

**Unit 7 Test****Multiple Choice**

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

- \_\_\_\_\_ 1. The data {1, 5, 8, 5, 1} represent a random sample of the number of days absent from school for five students at Monta Vista High. Find the mean and the standard deviation of the data.
- The mean is 20, and the standard deviation is about 7.6.
  - The mean is 4.4, and the standard deviation is about 2.76.
  - The mean is 4, and the standard deviation is about 2.68.
  - The mean is 4, and the standard deviation is about 7.2.
- \_\_\_\_\_ 2. Explain whether the research topic is best addressed through an experiment or an observational study. Then explain how you would set up the experiment or the observational study.

Do people who speak at least two languages fluently tend to earn more money than those who speak only one language?

- The treatment (learning to speak a second language fluently) is both ethical and practical because it is not known to have any negative effects. Use an experiment. Randomly choose a group of people who speak at least two languages. Randomly select another group of people who speak only one language, and have those people learn another language of their choice. Monitor the incomes of both groups to see how long it takes the second group to catch up to the first.
  - The treatment (learning to speak a second language fluently) is both ethical and practical because it is not known to have any negative effects. Use an experiment. Randomly choose a group of people who speak only one language. Randomly select half of those people to learn another language of their choice. Monitor the incomes of both groups at regular intervals.
  - The treatment (learning to speak a second language fluently) is not ethical. Use an observational study. Randomly choose a group of people who speak more than one language. Randomly choose another group of similar people who speak only one language. Monitor the incomes of both groups at regular intervals.
  - The treatment (learning to speak a second language fluently) is impractical. Use an observational study. Randomly choose a group of people who speak more than one language. Randomly choose another group of similar people who speak only one language. Monitor the incomes of both groups at regular intervals.
- \_\_\_\_\_ 3. In the cafeteria, sometimes salads are served and sometimes fruit is served. Linda notes that out of 15 days, 12 days salad is served and 3 days fruit is served. Predict how many days fruit is served in a 180-day school year. If necessary, round your answer to the nearest whole number.
- 33 days
  - 36 days
  - 144 days
  - 45 days

- \_\_\_\_\_ 4. Constellations are made up of more than one star. The table shows the number of stars that make up various constellations. Find the mean, median, and mode of the data set.

Constellation Number	Number of Stars in Constellation
Constellation 1	23
Constellation 2	30
Constellation 3	37
Constellation 4	23
Constellation 5	48

- a. mean = 46.3; median = 30;  
mode = 29
- b. mean = 32.2; median = 30;  
mode = 23
- c. mean = 32.2; median = 37;  
mode = 23
- d. mean = 46.3; median = 37;  
mode = 23
- \_\_\_\_\_ 5. The Fall Dance Committee surveys 20 eleventh and twelfth graders to see what music they would like to hear at the dance. Identify the population and sample.
- a. Population: All eleventh and twelfth graders at the school  
Sample: The 20 students who were surveyed
- b. Population: The 20 students who were surveyed  
Sample: All eleventh and twelfth graders at the school
- \_\_\_\_\_ 6. The study described below is a randomized comparative experiment. Describe the treatment, the treatment group, and the control group.
- A group researching dental health instructs a group of 100 people to brush twice a day for at least two minutes each time. Another 100 people were told to keep their usual brushing habits. After 6 months, the people who were told to brush for two minutes twice a day were significantly less likely to have cavities than those told to brush as usual.
- a. Treatment: Brush for two minutes twice a day.  
Treatment group: The 100 people told to brush for two minutes twice a day.  
Control group: The 100 people told to brush as usual.
- b. Treatment: The 100 people told to brush for two minutes twice a day.  
Treatment group: Brush for two minutes twice a day.  
Control group: The 100 people told to brush as usual.
- c. Treatment: Having fewer cavities.  
Treatment group: The 100 people told to brush for two minutes twice a day.  
Control group: The 100 people told to brush as usual.
- d. Treatment: Brush for two minutes twice a day.  
Treatment group: The 100 people told to brush as usual.  
Control group: The 100 people told to brush for two minutes twice a day.

