

# Graphing Linear Equations Word Problems

1. Georgie joins a gym. She pays \$25 to sign-up and then \$15 each month.

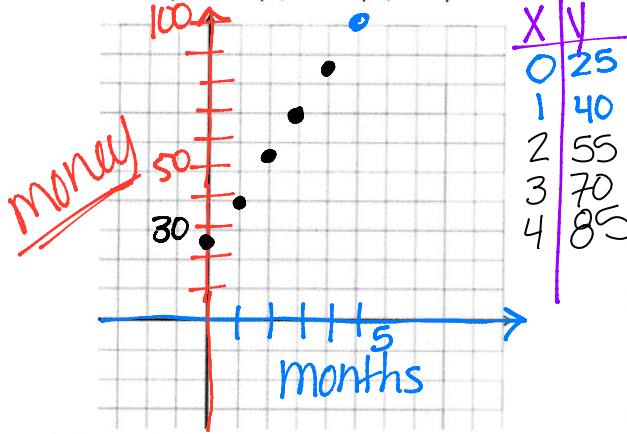
Linear

Create the Equation:

$$y = 15x + 25$$

Graph it!

Label the y-intercept, the slope, and your axes.



Discrete or Continuous?

once a month

Domain:

months  $[0, 1, 2, 3, \dots, \infty)$

Read the Graph: How much will Georgie have paid if she used the gym for 5 months?

\$100

2. Edwin has \$50.00 in his bank. He starts spending \$2.50 each week on snacks at lunch.

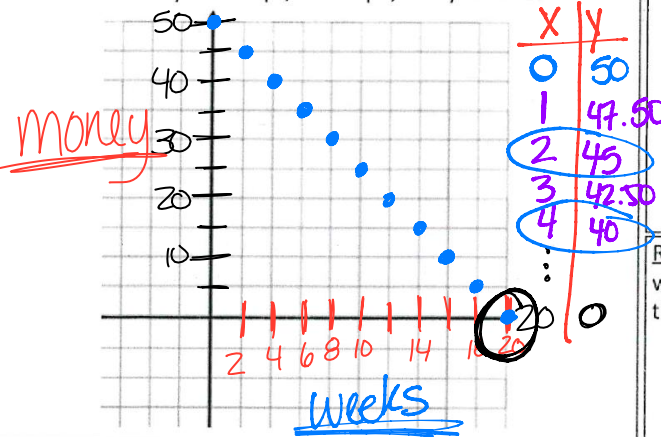
$$-50 = -2.5x \quad 0 = -2.5x + 50$$

Create the Equation:

$$y = -2.50x + 50$$

Graph it!

Label the y-intercept, the slope, and your axes.



Discrete or Continuous?

only at lunch

Domain:

Weeks  $[0, 20]$

Read the Graph: After how many weeks will Edwin run out of money? How is this shown on the graph?

20 weeks →  
X-intercept

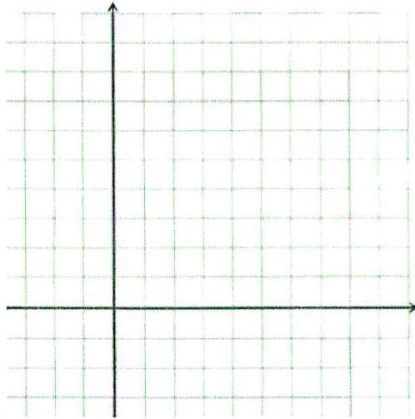
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3. Jesus wants to start saving for college. His parents started an account for him that currently holds \$325. Jesus adds \$50 each month.

Create the Equation:

Graph it!

Label the y-intercept, the slope, and your axes.



Discrete or continuous?

Domain:

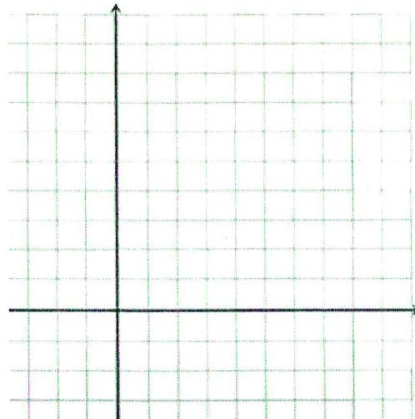
Read the Graph: Determine how much money Jesus will have if he continues this pattern for a year?

