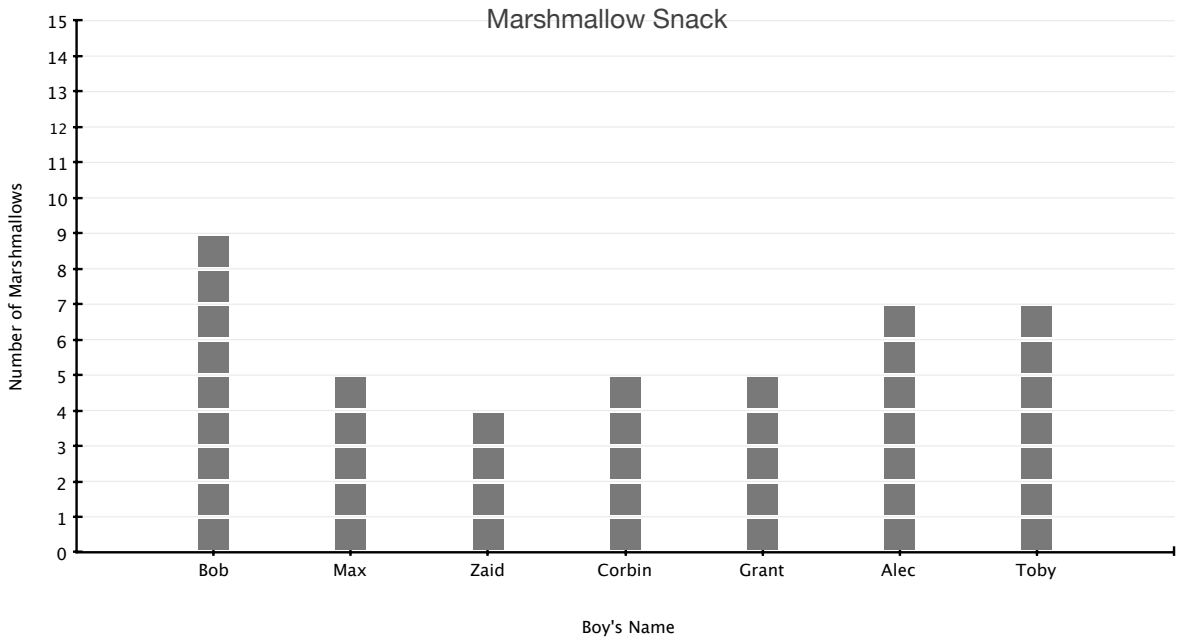
Mean, Median, Mode (Part 1)

Use What You've Learned
Answers and Explanations

1. Seven boys decided to have marshmallows for an after-school snack. The following graph shows the number of marshmallows each boy ate.



The mode, median, and mean are three ways to describe the number of marshmallows eaten by a typical boy in this group.

a. Determine the mode of this set of data.

The mode is the most common number of marshmallows eaten by the boys. The mode is 5 marshmallows.

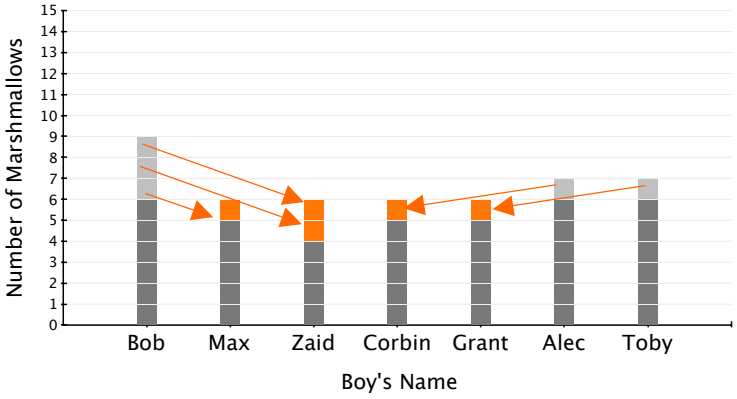
4 5 5 5 7 7 9

b. Determine the median of this set of data.

The median is the middle number when the data is placed in increasing order. The median is 5 marshmallows.

4 5 5 5 7 7 9

c. Determine the mean number of marshmallows by equalizing, or leveling out, the heights of the columns in the bar graph. Indicate your results on the bar graph shown above.



Equalizing the columns of the bar graph results in seven equal columns of 6. The mean is 6 marshmallows.

MakingSense

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2. The following measurements are the heights of the six senior players on the Washington High School boys' basketball team. 6'0" 6'2" 6'0" 6'5" 6'0" 6'5"

   a. Determine the median for this set of data.
   Since there is an even number of basketball players, the median height is halfway between the two middle heights. The median is 6'1", which is halfway between 6'0" and 6'2".

   b. Determine the mode for this set of data.
   The mode is the most common height, or 6'0".

   c. Determine the mean height of the players. Explain how you determined your answer.
   To determine the mean height, equalize the heights among all six players. If you subtract 3" from each player who is 6'5", you get two heights of 6'2", and 6" to distribute to shorter players. Use that 6" to add 2" to each of the three players who are 6'0". This makes all the players 6'2".

   d. Determine the mean height again, using a different strategy. Explain how you determined your answer.
   To determine the mean height, add the heights of all six boys and divide by six.
   One way to do this is to convert each height into inches.
   6'0" = 72" 6'0" = 72" 6'0" = 72" 6'2" = 74" 6'5" = 77" 6'5"= 77"
   Add the heights, divide by 6, and convert back to feet.
   72" + 72" + 72" + 74" + 77" + 77" = 444" 444" ÷ 6 = 74" 74" = 6'2"

   Since each boy is at least 6' tall, add the inches and divide by six to find the mean number of inches over 6 feet.
   0" + 0" + 0" + 2" + 5" + 5" = 12" 12" ÷ 6 = 2" The mean height is 6'2".

3. According to the American Veterinary Medical Association, the mean amount of money spent each year per pet dog is $200. Which of the following statements is true based on this information?
   a. Every pet owner spends $200 each year on veterinary visits for their dog. False
   b. No pet owner spends more than $200 per year on veterinary visits for their dog. False
   c. Some pet owners might spend more than $200 and some might spend $200 or less on veterinary visits for their dog each year. True
   d. All pet owners spend some money on veterinary visits for their dog each year. False

   The mean does not tell the amount of money each pet owner spends on veterinary visits for his or her dog in a year. The mean does tell the amount of money a typical pet owner spends on veterinary visits for his or her dog in one year. If all pet owners would spend the same amount on veterinary visits for their dog each year, the mean tells us they would each spend $200.

4. According to the American Veterinary Medical Association, the mean number of veterinary visits per household each year for pet dogs is 2.6 visits. How can someone make 2.6 visits to the veterinary office?
   Someone cannot make 2.6 visits to the veterinary office in one year. This statistic is the result of adding all the veterinary visits made in one year for pet dogs and dividing by the number of households with pet dogs. Some households make two or less visits and some households make three or more visits. The mean is one way to describe an average or common number of veterinary visits for dogs, but the median or mode may give a truer picture.