

# Independent and Dependent Variables

Name: \_\_\_\_\_ Date: \_\_\_\_\_

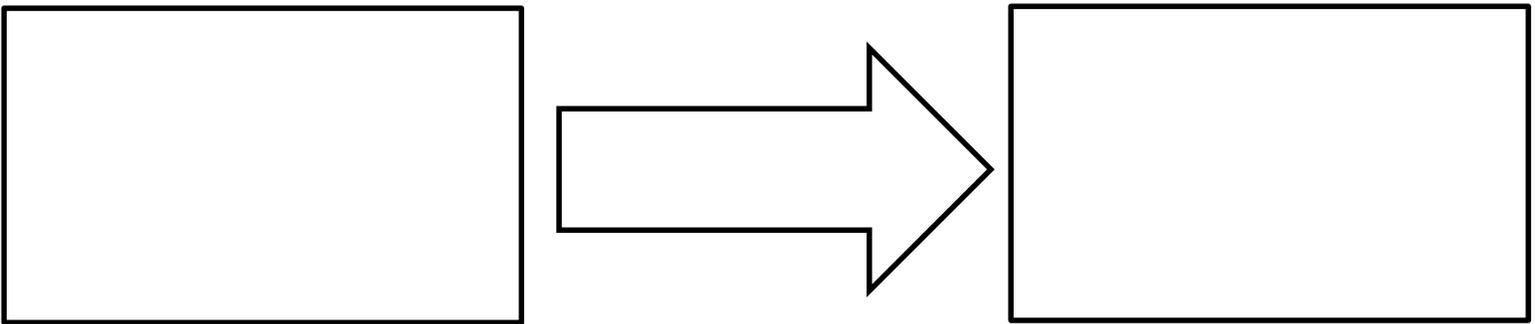
What does it mean to be independent?

What does it mean to be dependent?

The \_\_\_\_\_ variable \_\_\_\_\_ on the  
\_\_\_\_\_ variable.

The \_\_\_\_\_ ( ) is the independent variable.

The \_\_\_\_\_ ( ) is the dependent variable.



## Identifying Independent & Dependent Variable

Recall: \_\_\_\_\_ depends on \_\_\_\_\_

The number of quilts you can make.

\_\_\_\_\_

The amount of fabric you have available.

\_\_\_\_\_

The length of your vacation.

\_\_\_\_\_

The number of shirts you pack.

\_\_\_\_\_

The number of shelves in your room.

\_\_\_\_\_

The number of trophies you have.

\_\_\_\_\_

The cost of your order at a restaurant.

\_\_\_\_\_

The tip you leave your waiter/waitress.

\_\_\_\_\_

The number of cupcakes you make.

\_\_\_\_\_

The number of students in your class.

\_\_\_\_\_

**Matching Activity:** Cut out the below statements. Determine which statement represents the independent variable and which statement represents the dependent variable. Paste your solutions on the given sheet.

Recall: \_\_\_\_\_ depends on \_\_\_\_\_

The amount of books Matt is able to purchase at the store.

\_\_\_\_\_

The amount of money Denise earns.

\_\_\_\_\_

The number of omelets Brian can make for breakfast.

\_\_\_\_\_

The number of cupcakes Maria will bake.

\_\_\_\_\_

The amount of power produced using solar panels.

\_\_\_\_\_

The number of days Bogdan can spend on vacation.

\_\_\_\_\_

The amount of wall space you wish to paint.

\_\_\_\_\_

The number of canvas' Miles has.

\_\_\_\_\_

The amount of water Claire packs.

\_\_\_\_\_

The amount of money Matt has.

\_\_\_\_\_

The number of driveways  
Denise shovels.

\_\_\_\_\_

The amount of money Bogdan  
has saved.

\_\_\_\_\_

The amount of sun received.

\_\_\_\_\_

The amount of money Tasha  
earns.

\_\_\_\_\_

The number of paintings Miles  
can create.

\_\_\_\_\_

The number of eggs Brian has  
in the fridge.

\_\_\_\_\_

The number of hours Tasha  
babysits.

\_\_\_\_\_

The number of people  
attending Maria's birthday  
party.

\_\_\_\_\_

The length of Claire's hike.

\_\_\_\_\_

The amount of paint needed.

