

LINEAR RELATIONSHIPS



a 9 day CCSS-aligned unit
CCSS: 8.EE.5, 8.EE.6, 8.F.4

**ready-to-go, scaffolded
student materials**

LINEAR RELATIONSHIPS UNIT

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student friendly + real-world application

multiple representations

Unit: Linear Relationships
Student Handout 3

Name _____
Date _____ Pd _____

SLOPE-INTERCEPT FORM: PART I

Xander has biked 2 miles so far this week and plans to bike an average of 6 miles each day over the next several days. Xander wrote the equation and created the graph to represent x , the number of days and y , the total number of miles traveled on his bike.

$y = 6x + 2$

5. Find the slope of the graph. Where does Xander's equation touch the y-axis?

6. What value does the graph touch on the x-axis? See this value in Xander's equation?

Xander's equation is written in slope-intercept form.

- Slope-intercept form is one way to write the equation of a line.
- The y-intercept of a line is where the line crosses the y-axis.

In 1-3, use the given information to write the equation of the line.

1. slope = -9, y-intercept = 2 2. m = 4, y-intercept = -3

4. Complete the table below by recording the equation's graph.

	$y = x - 5$
SLOPE (m)	
Y-INT (b)	
GRAPH	

For each graph below, record the slope, y-intercept, and equation in slope-intercept form.

5. m: _____ b: _____ equation: _____

6. m: _____ b: _____ equation: _____

7. m: _____ b: _____ equation: _____

8. m: _____ b: _____ equation: _____

9. m: _____ b: _____ equation: _____

10. m: _____ b: _____ equation: _____

11. Matt is going to create a graph of the line $y = -3x - 2$. Circle the name of any student who correctly completed the task.

JAVIER KARI

$y = -3x - 2$ $y = 2x - 3$

Summarize today's lesson:

Unit: Linear Relationships
Homework 3

Name _____
Date _____ Pd _____

SLOPE-INTERCEPT FORM: PART I

Apply your knowledge of slope-intercept form to answer the questions below.

1. Harper is going to create a graph of the equation $y = -0.5x + 12$. Which of the following will be true about the graph?

a. The graph will contain the origin.
b. The graph will increase from left to right.
c. The graph will cross the x-axis at (12, 0).
d. The graph will have a slope of -0.5.

2. Khari graphed the line below. Which equation could represent Khari's graph?

a. $y = -2x - 3$
b. $y = 3x + 4$
c. $y = -4x + 3$
d. $y = -2x - 5$

For each graph below, record the slope, y-intercept, and equation in slope-intercept form.

3. m: _____ b: _____ equation: _____

4. m: _____ b: _____ equation: _____

5. m: _____ b: _____ equation: _____

6. Li wrote the equation below to represent the graph shown. Explain her errors and correct the equation.

$y = \frac{1}{2}x - 3$

7. For a and b, write an equation in slope-intercept form that meets the given criteria.

a. A negative slope and passes through the origin.
b. Slopes upward from left to right and has a y-intercept below the x-axis.

8. Mr. Brown asked his students to write an equation that represents a line with a positive slope and a negative y-intercept. Circle the name of any student who correctly completed the task.

EZRA AALIYAH JACOBY PENNY

$y = -5x + 2.5$ $y = 4x - 7$ $y = -3x - 11$ $y = \frac{4}{5}x - 20$

error analysis

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streamline your planning process with unit overviews

LINEAR RELATIONSHIPS OVERVIEW

STANDARDS

8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

8.EE.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .

8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

BIG IDEAS

- Slope of linear relationship; linear graph is the same b
- The rate of change and ini representations (graphs, t
- Linear relationships can be characteristics.

- ✓ key vocabulary
- ✓ vertical alignment



sample
pacing
calendar

ESSENTIAL QUESTI

- How can the slope of a line l
- What makes a situation prop
- How can rate of change be f

LINEAR RELATIONSHIPS UNIT PACING GUIDE

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Slope and Rate of Change	The Slope Formula	Slope-Intercept Form: Part I	Slope-Intercept Form: Part II	Slope and Slope-Intercept Form Quiz
Student Handout 1 Homework 1	Student Handout 2 Homework 2			
DAY 6	DAY 7			
Multiple Representations	Proportional and Non-Proportional Relationships			
Student Handout 5 Homework 5	Student Handout 6 Homework 6			

LINEAR RELATIONSHIPS UNIT OVERVIEW

TOPIC	TEACHING TIPS
Slope and Rate of Change	<ul style="list-style-type: none"> Have students draw the side view of a steep ramp and the side view of a ramp that isn't very steep. Allow students to discuss what makes one ramp steeper than the other and emphasize the differences in the vertical change over the horizontal change.
Proportional and Non-Proportional Relationships	<ul style="list-style-type: none"> An easy question students can ask to see if a situation is proportional is, "As one quantity doubles, does the other quantity double?". If the answer is yes, the relationship is proportional.
Slope-Intercept Form	<ul style="list-style-type: none"> Search "Linear Equations" on www.Flocabulary.com for a related video. To help students remember "b" is the y-intercept, use alliteration to say that "b" represents "begin".
Equations and Graphs	<ul style="list-style-type: none"> Search "Graphing Lines" on www.brainpop.com for an interactive tool where students can manipulate the slope and the y-intercept of an equation to see how it will affect the graph of the equation.

teaching ideas

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unit study guide + assessments

✓ quizzes

✓ editable unit test

Unit: Linear Relationships
Quiz 1

Name _____
Date _____ Pd _____

QUIZ: SLOPE AND SLOPE-INTERCEPT FORM



Answers

1. Kayla thinks that the slope of a vertical line is undefined, while Joshua argues that the slope of a vertical line is zero. Who is correct?

2. Find the rate of change shown in the table.

x	y
1	-3
2	-9
3	-15
4	-21

4. Which of the following triangles could question #3?

A.  B. 

5. A line has a slope of zero. Which of the following points could this line pass through?

A. (12, 9) and (12, 6)
B. (3, -6) and (7, -6)
C. (1, 4) and (2, 5)
D. (-9, 7) and (9, -7)

Unit: Linear Relationships
Review

Name _____
Date _____ Pd _____

LINEAR RELATIONSHIPS STUDY GUIDE


Solve each of the problems below. Be sure to ask questions if you need more help with a topic.

I CAN DETERMINE RATE OF CHANGE.

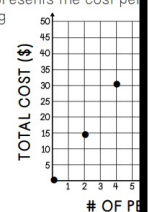
1. Find the rate of change from the table.

x	y
-3	
-2	
-1	
0	
3	

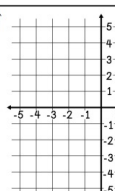
2. Find the slope of the graph.



3. The graph represents the cost per a pottery painting studio. Find the rate of change.



5. Find the slope of the graph.



7. Find the rate of change from the

EIGHTH GRADE CURRICULUM

LINEAR RELATIONSHIPS

UNIT FOUR: ANSWER KEY

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answer keys included 