

PATTERNS AND BIVARIATE DATA

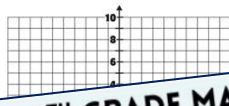
Name _____ Date _____

WARM UP #1

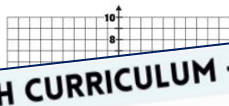
Lesson 1: Scatter Plots

Skill: Graphing Linear Equations Review

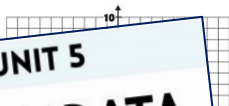
1) Graph $y = -3x - 6$



2) Graph $y = \frac{2}{3}x$



3) Graph $y = -\frac{1}{4}x + 2$



Name _____ Date _____

TWO-WAY TABLES

What is a Two-Way Table?

Example: _____ student survey.

8TH GRADE MATH CURRICULUM - UNIT 5

PATTERNS AND BIVARIATE DATA

Vocabulary

- Bivariate categorical data
- Bivariate measurement data
- Clustering
- Frequency
- Linear association
- Line of best fit
- Negative association

Objectives

- Gather, organize, and display bivariate data
- Plot points on a scatter plot and describe the association

Nonlinear association

Outliers

Name _____ Date _____

SCATTER PLOTS AND LINE OF BEST FIT

1) Construct a scatter plot using the data given in the table below.

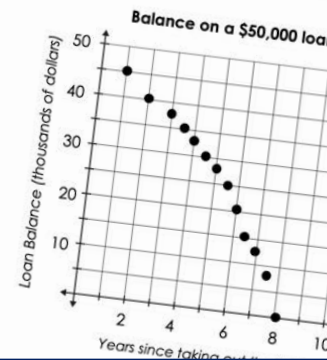
Water depth (feet)	Temperature (°F)
25	34
10	50

PRACTICE

INTERPRETING SCATTER PLOTS with real data

1) Describe the association of this scatter plot.

2) Does this appear to be a linear association?



QUIZ

Name _____ Date _____

EXIT TICKET #1

Lesson 2: Line of Best Fit

Skill: Line of Best Fit

1) Draw a line that best fits the relationship.

2) Write an equation for the line.

$y =$ _____

3) Explain why you drew the line of best fit where you did.

Name _____ Date _____

PATTERNS AND BIVARIATE DATA

1) Construct a scatter plot for the given data set.

Errors on Violin Test vs. Hours Practiced

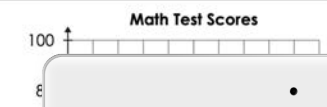
Hours Practiced	Errors
0	12
2	8
3	9
2.5	8
1	10
4	2
3.5	5

ASSESSMENT

PATTERNS AND BIVARIATE DATA

1) Construct a scatter plot for the given data set.

Math Test Scores



UNIT 5 QUIZ

SCATTER PLOTS AND LINE OF BEST FIT

Scatter Plots & Lines of Best Fit Quiz



PATTERNS AND BIVARIATE DATA

Vocabulary

- | | |
|---|---|
| <ul style="list-style-type: none">• Bivariate categorical data• Bivariate measurement data• Clustering• Frequency• Linear association• Line of best fit• Negative association | <ul style="list-style-type: none">• Nonlinear association• Outliers• Positive association• Relative Frequency• Scatter plot• Two-way table |
|---|---|

Objectives

- Gather, organize, and display bivariate data
- Analyze data points on a scatter plot and describe the relationship
- Investigate patterns of association in bivariate data
- Analyze bivariate data to make inferences or predictions.
- Analyze points in a two-way table.

Standards

CCSS

- 8.SP.1
- 8.SP.2
- 8.SP.3
- 8.SP.4

TEKS

- 8.5.C
- 8.5.D

PATTERNS AND BIVARIATE DATA

Lesson	Resources
Unit Prep pages (3 – 11)	• Vocabulary Page • Warm Up Page • Unit Pre-Assessment
1) Constructing and Interpreting Scatter Plots pages (12 – 22)	• 2 Warm-Ups • Construct and Interpret Scatter Plots Notes • Interpreting Scatter Plots Fold and Flip Notes • Constructing Scatter Plots Practice (2 pages) • Interpreting Scatter Plots Practice • Interpreting Scatter Plots with Real Data Practice • 2 Exit Tickets
2) Determining and Predicting with Lines of Best Fit pages (23 – 29)	• 2 Warm-Ups • Determining Line of Best Fit Notes • Determining Line of Best Fit Practice • Scatter Plots and Line of Best Fit Quiz (2 pages) • 2 Exit Tickets
3) Two-Way Tables pages (30 – 38)	• 2 Warm-Ups • Two-Way Tables Notes (2 pages) • Frequency and Relative Frequency Notes • Two-Way Tables Practice (2 pages) • Relative Frequencies Practice • 2 Exit Tickets
End of Unit pages (39 – 44)	• Review Sheet • Flip Book (separate PDF file) • Unit Post-Assessment