\_\_\_\_\_

Independent

Dependent


Independent

Dependent


NAME: \_\_\_\_\_

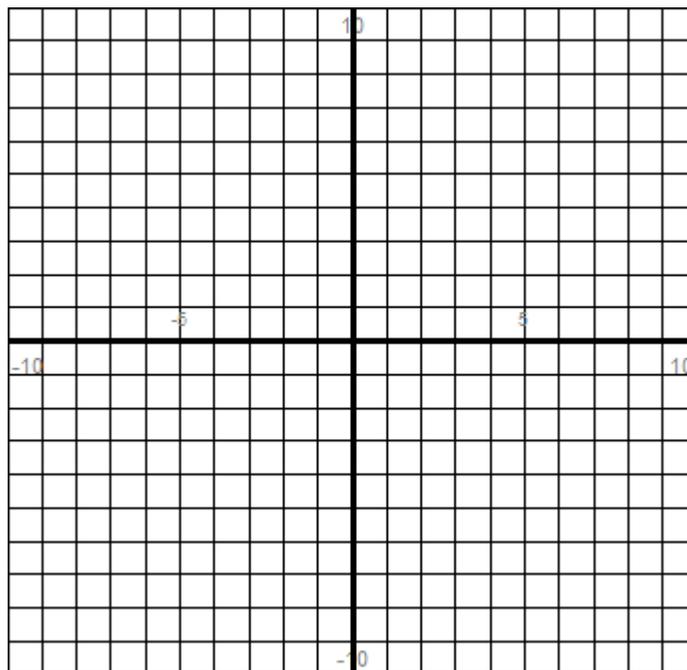
**APPLICATION**

1. Swine flu is attacking Porkopolis. The function below determines how many people have swine where  $t$  = time in days and  $S$  = the number of people in thousands.

$$S(t) = 9t - 4$$

- a. What is your Independent Variable (**TIME** or **NUMBER OF INFECTED PEOPLE**)
- b. What is your Dependent Variable (**TIME** or **NUMBER OF INFECTED PEOPLE**)

- c. Find  $S(4)$ .



- d. What does  $S(4)$  mean (in words)

- e. Find  $t$  when  $S(t) = 23$ .

- f. What does  $S(t) = 23$  mean?

- g. Find  $f(-1)$ ,  $f(0)$ ,  $f(1)$ , &  $f(2)$  and graph the function (plot the ordered pairs).

- i.  $f(-1) =$                       ii.  $f(0) =$                       iii.  $f(1) =$                       iv.  $f(2) =$

Algebra IA: More Independent & Dependent Variable Practice

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Recall: The \_\_\_\_\_ variable \_\_\_\_\_ on the  
\_\_\_\_\_ variable.

You measure the length and width of a rectangle.

\_\_\_\_\_

You calculate the area of the rectangle.

\_\_\_\_\_

You measure the height of your tomato plant.

\_\_\_\_\_

Your tomato plant has been growing for 4 weeks.

\_\_\_\_\_

Your cell phone bill.

\_\_\_\_\_

The amount of data you have used.

\_\_\_\_\_

The amount of hours you worked this week.

\_\_\_\_\_

You paycheck at the end of the week.

\_\_\_\_\_

The amount of time it takes you to drive to your Grandma's house.

\_\_\_\_\_

The speed you drive.

\_\_\_\_\_

The size of a diamond.

\_\_\_\_\_

The cost of a diamond.

\_\_\_\_\_

The number of clean shirts.

\_\_\_\_\_

The number of empty hangers.

\_\_\_\_\_

Warren's final test score.

\_\_\_\_\_

The number of correct answers  
Warren gave on the test.

\_\_\_\_\_

The amount of money you  
raised at the bake sale.

\_\_\_\_\_

The number of cookies you sold  
at the bake sale.

\_\_\_\_\_

The duration of the graduation  
ceremony.

\_\_\_\_\_

The number of diplomas being  
handed out.