- \_\_\_\_\_ 7. Determine which sampling method is most likely to be representative of the opinions of voters in an election race for governor of a state.
- Over the course of a week, poll every customer who comes into a car dealership and is willing to answer questions.
  - Ask viewers of the 11:00 P.M. news on a local television station to register their opinions on the station's web site.
  - Send questionnaires to 500 randomly selected registered members of each of the recognized political parties in the state.
  - Call 1000 randomly selected registered voters and ask their opinions.
- \_\_\_\_\_ 8. Explain whether the situation is an experiment or an observational study. A researcher asks people how many hours they exercise per week and examines whether this affects the amount of sleep they get.
- This is an experiment. The researcher gathers data instead of applying a treatment.
  - This is an observational study. The researcher is applying a treatment (exercise) instead of simply gathering data.
  - This is an observational study. The researcher gathers data instead of applying a treatment.
  - This is an experiment. The researcher is applying a treatment (exercise) instead of simply gathering data.
- \_\_\_\_\_ 9. The table shows the probability distribution for the number of people who contract a disease in a scientific study. Find the expected number of people who contract the disease. Round your answer to the nearest tenth.

<b>Number of People</b>	2	3	4	5	6
<b>Probability</b>	0.20	0.32	0.288	0.1536	0.0384

- a. 3.5                      b. 3.0                      c. 4.0                      d. 2.5
- \_\_\_\_\_ 10. The number of calls received by a technical support center during 18 randomly selected days is listed. Identify the outlier, and describe how it affects the mean and the standard deviation.

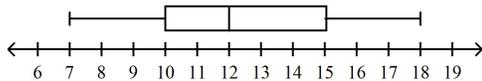
50	57	77	66	53	72
51	88	82	70	62	64
69	88	98	65	14	68

- The outlier is 88. The outlier in the data set causes the mean to increase from about 66.3 to about 69.4 and the standard deviation to decrease from about 18.6 to about 13.7.
- The outlier is 14. The outlier in the data set causes the mean to decrease from about 66.3 to about 69.4 and the standard deviation to increase from about 18.6 to about 13.7.
- The outlier is 88. The outlier in the data set causes the mean to decrease from about 66.3 to about 13.7 and the standard deviation to increase from about 18.6 to about 69.4.
- The outlier is 14. The outlier in the data set causes the mean to decrease from about 69.4 to about 66.3 and the standard deviation to increase from about 13.7 to about 18.6.

- \_\_\_\_\_ 11. A factory produces 28,000 computer monitors per day. The manager of the factory claims that fewer than 870 defective computer monitors are produced each day. In a random sample of 200 computer monitors, there are 3 defective computer monitors. Determine whether the manager’s claim is likely to be true. Explain.
- No, the manager’s claim is not likely to be true. Based on the data, you can predict that there are 880 defective computer monitors produced per day.
  - Yes, the manager’s claim is likely to be true. Based on the data, you can predict that there are 425 defective computer monitors produced per day.
  - No, the manager’s claim is not likely to be true. Based on the data, you can predict that there are 875 defective computer monitors produced per day.
  - Yes, the manager’s claim is likely to be true. Based on the data, you can predict that there are 420 defective computer monitors produced per day.
- \_\_\_\_\_ 12. A manufacturer inspects 400 personal video players and finds that 399 of them have no defects. The manufacturer sent a shipment of 800 video players to a distributor. Predict the number of players in the shipment that are likely to have no defects.
- 798
  - 780
  - 2
  - 399
- \_\_\_\_\_ 13. Decide whether the sampling method could result in a biased sample. Explain your reasoning. A teacher decides to survey the students in her classes to find out their opinion on the new menu in the cafeteria.
- The sample could be biased. The teacher does not teach all the students in the school.
  - The sample is probably not biased. It is a random sample.
- \_\_\_\_\_ 14. Make a box-and-whisker plot of the data. Find the interquartile range.

