

Chapter 9: Statistics and probability**CH 9.1 - Determining probability using fractions**

Learning Intention: I will learn to analyze a set of data in order to determine, compare, and interpret the mean, median, and mode

Mean: Average

- The **SUM** of a set of values **DIVIDED** by the number of **VALUES** in the set

Example**Key Points**

Jimothy's first 5 grizzly mile times were 7:36:00, 8:14:00, 12:56:00, 6:56:00, 7:45:00. What is Jimothy's average grizzly mile time?

- You can represent time using the format

minutes : seconds : milliseconds

7 : 36 : 00

★ Need to convert run times into seconds (or minutes).

$$7:36 \rightarrow 7 \times 60 + 36 = 456 \text{ seconds}$$

$$8:14 \rightarrow 8 \times 60 + 14 = 494 \text{ seconds}$$

$$12:56 \rightarrow 12 \times 60 + 56 = 776 \text{ seconds}$$

$$6:56 \rightarrow 6 \times 60 + 56 = 416 \text{ seconds}$$

$$7:45 \rightarrow 7 \times 60 + 45 = 465 \text{ seconds}$$

- Find the sum of all the times

- Divide the combined time by the number of values in the data set (5)

$$\textcircled{1} \text{ Sum} = 456 + 494 + 776 + 416 + 465 = 2608 \text{ seconds.}$$

② Divide by # of values (5)

$$\text{Mean} = \frac{2608 \text{ seconds}}{5} = 521.6 \text{ seconds.}$$

Mode:

- The most **FREQUENTLY** occurring **VALUE** in a set of data
- A data set can have **ONE** mode, **NO** mode, or **MORE** than one mode

Median:

- The **MIDDLE** number in a set of data after the data have been arranged in **ORDER**
- The median of a set with an **EVEN** number of values is the **AVERAGE** of the two median values (halfway between the two median values)

Example

The Vancouver Canucks scored the following number of goals in their last 10 games: 5, 4, 3, 2, 1, 5, 3, 3, 7, 4?

- What is the mode for the number of goals scored?
- What is the median number of goals scored?

Mode: most frequently occurring value.

① order values from least to greatest.

1, 2, 3, 3, 3 4, 4, 5, 5, 7
Mode = 3

Median: middle value.

① order values least → greatest

~~1~~ ~~2~~ ~~3~~ ~~3~~ 3 4 4 5 5 7

median is the average of the two middle values (halfway between)

$$3 + 4 = 7 \quad 7 \div 2 = \boxed{3.5}$$

Median = 3.5

Key Points**To Find Mode**

- Arrange the values in order from **least to greatest**
- Choose the value that repeats the most

To Find Median

- Arrange the values in order from **least to greatest**
- Find the middle value by counting an equal number of values from each end of the set or cross off pairs of least and greatest until you get to the middle
- For sets with an even number of values the median will be halfway between the two middle values