TEACHER RESOURCES

8TH GRADE MATH CURRICULUM - UNIT 5

PATTERNS AND BIVARIATE DATA

DAY 1 TOPIC: Unit Prep RESOURCES: - Unit 4 Review Activity (teacher choice) - Unit 5 Pre-Assessment	DAY 2 TOPIC: Scatter Plots RESOURCES: - L1 Warm Up 1 - Construct and Interpret Scatter Plots Notes - Interpreting Scatter Plots Fold and Flip Notes (optional) - Constructing Scatter Plots Practice (2 pages) - Exit Ticket 1	DAY 3 TOPIC: Scatter Plots RESOURCES: - L1 Warm Up 2 - Interpreting Scatter Plots Practice - Interpreting Scatter Plots with Real Data - Exit Ticket 2
DAY 4 TOPIC: Line of Best Fit RESOURCES: - L2 Warm Up 1 - Determining Line of Best Fit Notes - Determining Line of Best Fit Practice	DAY 5 TOPIC: Line of Best Fit RESOURCES: - L2 Warm Up 2 - Scatter Plots and Line of Best Fit Quiz (2 pages)	DAY 6 TOPIC: Two-Way Tables RESOURCES: - L3 Warm Up 1 - Two-Way Tables Notes (2 pages)

8TH GRADE MATH CURRICULUM - UNIT 5

PATTERNS AND BIVARIATE DATA

Student Tracking

Name	Pre-Assessment	Assessments	Notes

UNIT 5 LESSON 1

631

UNIT 5 LESSON 1

SCATTER PLOTS

Student Tracking

[illegible]

8TH GRADE MATH CURRICULUM

PATTERNS & BIVARIATE DATA

5 PATTERNS AND BIVARIATION

19 PATTERNS AND BIVARIATE DATA

BIVARLAIEDAIA

TEST

PATTERNS AND BIVARIATE DATA

Standard(s):

Student Materials:

Date(s):

- ☐ Calculator
- ☐ Colored pencils
- ☐ Ruler
- ☐ Scissors
- ☐ Glue
- ☐ Protractor
- ☐ Compass
- ☐ Graph paper
- ☐ Dry erase

Lesson Progression:

PATTERNS AND BIVARIATE DATA

Bivariate Categorical Data	
Bivariate Measurement Data	Name _____ Week of _____ to _____
Clustering	Date: _____
Frequency	Date: _____
Linear Association	Date: _____
Line of Best Fit	Date: _____

UNIT VOCABULARY

WEEKLY WARM UP SKILLS

SCATTER PLOTS

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1

Resource: 8th Unit 5, Lesson 1: Construct and Interpret Scatter Plots
Suggested Class Time: 2 days
The Big Idea

The Big Idea

- This is a complete lesson and practice for introduction to linear systems. Students will:
- Gather, organize, and display bivariate data
- Analyze data points on a scatter plot and describe the relationship
- Investigate patterns of association in bivariate data

Standards

Standards

- **8.SP.A.1** – Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
- **8.SP.A.2** – Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
- **8.SP.A.3** – Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.

Horizontal Planning

TEKS

- 8.5.C – Contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation.
- 8.5.D – Use a trend line that approximates the linear relationship between bivariate sets of data.