\_\_\_\_\_

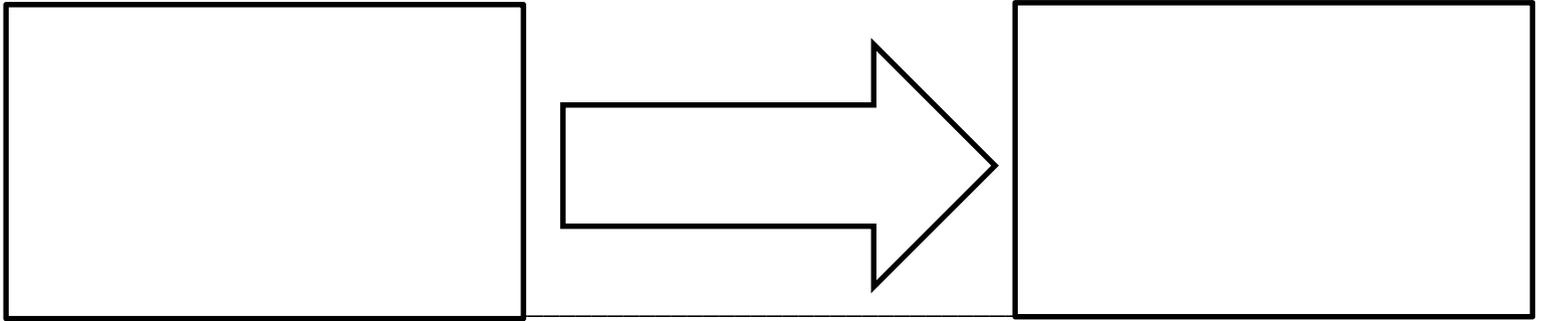
## Independent and Dependent Variables

Name: \_\_\_\_\_ Date: \_\_\_\_\_

The \_\_\_\_\_ variable \_\_\_\_\_ on the  
\_\_\_\_\_ variable.

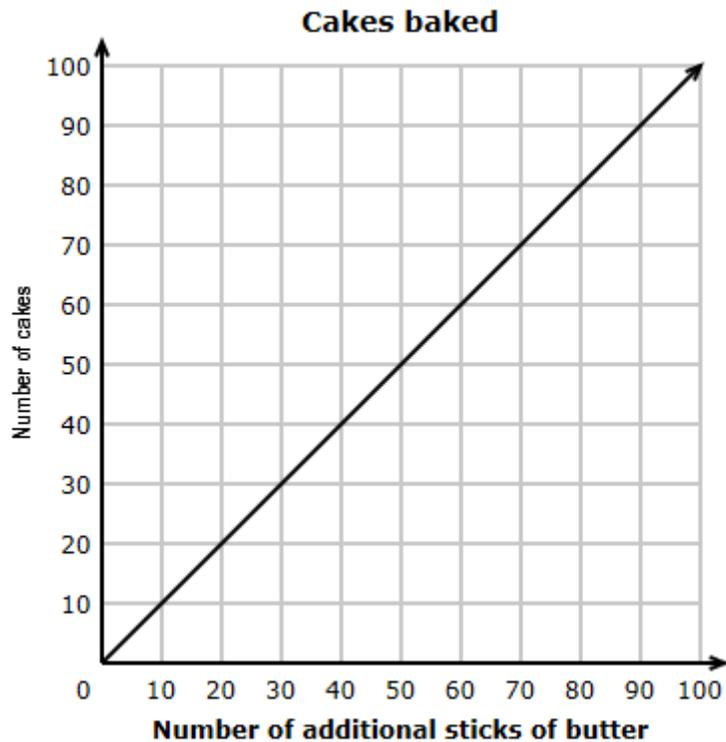
The \_\_\_\_\_ ( ) is the independent variable.

The \_\_\_\_\_ ( ) is the dependent variable.



### Application #1:

The below graph shows the number of cakes Christina can bake compared to the number of additional sticks of butter she will need to buy.



Identify the independent variable:

Identify the dependent variable:

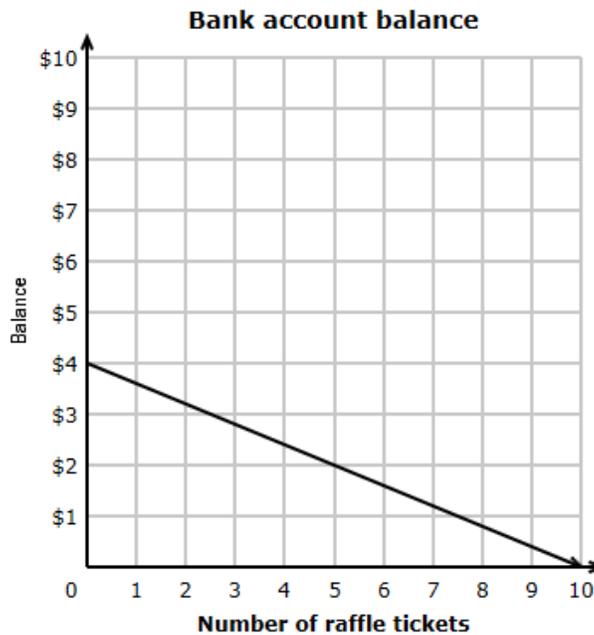
If Christina bakes 30 cakes, how many additional sticks of butter will she need to purchase?

