Alg 1 Week 14 block 1 Warm Up

1. Solve each equation.

a. $\frac{1}{x-2}=\frac{x}{8}$ b. $\frac{5}{x+1}=\frac{x+2}{x+1}$ c. $\frac{4}{c+4}=\frac{c}{c+25}$

2. Skill 19: Multiply and Divide Rational Expressions.
Simplify the polynomial completely.

$$\frac{7t^2-28t}{2t^2-5t-12}\bullet\frac{6t^2-t-15}{49t^3}$$

3. Solve and check or simplify as indicated:

$\sqrt{5r}+10=15$ $(3\sqrt{7}+\sqrt{3})^2$

$\sqrt{\frac{44x^4}{11}}$ $\sqrt{\frac{36}{5}}$

Notes 12-2 Frequency and Histograms

The **frequency** of an interval is the number of data values in that interval. A **frequency table** groups a set of data values into intervals and shows the frequency for each interval. Intervals in frequency tables do not overlap, do not have any gaps, and are usually of equal size.

Problem 1 Making a Frequency Table

Baseball The numbers of home runs by the batters in a local home run derby are listed below. What is a frequency table that represents the data?

7 17 14 2 7 9 5 12 3 10 4 12 7 15

Home Run Results

Home Runs	Frequency
2–5	
6–9	
10–13	
14–17	

A **histogram** is a graph that can display data from a frequency table. A histogram has one bar for each interval. The height of each bar shows the frequency of data in the interval it represents. There are no gaps between bars. The bars are usually of equal width.

Problem 2 Making a Histogram

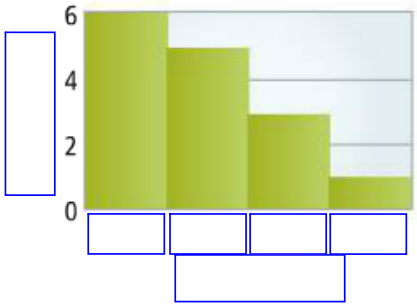
Television The data below are the numbers of hours per week a group of students spent watching television. What is a histogram that represents the data?

7 10 1 5 14 22 6 8 0 11 13 3 4 14 5

Watching Television

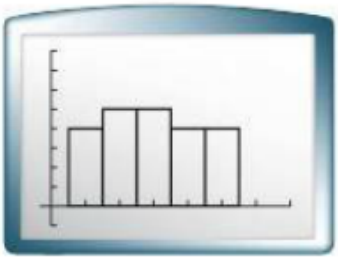
Hours	Frequency
0–5	
6–11	
12–17	
18–23	

Watching Television

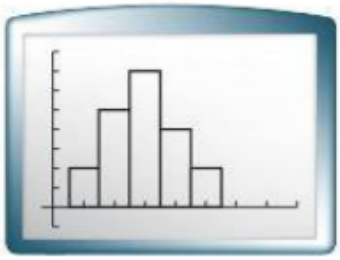


Use the intervals from the frequency table for the histogram. Draw a bar for each interval. Make the height of each bar equal to the frequency of its interval. The bars should touch but not overlap. Label each axis.

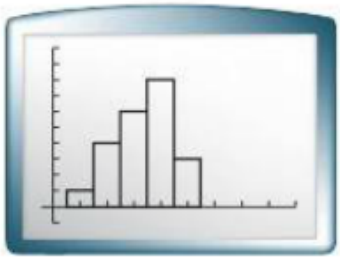
You can describe histograms in terms of their shape. Three types are shown below.



If the bars are roughly the same height, the histogram is *uniform*.



If a vertical line can divide the histogram into two parts that are close to mirror images, then the histogram is *symmetric*.

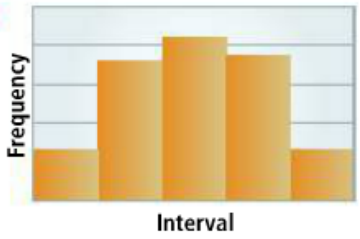


If the histogram has one peak that is not in the center, the histogram is *skewed*.

