

1.

$$\text{mean: } \frac{(3 + 3.14 + 3.15 + 3.18 + 3.2 + 3.22 + 3.35 + 3.28 + 3.28 + 3.29)}{10} = 3.209 = 3.21$$

$$\text{median: } \{ \cancel{3}, \cancel{3.14}, \cancel{3.15}, \cancel{3.18}, 3.2, 3.22, \cancel{3.35}, \cancel{3.28}, \cancel{3.28}, \cancel{3.29} \}$$

$$\frac{(3.2 + 3.22)}{2} = 3.21$$

mode: 3.28

2.

$$\text{range: } 3.35 - 3 = 0.35$$

$$\text{IQR: med} = 3.21, Q1 = 3.15, Q3 = 3.28$$

$$3.28 - 3.15 = 0.13$$

3.

$$\text{upper} > Q3 + 1.5(\text{IQR})$$

$$\text{upper} > 3.28 + 1.5(0.13) = 3.475 = 3.48$$

Dan is correct that the bag of popcorn that took 3.6 minutes to pop is an outlier because it is above the upper outlier threshold.

4.

25; The new element is the same as the average, so the average does not change.

5.

$$\text{number of storms: } 45$$

$$\text{old sum: } 9 \times 25 = 225$$

$$\text{desired sum: } 10 \times 27 = 270$$

$$\text{necessary element: } 270 - 225 = 45$$

6.

50%

7.

$$(0.25)(200) = 50 \text{ customers}$$

8.

$$55 - 10 = 45$$

9.

Only 25% of the customers are staying over 40 minutes. Seventy-five percent of the customers stay less than 40 minutes. The manager may have thought that the 3rd quartile, at 40 minutes, represented a percentage.

10.

IQR

11.

standard deviation

12.

mean = 6 standard deviation = 2

$$6 - 2 = 4$$

$$6 + 2 = 8$$

The interval from 4 to 8 is one standard deviation from the mean. The 68-95-99.7 Rule says that there is a 68% chance that the trees will produce between 4 and 8 bushels of apples. Therefore, 68% of the trees in this orchard should be expected to produce between 4 and 8 bushels of apples.

13.

$$10,572 - 9,593 = 979$$

14.

8,614 to 10,572

15.

11,551

16.

 $\{0, 0, 1, 1, 3, 5, 23\}$ 

Q1 = 0, Q3 = 5, IQR = 5

upper  $> 5 + 1.5(5)$ upper  $> 12.5$ new mean:  $\frac{(0+0+1+1+3+5)}{6} = 1.67$ 

The shop owner is correct because Tuesday is an outlier. Tuesday's sales skewed the mean higher than expected. When the outlier is removed, the mean is 1.67 or about 2 umbrellas sold each day. Ursula should use the median to predict future sales.