200
~~-200~~

$$\frac{2300}{25} = \frac{25w}{25}$$

$$w = 92$$

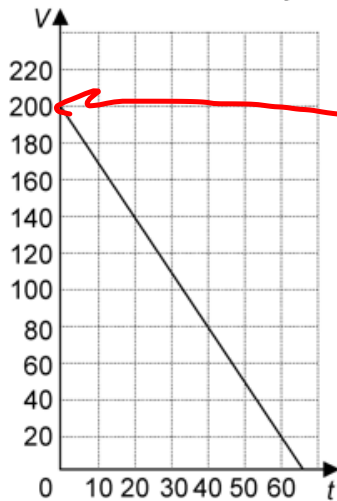
It would take
92 weeks!

Minds on

Linear Relations

Mr. Gilbert's parents are draining their pool to get ready for the winter. The Volume (V) is measured in Litres, the time to empty (t) is measured in minutes. The graph below shows the volume of water in the pool as it is draining.

Note that it took the pool 65 minutes to drain.



a) Is this an example of Direct or Partial variation? Explain why. (2 marks)

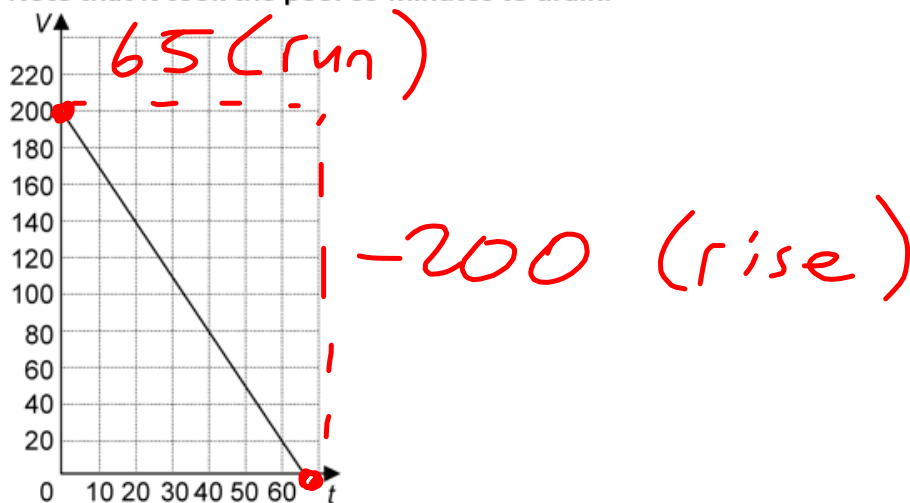
initial value is not 0

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Linear Relations

Mr. Gilbert's parents are draining their pool to get ready for the winter. The Volume (V) is measured in Litres, the time to empty (t) is measured in minutes. The graph below shows the volume of water in the pool as it is draining.

Note that it took the pool 65 minutes to drain.



b) What is the rate of change? (Be sure to include proper units) (3 marks)

$$\frac{-200}{65} = \frac{-40}{13} \approx -3.1$$

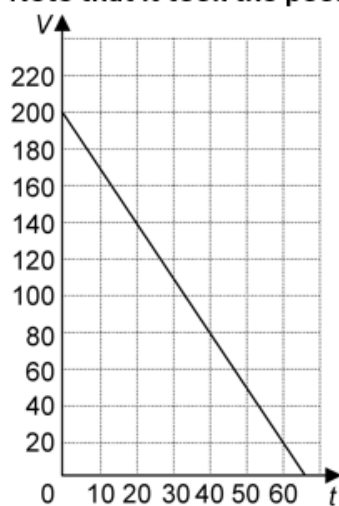
3.1 L/min

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Linear Relations

Mr. Gilbert's parents are draining their pool to get ready for the winter. The Volume (V) is measured in Litres, the time to empty (t) is measured in minutes. The graph below shows the volume of water in the pool as it is draining.

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c) Write an equation to describe the relationship. (2 marks)

$$V = -3.1t + 200$$

Minds on

Linear Relations

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Note that it took the pool 65 minutes to drain.



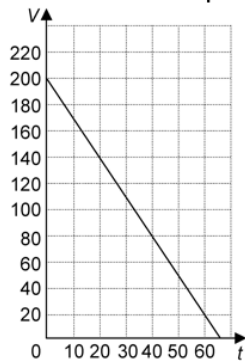
d) Explain how the graph would change if the volume of the pool was 160 Litres. (2 marks)

The initial value would be lower... the lines would be parallel (still changing at the same rate)

Minds on

Linear Relations

Mr. Gilbert's parents are draining their pool to get ready for the winter. The Volume (V) is measured in Litres, the time to empty (t) is measured in minutes. The graph below shows the volume of water in the pool as it is draining. **Note that it took the pool 65 minutes to drain.**



e) If the rate of change changes so the pool is draining at a rate of 4 L/min and the pool still started with 200 L of water in it, how long will it take the pool to empty? (2 marks)

volume = 0

$$V = -4t + 200$$

$$0 = -4t + 200$$

$$\begin{array}{r} -200 \\ -4t + 200 \\ \hline -4t = -200 \end{array}$$

$$\frac{-4t}{-4} = \frac{-200}{-4}$$

$$t = 50 \text{ minutes}$$

* just divide 200 L by 4 L/min !!
 😊

Minds on**Linear Relations**

A line goes through the point (4, 6) and has a slope of $-\frac{3}{2}$.

Determine the coordinates of one more point on this line. (3 marks)

$$\text{slope} = \frac{-3}{2} \left\{ \begin{array}{l} \leftarrow \text{rise (y-value } \downarrow 3) \\ \leftarrow \text{run (x-value } \uparrow 2) \end{array} \right.$$

$$\begin{array}{c} (4, 6) \\ \begin{array}{cc} \text{x} & \text{y} \\ (+2) & (-3) \end{array} \end{array} \Rightarrow \begin{array}{c} (6, 3) \\ \begin{array}{cc} \text{x} & \text{y} \end{array} \end{array}$$

Minds on

Linear Relations

Determine the equation of the line that goes with the table of values below.
(3 marks)

x	y
-18	4.5
-15	8
-12	11.5
-9	15
-6	18.5

$+3 \left(\begin{array}{l} -9 \\ -6 \end{array} \right) \rightarrow \left(\begin{array}{l} 15 \\ 18.5 \end{array} \right) + 3.5$
 $+6 \left(\begin{array}{l} -9 \\ -6 \end{array} \right) \rightarrow \left(\begin{array}{l} 15 \\ 18.5 \end{array} \right) + 7$

$$y = \frac{7}{6}x + 25.5$$

or

$$y = \frac{3.5}{3}x + 25.5$$