

Week 1 Monday Course 3 Warm-up



What is the solution?

$$\begin{cases} 2x - y = 0 \\ x + 2y = 10 \end{cases}$$

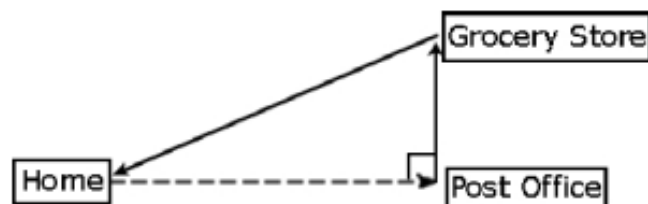
Finding Functions

Which ordered pair (x,y) can be added to the table so that y is still a function of x ?

x	-5	14	17	-8	
y	3	8	9	5	

- A) (1, 1)
- B) (14, 7)
- C) (17, 8)
- D) (-5, 1)

Mrs. Johnson has errands to accomplish at the post office and the grocery store. The grocery store is 6 miles north of the post office and the grocery store is 8 miles from home. How far is the post office from home?



Week 1 Monday Course 3 Warm-up



What is the solution?

$$\begin{cases} 2x - y = 0 \\ x + 2y = 10 \end{cases}$$

$$x = 2, y = 4$$

Finding Functions

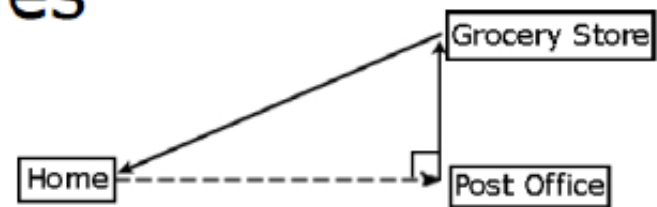
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5.3 miles



Lesson 6.4 Comparing Two Functions Day 1

Objective

TSW compare linear functions in the same and in different forms

***tables**

***graphs**

***algebraic equations**

Common Core State Standards

8 F2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal description) 8 F3 Interpret the equation $y=mx+b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.

Mathematical Practices *MP1 Solve problems/persevere MP2 Reason MP 4 Model Mathematics*



▶ A function is a relation between a set of inputs and a set of outputs, in which every input has exactly one output. You can use tables, graphs, and equations to represent many functions.

Lesson 6.4 Comparing Two Functions Day 1

Comparing Two Linear Functions using Tables and Algebraic Equations

The tables show two functions relating the total cost, y cents, and the weight of potatoes purchased, x pounds, at Shop A and Shop B.

Function 1- Analyze Table to find Rate of Change

Shop A

Weight of Potatoes (x pounds)	1	2	3	4
Total Cost (y cents)	60	120	180	240

Function 2- Analyze Table to find Rate of Change

Shop B

Weight of Potatoes (x pounds)	1	2	3	4
Total Cost (y cents)	50	100	150	200

- a) Use a verbal description to compare the two functions.
- b) Write an algebraic equation to represent each function.

What is another word for Rate of Change?

Lesson 6.4 Comparing Two Functions Day 1

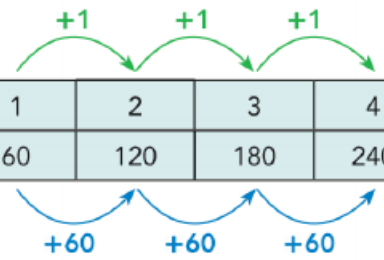
Comparing Two Linear Functions using Tables and Algebraic Equations

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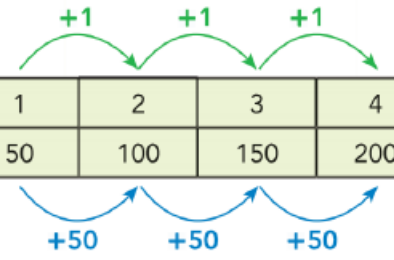
Rate of change:

$$\frac{60}{1} = 60 \quad \frac{60}{1} = 60 \quad \frac{60}{1} = 60$$

Function 2- Analyze Table to find Rate of Change

Shop B

Weight of Potatoes (x pounds)	1	2	3	4
Total Cost (y cents)	50	100	150	200



Rate of change:

$$\frac{50}{1} = 50 \quad \frac{50}{1} = 50 \quad \frac{50}{1} = 50$$

a) Use a verbal description to compare the two functions.

Both functions are linear and increasing functions. The function for Shop A has a greater rate of change than the function for Shop B.

What is another word for Rate of Change? **SLOPE**

Lesson 6.4 Comparing Two Functions Day 1

b) Write an algebraic equation to represent each function.

Shop A

Use the ordered pair (1, 60) and the rate of change, 60, to find the value of the y-intercept, b.

