Week 1 Tuesday Course 3 Warm-up

What is the solution to this system of equations?

$$2x - y = 8$$
$$x + y = 4$$

A) (2, -4)

B) (4, 0)

C) (6, 4)

D) (12, -8)

Which of the following tables best represents the graph of the linear equation?

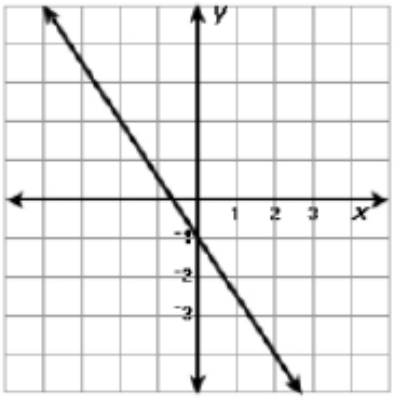

Table 1

x	y
-4	6
-2	3
0	0
2	-3

Table 2

x	y
-4	5
-2	2
0	-1
2	-4

Table 3

x	y
-3	5
-2	3
1	-3
2	-5

Table 4

x	y
-2	4
-1	2
1	-2
2	-4

A kite is flying on a 100-foot string tied to a stake in the ground. If the kite has vertical height of 80 feet, how far is it from the stake to the point on the ground directly below the kite?

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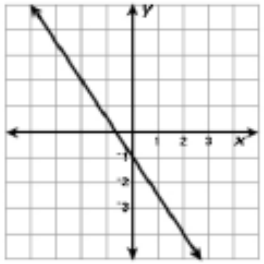
Finding Functions



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A) Table 1

✔ B) Table 2

C) Table 3

D) Table 4

A kite is flying on a 100-foot string tied to a stake in the ground. If the kite has vertical height of 80 feet, how far is it from the stake to the point on the ground directly below the kite?

60 feet

Lesson 6.4 Comparing Two Functions Day 2

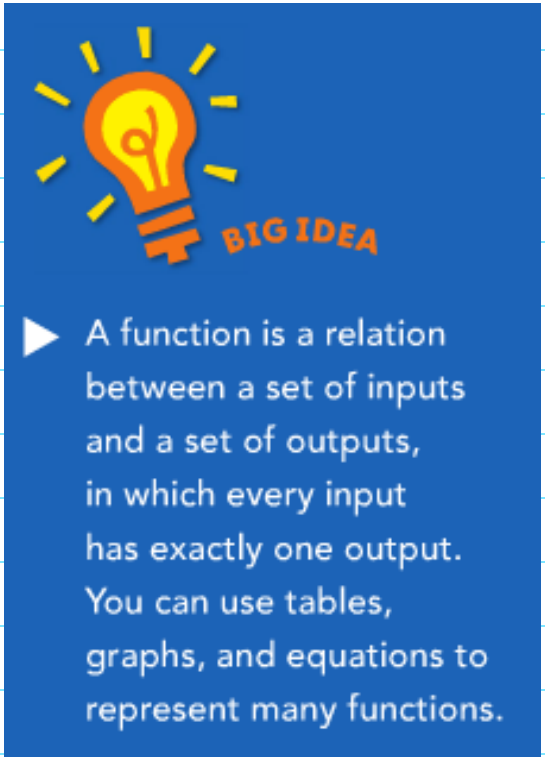
Objective

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*

Comparing Two Linear Functions using Tables and Algebraic Equations

Patrick and Leonard are brothers who each have money saved. The amount of money, y dollars, that each brother has left in savings after x weeks is a linear function. Patrick's function is represented by a table, and Leonard's function is represented by an equation.

Function 1- Analyze Table to find Rate of Change

Patrick's Savings

Number of Weeks (x)	0	5	15	20
Amount of Money (y dollars)	200	175	125	100

Function 2- Analyze Algebraic Equation

Leonard's Savings

Let x be the number of weeks.

Let y be the amount of savings Leonard has left after x weeks.

Amount of money: $y = 250 - 10x$

a) Write an algebraic equation to represent Patrick's linear function.

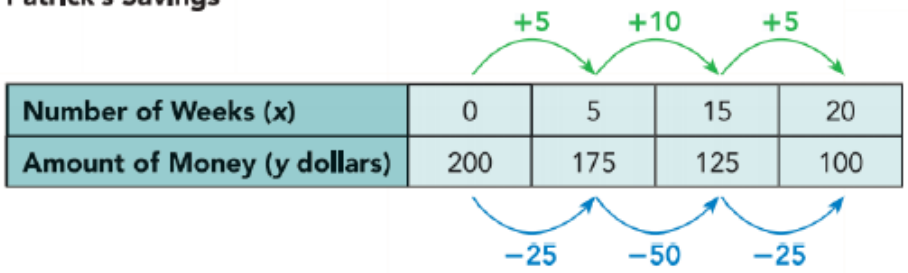
b) Use a verbal description to compare the two functions.

Lesson 6.4 Comparing Two Functions Day 2

a) Write an algebraic equation to represent Patrick's linear function.

Solution

Patrick's Savings



Rate of change: $\frac{-25}{5} = -5 \quad \frac{-50}{10} = -5 \quad \frac{-25}{5} = -5$

The rate of change is −5.

From the table, when the number of days is 0, Patrick has $200. So he starts with an initial amount of $200, and the algebraic equation is $y = 200 - 5x$.

Lesson 6.4 Comparing Two Functions Day 2

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

Solution

Both functions are linear and decreasing functions. Comparing the two equations, because $250 > 200$, Leonard has a greater amount of money at first. Comparing the rates of change shows that Leonard's savings decrease by \$10 each week, and Patrick's savings decrease by \$5 each week. So, Leonard's savings decrease more quickly than Patrick's savings.