If Christina buys 60 additional sticks of butter, how many cakes is she planning on making?

Is the function increasing or decreasing? Why does this make sense?

## Application #2

The below graph shows how Pamela's bank account balance is related to the number of raffle tickets she purchases.



Identify the independent variable:

Identify the dependent variable:

If Pamela purchases 4 raffle tickets, how much money will be left in her bank account?

If Pamela wishes to leave \$2 in her bank account, how many raffle tickets should she purchase?

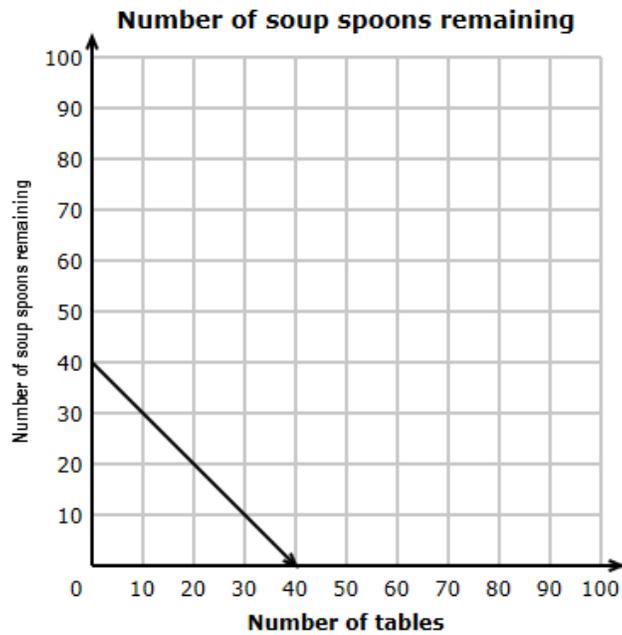
What is the maximum number of raffle tickets Pamela can purchase?

How much does each raffle ticket cost?

Is the function increasing or decreasing? Why does this make sense?

### Application #3

The below graph shows how the number of soup spoons Eddie has left relates to the number of tables he has set.



Identify the independent variable:

Identify the dependent variable:

How many soup spoons did Eddie begin with?

If Eddie wishes to have 10 soup spoons left, how many tables will he set?

What is the maximum number of tables Eddie can set?

How many soup spoons does each table get?

Is the function increasing or decreasing? Why does this make sense?

#### APPLICATION #4

Swine flu is attacking Porkopolis. The function below determines how many people have swine flu where  $t = \text{time in days}$  and  $S = \text{the number of people who have swine flu in thousands}$ .

$$S(t) = 9t - 4$$

Identify the independent variable:

Identify the dependent variable:

Find  $S(4)$ .

What does  $S(4)$  mean?

Find  $t$  when  $S(t) = 23$ .

What does  $S(t) = 23$  mean?

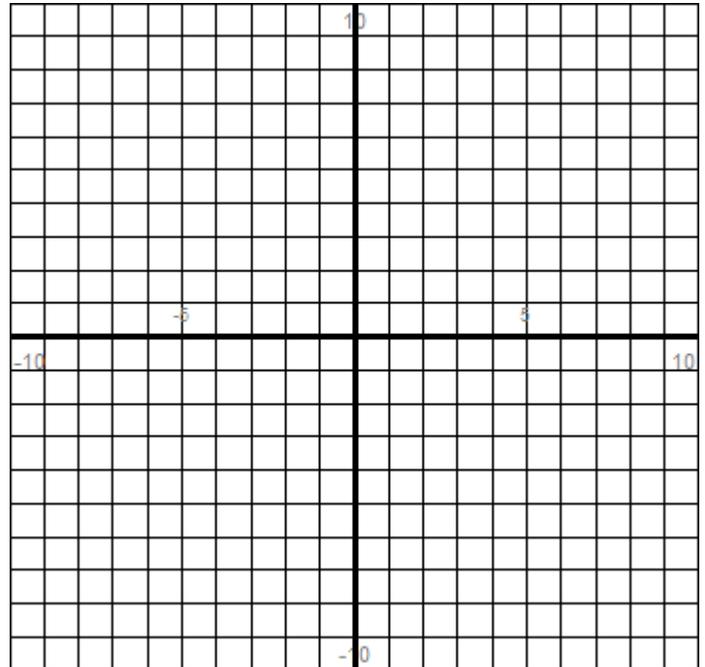
Find  $f(-1)$ ,  $f(0)$ ,  $f(1)$ , &  $f(2)$  and graph the function (plot the ordered pairs).