Linear function: $y = mx + b$
 $60 = 60(1) + b$ Substitute the values for m, x and y.
 $60 = 60 + b$ Simplify.
 $60 - 60 = 60 + b - 60$ Subtract 60 from both sides.
 $0 = b$ Simplify.

So, the algebraic equation for Shop A is $y = 60x$.

Shop B

Use the ordered pair (1, 50) and the rate of change, 50, to find the value of the y-intercept, b.

Linear function: $y = mx + b$
 $50 = 50(1) + b$ Substitute the values for m, x and y.
 $50 = 50 + b$ Simplify.
 $50 - 50 = 50 + b - 50$ Subtract 50 from both sides.
 $0 = b$ Simplify.

So, the algebraic equation for Shop B is $y = 50x$.

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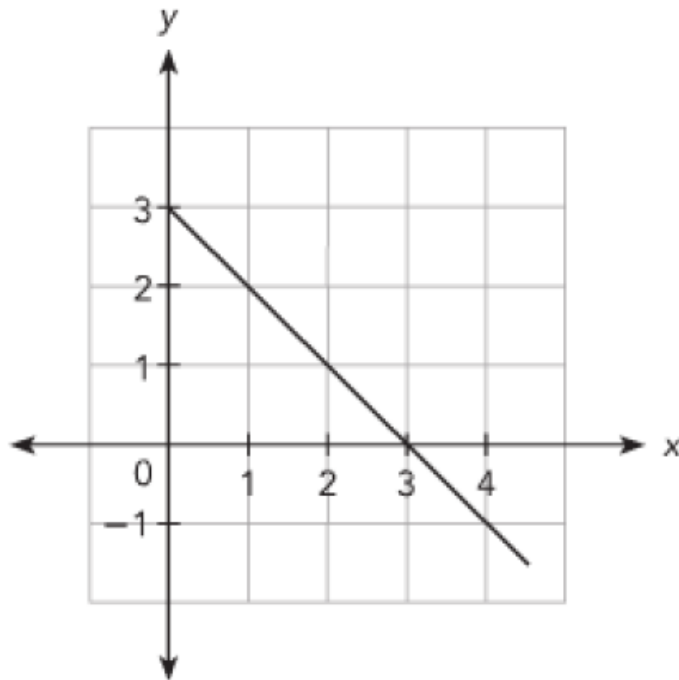
Lesson 6.4 Comparing Two Functions Day 1

Compare two functions using graph and algebraic equations

Practice 6.4

Tell whether the equation $y = -2x + 3$ can represent each of the following functions

3



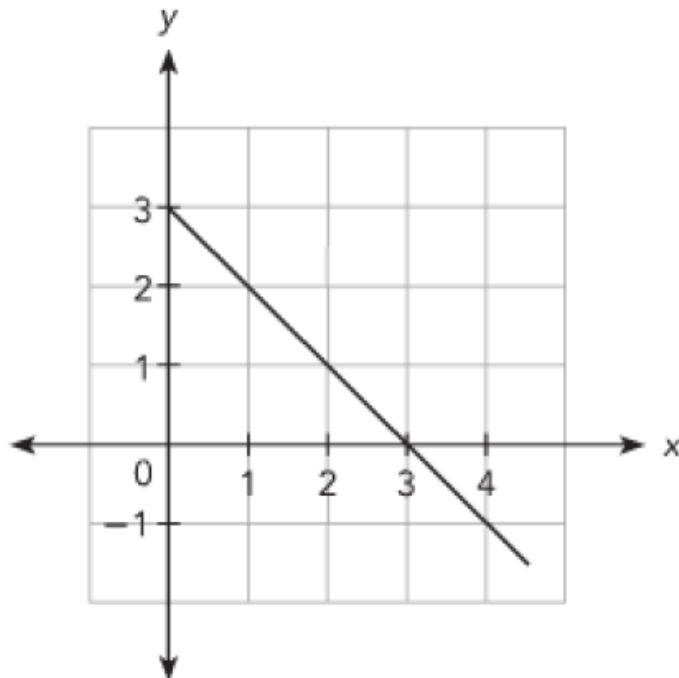
Lesson 6.4 Comparing Two Functions Day 1

Compare two functions using graph and algebraic equations

Practice 6.4

Tell whether the equation $y = -2x + 3$ can represent each of the following function

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No

Lesson 6.4 Comparing Two Functions Day 1

Compare two functions using graph and algebraic equations

Practice 6.4

- 10** Clara and Elaine have some savings. The functions that relate each girl's total savings, y dollars, to the number of months, x , that each girl saves are as follows:

Clara: $y = 380 + 20x$

Elaine: $y = 400 + 15x$

- Use a verbal description to compare the two functions.
- Graph the two functions on the same coordinate plane. Use 1 unit on the horizontal axis to represent 1 month for the x interval from 0 to 8, and 1 unit on the vertical axis to represent \$20 for the y interval from 380 to 540. For each function, draw a line through the points.
- Who will save more over time? Explain.