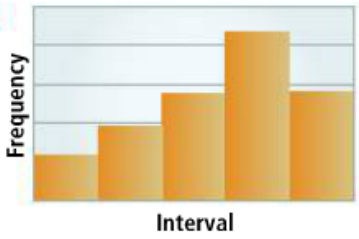
Problem 3 Interpreting Histograms

Is each histogram *uniform*, *symmetric*, or *skewed*?

A



B



Got It? **3. a.** The following set of data shows the numbers of dollars Jay spent on lunch over the last two weeks. Make a histogram of the data. Is the histogram *uniform*, *symmetric*, or *skewed*?

17 1 4 11 14 14 5 16 6 5 9 10 13 9

b. Reasoning How much money should Jay plan to bring for lunch next week? Explain your reasoning.

HW: p 735: 1,7, 11,14-17

The data below show battery life, in hours, for different brands of batteries.

12 9 10 14 10 11 10 18 21 10 14 22

1. Make a frequency table of the data.

Use the data to make a frequency table.

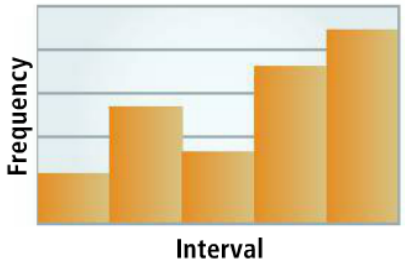
7. wing spans (cm): 150 126 139 144 125 149 133 140 142 149 150 127 130

Use the data to make a histogram. See Proble

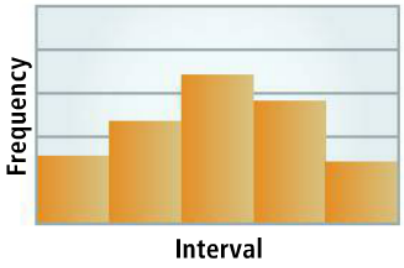
11. ages of relatives: 18 5 27 34 56 54 9 14 35 22 78 94 47 52 2 16 17 10

Tell whether each histogram is *uniform*, *symmetric*, or *skewed*. See Proble

14.



15.



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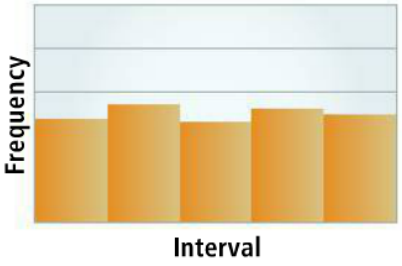
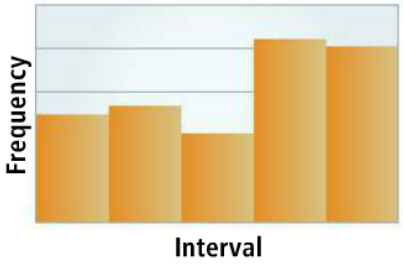


17.



Notes 12-3 Measures of Central Tendency and Dispersion

One way to summarize a set of data is to use a *measure of central tendency*. Mean, median, and mode are all **measures of central tendency.**

The measure of central tendency that best describes a data set may depend on whether the data set has an *outlier*. An **outlier** is a data value that is much greater or less than the other values in the set. Below is a review of mean, median, and mode, and when to use each as the measure of central tendency.