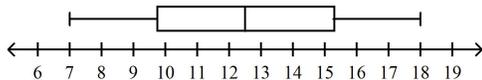
7,9,11,12,13,15,12,17,18,12,9,7,12,15,18,10

a.



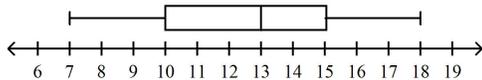
Interquartile range: 5

b.



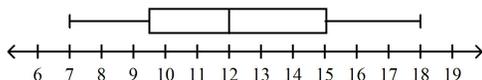
Interquartile range: 5.5

c.



Interquartile range: 5

d.



Interquartile range: 5.5

- \_\_\_\_\_ 15. Determine which sampling method is more likely to be representative of the population. Justify your answer.

Sampling Method	Results of Survey
Tom surveys 40 moviegoers by randomly choosing their ticket numbers.	60% like the movie.
Kim surveys 40 moviegoers that entered the movie theater in the first hour.	80% like the movie.

- a. Kim's method is more likely to be representative of the population because she uses a convenience sample. People that attend early showings of the movie may be more representative of the entire population of moviegoers than those in a random sample.
- b. Tom's method is more likely to be representative of the population because he uses a random sample. All of the moviegoers are equally likely to be selected.
- \_\_\_\_\_ 16. The Soft Landing video game company is about to release a new flight simulator game. If the game is likely to sell to more than 10% of all video game buyers, the company will make 500,000 copies. If it is likely to sell to less than 10%, the company will make 200,000 copies. Soft Landing sends an e-mail survey to everyone who bought their previous flight simulator game. Of 400 people who responded to the survey, 80 said they were "very likely" to buy the new game. Based on the results of the survey, the Soft Landing company makes 500,000 copies of the game. Was this a good decision? Explain why it was a good decision, or, if not, suggest a better way to gather information to make a better information.
- a. This was a good decision. Since 20% of the people surveyed are likely to buy the game, Soft Landing needed to make the greater number (500,000) of games.
- b. This was a poor decision. The sample surveyed was biased, because it only includes people who bought Soft Landing games. These people are more likely to buy another Soft Landing game than one from a different company.  
The company could make a better decision by surveying 100 randomly-selected flight simulator game buyers, not just their own customers.
- c. This was a good decision. Since 20% of their current flight simulator customers are likely to buy the game, Soft Landing needed to make the greater number (500,000) of games.
- d. This was a poor decision. The sample surveyed was biased, because it contained only people who buy flight simulator games. These people are more likely to be interested in a new flight simulator than are game buyers in general.  
The company could make a better decision by surveying 100 randomly-selected video game buyers at several different store locations.

\_\_\_\_ 17. A researcher is considering three methods of evaluating the effects of different fertilizers on corn production

Tell whether each method is a survey, an experiment, or an observational study. Then explain which method would be most reliable.

**Method A:** Monitor production on 200 randomly-chosen corn farms, and see how the fertilizers used on those farms affects production.

**Method B:** Randomly divide 200 corn farmers into two groups. Give each group a different type of fertilizer, and compare the amounts of corn produced.

**Method C:** Choose 200 corn farmers at random. Ask them which fertilizers they used and how they affected the amount of corn produced.

a. In method A, the researcher observes corn production, but does not impose a treatment. This is a survey.

In method B, the researcher gives each group a treatment. This is an experiment.

In method C, the researcher asks questions about how fertilizers affect corn production.

This is an observational study.

In method B, the members in each group are randomly chosen, so they are likely to be similar except for the type of fertilizer used. This method is the most reliable.

b. In method A, the researcher observes corn production, but does not impose a treatment. This is an observational study.

In method B, the researcher gives each group a treatment. This is an experiment.

