

MEAN • MEDIAN

MODE worksheets

SHELLEY GRAY

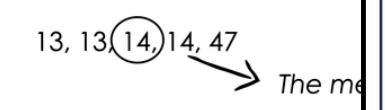
WHY DO WE USE MEDIAN?

We can use the **median** as an alternative to mean. It is one more way to use a central value to describe a data set.

Median is especially useful when there is an **outlier** (or one value that is different from the rest).

EXAMPLE:

Five people in the room have the following ages: 47, 13, 13, 14, 47. We could use the **median** to describe about how old the people in the room are.



What if we used mean instead? $(47+13+14+14+13) \div 5 = 20.2$

As you can see, the median is a better way to describe this data set.

47 is an outlier and skews the mean. It does not have much effect on the median.

Let's use the median:

Yvonne tracks the number of cans recycled per day.

WHAT IS MEAN (AVERAGE)

Mean is a way to describe a data set using only one value. The mean is referred to as the **average**.

How to Calculate the Mean

- 1** Add all the values in the data set. $\rightarrow 5 + 8 + 2 + 5 = 20$
- 2** Divide the sum by the number of values. $\rightarrow 20 \div 4 = 5$

The **mean** (or average) is 5.

Calculate the mean:

4, 1, 6, 5 11, 4, 7

MORE THAN ONE MODE OR NO MODE

If more than one value appears an equal amount of times, there is **more than one mode**.

Example: 9, 2, 6, 2, 9

- 1** Order the values from least to greatest. $\rightarrow 2, 2, 6, 9, 9$
- 2** Identify the values that appear most often. $\rightarrow 2$ and 9

Two values appear twice, so there are **two modes**.

If no values appear more than once, there is **no mode**.

Example: 9, 4, 10, 5, 2

- Order the values from least to greatest. $\rightarrow 2, 4, 5, 9, 10$
- No values appear more than once, so there is **no mode**.

Calculate the mode for each set of values. For each set, write the mode or modes.

3, 8, 4, 1, 2, 1, 8, 5, 10, 1, 4, 8, 9 6, 7, 9, 5, 2, 6 12, 1, 1

WHY DO WE USE MEAN?

We use the **mean**, or **average**, to describe a data set with a single value.

EXAMPLE:

There are three Grade 5 classes in the school. The first class has 20 students. The second class has 24 students. The third class has 19 students.

We could use the **mean** to describe about how many students are in each Grade 5 class.

$$(20 + 24 + 19) \div 3 = 21 \rightarrow \text{The average number of students in each Grade 5 class is 21.}$$

Let's use the mean:

Kendal counts the number of strawberries in four different baskets and records the data:

- Basket #1:** 15 strawberries
- Basket #2:** 18 strawberries
- Basket #3:** 14 strawberries
- Basket #4:** 15 strawberries

What is the mean (average) number of strawberries in the four baskets?

Describe a situation where this information might be useful.

WHAT IS MEDIAN? (MIDDLE NUMBER)

Median is another way to describe a data set using only one value.

How to Calculate the Median

- 1** Order the values from least to greatest. $\rightarrow 2, 7, 8, 9, 16$
 - 2** Identify the middle value. $\rightarrow 2, 7, \textcircled{8}, 9, 16$
- The **median** (or middle value) is **8**.

Calculate the median:

5, 8, 4, 10, 8

Step 1: Order least to greatest: $\rightarrow 4, 5, 8, 8, 10$

Step 2: Circle the middle value. The median is 8.

23, 19, 25, 34, 18, 16, 20

Step 1: Order least to greatest: $\rightarrow 16, 18, 19, 20, 23, 25, 34$

Step 2: Circle the middle value. The median is 20.

Looking for a way to teach and reinforce mean, median, and mode?

These worksheets are a perfect supplement to your lessons and can serve as reinforcement, spiral review, or even an assessment tool!



WHAT IS DATA?

Data is facts or information. For example, your age is data. Your favorite animal is data. The food you last ate is data.

