9.1 & 9.2

Introduction to Statistics & Mean

What is STATISTICS??

Statistics is the _____ of collecting, organizing, analyzing, and interpreting _____.

A **statistical question** is one for which you do not expect to get a _____. Instead, you expect a _____ of answers, and you are interested in the distribution and tendency of those answers.

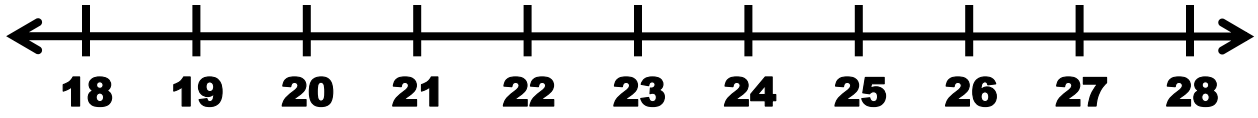
Example 1 – Dot Plots

You conduct a science experiment on house mice. Your teacher asks you, "What is the weight of a mouse?"

a. Is this a statistical question? Explain.

Weights (grams)			
20	19	21	20
18	20	27	21
28	23	20	19
20	21	18	27
19	22	21	20

b. You weigh some mice and record the weights (in grams) in the table. Display the data in a dot plot. Identify any clusters, peaks, or gaps in the data.



Example 1 – Dot Plots

c. Use the distribution of the data to answer the question.

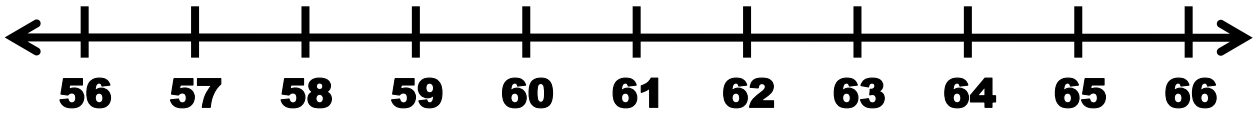
Practice

The table shows the ages of some people who retired early. You are asked, "How old are people who retire early?"

Ages			
60	61	59	60
62	56	64	59
58	60	61	60
59	60	58	61

a. Is this a statistical question? Explain.

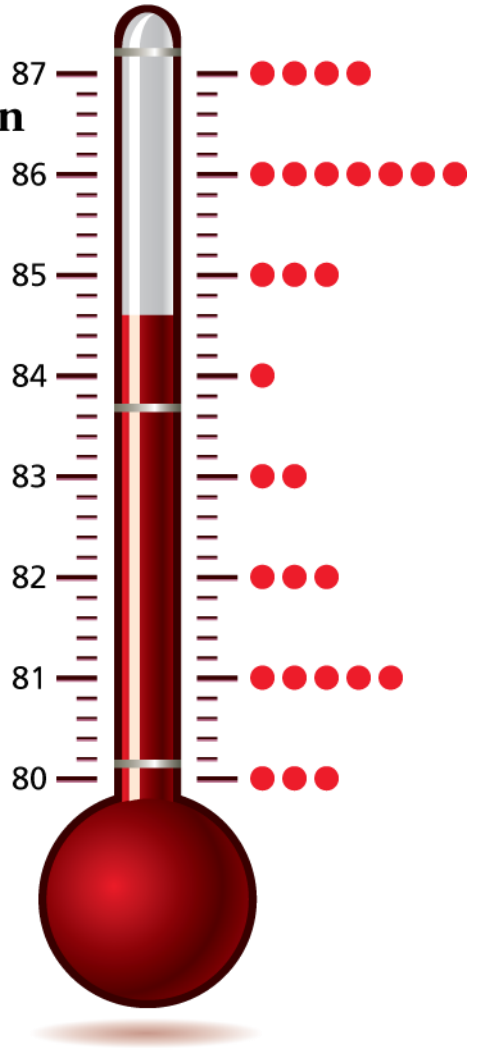
b. Display the data in a dot plot. Identify any clusters, peaks, or gaps in the data.



c. Use the distribution of the data to answer the question.

Example 2 – Using a Dot Plots

You record the high temperature every day while at summer camp in August. Then you create the vertical dot plot.



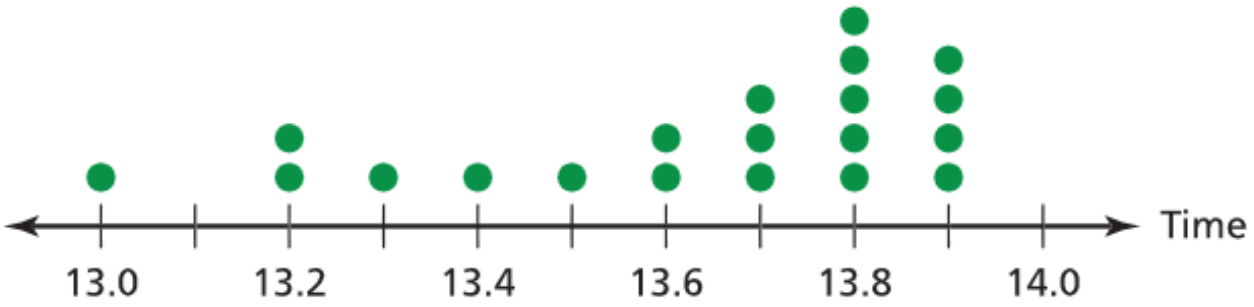
a. How many weeks were you at summer camp?

b. How can you collect these data? What are the units?

c. Write a statistical question that you can answer using the dot plot. Then answer the question.

