Name:_____ Date: _____ Period: _____

Graphing Linear Equations Word Problems

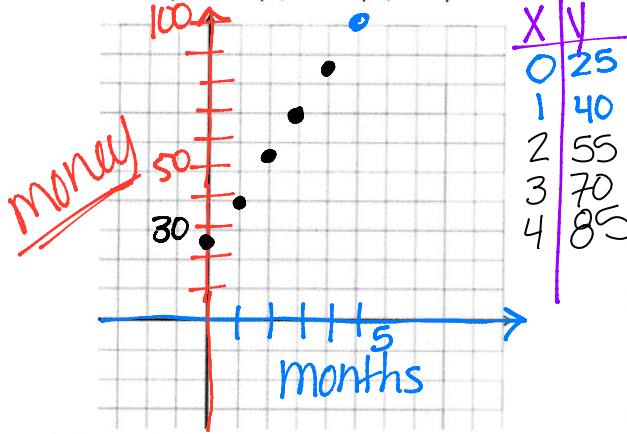1. Georgie joins a gym. She pays $25 to sign-up and then $15 each month.

Linear

Create the Equation:

$y = 15x + 25$

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

money

months

X	Y
0	25
1	40
2	55
3	70
4	85

Discrete or Continuous?
once-a-month

Domain:
months $[0,1,2,3...\infty)$

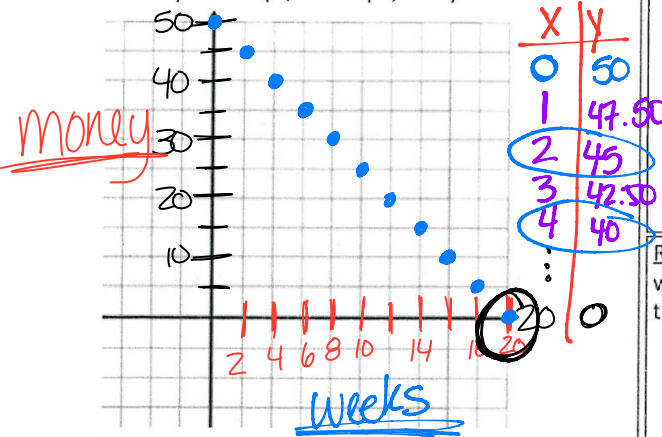Read the Graph: How much will Georgie have paid if she used the gym for 5 months?

$100

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

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

$X = 20$ weeks

Create the Equation:

$y = -2.50x + 50$

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

money

Weeks

X	Y
0	50
1	47.50
2	45
3	42.50
4	40

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?
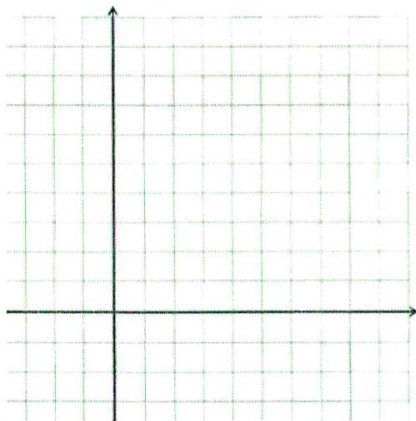
20 weeks →
X-intercept

Graphing Linear Equations Word Problems

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.
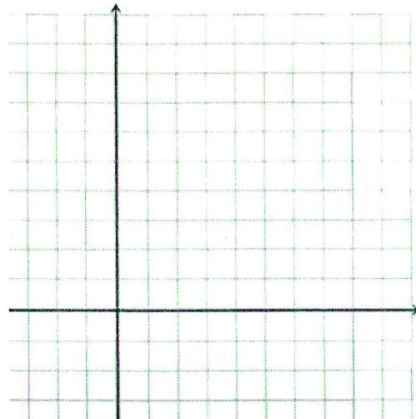
Discrete or continuous?