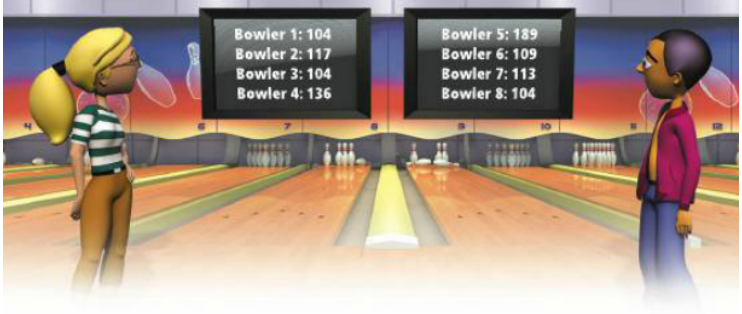
take note

Key Concept Mean, Median, and Mode

Measure	When to Use
The **mean** equals $\frac{\text{sum of the data values}}{\text{total number of data values}}$. The mean is often referred to as the *average*.	Use mean to describe the middle of a set of data that *does not* have an outlier.
The **median** is the middle value in a data set when the values are arranged in order. For a set containing an even number of data values, the median is the mean of the two middle data values.	Use median to describe the middle of a set of data that *does* have an outlier.
The **mode** is the data item that occurs the most times. A data set can have no mode, one mode, or more than one mode.	Use mode when the data are nonnumeric or when choosing the most popular item.

Problem 1 Finding Measures of Central Tendency

Bowling What are the mean, median, and mode of the bowling scores below? Which measure of central tendency best describes the scores?



Problem 2 Finding a Data Value

Grades Your grades on three exams are 80, 93, and 91. What grade do you need on the next exam to have an average of 90 on the four exams?

Got It? **2. a.** The grades in Problem 2 were 80, 93, and 91. What grade would you need on your next exam to have an average of 88 on the four exams?

b. Reasoning If 100 is the highest possible score on the fourth exam, is it possible to raise your average to 92? Explain.

A **measure of dispersion** describes how *dispersed*, or spread out, the values in a data set are. One measure of dispersion is *range*. The **range of a set of data** is the difference between the greatest and least data values.

Problem 3 Finding the Range

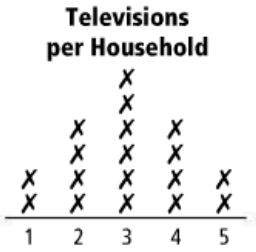
Finance **The closing prices, in dollars, of two stocks for the first five days in February are shown below. What are the range and mean of each set of data? Use the results to compare the data sets.**

Stock A: 25 30 30 47 28

Stock B: 34 28 31 36 31

Problem 4 Finding Measures of Central Tendency and Ranges

The results of a survey on the number of televisions in students' households are shown in the line plot.

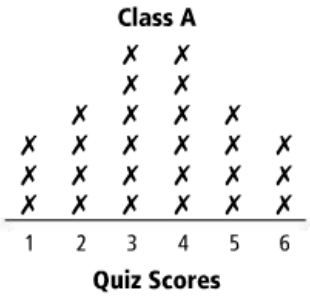


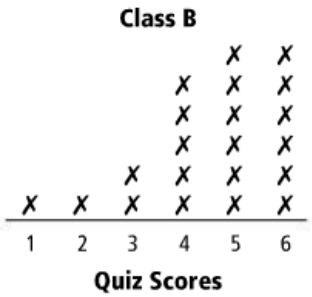
A **Calculate the mean, median, and range of the data.**

B **How can you tell from the graph that the mean and median are equal?**

Problem 5 Comparing Measures of Central Tendency

The results from the same quiz given to two different classes are shown in the line plots.





A **Which class has a higher standard for being in the top half of the quiz scores?**

B **By comparing line plots, how can you tell which mean is greater?**

HW p 735: 7, 11,14-17 &

HW p 742: 3, 5, 7, 9, 11, 13, 21

3. A student has gotten the following grades on his tests: 87, 95, 86, and 88. He needs to have an average of 90 to receive an A for the class. What is the minimum grade he must get on the last test in order to have an average of 90?

5. Error Analysis One student said 10 was the range of the data set 2, 10, 8, and 3. Another student said the range was 8. Which student is correct? Explain.

Find the mean, median, and mode of each data set. Tell which measure of central tendency best describes the data. See Problem 1.

7. weights of books (oz): 12 10 9 15 16 10

9. time spent on Internet (min/day): 75 38 43 120 65 48 52

Find the value of x such that the data set has the given mean. See Problem 2.

11. 3.8, 4.2, 5.3, x; mean 4.8

13. 100, 121, 105, 113, 108, x; mean 112

Determine which data set has a greater mean and a greater median. See Problems 4 and 5.

21.