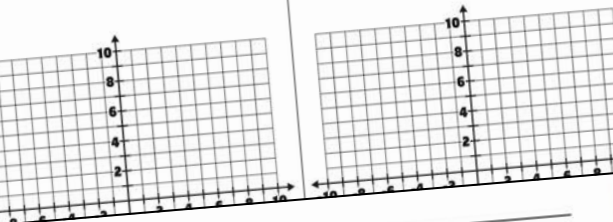
WARM UPS AND EXIT TICKETS

Lesson 1: Scatter Plots

Skill: Graphing Linear Equations

Graph $y = -3x - 6$

2) Graph $y = \frac{2}{3}x$



Lesson 2: Line of Best Fit

Skill: Constructing Scatter Plots

Create a scatter plot with the data from the table.

x	y
6	300
1	950
8	100

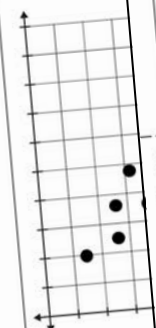
3
8
10
7
5
3

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me

te

1) Draw a line that best fits the relationship. Write an equation for the line.



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Name _____

Date _____

Lesson 3: Two-Way Tables

Skill: _____

1) Construct a two-way table from the data and whether they enjoy watching movies.

8	8	7	8	7
---	---	---	---	---

Name _____

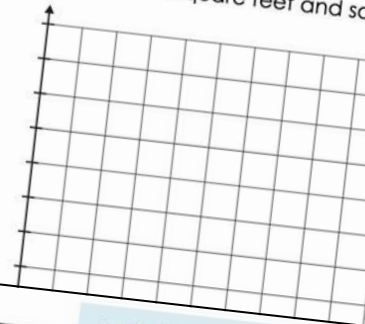
Date _____

Lesson 1: Scatter Plots

Skill: Creating Scatter Plots

Create a scatter plot with the data from the table which shows both the square feet and the price for homes in a given month.

Square Feet	Price (\$)
1,200	300,000
1,800	360,000
1,800	400,000
800	



WARM UP #1

Name _____

Date _____

Lesson 2: Line of Best Fit

Skill: Line of Best Fit

- 1) Draw a line that best fits the relationship.
- 2) Write an equation for the line.

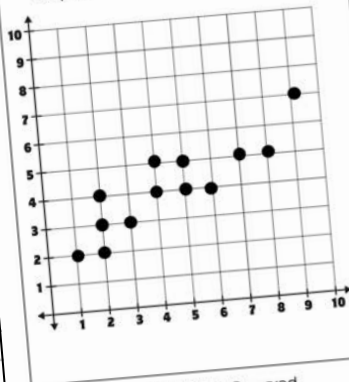
$y =$ _____

WARM UP #1

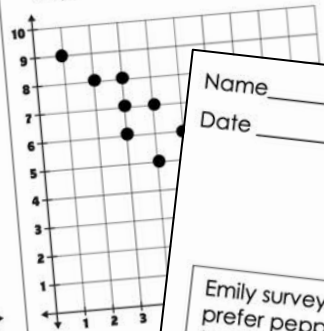
Lesson 3: Two-Way Tables

Skill: Line of Best Fit

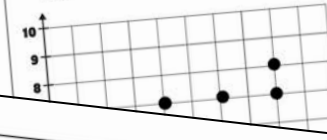
- 1) Draw a line that best fits the relationship. Write an equation for the line.



- 2) Draw a line that best fits the relationship. Write an equation for the line.



- 3) Draw a line that best fits the relationship. Write an equation for the line.



Name _____

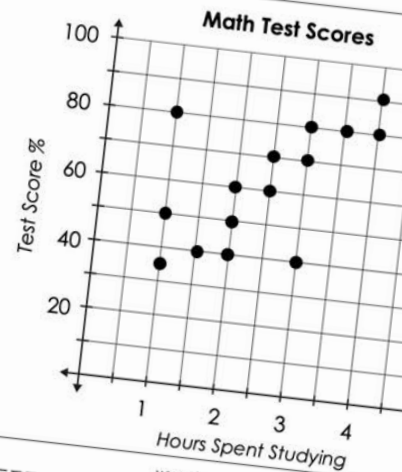
Date _____

Lesson 3: Two-Way Tables

Skill: Two-Way tables

Emily surveyed her classmates to determine their favorite pizza toppings. Of the 40 students who prefer pepperoni, 12 are males. Of the 25 students who prefer cheese, 15 are females. Create a two-way table to display this data.

EXIT TICKET



www.beyondtheworksheet.com

NOTES

Name _____ Date _____ **NOTES**

CONSTRUCT & INTERPRET

What is a Scatter Plot?

