learning focus:

✓ use a trend line to approximate data with linear association and make predictions

✓ construct and interpret scatterplots

✓ determine mean absolute deviation and generate random samples

SCATTER PLOTS & DATA UNIT
9 DAY TEKS-ALIGNED UNIT

8th GRADE

Name _____ Pd ____
Date _____

Unit: Scatter Plots and Data
Student Handout 3

SCATTER PLOTS AND PREDICTIONS

- When scatter plots demonstrate a _____ relationship, a _____ line that should lie as _____ can be used to show the general pattern of the data.

SCATTER PLOTS AND DATA UNIT
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SCATTER PLOTS AND DATA PACING GUIDE

DAY 1	DAY 2	DAY 3
Scatter Plots and Association	Constructing Scatter Plots	Scatter Plots and Predictions
Student Handout 1	Student Handout 2	Student Handout 3
Homework 1	Homework 2	Homework 3

| DAY 6 | DAY 7 | |
| Mean Absolute Deviation: Part I | | |

Predict the value of y when x = 30.

SCATTER PLOTS & DATA

a 9 day TEKS-aligned unit
TEKS: 8.5C, 8.5D, 8.11A, 8.11B. 8.11C

8th GRADE

ready-to-go, scaffolded
student materials

SCATTER PLOTS AND DATA UNIT
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SCATTER PLOTS & DATA

8th GRADE

student friendly + real-world application

multiple representations


Unit: Scatter Plots and Data
Student Handout 2

Name _____
Date _____ Pd_____

CONSTRUCTING SCATTER PLOTS

Jared's basketball team stood at various distances from the basketball hoop and counted the number of baskets they were able to make in 30 seconds. Use the data in the table to make a scatter plot. Then answer the questions that follow.

NAME	DISTANCE FROM HOOP	BASKETS MADE
Jared	15 ft	2
Tyrell	45 ft	2

(y-axis: BASKETS MADE, 1-10)
(x-axis: DISTANCE FROM HOOP (FT), 5 10 15 20 25 30 35 40 45 50)
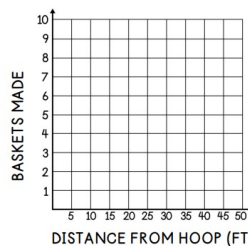
1. Describe the type of association seen in the scatter plot.

2. Are th... don't fit... the data...

4. Use the scatter plot to label each statement...
_____ a. As the distance from the hoop i...
_____ b. As the distance from the hoop d...

Scatter plots may include points known as... described below.

OUTLIERS	• A point that does n... plot is known as an... • Which player repre...
CLUSTERING	• When there are dis... • Why do you think c...

For 5-6, use the data to construct a scatter plot and answer the questions that follow.

5 The population of 10 cities and the number of elementary schools in the city is shown in the table.
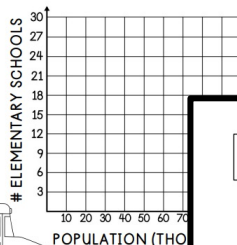
POPULATION	# ELEMENTARY SCHOOLS
76,000	19
60,000	17
35,000	11

(y-axis: # ELEMENTARY SCHOOLS, 3-30)
(x-axis: POPULATION (THO...), 10 20 30 40 50 60 70)

SCHOOL BUS

a. Describe any association and conclusions you can make from the graph.

b. Do... have...

6 The table below shows the number... lunch accounts and the balance of the...

# DAYS	16	2	20
BALANCE ($)	5.25	18.50	2.5...

LUNCH

(y-axis: ACCOUNT BALANCE ($), 2-20)
(x-axis: # DAYS, 2 4 6 8 10 12 14 16 18 20)
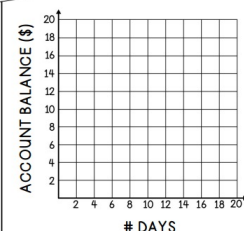
Unit: Scatter Plots and Data
Homework 2

Name _____
Date _____ Pd_____

CONSTRUCTING SCATTER PLOTS

Rebecca is researching cruises in order to plan a vacation. She records the length and total cost of different cruises in the table. Use the table to answer 1-5.

1. Construct a scatter plot of the data.

(y-axis: COST ($), 100-1,000)
(x-axis: LENGTH OF CRUISE (DAYS), 1 2 3 4 5 6 7 8 9 10)

CRUISE LINE	LENGTH	COST
Fiesta Cruises	6 days	$515
Aloha Tours	2 days	$249
Regal Ships	2 days	$199
Pacific Wonder	7 days	$679
Ocean Escapes	5 days	$489
Nautical Excursions	3 days	$270
Island Hoppers	7 days	$710
Bon Voyage Trips	4 days	$920
Harbor Adventures	4 days	$375
Marine Marvels	5 days	$600
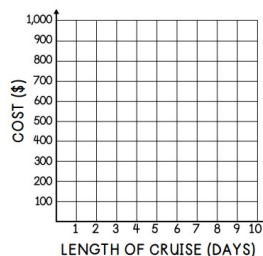
2. Which is a true statement about the data?

a. As the length of a cruise increases, the cost of the cruise increases.

b. As the length of a cruise decreases, the cost of the cruise decreases.

c. Both a and b are true.

d. Neither a nor b are true.

