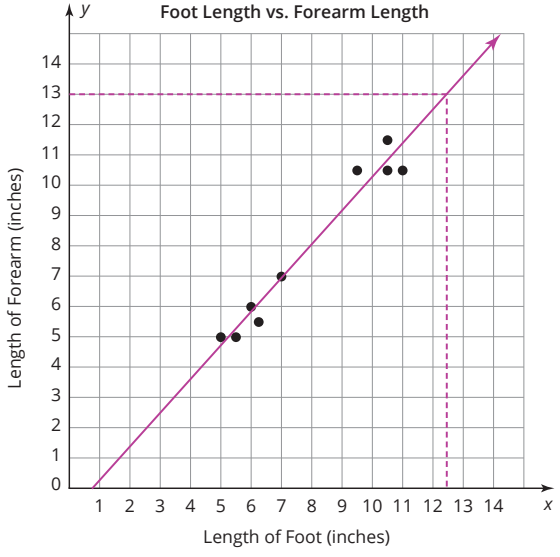
Notes

Name SP- skills practice L1 AP Q Date Lesson 1 Assn prac Q1

1. The scatterplot shows the foot lengths and forearm lengths for a group of people. Based on the scatterplot, what is the best prediction of a person's foot length in inches if the length of their forearm is 13 inches?

8.5D R 1pt



SP set III A
Set IV A

L2 AP Q 3h-i

SP Ext Set III

/

A. 10.5 in.

B. 11 in.

★ **C.** 12.5 in.

D. 14 in.

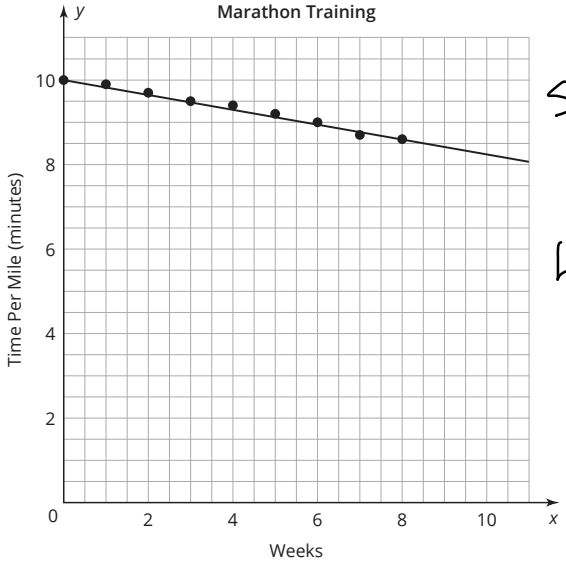
The trend line goes through the point (12.5, 13). The *y*-value, 13, is the forearm length. The *x*-value, 12.5, is the corresponding foot length.

MODULE 3 • TOPIC 1 • END OF TOPIC ASSESSMENT 47

Notes

8.SI
R
1pt

2. Lucia is training for a marathon. She decides to track her time per mile, in minutes, for 8 weeks. A trend line for the data is given. Which equation best fits the data?



Sp set II B
S&I III B

L2APQ 1-2

F. $y = 0.18x + 10.06$

★ **G.** $y = -0.18x + 10.06$

H. $y = 2x + 8.6$

J. $y = -2x + 8.6$

The data has a negative linear relationship so the slope of the line is negative. I can use two points to calculate the approximate slope.

$m = \frac{10 - 9}{0 - 6} = \frac{1}{-6} = -0.167$. This is closer to -0.18 than to -2.

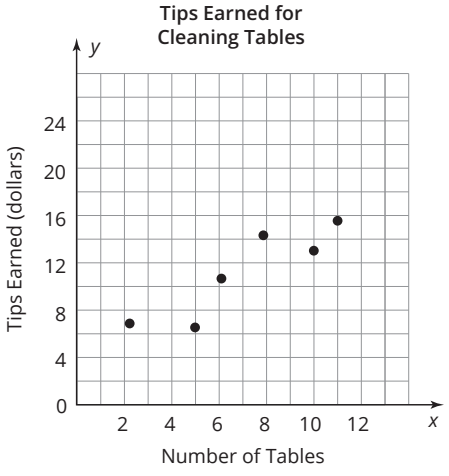
The equation $y = -0.18x + 10.06$ is the equation that best fits the data.