Practice 6.4

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Clara: $y = 380 + 20x$

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- a) Use a verbal description to compare the two functions.

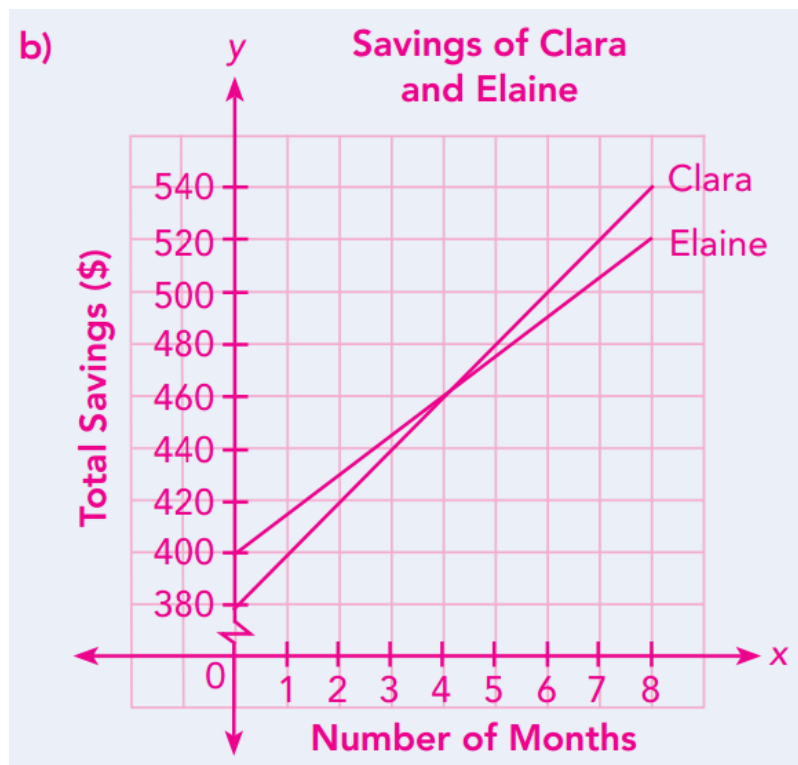
Both functions are linear and increasing functions. Comparing the two equations, because $400 > 380$, Elaine has a greater amount of savings at first. Comparing the rates of change shows that Clara's savings increase by \$20 each month, and Elaine's savings increase by \$15 each month. So, Clara's total savings will increase more quickly than Elaine's savings over time.

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Clara: $y = 380 + 20x$

Elaine: $y = 400 + 15x$

- a) Use a verbal description to compare the two functions.
- b) Graph the two functions on the same coordinate plane. Use 1 unit on the horizontal axis to represent 1 month for the x interval from 0 to 8, and 1 unit on the vertical axis to represent \$20 for the y interval from 380 to 540. For each function, draw a line through the points.



Practice 6.4

- c) Who will save more over time? Explain.

Both functions are linear and increasing functions. Comparing the two equations, because $1,000 > 800$, Option A costs more at first. Comparing the rates of change shows that the total fee for Option A increases by \$4 for each ticket sold, and the total fee for Option B increases by \$6 for each ticket sold. So, the total fee the director will pay for Option B will increase more quickly than the total fee for Option A as the number of tickets sold increases.

Lesson 6.4 Comparing Two Functions Day 1

Practice 6.4 #1-6 & 10

Name: _____

Practice 6.4

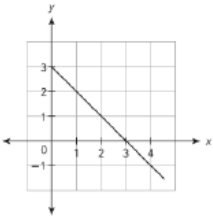
Tell whether the equation $y = -2x + 3$ can represent each of the following functions.

1

x	2	3	-1
y	-1	-3	5

2

x	1	2	3
y	-1	-3	-5

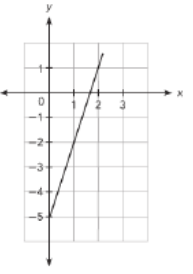
3 

Tell whether each function can represent the table of values.

x	1	2	3
y	-2	1	4

4 $y = 3x - 4$

5 $y = 2x - 5$

6 

Course 3

Challenge-

*Solve created equations

“Pick a Snowflake”

*BuzzMath



Lesson Check #1 & 3-can find an equivalent form of a function

Ticket Out the Door- Connect, Extend, Challenge

1. How are the ideas and information presented **CONNECTED** to what you already knew?
2. What new ideas did you get that **EXTENDED** or pushed your thinking in new directions?
3. What is still **CHALLENGING** or confusing for you to get your mind around? What questions, wonderings or puzzles do you now have?