

## Statistics Test Review

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_ 1. Use the frequency table. Find the probability that a person goes to the movies at least 8 times a month. Round to the nearest thousandth.

#### Trips to the Movies

Number of Movies	Number of Moviegoers
More than 7 movies per month	123
5–7 movies per month	133
2–4 movies per month	265
Less than 2 movies per month	226
<b>Total</b>	<b>747</b>

- a. 0.165                      b. 0.883                      c. 0.343                      d. 0.697

**Find the mean, median, and mode of the data set. Round to the nearest tenth.**

- \_\_\_\_ 2. 15, 13, 9, 9, 7, 1, 11, 10, 13, 1, 13
- a. mean = 9.3,                      b. mean = 8.5,                      c. mean = 9.3,                      d. mean = 8.5,  
median = 8, mode                      median = 10,                      median = 10,                      median = 10,  
=13                      mode = 13                      mode = 13                      mode = 8

**Find the range and interquartile range of the data. Round to the nearest tenth.**

- \_\_\_\_ 3. 259, 125, 158, 168, 187, 334, 198
- a. range = 176; interquartile range = 72                      c. range = 176; interquartile range = 101  
b. range = 209; interquartile range = 72                      d. range = 209; interquartile range = 101

**Find the mean and standard deviation of the of data. Round to the nearest tenth.**

- \_\_\_\_ 4. 20, 16, 18, 14, 9, 20, 16
- a. mean = 16;  
standard deviation = 3.6                      c. mean = 16;  
standard deviation = 12.7  
b. mean = 16.1;  
standard deviation = 3.6                      d. mean = 16.1;  
standard deviation = 12.7
- \_\_\_\_ 5. Another measure of variation is *variance*, which equals  $s^2$ . Find the variance and standard deviation of the data set. Round to the nearest tenth.  
7, 8, 4, 10, 6, 10
- a. variance = 4.6;  
standard deviation = 2.3                      c. variance = 1.5;  
standard deviation = 2.3  
b. variance = 1.5;  
standard deviation = 2.1                      d. variance = 4.6;  
standard deviation = 2.1
- \_\_\_\_ 6. A set of data has mean 66 and standard deviation 7. Find the *z*-score of the value 32.
- a. 0.4                      b. 4.9                      c. -34                      d. -4.9
- \_\_\_\_ 7. Use the frequency table to determine how many students received a score of 60 or better on an English exam.

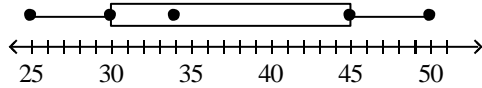
Score	Frequency
50–59	1
60–69	8
70–79	3
80–89	7
90–100	4

- a. 8 students      b. 9 students      c. 14 students      d. 22 students

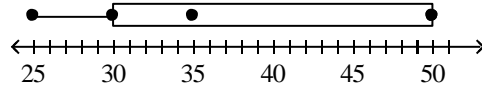
**Draw the box-and-whisker plot for the data.**

8. 33, 50, 30, 45, 30, 41, 27, 34, 50, 49, 40, 40, 35, 25, 28

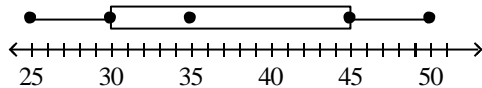
a.



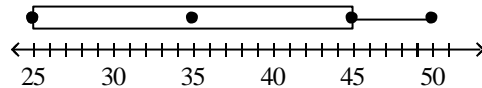
c.



b.



d.