48 MODULE 3 • TOPIC 1 • END OF TOPIC ASSESSMENT

Notes

3. Javier works in a restaurant. Sometimes he clears tables. The scatterplot shows how much he earned in tips by clearing tables on different days. Which statements could be a good prediction of how much Javier will earn by clearing tables? Select **TWO** correct statements.

8.50
R
2 pts



Sp Set III A
Set IV A
Lz Ap Q 3h-i
Sp Ext Set III

★ **A.** Javier will earn about $10 for clearing 6 tables.

B. Javier will earn about $6 for clearing 6 tables.

C. Javier will earn about $12 for clearing 11 tables.

D. Javier will earn about $16 for clearing 13 tables.

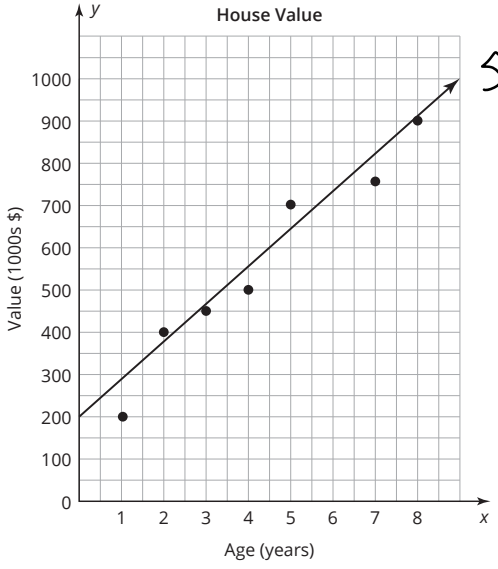
★ **E.** Javier will earn about $13 for clearing 10 tables.

Looking at the y-value for each point on the scatterplot will give the amount Javier earns in tips for each number of tables. The y-value for the point representing 10 tables is approximately $13. The y-value for the point representing 6 tables is approximately $10.

MODULE 3 • TOPIC 1 • END OF TOPIC ASSESSMENT 49

Notes

4. Juliana and Ben bought a house. They keep track of their house's value over the years. A trend line is given for the data. Which equation best fits the trend line for the data and can be used to make predictions?



★ **F.** $y = 75x + 200$

G. $y = -75x + 200$

H. $y = 75x - 200$

J. $y = -75x - 200$

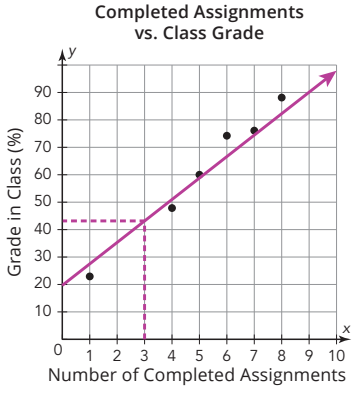
The trend line intersects the *y*-axis at positive 200 so *b* in the equation will be 200. The line increases up to the right which indicates a positive slope. The correct equation is $y = 75x + 200$.

50 MODULE 3 • TOPIC 1 • END OF TOPIC ASSESSMENT

Notes

5. The table and the graph show the number of completed assignments for 7 students and their class grade, as a percentage.

Number of Completed Assignments	7	10	6	5	4	1	8
Grade in Class (%)	76	92	74	60	48	23	88



Draw a trend line. Based on the scatterplot and your trend line, what is the best prediction of the number of completed assignments for a student who has a class grade of 43%?

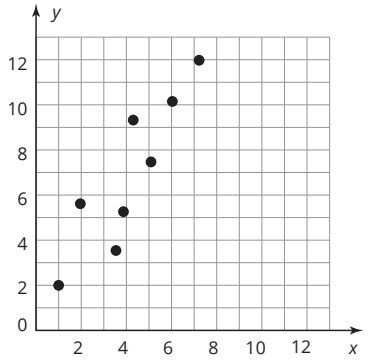
I predict a student with a class grade of 43% has completed 3 assignments.

MODULE 3 • TOPIC 1 • END OF TOPIC ASSESSMENT 51

Notes

8.11A
S
1Pt

6. Consider the scatterplot shown. For the scatterplot, determine if the relationship shown is linear, non-linear, or neither. If the relationship is linear, state whether the relationship is positive, negative, or neither.