Practice

The dot plot shows the times of sixth grade students in a 100-meter race.



a. How many students ran in the race?

b. How can you collect these data? What are the units?

c. Write a statistical question that you can answer using the dot plot. Then answer the question.

MEAN

- (Average) – The sum of numbers divided by the amount of numbers

$$\text{Mean} = \frac{\qquad\qquad\qquad\qquad}{\qquad\qquad\qquad\qquad}$$

1) Find the average of the following numbers:

20, 32, 35, 48, and 55

IF YOU GET A DECIMAL ANSWER, ROUND TO THE NEAREST TENTH PLACE

Example 3 – Finding the Mean

Text Messages Sent
Mark: 120
Laura: 95
Stacy: 101
Josh: 125
Kevin: 82
Maria: 108
Manny: 90

The table shows the number of text messages sent by a group of friends over 1 week. What is the mean number of messages sent?

(A) 100 (B) 102 (C) 103 (D) 104

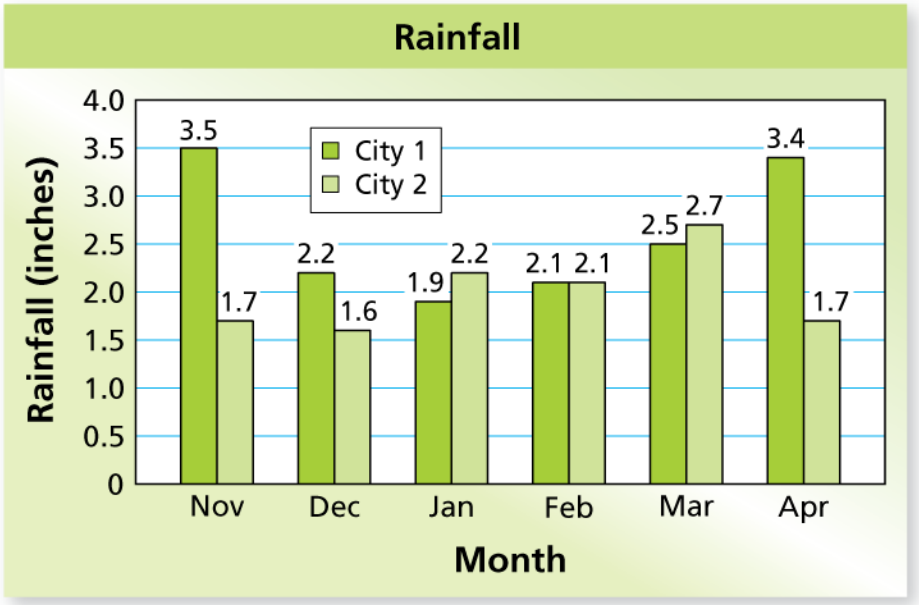
Practice

Find the mean of the data.

30, 81, 50, 24, 15, 64

Example 4 – Comparing Means

The double bar graph shows the monthly rainfall amounts for two cities over a six-month period. Compare the mean monthly rainfalls.



Practice

Compare the mean monthly rainfall (in inches) for the two cities.

City A: 2.5, 4.3, 4.8, 2.7, 1.2

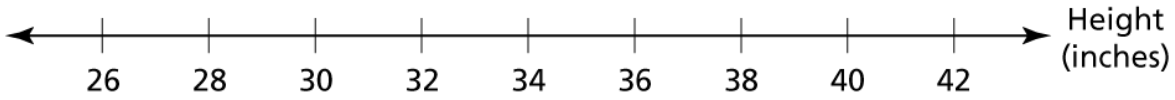
City B: 1.7, 4.1, 5.5, 3.2, 0.5

Example 5 – Outliers and the Mean

Shetland Pony Heights (inches)				
40	37	39	40	42
38	38	37	28	40

The table shows the heights of several Shetland ponies.

a. Identify the outlier.



b. Find the mean with and without the outlier.

Example 5 – Outliers and the Mean

Shetland Pony Heights (inches)				
40	37	39	40	42
38	38	37	28	40

c. Describe how the outlier affects the mean.

With the outlier, the mean is less than all but three of the heights. Without the outlier, the mean better represents the heights.

Practice

The table shows the weights of several kittens.

Kitten Weights (pounds)				
4.5	5.7	4.4	4.45	5.5
5.6	4.7	4.9	7.25	5

a. Identify the outlier.

b. Find the mean with and without the outlier.

c. Describe how the outlier affects the mean.