### Short Answer

- Identify the outlier in the set of values. Then describe how the outlier affects the mean of the data.  
10, 32, 3, 12, 20, 30, 36, 32, 74, 26, 16, 7, 20, 33
- A restaurant chain's owners are trying to decide if they want to open up a franchise in your town. To help them decide, they want to find out how often people in your town go out to eat. A researcher interviews people leaving a local restaurant. Is there a bias in this sampling method? Explain.
- A survey is completed by taking samples from teachers at Panther Creek, Green Hope, Cary, and Apex Friendship high schools. Which survey method was used?
- A town is surveying people about a traffic light that is set to be put up soon. The surveyor asked people how they felt about the new light. He asked 100 people age 16-25, 100 people age 26-50, and 100 people over the age of 50. Which survey method did he use?
- Prizes are going to be given at a basketball game by selecting a fan's ticket stub out of a bucket at the beginning of the game, as well as at the end of each quarter. What method of sampling would this be?
- Find the sample size needed to produce the margin of error of  $\pm 2$  pounds if the mean weight of an animal is 80 pounds with a standard deviation of 4 pounds if the researcher wants to be 90% confident.
- Zoe's test score corresponds to a z-score of 2.3, and Josh's test score corresponds to a z-score of -0.4. Which person scored the closest to the class average? Which person got a higher score on the test?

## Statistics Test Review

### Answer Section

#### MULTIPLE CHOICE

1. ANS: A                      PTS: 1                      DIF: L1                      REF: 12-1 Probability Distributions  
OBJ: 12-1.1 Making a Probability Distribution  
NAT: CAT5.LV21/22.45 | CAT5.LV21/22.46 | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.DP | IT.LV17/18.FR | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.11 | TV.LV21/22.12 | TV.LV21/22.15 | TV.LV21/22.47 | TV.LVALG.53 | TV.LVALG.56                      TOP: 12-1 Example 2  
KEY: frequency table | cumulative probability  
MSC: CAT5.LV21/22.45 | CAT5.LV21/22.46 | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.DP | IT.LV17/18.FR | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.11 | TV.LV21/22.12 | TV.LV21/22.15 | TV.LV21/22.47 | TV.LVALG.53 | TV.LVALG.56
2. ANS: C                      PTS: 1                      DIF: L1                      REF: 12-3 Analyzing Data  
OBJ: 12-3.1 Measures of Central Tendency  
NAT: NAEP D1b | NAEP D1d | NAEP D2a | CAT5.LV21/22.47 | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.I | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.15 | TV.LV21/22.17 | TV.LV21/22.49 | TV.LVALG.53  
TOP: 12-3 Example 1                      KEY: mean | median | mode  
MSC: NAEP D1b | NAEP D1d | NAEP D2a | CAT5.LV21/22.47 | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.I | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.15 | TV.LV21/22.17 | TV.LV21/22.49 | TV.LVALG.53
3. ANS: D                      PTS: 1                      DIF: L1                      REF: 12-4 Standard Deviation  
OBJ: 12-4.1 Finding Standard Deviation  
NAT: NAEP D2a | NAEP D2d | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.12 | TV.LV21/22.15 | TV.LVALG.53                      TOP: 12-4 Example 1  
KEY: range | interquartile range  
MSC: NAEP D2a | NAEP D2d | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.12 | TV.LV21/22.15 | TV.LVALG.53
4. ANS: B                      PTS: 1                      DIF: L1                      REF: 12-4 Standard Deviation  
OBJ: 12-4.1 Finding Standard Deviation  
NAT: NAEP D2a | NAEP D2d | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.12 | TV.LV21/22.15 | TV.LVALG.53                      TOP: 12-4 Example 2  
KEY: mean | standard deviation  
MSC: NAEP D2a | NAEP D2d | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.12 | TV.LV21/22.15 | TV.LVALG.53
5. ANS: D                      PTS: 1                      DIF: L2                      REF: 12-4 Standard Deviation  
OBJ: 12-4.1 Finding Standard Deviation  
NAT: NAEP D2a | NAEP D2d | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.12 | TV.LV21/22.15 | TV.LVALG.53                      KEY: standard deviation | variance

MSC: NAEP D2a | NAEP D2d | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.12 | TV.LV21/22.15 | TV.LVALG.53