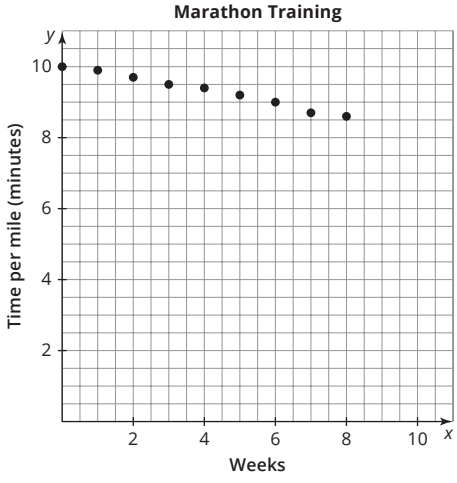
SP Set 1B
L1 APQ 2 ef
4b-d

The relationship is linear and positive.

SP ext Set I

8.5C
S
2pts

7. Lucia is training for a marathon. She decides to track her time per mile, in minutes, for 8 weeks.



SP Set 1B
L1 APQ 1

Is there a linear association between the number of weeks Lucia trains and her time per mile? Explain your reasoning.

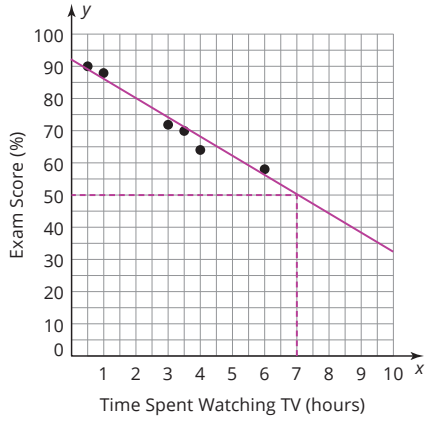
Yes. The association is linear because a line could be drawn so that the points would be clustered close to the line.

52 MODULE 3 • TOPIC 1 • END OF TOPIC ASSESSMENT

Notes

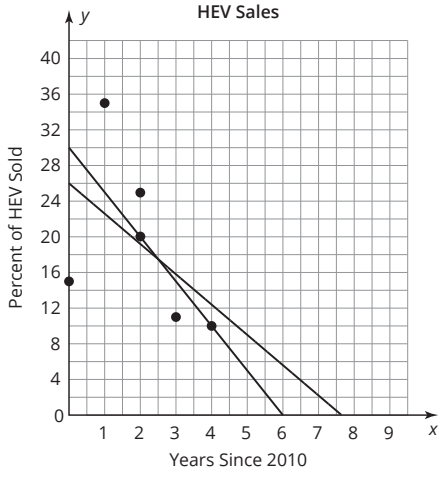
8. Consider the scatterplot shown.

Predict the exam score if a person watches 7 hours of TV.



If a person spent 7 hours watching TV, I predict their exam score will be about 50%.

9. A car dealership tracks its car sales based on the type of car. The graph shows the percent of sales that were Hybrid Electric Vehicles (HEV) for the years since 2010. The trend line for the data is given.



$$m = \frac{10 - 20}{4 - 2}$$
$$= \frac{-10}{2}$$
$$= -5$$

$y = -5x + 30.$

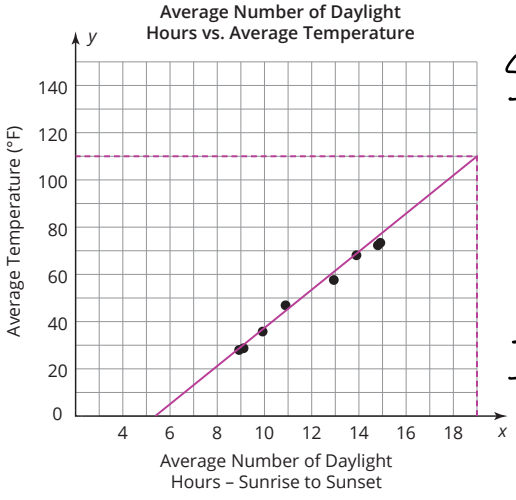
Write the equation of the line that best fits the data.

MODULE 3 • TOPIC 1 • END OF TOPIC ASSESSMENT 53

Notes

8.SD
R
1pt

10. The graph shows several months of weather data for New York. Based on the scatterplot, what is the best prediction for the temperature if there were 16 hours of daylight?