In method C, the researcher asks questions about how fertilizers affect corn production.

This is a survey.

In method C, the farmers surveyed are randomly chosen, so they are not limited to just the two types of fertilizer used in method B. This method is the most reliable.

c. In method A, the researcher observes corn production, but does not impose a treatment. This is a survey.

In method B, the researcher gives each group a treatment. This is an experiment.

In method C, the researcher asks questions about how fertilizers affect corn production.

This is an observational study.

In method C, the farmers surveyed are randomly chosen, so they are not limited to just the two types of fertilizer used in method B. This method is the most reliable.

d. In method A, the researcher observes corn production, but does not impose a treatment. This is an observational study.

In method B, the researcher gives each group a treatment. This is an experiment.

In method C, the researcher asks questions about how fertilizers affect corn production.

This is a survey.

In method B, the members in each group are randomly chosen, so they are likely to be similar except for the type of fertilizer used. This method is the most reliable.

- \_\_\_\_\_ 18. Which of the following is true about these two data sets?
- {71, 71, 75, 77, 83, 91, 92} and {73, 75, 76, 76, 83, 87, 90}
- a. The variances are equal.                      c. The medians are equal.  
b. The means are equal.                          d. The ranges are equal.
- \_\_\_\_\_ 19. Decide whether the sampling method could result in a biased sample. Explain your reasoning.  
A TV station wants to get the opinions of viewers on the look of a new game-show set. The station's staff e-mails a survey to all viewers who have subscribed to their online program guide.
- a. The sample is probably not biased. It is a random sample.  
b. The sample could be biased. Some people who watch the show do not subscribe to the program guide.
- \_\_\_\_\_ 20. Explain whether the situation is an experiment or an observational study.  
A nutritionist wants to know if taking vitamins keeps people from getting colds. She gives 100 people a vitamin supplement for 2 months, and compares the results to 100 people who do not take vitamins.
- a. This is an experiment. The nutritionist is applying a treatment (taking vitamins) instead of simply gathering data.  
b. This is an experiment. The nutritionist gathers data instead of applying a treatment.  
c. This is an observational study. The nutritionist gathers data instead of applying a treatment.  
d. This is an observational study. The nutritionist is applying a treatment (taking vitamins) instead of simply gathering data.

## Unit 7 Test Answer Section

### MULTIPLE CHOICE

1. ANS: C

**Step 1** Find the mean.

$$\bar{x} = \frac{1+5+8+5+1}{5} = 4$$

**Step 2** Find the difference between the mean and each data value, and square it.

<b>Data Value</b>	<b>1</b>	<b>5</b>	<b>8</b>	<b>5</b>	<b>1</b>
$x - \bar{x}$	-3	1	4	1	-3
$(x - \bar{x})^2$	9	1	16	1	9

**Step 3** Find the variance. Find the average of the last row of the table.

$$\sigma^2 = \frac{9+1+16+1+9}{5} = 7.2$$

**Step 4** Find the standard deviation. The standard deviation is the square root of the variance.

$$\sigma = \sqrt{7.2} \approx 2.68$$

The mean is 4, and the standard deviation is about 2.68.

	<b>Feedback</b>
<b>A</b>	Find the mean, then find the difference between the mean and each data value. Square the differences and take the square root of their average to find the standard deviation.
<b>B</b>	Check your calculations.
<b>C</b>	Correct!
<b>D</b>	The standard deviation is the square root of the variance.

PTS: 1                      DIF: 2                      REF: 17aed95e-4683-11df-9c7d-001185f0d2ea

OBJ: 1-1.4 Finding the Mean and Standard Deviation                      STA: MCC9-12.S.ID.2

LOC: MTH.C.13.04.02.01.01.001 | MTH.C.13.04.02.02.011

TOP: 1-1 Measures of Central Tendency and Variation                      DOK: DOK 3

2. ANS: D

	Feedback
A	The treatment is ethical, but it may not be practical.
B	The treatment is ethical, but it may not be practical.
C	The treatment is ethical, but it may not be practical.
D	Correct!

