

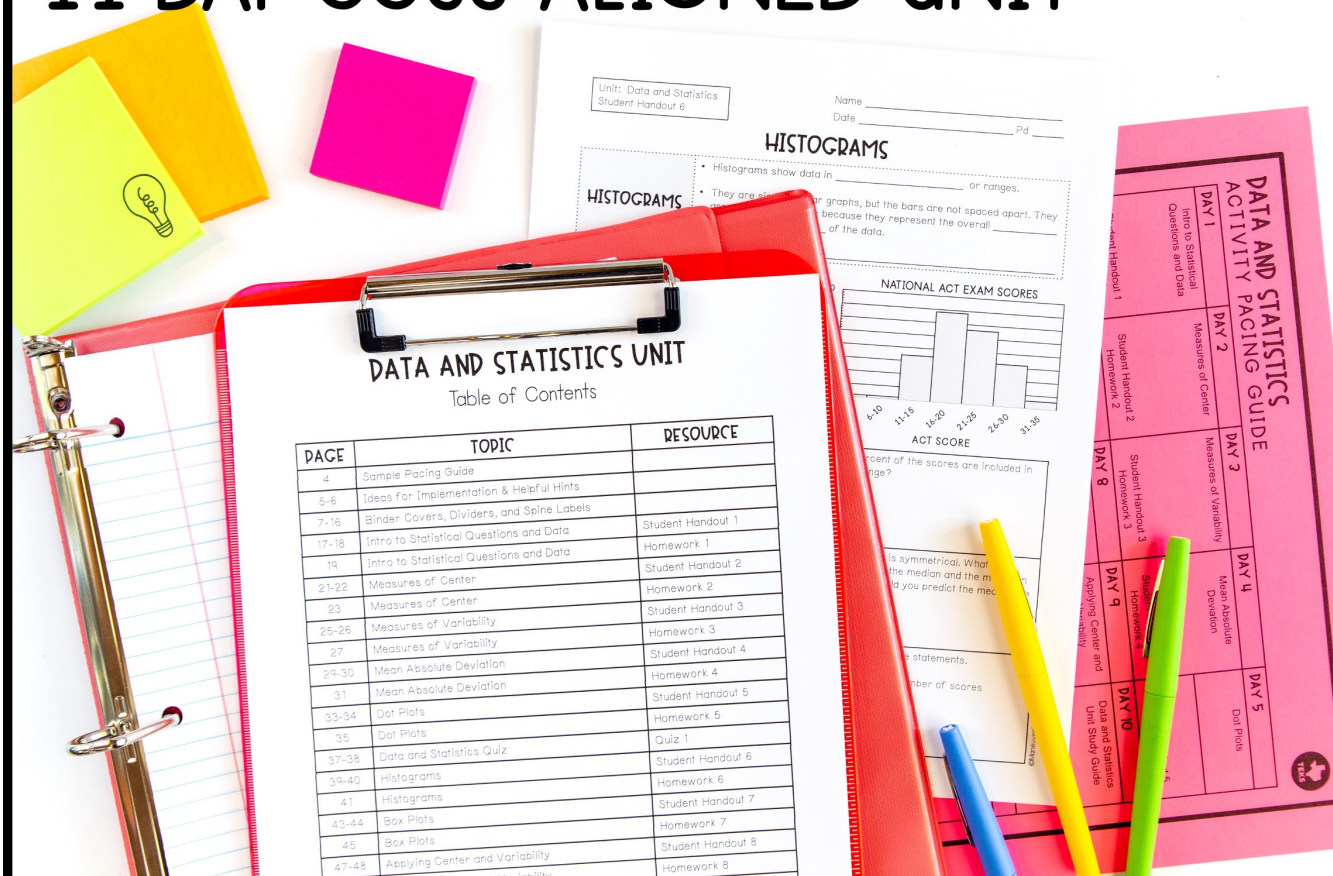
learning focus:

- ✓ describe measures of center, spread, and shape of a set of data
- ✓ recognize a statistical question
- ✓ display numerical data on dot plots, box plots, and histograms