Sp Set III A
Set IV A

L2APQ 3h-i

Sp Ext Set III

85°F

The trend line goes through the point (16, 85). The *x*-value, 16, is the average number of daylight hours. The *y*-value, 85, is the corresponding average temperature.

54 MODULE 3 • TOPIC 1 • END OF TOPIC ASSESSMENT

MODULE 3, TOPIC 1 ASSESSMENT SCORING GUIDE

1 Patterns in Bivariate Data

Proportionality

1 DAY PACING = 45-MINUTE SESSION

The student is expected to:

8.5C contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation.

8.5D use a trend line that approximates the linear relationship between bivariate sets of data to make predictions.

8.5I write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations.

Measurement and Data

The student is expected to:

8.11A construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data.

Question Number	TEKS*	Point Value	Scoring Guidance
1	**8.5D**	1	• The student selects the correct answer. (1 point) • The student does not select the correct answer. (0 points)
2	**8.5I**	1	• The student selects the correct answer. (1 point) • The student does not select the correct answer. (0 points)
3	**8.5D**	2	• The student selects both correct answers. (2 points) • The student selects one of the correct answers. (1 point) • The student does not select any of the correct answers. (0 points)
4	**8.5I**	1	• The student selects the correct answer. (1 point) • The student does not select the correct answer. (0 points)
5	**8.5D**	1	• The student correctly predicts the number of completed assignments. (1 point) • The student does not correctly predict the number of completed assignments. (0 points)
6	8.11A	1	• The student correctly identifies the relationship as linear and positive. (1 point) • The student does not correctly identify the relationship as linear and positive. (0 points)
7	8.5C	2	• The student correctly identifies the linear association and provides valid mathematical reasoning. (2 points) • The student correctly identifies the linear association but does not provide valid mathematical reasoning. (1 point) • The student does not correctly identify the linear association or provide valid mathematical reasoning. (0 points)

*Bold TEKS = Readiness Standard

Question Number	TEKS*	Point Value	Scoring Guidance
8	**8.5D**	1	• The student correctly predicts the exam score. (1 point) • The student does not correctly predict the exam score. (0 points)
9	**8.5I**	1	• The student correctly estimates the equation of the trend line. (1 point) • The student does not correctly estimate the equation of the trend line. (0 points)
10	**8.5D**	1	• The student correctly predicts the temperature. (1 point) • The student does not correctly predict the temperature. (0 points)

*Bold TEKS = Readiness Standard

Response to Student Performance

TEKS*	Question(s)	Recommendations
8.5C	7	**To support students:** • Use Skills Practice Set I.B for additional practice. • Review Lesson 1 Assignment Practice Question 1.
8.5D	1, 3, 5, 8, 10	**To support students:** • Use Skills Practice Sets III.A and IV.A for additional practice. • Review Lesson 2 Assignment Practice Questions 3h-i. **To challenge students:** • Extend student knowledge with Skills Practice Extension Set III.
8.5I	2, 4, 9	**To support students:** • Review the Slope-Intercept equation of a line. • Use Skills Practice Sets II.B and III.B for additional practice. • Review Lesson 2 Assignment Practice Questions 1-2. **To challenge students:** • Extend student knowledge with Skills Practice Extension Set II.
8.11A	6	**To support students:** • Use Skills Practice Set I.B for additional practice. • Review Lesson 1 Assignment Practice Questions 2e-f, 4b-d. **To challenge students:** • Extend student knowledge with Skills Practice Extension Set I.

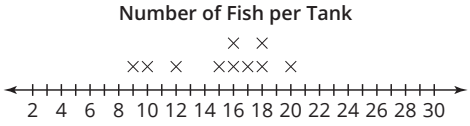
NOTE: Both teachers and administrators should refer to the Assessment Guidance and Analysis section of the Course and Implementation Guide for additional support in analyzing and responding to student data.

*Bold TEKS = Readiness Standard

Notes

Name _____ Date _____

1. A local zoo has an Aquarium House exhibit with a variety of fish. They recorded the number of fish in each of their tanks. The data are shown.



What is the mean absolute deviation of the data?