A **data set** is a set of related facts or information. For example, if you surveyed your class about their favorite sports, the information you collected would be a **data set**.

List some other examples of data sets.

Let's collect some data about the number of students in each Grade 5 class. Create a tally chart to organize the data.

January	
February	
March	
April	
May	
June	

Organizing the data and figuring out what the information we collect. On the next page, we will learn ways to describe data – mean, median, and mode.

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WHY DO WE USE MEAN?

We use the **mean**, or **average**, to describe a data set.

EXAMPLE:

There are three Grade 5 classes in the school. The first class has 20 students. The second class has 24 students. The third class has 19 students.

We could use the **mean** to describe about how many students are in each Grade 5 class.

$$(20 + 24 + 19) \div 3 = 21 \rightarrow \text{The average number of students in each Grade 5 class is 21.}$$

Let's use the mean:

Kendal counts the number of strawberries in four different baskets and records the data:

- Basket #1: 15 strawberries
- Basket #2: 18 strawberries
- Basket #3: 14 strawberries
- Basket #4: 15 strawberries

What is the mean number of strawberries in the four baskets?

Describe a situation where this information might be useful.

Dallas is keeping track of how many points his favorite basketball player scores in three games.

- Game #1: 4 points
- Game #2: 2 points
- Game #3: 5 points

What is the mean (or average) number of points he scores per game?

PRACTICING MEAN

Calculate the **mean** for each data set below. Show your work.

21, 14, 14, 12, 20

75, 39

47, 32

34, 5

120, 1

86, 44

6, 2, 1

PRACTICING MEAN

Calculate the **mean** for each of the following situations. Show your work.

What is the **mean cost** of a shirt?

Why might this information be useful?

What is the **mean** of the following data set? Show your work.

WHAT IS MEAN? (AVERAGE)

Mean is a way to describe a data set using only one value. We often refer to the mean as the **average**.

How to Calculate the Mean **Example:** 5, 8, 2, 5, 7, 3

- 1 Add all the values in the data set. $\rightarrow 5 + 8 + 2 + 5 + 7 + 3 = 30$
- 2 Divide the sum by the number of values. $\rightarrow 30 \div 6 = 5$

The **mean** (or average) is 5.

Calculate the mean:

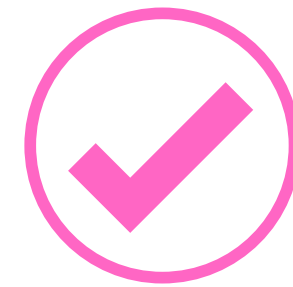
4, 1, 6, 5	11, 4, 7, 12, 10
Step 1: $4 + 1 + 6 + 5 =$ _____	Step 1: $11 + 4 + 7 + 12 + 10 =$ _____
Step 2: _____ $\div 4 =$ _____	Step 2: _____ $\div 5 =$ _____
The mean is _____.	The mean is _____.

worksheets provide scaffolding as students learn new concepts

IDEAS FOR USE



extra reinforcement at a station or center



as an assessment tool - end-of-unit assessment or to identify misconceptions



as spiral review



to guide small group math lessons

INCLUDES

15

WORKSHEETS

WHY DO WE USE MEDIAN?
We can use the **median** as an alternative to mean. It is one more way to use a central value to describe a data set.
Median is especially useful when there is an **outlier** (or a value that is much different from the rest).
EXAMPLE:
Five people in the room have the following ages: 47, 13, 14, 14, 13
We could use the **median** to describe the room are.
What if we used mean instead? (47, 13, 13, 14, 14)
As you can see, the median is a better central value of this data set.
47 is an outlier and skews the mean.
Let's use the median:
Yvonne tracks the number of cans sold each day.
Monday: 24 cans
Tuesday: 19 cans
Wednesday: 20 cans
Thursday: 76 cans
Friday: 25 cans
Is there an **outlier** in this data set?
Now calculate the **mean** and **median** of this data set.

