

Lesson 11 Probability and Statistics

An average is a number that best represents all the numbers in a group. You probably come in contact with averages every day: a bowling average or the average income of a particular job. A median is a type of average. It is the number that falls exactly in the middle of a set of numbers when the numbers are arranged in order of least to greatest.

Example The weekly earnings of five people are shown in the chart. What is the best estimate of their average weekly earnings? What is the best estimate of the median earnings?

Earnings

| | |
|---------|-------|
| Carlos | \$759 |
| Loretta | \$197 |
| Andy | \$553 |
| Marcia | \$905 |
| Darryl | \$431 |

Step 1. Find the average. First add the numbers in the list. Regroup as needed.

$$\begin{array}{r}
 22 \\
 \$759 \\
 \$197 \\
 \$553 \\
 \$905 \\
 + \$431 \\
 \hline
 \$2845
 \end{array}$$

Step 2. Next count the number in the list and divide the sum by that amount. There are 5 numbers in the list, so divide \$2845 by 5. \$569 is the average weekly income.

$$\begin{array}{r}
 569 \\
 5 \overline{)2845} \\
 \underline{-25} \\
 34 \\
 \underline{-30} \\
 45 \\
 \underline{-45} \\
 0
 \end{array}$$

Step 3. Because the question asks for the best "estimate," round the answer to the nearest ten.

\$569

↓
9 is greater than 5, so add 1 to the 6 in the tens' place and change the 9 in the ones' place to 0. \$569 is rounded up to \$570.

Step 4. To find the median, arrange the numbers from least to greatest. The number in the middle is known as the median. Because the problem asks for the best estimate, round the median to the nearest ten.

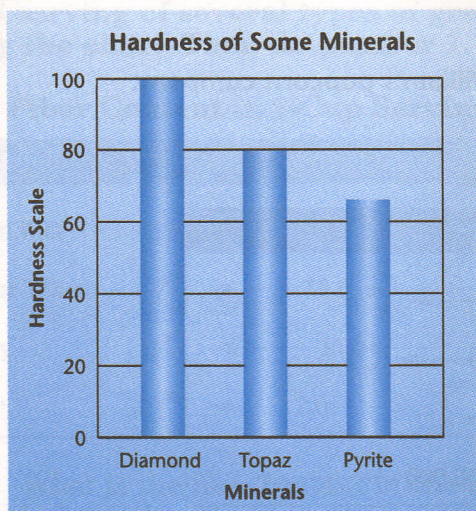
\$197 \$431 \$553 \$759 \$905

↓
3 is less than 5, so the 5 in the tens' place remains unchanged. Change the 3 in the tens' place to 0. \$553 is rounded down to \$550.

The average weekly earnings estimate is \$570. The median weekly earnings estimate is \$550.

Test Example

Study the chart. Then do number 1.



1 What is the best estimate of the average hardness of these minerals?

- A 80
- B 70
- C 100
- D 10060

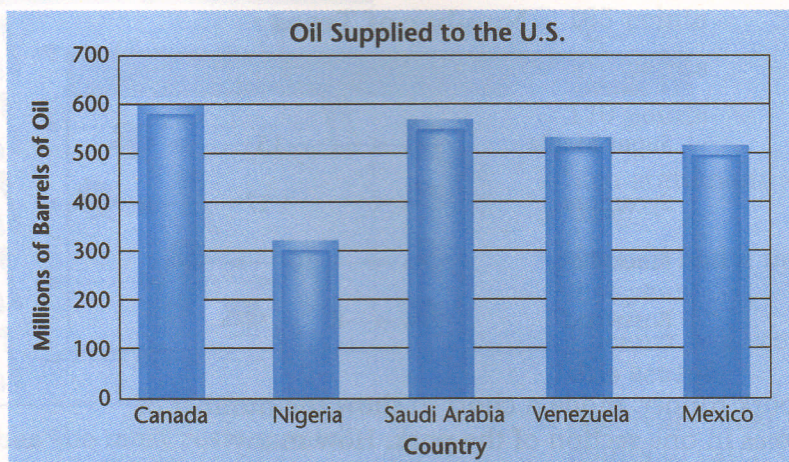
Hint

Count how many numbers you add together to determine what to divide by.

- 1 A Add $100 + 80 + 63 = 243$. You have 3 minerals, so you will divide by 3. $243 \div 3 = 81$. 81 rounded down to the nearest ten is 80.

Practice

This graph shows the countries supplying the most oil to the United States. Study the graph. Then do number 1.



1 Which of these is the best estimate of the median amount of oil supplied by the five countries?

- A 300 million barrels
- B 400 million barrels
- C 600 million barrels
- D 500 million barrels

Check your answers on page 118.