

## Interpreting Graphs of Linear Equations

EQ: How do I write an equation that represents a situation with constant change?

MCC9-12.A.CED.1 – Create equations and inequalities in one variable and use them to solve problems.

## INB - "Slope-Intercept Form"

**General form for graphing a line**

$$y = mx + b$$

or

$$f(x) = mx + b$$

Graphing from slope-intercept form:

1. Put your “b” on the y-axis; this is your “beginning”.

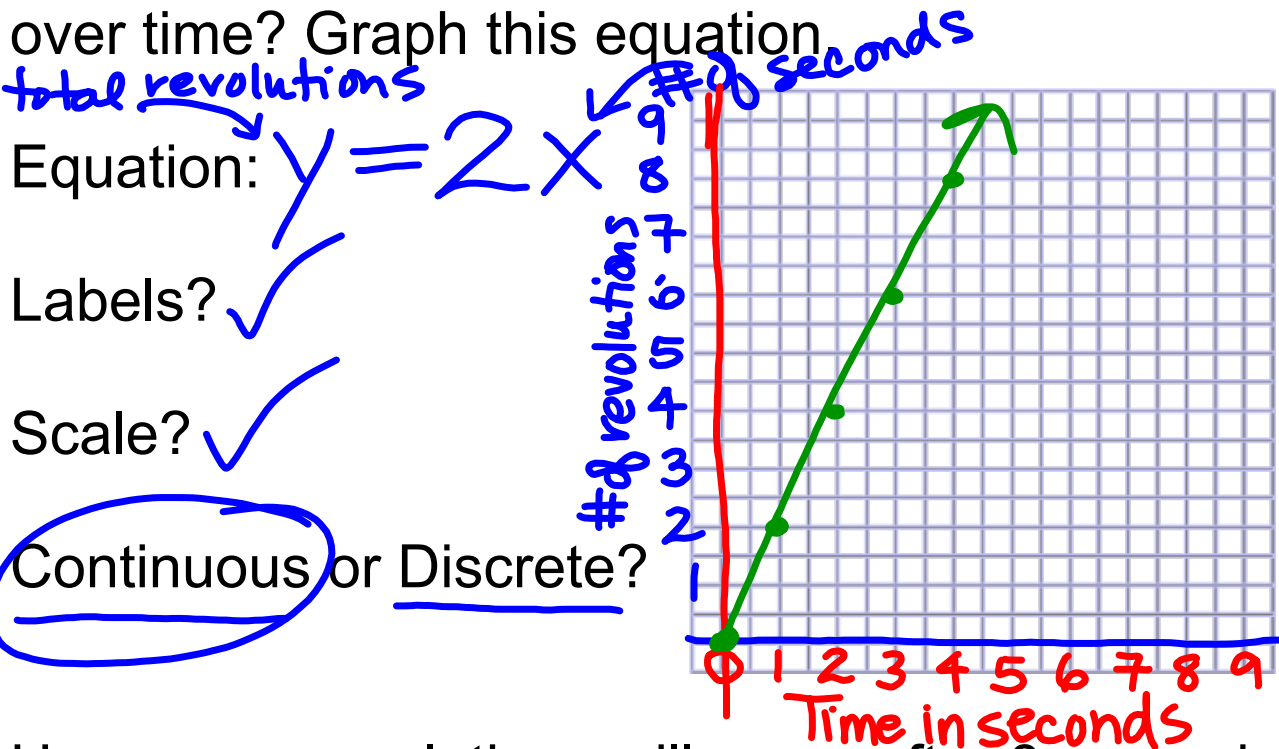
2. Make “m” a fraction if it is a whole number by putting it over 1. From your “b”, move up or down by the top number, move right by the bottom number.

## Vocabulary

Discrete Graph - A graph where data points are NOT connected. Intermediate values do NOT exist. Example: # of Kids on a Field Trip vs. Cost.

Continuous Graph - A graph where data points ARE connected. Intermediate values DO exist. Example: Time vs. Miles Traveled in Car.

A gear on a machine turns at a rate of 2 revolutions per second. Let  $x$  = time in seconds and  $y$  = number of revolutions. What is the equation that models the number of revolutions over time? Graph this equation.



How many revolutions will occur after 8 seconds?

16 revolutions

A cab company charges an initial rate of \$2.50 for a ride, plus \$0.50 for each mile driven. What is the equation that models the total fee for using this cab company? Graph this equation.