• _____

Other Key Terms:

- Strength - _____
- Linearity - _____
- Slope - _____
- Outlier - _____

Name _____ Date _____ **NOTE**

DETERMINING LINE OF BEST FIT

What is a Line of Best Fit?

• _____

Steps to finding the line of best fit:

1. _____
2. _____
3. _____

Name _____ Date _____ **NOTES**

TWO-WAY TABLES

What is a Two-Way Table?

Examine the Parts of a Two-Way Table:

- The two-way table below displays data from _____
- One category is represented by rows.
- The second category is represented by columns.
- There are totals at the end of each row and column.

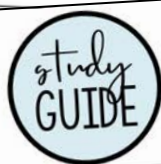
Name _____ Date _____ **NOTE**

FREQUENCY AND RELATIVE FREQUENCY

Define:

- Frequency: _____

PATTERNS AND BIVARIATE DATA



CREATING TWO-WAY TABLES

1. Carefully read the given scenario.
2. Identify the two separate categories of information.
3. Record the options for one category at the top of each column, and the options for the second category at the beginning of each row.
4. Fill in the table with the information you have been given.
5. Use reasoning and logic to complete any missing parts of the table.

SCATTER PLOTS

A scatter plot is a graph that plots

LINE OF BEST FIT

What is it?

A line that refers to a trend in data. It shows a positive or negative correlation (or no correlation). The line suggests a possible relationship between two variables.

How do I find it?

Draw a line through the data points so that an equal number of points are above and below the line.

How do I interpret it?

Identify the slope and y-intercept of the line. Substituting the equation of the line into the equation of the line, $y = mx + b$.

Interpreting Scatter Plot

STRENGTH

SLOPE

LINEARITY

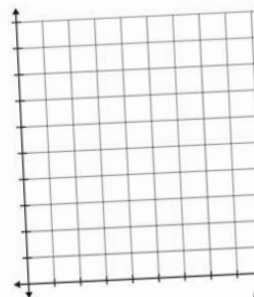
PRACTICE WORKSHEETS

CONSTRUCTING SCATTER PLOTS

Directions: Create a scatter plot for the relationship shown in each table.

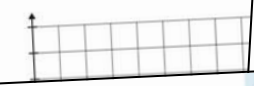
1) Test Scores vs. Homework Scores

Test	HW
60	35
95	50
40	10
90	50
60	15
95	50
90	40



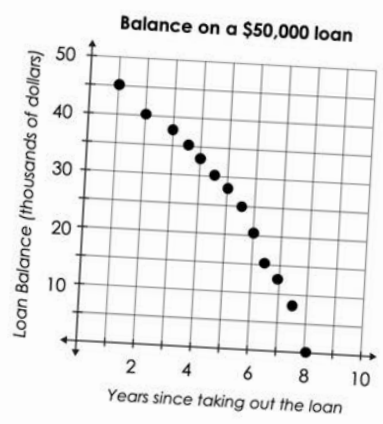
2) Total Rainfall (in.) by Hour

Hour	Rainfall
------	----------



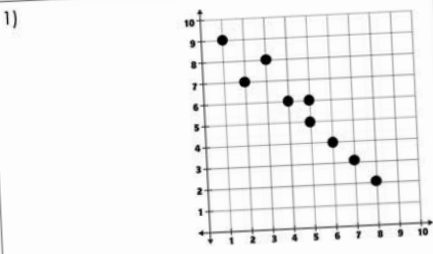
INTERPRETING SCATTER PLOTS with real data

- Describe the association of this scatter plot.
- Does this appear to be a linear or nonlinear association?
- Is there an outlier in the data? Explain.
- Has the debt been paid off? How can you tell?

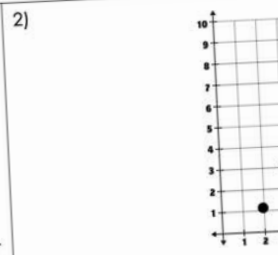


DETERMINING LINE OF BEST FIT

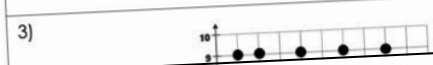
Directions: Draw a line of best fit for each scatter plot. Write an equation for each



$y =$ _____



$y =$ _____



TWO-WAY TABLES

Directions: Use the given table to complete questions 5 – 11.