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)
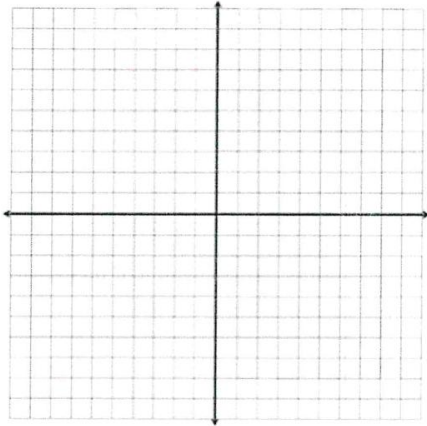
Name:_____ Date:_____ Period:_____

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.

l

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.

gallons water

320, 280, 240, 200, 160, 120, 80, 40

2 4 6 10 14 18 20

Minutes

X	Y
0	300
1	280
2	260
3	240
4	220
5	200
15	0

Discrete OR Continuous?
always draining water

Domain:
Minutes [0, 15]

Read the Graph: How many gallons will be in the tub after 8 minutes?
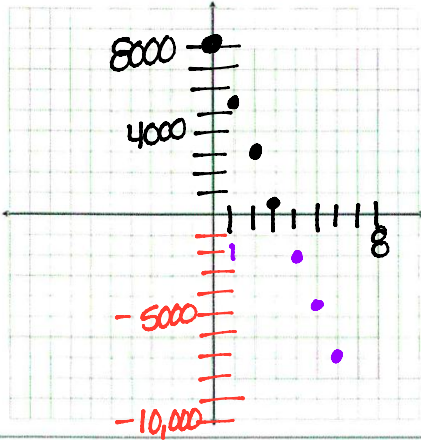-20(8) + 300 = 140 gallons

Graphing Linear Equations Word Problems

Name:_____ Date:_____ Period:_____

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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)?
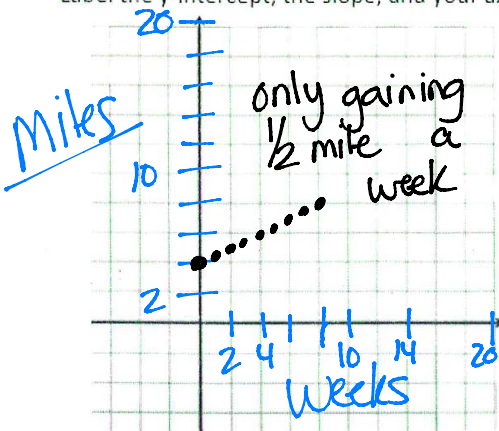
Owes $12,000

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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.

Miles

only gaining ½ mile a week

Weeks

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]
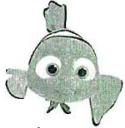
Read the Graph: How many weeks until Sierra could run half a marathon (13.1 miles)? 19 wks

11	9.5	15	11.5	19	13.5
12	10	16	12	20	
13	10.5	17	12.5		
14	11	18	13		

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Question	Exponential Growth or Decay?	Follow directions	
1. You buy a house for $130,000. It **appreciates** 6% per year. How much is it worth in 10 years? up in price $6 + 100 = \dfrac{106}{100} = 1.06$	Growth or decay? Domain: years $(0, \infty)$	Initial amount $\$130,000$ Equation: $130,000(1.06)^x$ $130,000(1.06)^{10} =$	Discrete or continuous? Answer: $\$232810.20$
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?	Growth or decay? Domain: years $\{0,1,2,3,4, 5,6,7,8,9, 10\}$	Initial amount 1546 Equation: $1546\left(\dfrac{1}{2}\right)^x$ $1546\left(\dfrac{1}{2}\right)^{10} =$	Discrete or continuous? Answer: 1.506 ≈ 2 hairs
3. If you invest $40 in an account for 10 years at a 3% interest rate how much money will you have?	Growth or decay? Domain:	Initial amount Equation:	Discrete or continuous? Answer:
4. A population of 100 frogs triples every year. How many frogs will there be in 5 years? X3	Growth or decay? Domain: years $\{0,1,2,3,4, 5\}$	Initial amount 100 Equation: $100(3)^x$ $100(3)^5$	Discrete or continuous? Answer: 24,300 frogs

set notation

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?	Growth or **decay?**	Initial amount **821**	**Discrete** or continuous? only whole Fish
	Domain: months $[0,1,2,3\ldots\infty)$ Keeping 85%. → 0.85	Equation: $y = 821(0.85)^x$ $821(0.85)^6 =$	Answer: **309 Fish**

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?	Growth or decay?	Initial amount	Discrete or continuous?
	Domain:	Equation:	Answer:

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? until we get 25,600	**Growth** or decay? $\times 2$	Initial amount 25	Discrete or **continuous?**
	Domain: Days $[0, \infty)$	Equation: $25(2)^x$ $25(2)^{10}$	Answer: 10 days

Range Zombies $(25, \infty)$

25,600