6. ANS: D PTS: 1 DIF: L1 REF: 12-4 Standard Deviation  
OBJ: 12-4.2 Using Standard Deviation  
NAT: NAEP D2a | NAEP D2d | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.12 | TV.LV21/22.15 | TV.LVALG.53 TOP: 12-4 Example 5  
KEY: standard deviation | z-score  
MSC: NAEP D2a | NAEP D2d | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.12 | TV.LV21/22.15 | TV.LVALG.53
7. ANS: D PTS: 1 DIF: L2 REF: 12-1 Data Analysis and Probability  
OBJ: 12-1.1 Using Frequency Tables to Display Data  
NAT: NAEP D1b | NAEP D1d | CAT5.LV18.53 | CTBS.LV18.53 | ITBS.LV14.PS | S9.Adv1.DSP | S10.Adv1.DSP | TV.LV18.15 STA: 8NC 4.01 TOP: 12-1 Example 1  
KEY: frequency table  
MSC: NAEP D1b | NAEP D1d | CAT5.LV18.53 | CTBS.LV18.53 | ITBS.LV14.PS | S9.Adv1.DSP | S10.Adv1.DSP | TV.LV18.15
8. ANS: B PTS: 1 DIF: L1 REF: 12-2 Box-and-Whisker Plots  
OBJ: 12-2.1 Making Box-and-Whisker Plots  
NAT: NAEP D2b | NAEP D2d | CAT5.LV18.51 | CAT5.LV18.53 | CTBS.LV18.51 | CTBS.LV18.53 | ITBS.LV14.PS | S9.Adv1.DSP | S10.Adv1.DSP | TV.LV18.15 STA: 8NC 4.01  
TOP: 12-2 Example 1 KEY: box-and-whisker plot  
MSC: NAEP D2b | NAEP D2d | CAT5.LV18.51 | CAT5.LV18.53 | CTBS.LV18.51 | CTBS.LV18.53 | ITBS.LV14.PS | S9.Adv1.DSP | S10.Adv1.DSP | TV.LV18.15

## SHORT ANSWER

9. ANS:  
The outlier is 74; it raises the mean from about 21.3 to about 25.1.
- PTS: 1 DIF: L2 REF: 12-3 Analyzing Data  
OBJ: 12-3.1 Measures of Central Tendency  
NAT: NAEP D1b | NAEP D1d | NAEP D2a | CAT5.LV21/22.47 | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.I | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.15 | TV.LV21/22.17 | TV.LV21/22.49 | TV.LVALG.53  
TOP: 12-3 Example 6 KEY: outlier | mean | writing in math  
MSC: NAEP D1b | NAEP D1d | NAEP D2a | CAT5.LV21/22.47 | CAT5.LV21/22.51 | CAT5.LV21/22.53 | IT.LV17/18.CP | IT.LV17/18.DI | IT.LV17/18.I | IT.LV17/18.PS | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.15 | TV.LV21/22.17 | TV.LV21/22.49 | TV.LVALG.53
10. ANS:  
Yes. Explanations may vary. Sample: The survey would likely miss people who eat out infrequently or not at all. People leaving a restaurant are likely to eat out more often than the general population.
- PTS: 1 DIF: L1 REF: 12-5 Working With Samples  
OBJ: 12-5.1 Sampling Without Bias  
NAT: NAEP D3c | CAT5.LV21/22.48 | CAT5.LV21/22.53 | IT.LV17/18.DI | IT.LV17/18.DP | S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.15 | TV.LV21/22.50 | TV.LVALG.53 TOP: 12-5 Example 2

KEY: sample | sampling method | bias | reasoning | writing in math

MSC: NAEP D3c | CAT5.LV21/22.48 | CAT5.LV21/22.53 | IT.LV17/18.DI | IT.LV17/18.DP |

S9.TSK3.DSP | S9.TSK3.NS | S10.TSK3.DSP | S10.TSK3.NS | TV.LV21/22.15 | TV.LV21/22.50 |  
TV.LVALG.53

11. ANS:  
Cluster

PTS: 1

12. ANS:  
Stratified

PTS: 1

13. ANS:  
Random

PTS: 1

14. ANS:  
about 11 animals

PTS: 1

15. ANS:  
Josh; Zoe

PTS: 1