i.  $S(-1)$

ii.  $S(0)$

iii.  $S(1)$

iv.  $S(2)$

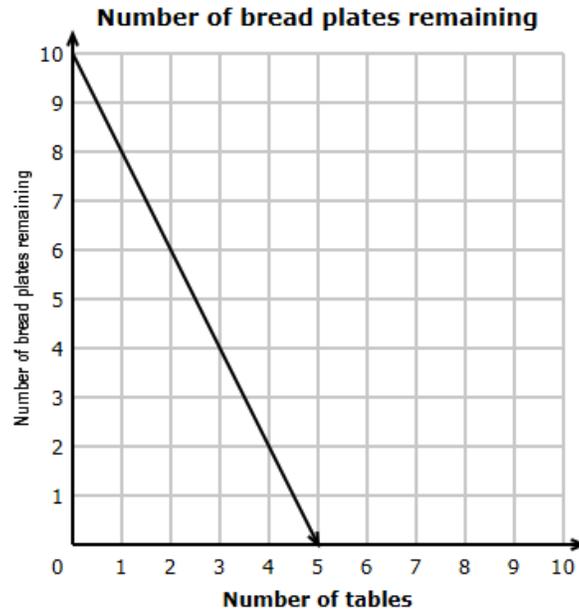


## Independent and Dependent Variables Applications II

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Application #1:

The below graph shows the number of bread plates that Susan has left related to the number of tables Susan has set.



Identify the independent variable: \_\_\_\_\_

Identify the dependent variable: \_\_\_\_\_

If Susan sets 2 tables, how many bread plates will she have left?

If Susan has 2 bread plates remaining, how many tables has she set?

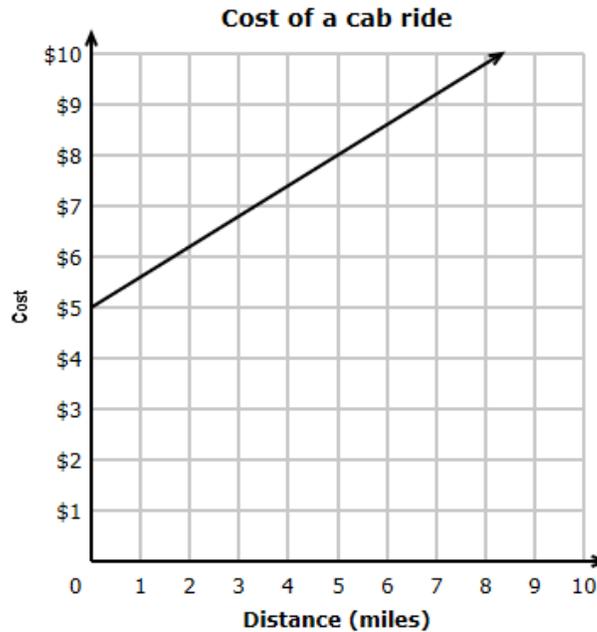
What is the maximum number of tables Susan can set?

How many bread plates does Susan begin with?

Is the function increasing or decreasing? Why does this make sense?

### Application #2

The below graph shows the cost of a cab ride depending on the distance in miles you need to travel.



Identify the independent variable: \_\_\_\_\_

Identify the dependent variable: \_\_\_\_\_

If you have \$8 in your wallet, how far can the cab take you?