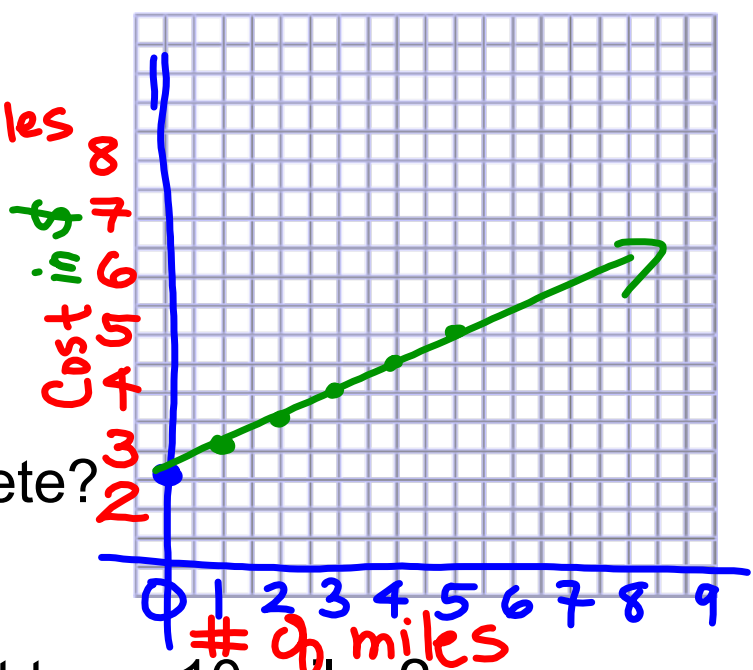
$$y = .50x + 2.50$$

Equation:

Labels? ✓

Scale? ✓

Continuous or Discrete?



How much will it cost to go 10 miles?

$$y = .50x + 2.50$$

$$.50(10) + 2.50$$

$$\text{\$ } 7.50$$

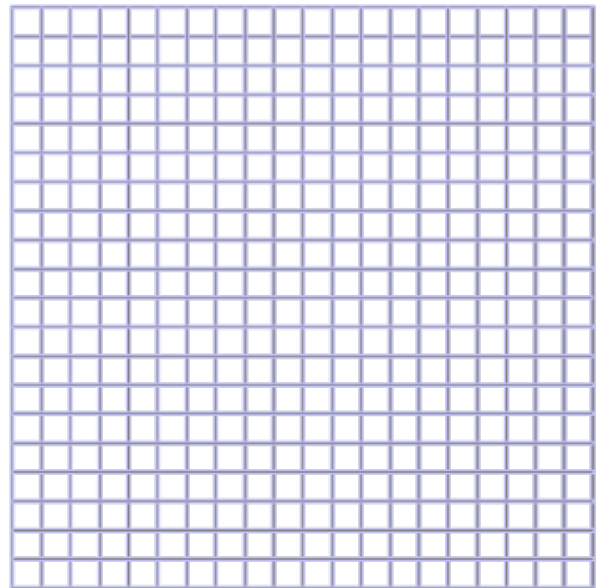
Your car holds 10 gallons of gas. Your car uses the gas at a rate of 10 miles per gallon. What is the equation that models this situation if you just filled your tank? Graph this equation.

Equation:

Labels?

Scale?

Continuous or Discrete?



How many miles have you gone if you have 4 gallons left?

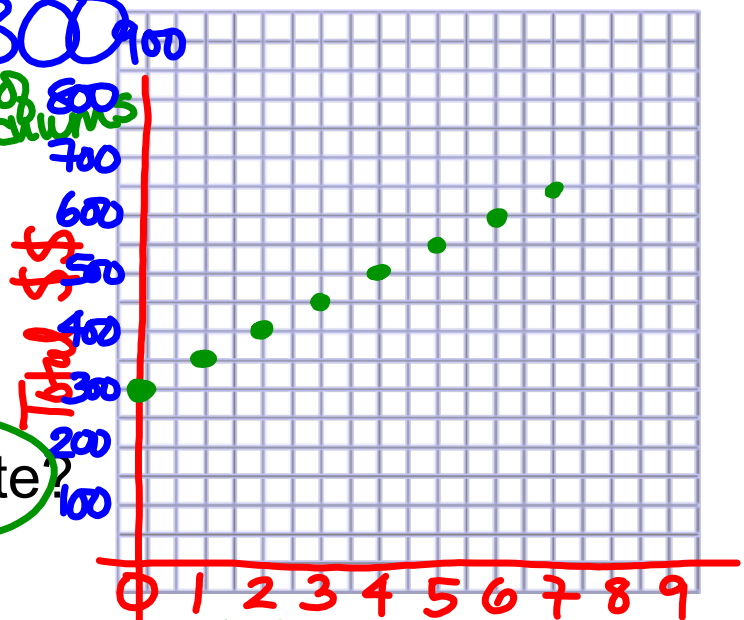
Matthew receives a base weekly salary of \$300 plus a commission of \$50 for each vacuum he sells. What is the equation that models his weekly earnings? Graph this equation.