DATA & STATISTICS UNIT

11 DAY CCSS-ALIGNED UNIT

6th
GRADE



A MANEUVERING THE MIDDLE ® RESOURCE

DATA & STATISTICS



an 11 day CCSS-aligned unit

CCSS: 6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5, 6.SP.5.a-d

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

DATA AND STATISTICS UNIT

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student friendly + real-world
application

interactive
practice

Unit: Data and Statistics
Student Handout 1

Name _____
Date _____ Pd _____

INTRO TO STATISTICAL QUESTIONS AND DATA

DATA

- Data can be described as a collection of _____.
- For example: numbers, measurements, observations, and descriptions
- **Categorical data:** this data represents _____ and is often sorted by _____.
- **Numerical data:** this data represents _____ and is often sorted by _____.

TASK 1 Read each statement to determine if it is statistical or not.

"I am collecting data to determine each student's favorite genre of book to read."
LUKE

JOSIE
"I am collecting data to determine how much money each student's family spends on groceries each week."

IS THE DATA STATISTICAL?

LUKE	
DEMARCUS	
JOSIE	
WEATHER	

Identify two numerical and two categorical questions from the deck of playing cards.

CATEGORICAL DATA: _____

NUMERICAL DATA: _____

STATISTICAL QUESTIONS

- For a question to be considered statistical, it must meet two criteria:
 - the question must be able to be answered by _____
 - the data must _____
- Ex: _____

TASK 2 Determine if each of the questions below are statistical or not. Rewrite any non-statistical questions to be statistical.

1. How many times a week do you go to football practice?

2. How many times a week do you go to the gym?

4. Create both a statistical and non-statistical question for the data below.

STATISTICAL: _____

NON-STATISTICAL: _____

TASK 3 Draw a line from each question to the box it will be used.

How much are the monthly utilities of the new home?

How many times a week do you go to the gym?

Categorical statistical

Numeric and non-statistical

Summarize today's lesson:

Unit: Data and Statistics
Homework 1

Name _____
Date _____ Pd _____

INTRO TO STATISTICAL QUESTIONS AND DATA

In 1-2, list whether the results of the survey would be categorical or numerical. Explain your reasoning.

SURVEY QUESTION	TYPE OF DATA AND EXPLANATION
1. How many pets do the students in my class have?	
2. What streaming service do the residents in my apartment complex subscribe to?	

The students in Mr. Kurtz's class are asked to create nine different survey questions. List the letter of each question that is statistical in the table below. If it is not a statistical question, rewrite it to be statistical.

A How often do you play football?	D How many sit-ups can the students in PE class complete in 1 minute?	C What are the heart rates of the students in the 6 th grade class?
D What are the types of sneakers students in our school wear?	E How many students tried out for the volleyball team?	F How many meters can the students on the swimming team swim?
G What is the max number of minutes that students on the track team can run?	H How many pairs of tennis shoes do the students in our school have?	I How many students in the 6 th grade can do the long jump?

STATISTICAL	NON-STATISTICAL & REWRITE

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graphic
organizers

DATA & STATISTICS

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streamline your planning
process with unit overviews

DATA AND STATISTICS OVERVIEW



STANDARDS

- 6.SP.1** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
- 6.SP.2** Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
- 6.SP.3** Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
- 6.SP.4** Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- 6.SP.5** Summarize numerical data sets in relation to their context, such as by:
- 6.SP.5a** reporting the number of observations.
 - 6.SP.5b** describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
 - 6.SP.5c** giving quantitative measure of center and variability, as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
 - 6.SP.5d** relating the choice of measures of center and variability to the context in which the data were gathered.

PIC IDEAS

- A statistical question requires a population.
- Statistics describe a set of data.
- Data can be displayed graphically.

ESSENTIAL QUESTIONS

- How can you differentiate between a statistical question and a non-statistical question?
- How can you determine whether a data set is skewed or symmetric?
- How can statistical information be used to make a decision?