MORE THAN ONE MODE OR NO MODE
If more than one value appears an equal amount of times, there is **more than one mode**.
Example: 9, 2, 6, 2, 9
least to greatest. \rightarrow 2, 2, 6, 9, 9
appear most often. \rightarrow (2, 2), 6, (9, 9)
there are **two modes**. The modes are 2 and 9.
once, there is **no mode**.
to greatest. \rightarrow 2, 4, 5, 9, 10
once, so there is **no mode**.
set of values. For some there may be no mode or

WHAT IS MEAN? (AVERAGE)
Mean is a way to describe a data set using only one value. We often hear the mean referred to as the **average**.
How to Calculate the Mean
1 Add all the values in the data set. $\rightarrow 5 + 8 + 2 + 5 + 7 + 3 = 30$
2 Divide the sum by the number of values. $\rightarrow 30 \div 6 = 5$
The **mean** (or average) value is **5**.
Example: 5, 8, 2, 5, 7, 3

Calculate the mean:
4, 1, 6, 5
Step 1: $4 + 1 + 6 + 5 =$ _____
Step 2: _____ $\div 4 =$ _____
The mean is _____.

11, 4, 7, 12, 10
Step 1: $11 + 4 + 7 + 12 + 10 =$ _____
Step 2: _____ $\div 5 =$ _____
The mean is _____.

17, 23, 24
Step 1: $17 + 23 + 24 =$ _____

96, 57

Ready to take the guesswork out of teaching mean, median, and mode? Check out the bundle!

MEAN • MEDIAN • MODE

ACTIVITIES

Bundle

SHELLEY GRAY

MEAN
AVERAGE

Add the values. Then divide by the total number of values.

MEDIAN

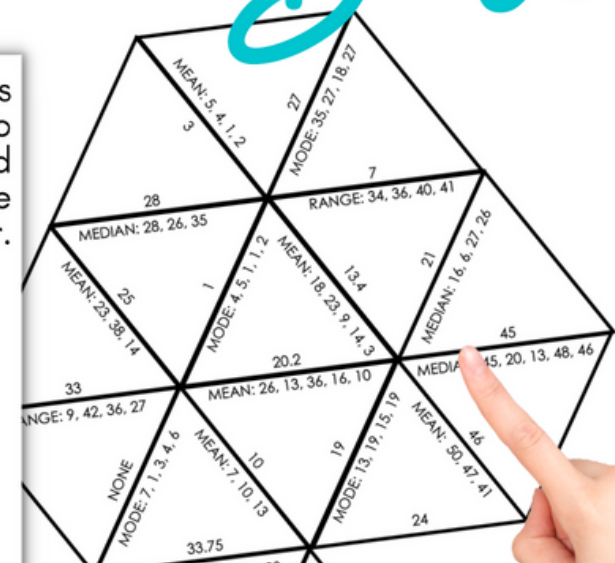
MIDDLE

Order values least to greatest. Find the middle number.

(3 +

3, 5, 3, 4, 10

3, 3, 4, 5, 10



TASK #2 **TICKET PRICES**

The first thing you decide to investigate is ticket prices. Could that be the reason for the loss in revenue?

Ticket prices vary based on where fans are seated. The table below shows the prices in each section. There are an equal number of seats in each section.

Section	Ticket Price
1	\$75
2	\$67
3	\$42
4	\$28
5	\$13

What is the mean (average) ticket price? Show your work.

TASK #5 **GIFT SHOP**

You have a sneaking suspicion that the gift shop is not doing as well as it could be. Let's dig into the data.

First, you ask the gift shop manager to provide you with the amounts of the sales of the last game. He gives you the following amounts:

17, 4, 17, 35, 17, 17, 25, 4, 17, 17, 25, 17, 17, 4, 25

Arrange these amounts into ascending order, to make them easier to analyze.

Section	Ticket Price

If there are two middle numbers, add them up and divide by 2