Additive and Multiplicative Relationships

Remember . . .

- The **independent quantity** is the variable in an equation or rule that represents the _____ value and is graphed on the _____- axis.

- The **dependent quantity** is the variable in an equation or rule that represents the _____ value and is graphed on the ____-axis.

Some relationships are **additive** while others are **multiplicative**. You can determine the relationship by looking at the operation within the equation.

For each equation, determine whether it represents an additive (A) or multiplicative (M) relationship.
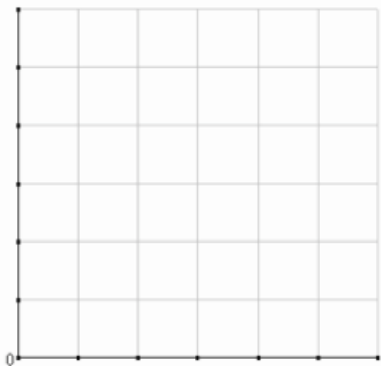
$$y = 5 + x \qquad y = 9x \qquad y = x - 4 \qquad y = \tfrac{1}{2}x$$

An **Additive Relationship** involves only _____

or _____ to compare the independent and dependent

quantities of a relationship.

Example: Edwin has a $50 gift card to Saltgrass and some money in his savings. He can buy dinner for his family that is $50 more than the amount in his savings. Create a table and a graph showing how much Edwin can spend on dinner.

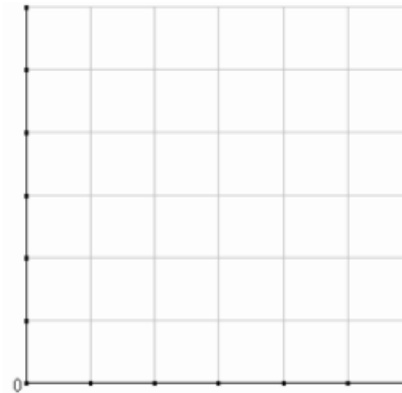| Amount in Savings (x)	Rule or Equation	Dinner total (y)	(x , y)
$10			
$20			
$25			
$40			

What is the independent quantity?

What is the dependent quantity?

A **Multiplicative Relationship** uses _____

or _____ to compare the independent and dependent

quantities of a relationship.

Example: Joscelin's birthday is in two weeks and her mom is planning her birthday party. She is buying balloons that each cost $1.50. Create a table and a graph showing how much her mom can spend on balloons.

Number of balloons (x)	Rule or Equation	Total (y)	(x , y)
3			
6			
12			
18			

What is the independent quantity?

What is the dependent quantity?

Additive and Multiplicative Relationships

Remember . . .

- The **independent quantity** is the variable in an equation or rule that represents the input value and is graphed on the x – axis.

- The **dependent quantity** is the variable in an equation or rule that represents the output value and is graphed on the y –axis.

Some relationships are additive while others are multiplicative. You can determine the relationship by looking at the operation within the equation.

For each equation, determine whether it represents an additive (A) or multiplicative (M) relationship.

| $y = 5 + x$	$y = 9x$	$y = x - 4$	$y = \frac{1}{2}x$
additive	multiplicative	additive	multiplicative

An **Additive Relationship** involves only <u>*addition*</u> or <u>*subtraction*</u> to compare the independent and dependent quantities of a relationship.

Example: Edwin has a $50 gift card to Saltgrass and some money in his savings. He can buy dinner for his family that is $50 more than the amount in his savings. Create a table and a graph showing how much Edwin can spend on dinner.

| Amount in Savings (x)	Rule or Equation $x + 50$	Dinner total (y)	(x , y)
$10	10 + 50	60	(10 , 60)
$20	20 + 50	70	(20 , 70)
$25	25 + 50	75	(25 , 75)
$40	40 + 50	90	(40 , 90)
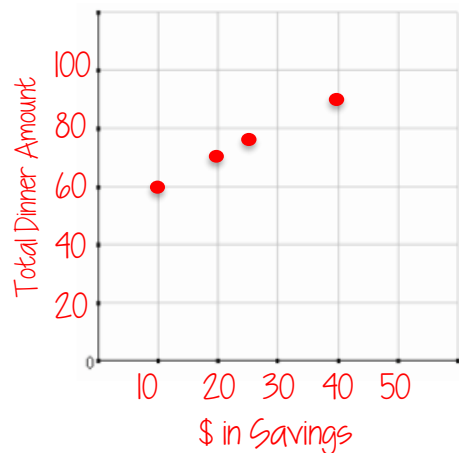
What is the independent quantity?

Amount in savings

What is the dependent quantity?

Dinner total

A **Multiplicative Relationship** uses <u>*multiplication*</u> or <u>*division*</u> to compare the independent and dependent quantities of a relationship.

Example: Joscelin's birthday is in two weeks and her mom is planning her birthday party. She is buying balloons that each cost $1.50. Create a table and a graph showing how much her mom can spend on balloons.

Number of balloons (x)	Rule or Equation $1.5x$	Total cost (y)	(x , y)
3	1.5 · 3	4.5	(3 , 4.5)
6	1.5 · 6	9	(6 , 9)
12	1.5 · 12	18	(12 , 18)
18	1.5 · 18	27	(18 , 27)
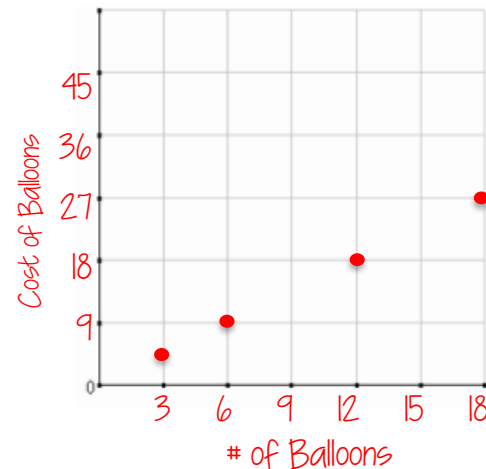
What is the independent quantity?

# of balloons

What is the dependent quantity?

Total cost of balloons