4. Victoria moved into a new apartment and called to install her cable. They told her they charged \$45 to install the cable box and \$60 each month for the service.

Create the Equation:

Graph it!

Label the y-intercept, the slope, and your axes.



Discrete or continuous?

Domain:

Read the Graph: Why should you only draw this graph in the first quadrant?  
(only positive values)

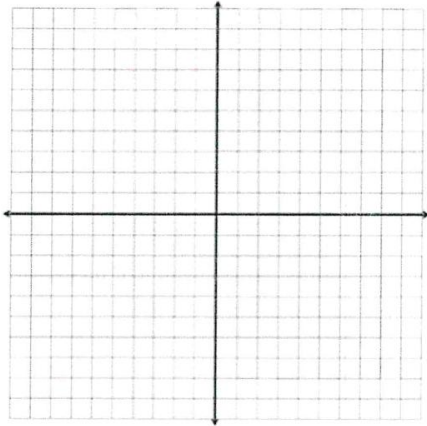
# Graphing Linear Equations Word Problems

5. Jennifer spent \$150 at a craft fair to rent a booth. She sells knit blankets for \$25 each.

Create the Equation:

Graph it!

Label the y-intercept, the slope, and your axes.



Discrete or Continuous?

Domain

Read the Graph: How many blankets does Jennifer need to sell to break even?

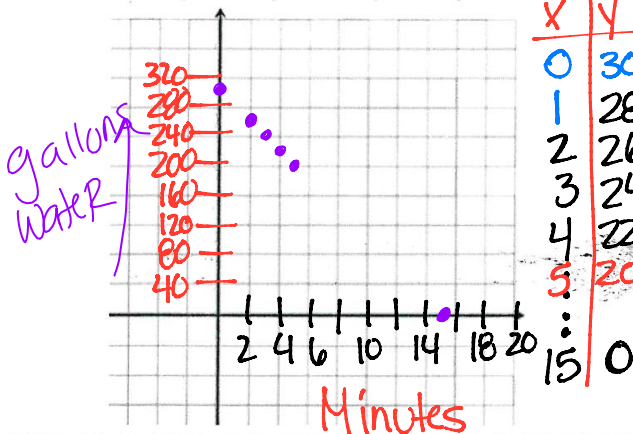
6. Lin wants to empty her hot tub to clean it. She has a 300 gallon hot tub and empties it at a rate of 20 gallons each minute.

Create the Equation:

$$y = -20x + 300$$

Graph it!

Label the y-intercept, the slope, and your axes.



Discrete or Continuous?  
always draining water

Domain: Minutes  $[0, 15]$

Read the Graph: How many gallons will be in the tub after 8 minutes?

$$-20(8) + 300 = 140 \text{ gallons}$$

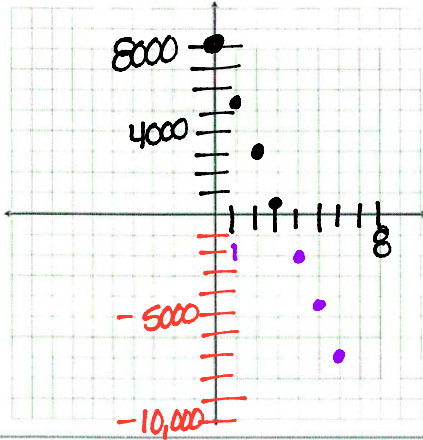
# Graphing Linear Equations Word Problems

7. Greg saved \$8,000 prior to starting college. Each semester he must pay \$2,500 in tuition and fees. He knows he will eventually be in debt.

Create the Equation:

$$y = 8000 - 2500x$$

Graph it!  
Label the y-intercept, the slope, and your axes.



X	Y
0	8000
1	5500
2	3000
3	500
4	-2000
5	-4500
6	-7000
7	-9500
8	-12000

Discrete or Continuous?

Pay one time

Domain:

Semesters

set

{0, 1, 2, 3, 4, 5, 6, 7, 8}

Read the Graph: Determine how much debt Greg will be in if he graduates in 4 years (8 semesters)?