	Can Swim	Cannot Swim	Total
7 th Graders	240	32	
8 th Graders			
Total		51	

- Complete the table above.
- How many students were surveyed?
- What is the frequency of 7th graders who can swim?
- What is the relative frequency of 7th graders who can swim?
- What is the relative frequency of 8th graders who cannot swim?
- How many 7th graders were surveyed?

PRACTICE

TWO-WAY TABLES

Directions: Create a two-way table for each set of data.

1) A survey of eighth graders was conducted. 88 students own a tablet and 67 students have a cell phone. 23 students do not have a tablet but do have a cell phone. 19 students do not have either a cell phone or a tablet.

2) 100 patrons in a movie theater were asked if they liked popcorn or candy. Out of the 100 patrons, 45 liked popcorn and 30 liked candy. There were 10 patrons who liked both popcorn and candy.

PRACTICE

RELATIVE FREQUENCIES

Snack Preference Based on Age Range

	Ice Cream	Cookies	Fruit	Total
Under Age 18	240	32		
18 and Older			65	293
Total		51	70	

- Complete the two-way table above.
- Create a relative frequency table using the two-way table.

	Ice Cream	Cookies	Fruit	Total
Under Age 18				
18 and Older				
Total				

ASSESSMENTS - PRINT AND DIGITAL

Name _____ Date _____ Class _____

PRE-ASSESSMENT

Directions: Read each question carefully. Show your work when necessary.

1) Complete the table for the equation.

x	y
-3	
0	
3	
6	

$y = \frac{1}{3}x - 8$

2) Complete the table for the equation.

$y = -3x + 2$

3) Graph the equation.

4) Graph the equation.

SCATTER PLOTS AND LINE OF BEST FIT

- 5) Describe the meaning of the slope and the y-intercept for this scenario.
- Slope: _____
 - y-intercept: _____
- 6) Explain whether there are any outliers or any clustering.

Name _____ Date _____

QUIZ

SCATTER PLOTS AND LINE OF BEST FIT

1) Construct a scatter plot using the data given in the table below.

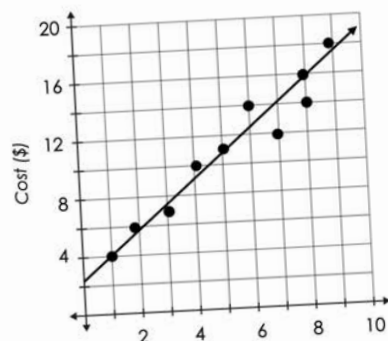
Water depth (feet)	Temperature (°F)
25	34
10	50
6	75
5	60
12	56
	69
	41
	6
	7

QUIZ

PATTERNS AND BIVARIATE DATA

For #14 - 17: Use the given scatter plot and equation to answer the questions.

- 14) Predict the cost of 8 pounds of strawberries.
- Graph prediction: _____
- Equation prediction: _____
- Show your work: _____



- 15) Predict the cost of 14 pounds of strawberries.
- Graph prediction: _____
- Equation prediction: _____
- Show your work: _____

- 16) What does the slope of the line represent in this situation?

- 17) What does the y-intercept represent in this situation?

Name _____ Date _____

ASSESSMENT

PATTERNS AND BIVARIATE DATA

1) Construct a scatter plot for the given data set.

Errors on Violin Test vs. Hours Practiced

Name	Hours Practiced	Errors
Ana	0	12
Jason	2	8
Manuel	3	9
	2.5	8
	1	10
	4	2
	3.5	5

the line of best fit.

your equation to predict how many errors a student would have if they

to answer questions 5 - 7.

5) What kind of association is represented in the scatter



UNIT 5 QUIZ

SCATTER PLOTS AND LINE OF BEST FIT

Scatter Plots & Lines of Best Fit Quiz

lindsayperro@gmail.com [Switch account](#)

* Required

Email *

Your email

Use the table below to answer the questions.

WATER DEPTH (FEET)	TEMPERATURE (°F)
25	34
10	50
6	75
5	60
12	56
	69
	41
	6
	7



Unit 5

PATTERNS AND BIVARIATE DATA

PRE-ASSESSMENT

Patterns & Bivariate Data Pre-Assessment

lindsayperro@gmail.com [Switch account](#)

* Required

Email *

Your email

- 1) Find the values of y given an x value for the given function below:

$$y = \frac{1}{3}x - 8$$