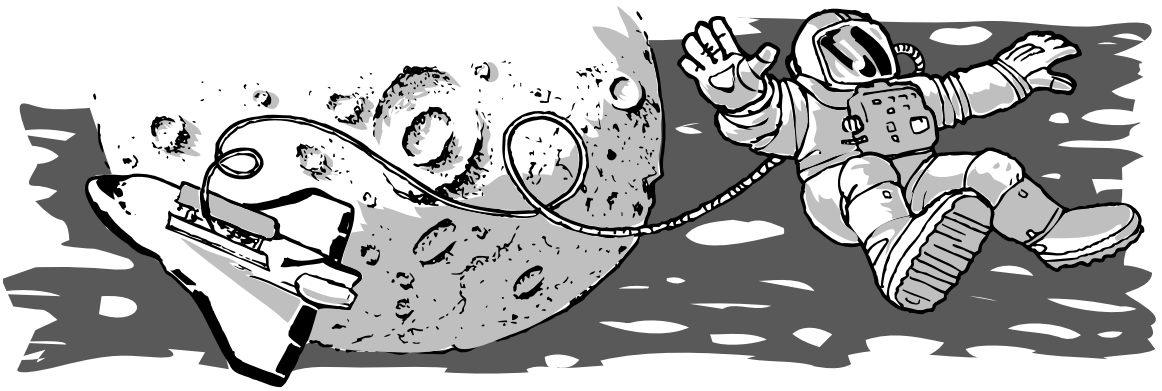
Name _____ Date _____ Class _____

LESSON 6-3

Challenge

Outer Space Outlier

You have been chosen to train as an astronaut! The statisticians at NASA are not happy, because you are a major outlier for their data. Use the information below to find how you will affect their astronaut data.



Youngest Astronauts

In 1970, Russian astronaut Gherman S. Titov became the youngest person to travel into space. He was 25 years old at liftoff. The ages of some of the other youngest astronauts of all time were 26, 29, 28, 27, 26, and 28.	
Data Without Your Age:	**Data With Your Age:**
Mean age:	**Mean age:**
Median age:	**Median age:**
Mode age:	**Mode age:**

Oldest Astronauts

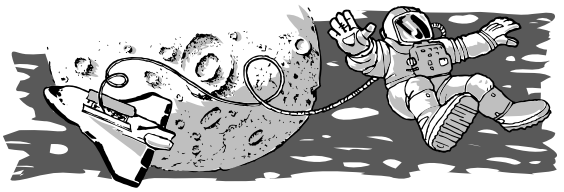
In 1998, American astronaut John H. Glenn became the oldest person to travel into space. He was 77 years old at liftoff. The ages of some of the other oldest astronauts of all time were 54, 59, 61, 56, 58, and 55.	
Data Without Your Age:	**Data With Your Age:**
Mean age:	**Mean age:**
Median age:	**Median age:**
Mode age:	**Mode age:**

LESSON 6-3

Challenge

Outer Space Outlier

You have been chosen to train as an astronaut! The statisticians at NASA are not happy, because you are a major outlier for their data. Use the information below to find how you will affect their astronaut data. Some answers depend on student ages. Sample answers are given for age 12.



Youngest Astronauts

In 1970, Russian astronaut Gherman S. Titov became the youngest person to travel into space. He was 25 years old at liftoff. The ages of some of the other youngest astronauts of all time were 26, 29, 28, 27, 26, and 28.

Data Without Your Age:	Data With Your Age:
Mean age: 27	**Mean age:** 25.125
Median age: 27	**Median age:** 26.5
Mode age: 26 and 28	**Mode age:** 26 and 28

Oldest Astronauts

In 1998, American astronaut John H. Glenn became the oldest person to travel into space. He was 77 years old at liftoff. The ages of some of the other oldest astronauts of all time were 54, 59, 61, 56, 58, and 55.

Data Without Your Age:	Data With Your Age:
Mean age: 60	**Mean age:** 54
Median age: 58	**Median age:** 57
Mode age: no mode	**Mode age:** no mode

LESSON 6-3

Problem Solving

Additional Data and Outliers

Use the table to answer the questions.

Successful Films in the U.S.