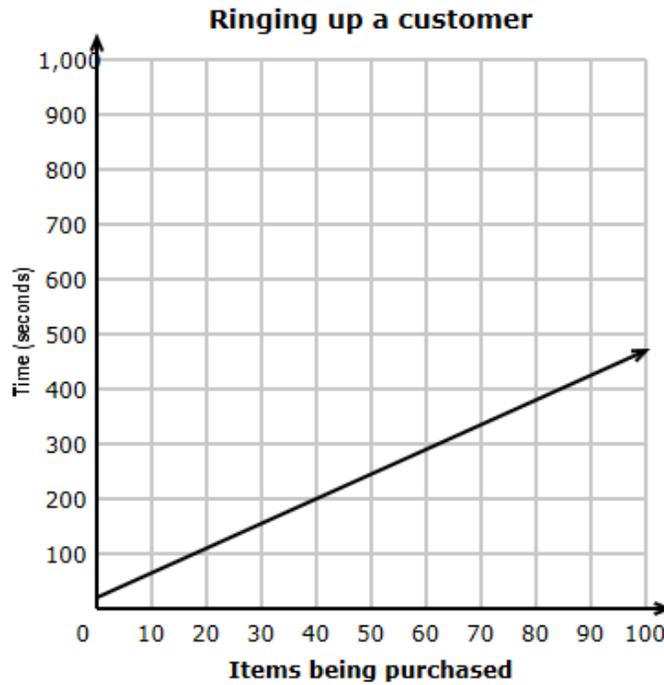
If you need the cab to drive you 8 miles, how much will you approximately spend?

How much does the cab driver charge you before he begins driving?

Is the function increasing or decreasing? Why does this make sense?

### Application #3

The below graph shows the time it takes in seconds to ring up a customer depending on the amount of items the customer wishes to purchase.



Identify the independent variable: \_\_\_\_\_

Identify the dependent variable: \_\_\_\_\_

How many seconds will it approximately take to ring up a customer who has 20 items?

How many items can the cashier ring up in 5 minutes? (Hint: Convert 5 minutes to seconds!)

Is the function increasing or decreasing? Why does this make sense?

#### APPLICATION #4

The below function represents how much a caterer will charge in dollars ( $c$ ) depending on the number of guests ( $p$ ) attending an event.

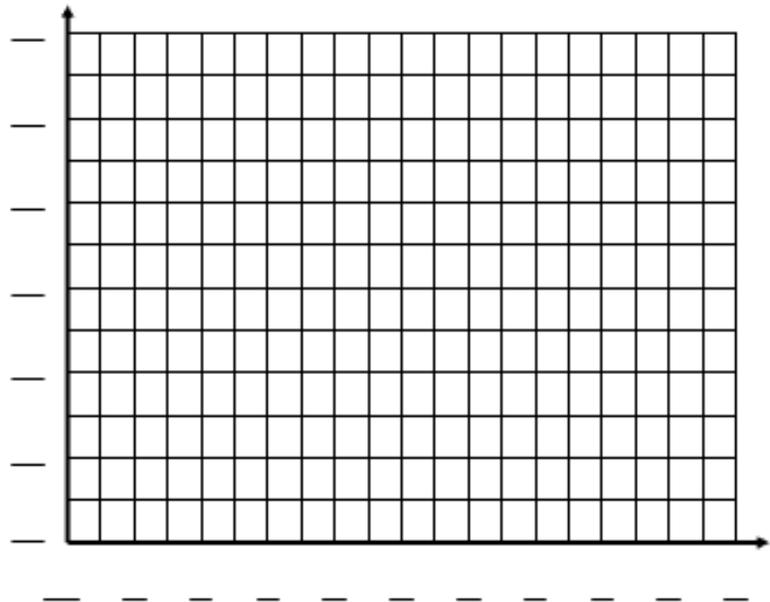
$$c(p) = 18p + 200$$

Identify the independent variable:

Identify the dependent variable:

Find  $c(5)$ .

What does  $c(5)$  mean?



Find  $p$  when  $c(p) = 560$ .

What does  $c(p) = 560$  mean?

Find  $c(10)$ ,  $c(15)$ ,  $c(40)$ , &  $c(75)$  and graph the function (plot the ordered pairs).

*i.*  $c(10)$

*ii.*  $c(15)$

*iii.*  $c(40)$

*iv.*  $c(75)$

### APPLICATION #5

You are moving and need to rent a Uhaul. The below function represents how much it will cost you to rent a Uhaul in dollars ( $c$ ) based on the number of miles ( $m$ ) you will need to drive the Uhaul.