total salary → Equation:  $y = 50x + 300$

Labels? ✓

Scale? ✓

Continuous or Discrete? (Discrete)



How much will he make if he sells 5 vacuums?

\$550



Maddie borrowed \$1000 from a friend to buy a new TV. Her friend doesn't charge any interest, and Maddie makes \$50 payments each month. What is the equation that models the money

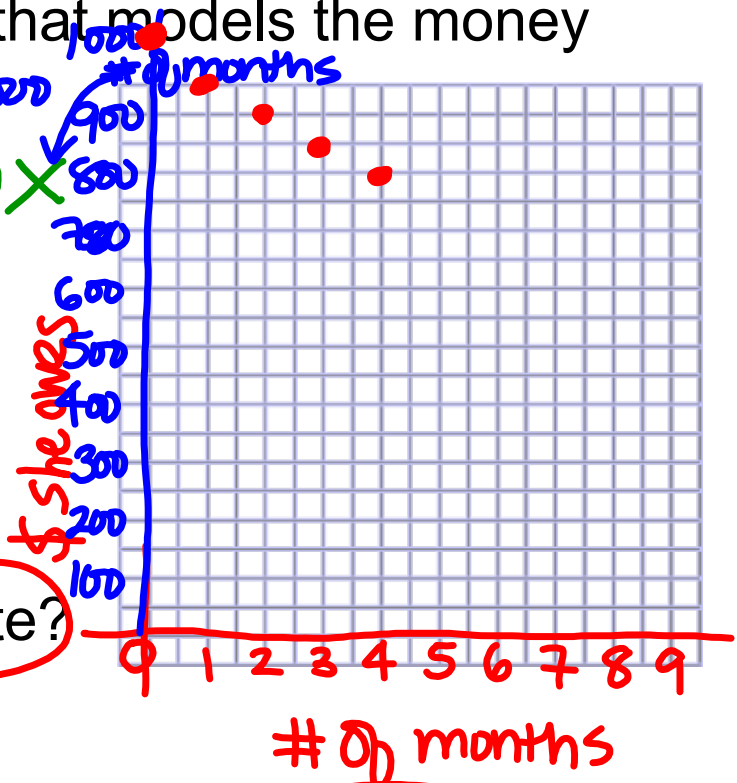
Maddie owes?  $-50x + 1000$

Equation:  $y = 1000 - 50x$

Labels? ✓

Scale?

Continuous or Discrete?



How much will Maddie owe after 1 year?

$$1000 - 50(12) = \\ \$400$$

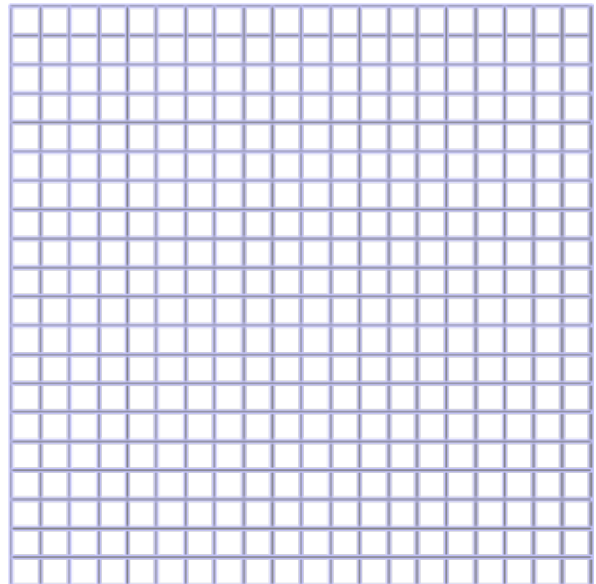
Ms. Morton is planning a Field Trip to the movies. The cost to rent the bus is \$40 and then it costs \$10 per ticket. What is an equation that models this scenario if  $x$  = # of people attending?

Equation:

Labels?

Scale?

Continuous or Discrete?



How many people are attending if it costs \$140?