Film	U.S. Earnings for first release (million $)
E.T. the Extra-Terrestrial	400
Forrest Gump	330
Independence Day	305
Jurassic Park	357
The Lion King	313

1. Find the mean, median, and mode of the earnings data.

mean: $341 million; median: $330 million; mode: none

2. *Titanic* earned more money in the United States than any other film—a total of $600 million! Add this figure to the data and find the mean, median, and mode. Round your answer for the mean to the nearest whole million.

mean: $384 million; median: $343.5 million; mode: none

Circle the letter of the correct answer.

3. In Canada, people watch TV an average of 74 minutes each day. In Germany, people watch an average of 68 minutes a day. In France it is 67 minutes a day, in Spain it is 91 minutes a day, and in Ireland it is 74 minutes a day. Find the mean, median, and mode of the data.

A mean: 74 min.; median: 74 min.; mode: 74 min.

B mean: 74 min.; median: 74.8 min.; mode: 74 min.

C mean: 74.8 min.; median: 74 min.; mode: 24 min.

(D) mean: 74.8 min.; median: 74 min.; mode: 74 min.

4. People in the United States watch more television than in any other country. Americans watch an average of 118 minutes a day! Add this number to the data and find the mean, median, and mode.

(F) mean: 82 min.; median: 74 min.; mode: 74 min.

G mean: 82 min.; median: 74 min.; mode: 118 min.

H mean: 82 min.; median: 91 min.; mode: 74 min.

J mean: 74.8 min.; median: 82 min.; mode: 74 min.

5. In Exercise 2, which data measurement changed the least with the addition of *Titanic*'s earnings?

A the range (C) the median

B the mean **D** the upper extreme

6. In Exercise 4, which measurements best describe the data?

F mean and median

G range and mean

(H) median and mode

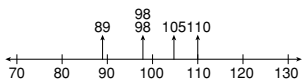
J range and mode

LESSON 6-3

Reading Strategies

Use Graphic Aids

Tim put his bowling scores on a number line.

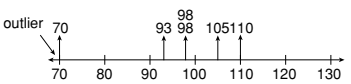


The number line lets you see whether the scores are close together or spread apart.

Recall the measures that describe Tim's scores:

Mean—100 Median—98 Mode—98 Range—21

Tim bowled another game and got a score of 70. This number line includes Tim's new score.



The score of 70 is called an **outlier,** because it is set apart from the other scores.

Answer the following questions.

1. How does the number line help you see the outlier in these scores?

Possible answer: You can see that 70 is set apart from the other scores.

2. Will the mean increase or decrease when the score of 70 is included?

decrease

3. How does the number line help you find the mode?

Possible answer: The numbers are stacked on top of each other.

4. With the addition of the score of 70, will the range increase or decrease?

increase

5. Circle the correct answer: Which measure is not changed with the added score of 70?

median (mode)

LESSON 6-3

Puzzles, Twisters & Teasers

A–Maze–ing Data!

First, answer each question. Then use your answers to navigate through the maze.

1. Consider the data set 2, 4, 6, 8, 8, 8, 10, 12, 14, 16. What happens to the mean if you add the values 3 and 9?

The mean goes down by 0.5. (5 tenths)

2. What is the mean if you add 2 and 18 to the original data set? 9

3. As CEO of a company you notice that your five executives have the following salaries: $65,000, $70,000, $80,000, $80,000, and $72,000. You are hiring a sixth executive and will pay her $78,000. By how many thousands did the median change? 3

4. Consider the data set 6, 8, 10, 12, 12, 12, 14, 16, 18, 20. What happens to the mean if you add the values 22 and 22.7? The mean goes up by 1.6.

5. Consider the data set: 6, 8, 12, 13 and 16. Which statistical measure will change if you add 8 and 14 to the data set?

If Mean move 1 space right If Median move 4 spaces left

(If Mode move 5 spaces down) If none move 3 spaces right

Now you must find your way through this maze to increase the mean of your grades.

Go to start and move down the amount of answer #1 times 10.

Move right the amount of answer #2.

Move up the amount of answer #3.

Move right the amount of answer #4 rounded to the nearest whole number.

Follow the directions for the answer you selected for #5.