DATA AND STATISTICS PACING GUIDE



DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Intro to Statistical Questions and Data	Measures of Center	Measures of Variability	Mean Absolute Deviation	Dot Plots
Student Handout 1 Homework 1	Student Handout 2 Homework 2	Student Handout 3	Student Handout 4	Student Handout 5
DAY 6	DAY 7			
Data and Statistics Quiz	Histograms			
Quiz 1	Student Handout 6 Homework 6			
DAY 11	NOTES			
Data and Statistics Unit Test				
Unit Test				

DATA AND STATISTICS OVERVIEW



TOPIC	TEACHING TIPS
Statistical Questions	<ul style="list-style-type: none">Remind students that a statistical question must have a variety of answers from a variety of people.Present students with a non-statistical question and have them revise it to be statistical. This could be done as partners or as a whole class activity.
Dot Plots	<ul style="list-style-type: none">This is a great opportunity for students to gather their own data. Students can create their own statistical question and then survey the class and plot the data. Emphasize the importance of the scale on the dot plot and that each response gets its own dot.
Frequency Tables	<ul style="list-style-type: none">Students tend to do well with frequency tables. However, relative frequency can be a challenge because it is slightly more abstract. Remind students that they are comparing the frequency to the total. You can even introduce the phrase "it's all relative".
Histograms	<ul style="list-style-type: none">Provide each student with a sticky note and ask them to write their name. Then, pose the question, "How many minutes does it take you to get ready in the morning?" or something similar. Discuss the various options for the x- and y-axis and then ask student to place their sticky note accordingly on the board. Students should be able to see a "life-size" histogram!
Measures of Center	<ul style="list-style-type: none">Students need to be able to recognize that the mean and median are two different measures of center and that one is a better judge based on what the data set looks like. When the data is skewed, the median is a best representation. When the data is symmetric the mean is the best representation.
Measures of Variability	<ul style="list-style-type: none">I think this is a great discussion when looking at the statistics of a professional basketball team. There will be specific measurements (height) that have less variability, but then there will be others that have great variability (number of free throws, number of points scored).
Box Plots	<ul style="list-style-type: none">Box plots can be more complicated than necessary. The process of creating a box plot isn't much different than finding the median twice. I always asked students to identify the five number summary first and then create the sketch. It provides a bit of structure for students who need a step-by-step process.

teaching
ideas

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CCSS: 6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5, 6.SP.5.a-d

unit study guide + assessments



quizzes



editable unit test

Unit: Data and Statistics
Quiz 1

Name _____
Date _____ Pd _____

QUIZ : DATA AND STATISTICS

Answer the questions below. Be sure to show your work.

1. Which of the following best describes the survey question,
"How many pairs of tennis shoes do the students in our school have?"

A. Statistical question, numeric data
B. Statistical question, categorical data
C. Non-statistical question, numeric data
D. Non-statistical question, categorical data

2. Which of the following best describes
"How many days do you play football during the week?"

A. Statistical question, numeric data
B. Statistical question, categorical data
C. Non-statistical question, numeric data
D. Non-statistical question, categorical data

In questions 3-5, several small packages of candies were recorded on the dot plot below.

3. How many bags of candies were sampled?

A. 20
B. 22
C. 25
D. 30

4. Which of the following statements is true?

A. Twenty-five packages of candies were sampled.
B. The data is skewed right.
C. The most common number of blue candies is 45.
D. The median is 8.5.

5. Which of the following statements describes the data?

A. The data is skewed left.
B. The data is skewed right.
C. The data is spread out.
D. The data is symmetrical.

Answers

1. _____
2. _____
3. _____

Unit: Data and Statistics
Review

Name _____
Date _____ Pd _____

DATA & STATISTICS UNIT STUDY GUIDE

Solve each of the problems below. These represent the types of questions on your test. Be sure to ask questions if you need more help with a topic.

I CAN RECOGNIZE A STATISTICAL QUESTION.

1. Determine if the survey question is statistical or not. If it is, write a question that is statistical.

a. What is each student's favorite color?
b. What size shoes do you wear?
c. How many books have the student read?
d. How fast can the sixth grade student run?
e. How many times do you go to the gym?
f. What is your favorite type of music?

I CAN DESCRIBE A DATA DISTRIBUTION.

2. Describe the overall shape, spread, center of the dot plot.

AGE OF CEOs AT FORTUNE 500 COMPANIES

35 40 45 50 55 60 65

SIXTH GRADE CURRICULUM

DATA AND STATISTICS

UNIT TEN: ANSWER KEYS

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answer keys
included