PTS: 1                    DIF: 2                    REF: 908a36ec-6ab2-11e0-9c90-001185f0d2ea  
 OBJ: 1-3.3 Designing an Experiment or Observational Study    NAT: NT.CCSS.MTH.10.9-12.S.IC.3  
 STA: MCC9-12.S.IC.3                    TOP: 1-3 Surveys, Experiments, and Observational Studies  
 KEY: experiment | observational study    DOK: DOK 3

3. ANS: B

	Feedback
A	Use a proportion to predict the number of days fruit is served.
B	Correct!
C	This is a good prediction for the number of days <i>salad</i> is served. Predict the number of days fruit is served.
D	Use a proportion to predict the number of days fruit is served.

PTS: 1                    DIF: 2                    REF: 9080d490-6ab2-11e0-9c90-001185f0d2ea  
 OBJ: 1-2.3 Using Data to Make Predictions                    NAT: NT.CCSS.MTH.10.9-12.S.IC.1  
 STA: MCC9-12.S.IC.4 | MCC9-12.S.IC.1                    TOP: 1-2 Data Gathering  
 KEY: sample | prediction from a sample    DOK: DOK 3

4. ANS: B

To find the mean, add all the values in the list and divide by 5.  
 To find the median, sort the values in ascending order and choose the third value, which is the middle number, in the sorted list.  
 To find the mode, look for the value that appears the most times in the list.

	Feedback
A	To find the mean, add the data values, then divide by the number of values. To find the mode(s), identify the most-frequently appearing value(s).
B	Correct!
C	To find the median, put the data values in order and find the middle value.
D	To find the mean, add the data values, then divide by the number of values. To find the median, put the data values in order and find the middle value.

PTS: 1                    DIF: 2                    REF: 17aa14a6-4683-11df-9c7d-001185f0d2ea  
 OBJ: 1-1.1 Finding Measures of Central Tendency                    STA: MCC9-12.S.ID.2  
 LOC: MTH.C.13.04.02.01.01.001 | MTH.C.13.04.02.01.003 | MTH.C.13.04.02.01.004  
 TOP: 1-1 Measures of Central Tendency and Variation  
 KEY: central tendency | mean | median | mode                    DOK: DOK 3

5. ANS: A

	Feedback
A	Correct!
B	A sample is part of the population.

PTS: 1                      DIF: 1                      REF: 90772414-6ab2-11e0-9c90-001185f0d2ea  
 NAT: NT.CCSS.MTH.10.9-12.S.IC.1                      STA: MCC9-12.S.IC.4  
 TOP: 1-2 Data Gathering                      KEY: survey | population | sample  
 DOK: DOK 2

6. ANS: A

	Feedback
A	Correct!
B	A group of people is not a treatment. The treatment is the behavior, medication, etc. assigned to a group.
C	Having fewer calories is a result, not a treatment.
D	The people in the treatment group are told to brush for two minutes twice a day.

PTS: 1                      DIF: 2                      REF: 9087fba1-6ab2-11e0-9c90-001185f0d2ea  
 OBJ: 1-3.2 Evaluating a Published Report                      NAT: NT.CCSS.MTH.10.9-12.S.IC.3  
 STA: MCC9-12.S.IC.3 | MCC9-12.S.IC.6  
 TOP: 1-3 Surveys, Experiments, and Observational Studies  
 KEY: experiment | control group | treatment group                      DOK: DOK 3

7. ANS: D

	Feedback
A	There is a sampling method that is more likely to select a random sample.
B	There is a sampling method that is more likely to select a random sample.
C	There is a sampling method that is more likely to select a random sample.
D	Correct!