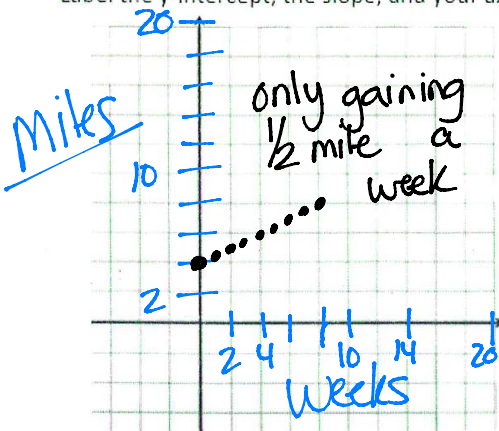
Owes \$12,000

8. Sierra wants to train for a marathon. Right now she can run 4 miles. She plans to add half a mile each week.

Create the Equation:

$$y = 4 + \frac{1}{2}x \quad y = \frac{1}{2}x + 4$$

Graph it!  
Label the y-intercept, the slope, and your axes.



X	Y
0	4
1	4.5
2	5
3	5.5
4	6
5	6.5
6	7
7	7.5
8	8
9	8.5
10	9

Discrete or Continuous?

Runs then stops

Domain:



Weeks

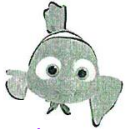
[0, 19]

Read the Graph: How many weeks until Sierra could run half a marathon (13.1 miles)?

11	9.5	11.5	19	BS
12	10	16	12	20
13	10.5	17	12.5	
14	11	18	13	

19 weeks

Question	Exponential Growth or Decay?	Follow directions	
<p>1. You buy a house for \$130,000. It <b>appreciates</b> 6% per year. How much is it worth in 10 years?</p> 	<p><b>Growth or decay?</b></p>	<p><b>Initial amount</b></p>	<p><b>Discrete or continuous?</b></p>
	<p><b>Domain:</b></p>	<p><b>Equation:</b></p>	<p><b>Answer:</b></p>
<p>2. Mr. MD is losing 1/2 of his hair each year ☺ If he currently has 1,546 hairs on his head, about how many hairs will he have left after 10 years?</p> 	<p><b>Growth or decay?</b></p>	<p><b>Initial amount</b></p>	<p><b>Discrete or continuous?</b></p>
	<p><b>Domain:</b></p>	<p><b>Equation:</b></p>	<p><b>Answer:</b></p>
<p>3. If you invest \$40 in an account for 10 years at a 3% interest rate how much money will you have?</p>	<p><b>Growth or decay?</b></p>	<p><b>Initial amount</b></p>	<p><b>Discrete or continuous?</b></p>
	<p><b>Domain:</b></p>	<p><b>Equation:</b></p>	<p><b>Answer:</b></p>
<p>4. A population of 100 frogs triples every year. How many frogs will there be in 5 years?</p>	<p><b>Growth or decay?</b></p>	<p><b>Initial amount</b></p>	<p><b>Discrete or continuous?</b></p>
	<p><b>Domain:</b></p>	<p><b>Equation:</b></p>	<p><b>Answer:</b></p>

<p>5. A species of extremely rare, deep water fish are slowly becoming extinct. If there are a total 821 of this type of fish and there are 15% fewer fish each month, how many will there be in half a year?</p>  <p>Keeping 85% → 0.85</p>	<p><b>Growth or decay?</b></p>	<p><b>Initial amount</b></p> <p>821</p>	<p><b>Discrete or continuous?</b></p> <p>only whole fish</p>
<p>6. The population of Austin is multiplying by 1.4 per year. In 2010, the population was 500,000. What would be the predicted current population?</p>	<p><b>Growth or decay?</b></p>	<p><b>Initial amount</b></p>	<p><b>Discrete or continuous?</b></p>
<p>7. A super-deadly strain of bacteria is causing the zombie population to double every day. Currently, there are 25 zombies. After how many days will there be 25,600 zombies?</p>	<p><b>Growth or decay?</b></p>	<p><b>Initial amount</b></p>	<p><b>Discrete or continuous?</b></p>
	<p><b>Domain:</b></p>	<p><b>Equation:</b></p> <p><math>y = 821(0.85)^x</math></p>	<p><b>Answer:</b></p>