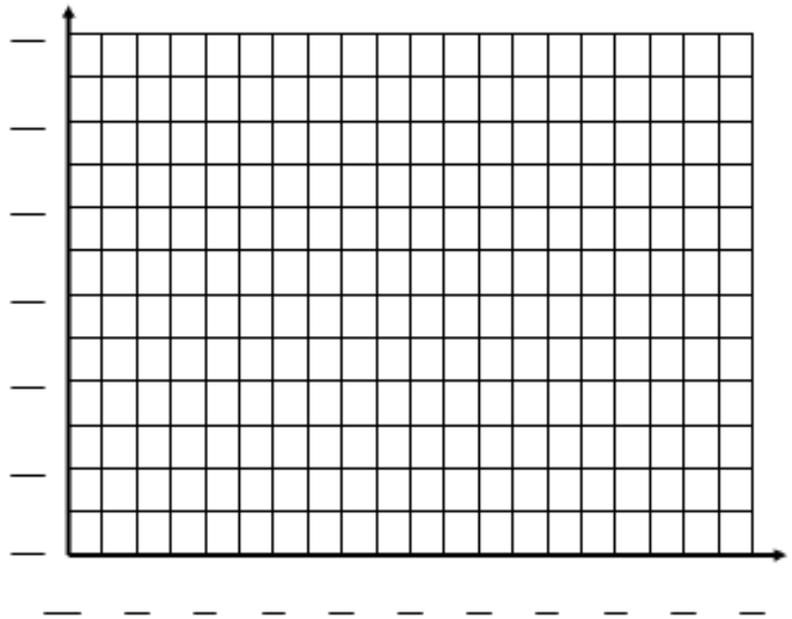
$$c(m) = 0.5m + 30$$

Identify the independent variable:

Identify the dependent variable:

Find  $c(0)$ .

What does  $c(0)$  mean?



Find  $m$  when  $c(m) = 75$ .

What does  $c(m) = 75$  mean?

Find  $c(10)$ ,  $c(50)$ ,  $c(100)$ , &  $c(200)$  and graph the function (plot the ordered pairs).

*i.*  $c(10)$

*ii.*  $c(50)$

*iii.*  $c(100)$

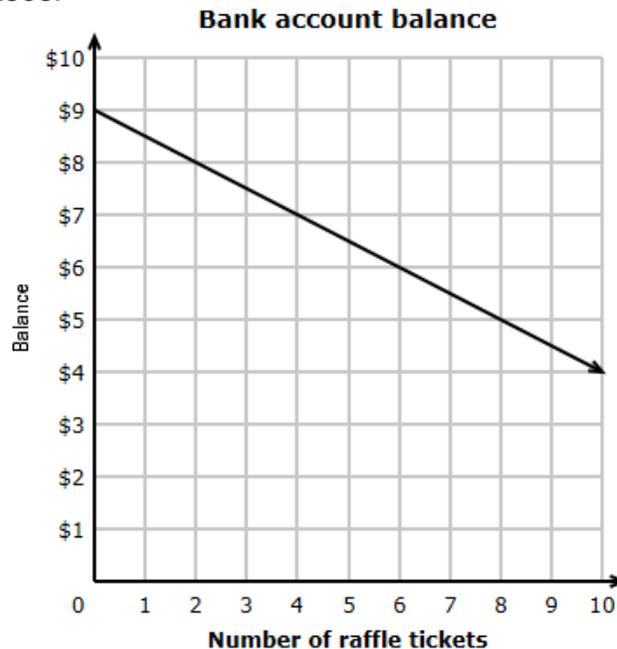
*iv.*  $c(200)$

## Independent and Dependent Variables Applications III

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Application #1:

The below graph shows how David's bank account is affected by the number of raffle tickets he purchases.



Identify the independent variable: \_\_\_\_\_

Identify the dependent variable: \_\_\_\_\_

If David buys 2 raffle tickets, how much money will be left in his bank account?

If David wishes to leave \$6 in his bank account, how many raffle tickets will he be able to purchase?