PTS: 1                      DIF: 2                      REF: 907e4b25-6ab2-11e0-9c90-001185f0d2ea  
 OBJ: 1-2.2 Determining if a Sample is Representative of a Population  
 NAT: NT.CCSS.MTH.10.9-12.S.IC.1 | NT.CCSS.MTH.10.9-12.S.IC.3 | NT.CCSS.MTH.10.9-12.S.MD.6  
 STA: MCC9-12.S.IC.1 | MCC9-12.S.IC.3                      TOP: 1-2 Data Gathering  
 KEY: sample | random | word | real-life | method | survey | poll                      DOK: DOK 3

8. ANS: C

	Feedback
A	In an experiment, the researcher applies a treatment.
B	Is the researcher setting up a control group and a treatment group?
C	Correct!
D	Is the researcher setting up a control group and a treatment group?

PTS: 1                    DIF: 1                    REF: 90859946-6ab2-11e0-9c90-001185f0d2ea  
 OBJ: 1-3.1 Identifying Experiments and Observational Studies   NAT: NT.CCSS.MTH.10.9-12.S.IC.3  
 STA: MCC9-12.S.IC.3                    TOP: 1-3 Surveys, Experiments, and Observational Studies  
 KEY: experiment | observational study    DOK: DOK 2

9. ANS: A

The expected value is the weighted average of all the outcomes of the study.

$$\text{Expected value} = 2(.20) + 3(.32) + 4(.288) + 5(.1536) + 6(.0384) = 3.5104 \approx 3.5$$

	Feedback
A	Correct!
B	To find the expected value, multiply the outcomes by their probabilities.
C	This is the average of the number of people. To find the expected value, multiply the outcomes by their probabilities.
D	To find the expected value, multiply the outcomes by their probabilities.

PTS: 1                    DIF: 2                    REF: 17aa3bb6-4683-11df-9c7d-001185f0d2ea  
 OBJ: 1-1.2 Finding Expected Value  
 NAT: NT.CCSS.MTH.10.9-12.S.MD.5 | NT.CCSS.MTH.10.9-12.S.MD.4  
 STA: MCC9-12.S.MD.2                    LOC: MTH.C.13.05.05.004  
 TOP: 1-1 Measures of Central Tendency and Variation                    DOK: DOK 3

10. ANS: D

The outlier is 14. The outlier in the data set causes the mean to decrease from about 69.4 to about 66.3 and the standard deviation to increase from about 13.7 to about 18.6.

	Feedback
A	An outlier is an extreme value that is much less than or much greater than the other data values.
B	First, find the outlier. Then, compare the mean and standard deviation with and without the outlier.
C	Use a graphing calculator to help you.
D	Correct!

PTS: 1                    DIF: 2                    REF: 17af006e-4683-11df-9c7d-001185f0d2ea  
 OBJ: 1-1.5 Examining Outliers                    NAT: NT.CCSS.MTH.10.9-12.S.ID.3  
 STA: MCC9-12.S.ID.3  
 LOC: MTH.C.13.04.02.01.009 | MTH.C.13.04.02.02.013 | MTH.C.13.04.02.02.014  
 TOP: 1-1 Measures of Central Tendency and Variation                    DOK: DOK 3

11. ANS: D

	Feedback
A	Use a proportion to predict the number of defective monitors produced each day.
B	Use a proportion to predict the number of defective monitors produced each day.
C	Use a proportion to predict the number of defective monitors produced each day.
D	Correct!

PTS: 1                    DIF: 2                    REF: 90830fdb-6ab2-11e0-9c90-001185f0d2ea  
 OBJ: 1-2.3 Using Data to Make Predictions                    NAT: NT.CCSS.MTH.10.9-12.S.IC.1  
 STA: MCC9-12.S.IC.4 | MCC9-12.S.IC.1 | MCC9-12.S.MD.7    TOP: 1-2 Data Gathering  
 KEY: sample | evaluating claims                    DOK: DOK 3

12. ANS: A

	Feedback
A	Correct!
B	Check that you calculated the failure rate correctly.
C	This is the number of players that are likely to <i>have</i> defects. Predict the number that do <i>not</i> have defects.
D	This is the number of defect-free players in the 400 that were originally tested. Predict the number of defect-free players in a shipment of 800 players.

