

Diving for Treasure (Grades 3-5)



Math Question:

Imagine that you are diving in the ocean for lost treasure. You find a treasure chest full of gems, mostly diamonds and rubies. They are worth a lot of money! How many handfuls will it take for you to get 500 gems?

Connections to Math Standards:

Diving for Treasure is an activity that encourages children to collect data and to use appropriate statistical methods to analyze and interpret data.

Materials:

- 25 or more gems, beans, pieces of macaroni, or other small items to serve as counters
- Paper bag
- Calculator
- Mean, median, mode, and range definitions and example page explaining mean, median, and mode
- Score sheet

Helpful Hint:

Glass gems can often be purchased at a dollar store.

Directions:

1. Place gems (or other counters) in a paper bag.
2. Have your child reach in the bag, get a handful, and then count the gems.
3. On the score sheet, record the number of gems in the handful.
4. Place the gems back in the bag and repeat the process nine more times, recording the number of gems retrieved in each handful.
5. Find the mean, median, mode, and range of the set of data that was collected.
6. Using this information, calculate how many dives are needed to retrieve 500 gems.

Questions Parents Can Ask:

- How many gems do you think you will get in the next handful? Why?
- Are the mean and median close?
- How many dives do you think it would take to retrieve 500 gems? How do you know?

Definitions and Example

Mean: the sum of a set of numbers divided by the number of numbers in the set.

Median: the middle number of a set of numbers when the numbers are arranged from least to greatest (or greatest to least). If there are two numbers in the middle, use the mean of the two numbers to express the median.

Mode: the number that is the most frequent in a set of numbers. In any given set of data, there can be one mode, more than one mode, or no mode at all.

Range: the difference between the greatest number and the least number in a set of numbers.

Example:

An example set of data is provided; however, your data sets will vary based on the size of your child's hand and the size of the counters.

Dive Number	Number of Gems in one Handful
1	12
2	13
3	14
4	14
5	14
6	15
7	15
8	17
9	18
10	18

- **Mean:** $(12 + 13 + 14 + 14 + 14 + 15 + 15 + 17 + 18 + 18) \div 10 = 15$
- **Median:** There are two numbers in the middle, 14 and 15, so the median is $(14 + 15) \div 2 = 14.5$
- **Mode:** The most frequent number is 14, which occurs 3 times, so the answer is 14
- **Range:** $18 - 12 = 6$

Math Question:

How many handfuls will it take to retrieve 500 gems, using the mean, median, and mode?

Using the Mean: $500 \div 15 = 33.33$, which would require 34 dives

Using the Median: $500 \div 14.5 = 34.48$, which would require 35 dives

Using the Mode: $500 \div 14 = 35.71$, which would require 36 dives

Provided courtesy of West Virginia Parent Connections at Edvantia. Preparation of these materials was supported in whole or in part by funds from the U.S. Department of Education, Office of Innovation and Improvement, under grant #U310A060257. The content does not necessarily reflect the views of the Department of Education, any other agency of the U.S. government, or any other source.

Score Sheet

Dive Number	Number of Gems in one Handful
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Mean**Median****Mode****How many handfuls will it take to retrieve 500 gems, using the mean, median, and mode?**

Provided courtesy of West Virginia Parent Connections at Edvantia. Preparation of these materials was supported in whole or in part by funds from the U.S. Department of Education, Office of Innovation and Improvement, under grant #U310A060257. The content does not necessarily reflect the views of the Department of Education, any other agency of the U.S. government, or any other source.