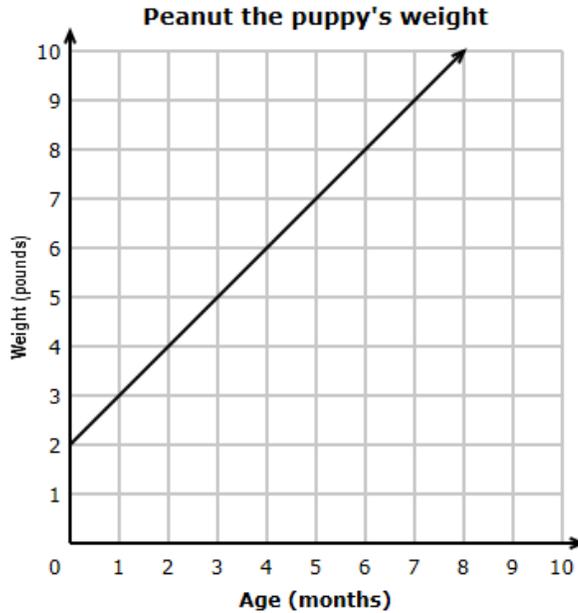
How much money did David begin with in his bank account??

How much does each raffle ticket cost?

Is the function increasing or decreasing? Why does this make sense?

## Application #2

The below graph shows how Peanut the puppy's weight varies depending on his age.



Identify the independent variable: \_\_\_\_\_

Identify the dependent variable: \_\_\_\_\_

How much did Peanut weight when he was born?

How much does Peanut weight after 4 months?

At what age will Peanut weigh 10lbs?

Is the function increasing or decreasing? Why does this make sense?

### APPLICATION #3

The below function represents the elevation  $h$  (in feet) a climber can ascend after a certain amount of time  $t$  (in hours).

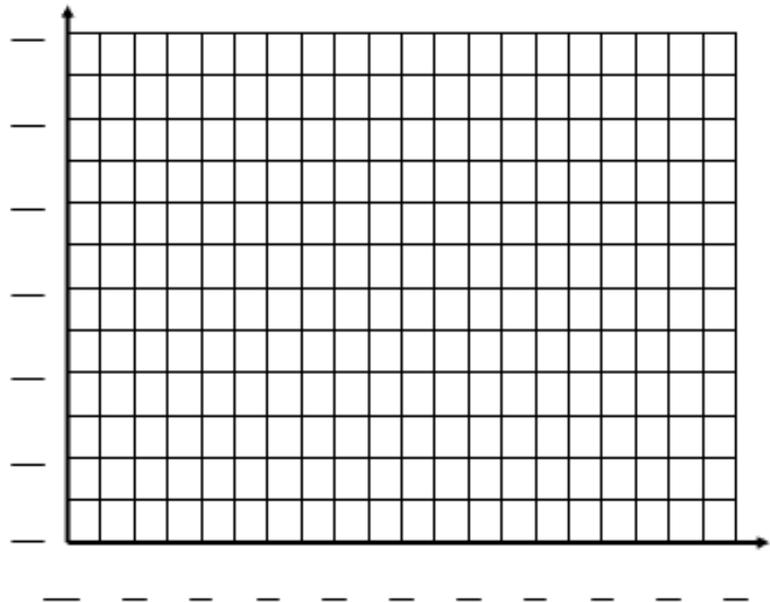
$$h(t) = 1000t + 5400$$

Identify the independent variable:

Identify the dependent variable:

Find  $h(2)$ .

What does  $h(2)$  mean?



Find  $t$  when  $h(t) = 12,400$ .

What does  $h(t) = 12,400$  mean?

Find  $h(0)$ ,  $h(3)$ ,  $h(5)$ , &  $h(9)$  and graph the function (plot the ordered pairs).

j.  $h(0)$

ii.  $h(3)$

iii.  $h(5)$

iv.  $h(9)$

#### APPLICATION #4

The body length  $b$  (in inches) of a walrus calf can be modeled by the below function, where  $c$  is the calf's age (in months).

$$b(c) = 5c + 42$$

Identify the independent variable:

Identify the dependent variable:

Find  $b(0)$ .

What does  $b(0)$  mean?

Find  $c$  when  $b(c) = 62$ .

What does  $b(c) = 62$  mean?

Find  $b(1)$ ,  $b(3)$ ,  $b(6)$ , &  $b(10)$  and graph the function (plot the ordered pairs).

i.  $b(1)$

ii.  $b(3)$

iii.  $b(6)$

iv.  $b(10)$