PTS: 1                    DIF: 2                    REF: 9080ad80-6ab2-11e0-9c90-001185f0d2ea  
 OBJ: 1-2.3 Using Data to Make Predictions                    NAT: NT.CCSS.MTH.10.9-12.S.IC.1  
 STA: MCC9-12.S.IC.1 | MCC9-12.S.IC.4                    TOP: 1-2 Data Gathering  
 KEY: sample | prediction from a sample    DOK: DOK 3

13. ANS: A

	Feedback
A	Correct!
B	This is not a random sample. Students who do not have a class with this teacher have no chance of being in the sample.

PTS: 1                    DIF: 2                    REF: 907be8ca-6ab2-11e0-9c90-001185f0d2ea  
 OBJ: 1-2.1 Determining if a Sample is Biased  
 NAT: NT.CCSS.MTH.10.9-12.S.IC.1 | NT.CCSS.MTH.10.9-12.S.MD.6  
 STA: MCC9-12.S.IC.1                    TOP: 1-2 Data Gathering  
 KEY: sample | biased sample                    DOK: DOK 3

14. ANS: D

Order the data from least to greatest.

7, 7, 9, 9, 10, 11, 12, 12, 12, 12, 13, 15, 15, 17, 18, 18  
 ↑        ↑            ↑            ↑            ↑

Find the minimum, maximum, median, and quartiles.

Minimum = 7

Maximum = 18

Median = 12

Lower Quartile = 9.5

Upper Quartile = 15

Interquartile range =  $15 - 9.5 = 5.5$ 

	Feedback
A	Order the data from least to greatest, then find the minimum, maximum, median, and quartiles.
B	Order the data from least to greatest, then find the minimum, maximum, median, and quartiles.
C	Order the data from least to greatest, then find the minimum, maximum, median, and quartiles.
D	Correct!

PTS: 1                    DIF: 2                    REF: 17ac7702-4683-11df-9c7d-001185f0d2ea

OBJ: 1-1.3 Making a Box-and-Whisker Plot and Finding the Interquartile Range

NAT: NT.CCSS.MTH.10.9-12.S.ID.1      STA: MCC9-12.S.ID.1

LOC: MTH.C.13.02.03.016 | MTH.C.13.04.02.02.009

TOP: 1-1 Measures of Central Tendency and Variation                    DOK: DOK 3

15. ANS: B

	Feedback
A	Random samples are usually more representative of a population than are convenience samples.
B	Correct!

PTS: 1                    DIF: 2                    REF: 907c0fda-6ab2-11e0-9c90-001185f0d2ea

OBJ: 1-2.2 Determining if a Sample is Representative of a Population

NAT: NT.CCSS.MTH.10.9-12.S.IC.1 | NT.CCSS.MTH.10.9-12.S.IC.3 | NT.CCSS.MTH.10.9-12.S.MD.6

STA: MCC9-12.S.IC.1 | MCC9-12.S.IC.3                    TOP: 1-2 Data Gathering

KEY: sample | representative sample                    DOK: DOK 3

16. ANS: D

	Feedback
<b>A</b>	Check for bias in the survey method.
<b>B</b>	Is the new sampling method likely to produce a representative sample?
<b>C</b>	Check for bias in the survey method.
<b>D</b>	Correct!