3. Which best describes the association seen between the variables?

a. Positive and linear

b. Positive and non-linear

c. Negative and linear

d. Negative and non-linear

4. Does the data appear to have any outliers? Explain.

5. Does the graph demonstrate clustering? Explain.

higher-level analysis

SCATTER PLOTS & DATA

a 9 day TEKS-aligned unit
TEKS: 8.5C, 8.5D, 8.11A, 8.11B. 8.11C

streamline your planning
process with unit overviews

SCATTER PLOTS AND DATA
OVERVIEW

READINESS STANDARDS

8.5D Use a trend line that approximates the linear relationship between bivariate sets of data to make predictions.

SUPPORTING STANDARDS

8.5C 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.

8.11A Construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data.

8.11B Determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points.

8.11C Simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected.

BIG IDEAS

- Scatter plots can be used to
- Straight lines and their equa patterns.
- Mean absolute deviation ca

ESSENTIAL QUESTIO

- How is a scatter plot differen
- What purpose does a scatte
- How can a line of best fit be
- When might you prefer a sm

✓ **key vocabulary**

✓ **vertical alignment**

sample pacing calendar

SCATTER PLOTS AND DATA UNIT
PACING GUIDE

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Scatter Plots and Association	Constructing Scatter Plots	Scatter Plots and Predictions	Trend Line Equations	Scatter Plots and Trend Lines Quiz
Student Handout 1 Homework 1	Student Handout 2 Homework 2			
DAY 6	**DAY 7**			
Mean Absolute Deviation: Part I	Mean Absolute Deviation: Part II			
Student Handout 5 Homework 5	Student Handout 6 Homework 6			

SCATTER PLOTS AND DATA UNIT
OVERVIEW

TOPIC	TEACHING TIPS
Scatter Plots and Association	• Emphasize to students that variables with positive association **move together**, rather than increase. Similarly, variables with negative association move in **opposite directions** rather than decrease. This will help prevent students becoming confused in a situation where as one variable decreases the other decreases as well, which is positive association.
Constructing Scatter Plots	• I love that this topic can give opportunities for students to get out of their seats and participate in collecting data. For example, have students record how many jumping jacks they can do in certain time intervals (15 seconds, 30 seconds, 45 seconds, etc.). Then, construct a class scatter plot comparing the time with the number of jumping jacks and discuss patterns of association, clustering, outliers, etc.
Scatter Plots and Trend Lines	• I usually have to remind students that when they are creating an equation for a trend line, they need to choose two points on the actual trend line, not necessarily two of the data points on the scatter plot.
Mean Absolute Deviation	• To check students' understanding of mean absolute deviation, I like to pose challenges to groups in the class such as: "Using only numbers 1-100 and not using any number twice, create a set of 5 numbers with the largest mean absolute deviation." The group's approach in creating the list reveals a lot about their grasp of what mean absolute deviation actually is.
Random Samples	• Visit www.khanacademy.org and search "Techniques for generating a random sample" (you do not need to sign up for an account). This is a good intro video for common random sampling techniques.

teaching ideas

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SCATTER PLOTS & DATA

a 9 day TEKS-aligned unit
TEKS: 8.5C, 8.5D, 8.11A, 8.11B. 8.11C

unit study guide + assessments

✓ **quizzes**

✓ **editable unit test**

Unit: Scatter Plots and Data
Quiz 1

Name _____
Date _____ Pd _____

QUIZ: SCATTER PLOTS AND TREND LINES

Answer each question and be sure to show work when necessary.

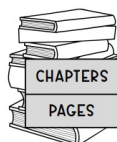| Answers |
|---|
| 1. _____ |
| 2. _____ |
| 3. (see graph) |
| 4. |

1. Jeremiah conducts a survey and finds that as the first variable in his survey decreases, the second variable increases. What type of association is there between the two variables?

A. Positive association
B. Negative association
C. No association
D. There is not enough information to t

2. Which is a true statement about the s
shown at the right?

A. The association is linear.
B. The association is positive.
C. The graph does not appear to have a
D. All the above are true.

3. The table below shows the number of
several books. Use the data in the table t

CHAPTERS	12	10	15	17
PAGES	320	218	375	360

4. Which is a true statement about the s

A. As the chapters in a book increase, t
B. As the chapters in a book decrease, t
C. As the chapters in a book increase, t
D. Both B and C are true.

Unit: Scatter Plots and Data
Review

Name _____
Date _____ Pd _____

SCATTER PLOTS AND DATA STUDY GUIDE

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

**I CAN DESCRIBE PATTERNS OF ASSOCIATION FOR BIVARIATE DATA.**   8.11A

1. Describe the type of association you'd expect to see between the following variables. Explain your choices.

a. The length of a movie and the nu

b. The number of hours a musician
makes in a performance

2. George is looking at two sets of n
data and sees that as one set decre
other set also decreases. What type
association is this?

I CAN DESCRIBE RELATIONSHIPS IN SCA

4. For each scatter plot, label the type
whether it is linear or non-linear.

A
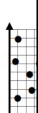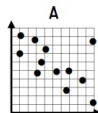
5. Which of the scatter plots could li
represent the number of food items
and the total number of calories con
meal? Explain.

EIGHTH GRADE CURRICULUM

SCATTER PLOTS AND DATA

UNIT NINE: ANSWER KEY

answer keys included →