Guided Practice

Complete.

2 Two classes, A and B, compare the amount of donations they will raise for a charity by participating in a walkathon. The amount of donations they will raise, y dollars, is a function of the distance the students walk, x miles.

Class A

Distance Walked (x miles)	0	1	2	4
Amount of Donations (y dollars)	100	115	130	160

Class B

Amount of donations: $y = 20x + 50$

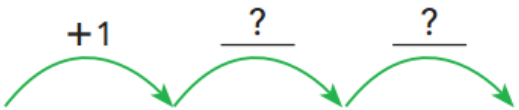
a) Write an algebraic equation to represent the table of values representing the amount of donations Class A will raise for the charity.

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

Lesson 6.4 Comparing Two Functions Day 2

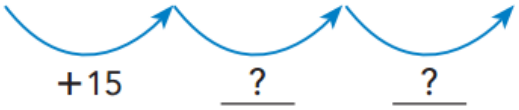
a) Write an algebraic equation to represent the table of values representing the amount of donations Class A will raise for the charity.

Class A



+1; +2

Distance Walked (x miles)	0	1	2	4
Amount of Donations (y dollars)	100	115	130	160



+15; +30

Rate of change: $\frac{15}{1} = \frac{?}{\quad}$ $\frac{?}{?} = \frac{?}{\quad}$ $\frac{?}{?} = \frac{?}{\quad}$ 15; $\frac{15}{1}$; 15; $\frac{30}{2}$; 15

The algebraic equation is $y =$?. $15x + 100$

Lesson 6.4 Comparing Two Functions Day 2

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

Both functions are ___?___ and ___?___ functions. Comparing the two equations, linear; increasing
because ___?___ > 50, Class ___?___ raises a greater amount of money at first. 100; A
Comparing the rates of change shows that Class A will raise $___?___ for each 15
mile the students walk, and Class B will raise $___?___ for each mile the students 20
walk. So, the amount of donations Class ___?___ will raise increases more quickly B
than the amount of donations Class ___?___ will raise. A

11 The director of a theater group wants to rent a theater for an upcoming show. The director has two options for paying for the rental. Both options involve paying a deposit and then paying an additional charge for each ticket sold. For each function, the total amount the director would pay, y dollars, is a function of the number of tickets sold, x.

Option A

Number of Tickets Sold (x)	100	150	200
Total Fee (y dollars)	1,400	1,600	1,800

Option B

A deposit of $800 plus $6 per ticket sold.

a) Write an algebraic equation to represent each function.

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

c)  *Math Journal* The theater seats up to 200 people. If the director expects to sell all the tickets, which of the two options, A or B, offers a better deal? Explain.

Lesson 6.4 Comparing Two Functions Day 2

a) Write an algebraic equation to represent each function.

Option A: $y = 1{,}000 + 4x$; Option B: $y = 800 + 6x$

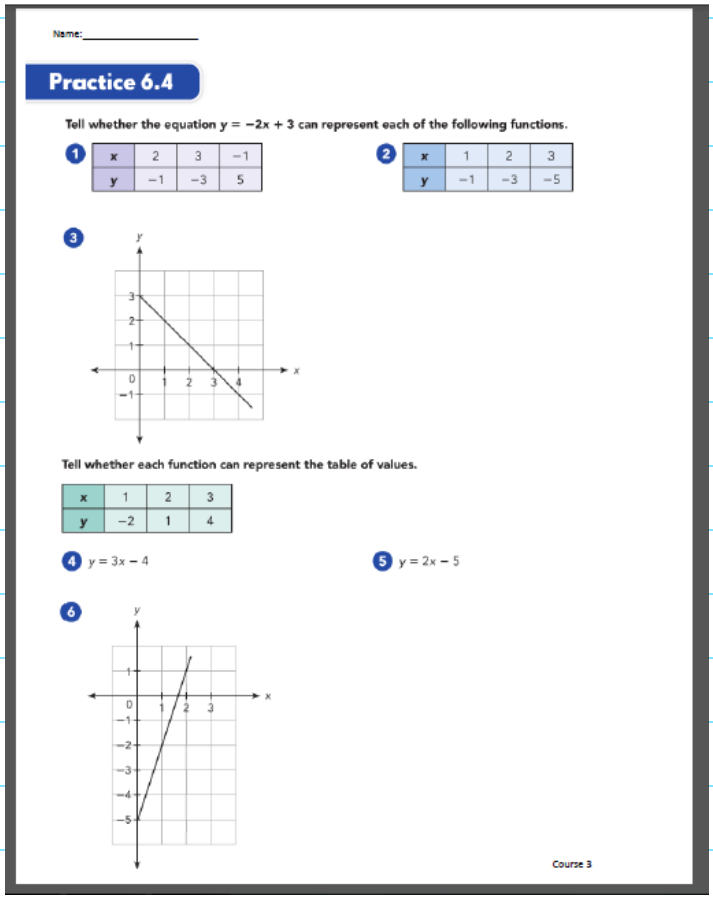
b) Use a verbal description to compare the two functions.

c)  *Math Journal* The theater seats up to 200 people. If the director expects to sell all the tickets, which of the two options, A or B, offers a better deal? Explain. Option A; The total fee for Option A is lower than the total fee for Option B when all the tickets are sold.

11 b) 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 2

Practice 6.4 #7-9 & 11



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 #11-can compare two linear functions represented in different forms.

Lesson 6.3 Understanding Linear and Nonlinear Functions Day 2

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?