PTS: 1                    DIF: 3                    REF: 90857236-6ab2-11e0-9c90-001185f0d2ea

OBJ: 1-2.4 Using Data to Make Decisions

NAT: NT.CCSS.MTH.10.9-12.S.IC.1 | NT.CCSS.MTH.10.9-12.S.MD.6

STA: MCC9-12.S.IC.1 | MCC9-12.S.MD.7

TOP: 1-2 Data Gathering

KEY: decisions | sampling | bias

DOK: DOK 4

17. ANS: D

	Feedback
<b>A</b>	Check your classifications of methods A and C.
<b>B</b>	Method C uses the farmers' own observations, which may not be as reliable as data gathered by researchers. Also, there may be other differences in the farmers' crop treatments besides fertilizer. There is a more reliable method.
<b>C</b>	Check your classifications of methods A and C.
<b>D</b>	Correct!

PTS: 1                    DIF: 3                    REF: 908c9947-6ab2-11e0-9c90-001185f0d2ea

OBJ: 1-3.4 Evaluating Data Collection Methods

NAT: NT.CCSS.MTH.10.9-12.S.IC.3

STA: MCC9-12.S.IC.3

TOP: 1-3 Surveys, Experiments, and Observational Studies

KEY: experiment | survey | observational study | reliability

DOK: DOK 4

18. ANS: B

The ranges of both sets are not equal:  $92 - 71 = 21$  and  $90 - 73 = 17$ .

The medians of both sets are not equal:  $77 \neq 76$ .

The variances of both sets are not equal:  $67.14 \neq 37.71$ .

The means of both sets are equal:

$$\frac{71 + 71 + 75 + 77 + 83 + 91 + 92}{7} = 80$$

$$\frac{73 + 75 + 76 + 76 + 83 + 87 + 90}{7} = 80$$

	Feedback
A	The variances are not equal.
B	Correct!
C	The median of the first set is 77, and the median of the second set is 76.
D	The range of the first set is 21, and the range of the second set is 23.

PTS: 1                      DIF: 3                      REF: 17b13bba-4683-11df-9c7d-001185f0d2ea

NAT: NT.CCSS.MTH.10.9-12.S.ID.2 | NT.CCSS.MTH.10.9-12.S.ID.3

STA: MCC9-12.S.ID.2 | MCC9-12.S.ID.3

LOC: MTH.C.13.04.02.01.01.001

TOP: 1-1 Measures of Central Tendency and Variation

DOK: DOK 4

19. ANS: B

	Feedback
A	This is not a random sample. Customers who do not subscribe to the program guide have no chance of being in the sample.
B	Correct!

PTS: 1                      DIF: 2                      REF: 9079866f-6ab2-11e0-9c90-001185f0d2ea

OBJ: 1-2.1 Determining if a Sample is Biased

NAT: NT.CCSS.MTH.10.9-12.S.IC.1 | NT.CCSS.MTH.10.9-12.S.IC.3 | NT.CCSS.MTH.10.9-12.S.MD.6

STA: MCC9-12.S.IC.1 | MCC9-12.S.IC.3

TOP: 1-2 Data Gathering

KEY: sample | biased sample

DOK: DOK 3

20. ANS: A

	Feedback
<b>A</b>	Correct!
<b>B</b>	The nutritionist is prescribing a treatment to some subjects and using the others as a control group.
<b>C</b>	The nutritionist is prescribing a treatment to some subjects and using the others as a control group.
<b>D</b>	In an observational study, the researcher gathers data instead of specifying a treatment.

PTS: 1                    DIF: 1                    REF: 9087d491-6ab2-11e0-9c90-001185f0d2ea  
OBJ: 1-3.1 Identifying Experiments and Observational Studies    NAT: NT.CCSS.MTH.10.9-12.S.IC.3  
STA: MCC9-12.S.IC.3                    TOP: 1-3 Surveys, Experiments, and Observational Studies  
KEY: experiment | observational study    DOK: DOK 2

Unit 7 Test [Answer Strip]

ID: J

B 4.

D 7.

D 11.

B 15.

C 1.

C 8.

D 2.

A 12.

D 16.

A 5.

A 13.

A 6.

A 9.

D 14.

D 10.

B 3.

**Unit 7 Test [Answer Strip]**

**ID: J**

  D   17.

  B   18.

  B   19.

  A   20.