A. 2

★ **B.** 2.88

C. 15.1

D. 28.8

$$\frac{9 + 10 + 12 + 15 + 16 + 16 + 17 + 18 + 18 + 20}{10} = 15.1$$

$$|15.1 - 9| = 6.1$$
$$|15.1 - 10| = 5.1$$
$$|15.1 - 12| = 3.1$$
$$|15.1 - 15| = 0.1$$
$$|15.1 - 16| = 0.9$$
$$|15.1 - 16| = 0.9$$
$$|15.1 - 17| = 1.9$$
$$|15.1 - 18| = 2.9$$
$$|15.1 - 18| = 2.9$$
$$|15.1 - 20| = 4.9$$

$$\frac{6.1 + 5.1 + 3.1 + 0.1 + 0.9 + 0.9 + 1.9 + 2.9 + 2.9 + 4.9}{10} = 2.88$$

MODULE 3 • TOPIC 2 • END OF TOPIC ASSESSMENT 55

Notes

2. James is practicing to run the quarter mile race in an upcoming track meet. He wrote down his times, in seconds, during practice. His data is shown.
65, 92, 71, 83, 86, 69, 79, 90
What is the mean absolute deviation of the data?

★ **F.** 8.4

G. 8.5

H. 79.3

J. 79.4

$$\frac{65 + 92 + 71 + 83 + 86 + 69 + 79 + 90}{8} = 79.4$$

$$|79.4 - 65| = 14.4$$
$$|79.4 - 92| = 12.6$$
$$|79.4 - 71| = 8.4$$
$$|79.4 - 83| = 3.6$$
$$|79.4 - 86| = 6.6$$
$$|79.4 - 69| = 10.4$$
$$|79.4 - 79| = 0.4$$
$$|79.4 - 90| = 10.6$$

$$\frac{14.4 + 12.6 + 8.4 + 3.6 + 6.6 + 10.4 + 0.4 + 10.6}{8} = 8.4$$

3. Mrs. Flores wants to determine which year-end celebration to choose for the students. She wants student input, so she needs to choose a sample of 20 students from the school. Which of the samples shown are random samples? Select all that apply.

★ **A.** Give each student a number and use a random number generator to select 20 numbers.

B. Choose the 20 students who volunteer for the school fundraising event this Friday.

★ **C.** Put all students' names on slips of paper in a box and select 20 names without looking.

D. Choose the first 20 students from an alphabetized school roster.

E. Choose the last 20 students who arrive to school that day.

A random sample means that every member of the sample population has an equal chance of being chosen.

56 MODULE 3 • TOPIC 2 • END OF TOPIC ASSESSMENT

Notes

4. Ricardo wants to find out if students at a local high school go to the football games. He decides to take a sample rather than ask every student. He asks the first 15 freshmen leaving the library. Which statement about the sample is true?

F. This sample includes the entire student population.

G. This sample is representative of the population.

★ **H.** This sample is not a random sample.

J. This sample gives all students an equal chance of being selected.

A random sample means that every member of the sample population has an equal chance of being chosen. Since not every student has a chance of being in the sample, this is not a random sample.

5. Jackson wants to estimate the number of minutes students spend waiting for the bus each morning. He decides to take a random sample of 10 anonymous students. The results are shown.

Student	Wait Time (min)
A	6
B	9
C	4
D	9
E	10
F	18
G	5
H	12
I	8
J	7

Determine the mean absolute deviation for the data set.

MAD = 2.8 minutes

$$\frac{6 + 9 + 4 + 9 + 10 + 18 + 5 + 12 + 8 + 7}{10} = 8.8$$

$$|8.8 - 6| = 2.8$$
$$|8.8 - 9| = 0.2$$
$$|8.8 - 4| = 4.8$$
$$|8.8 - 9| = 0.2$$
$$|8.8 - 10| = 1.2$$
$$|8.8 - 18| = 9.2$$
$$|8.8 - 5| = 3.8$$
$$|8.8 - 12| = 3.2$$
$$|8.8 - 8| = 0.8$$
$$|8.8 - 7| = 1.8$$

$$\frac{2.8 + 0.2 + 4.2 + 0.2 + 1.2 + 9.2 + 3.8 + 3.2 + 0.8 + 1.8}{10} = 2.8$$

MODULE 3 • TOPIC 2 • END OF TOPIC ASSESSMENT 57

Notes

Use the information shown for Items 6–7.

Nakota is helping set up the sports drinks for a weekend carnival for seventh-graders at his school. He needs to choose three flavors to serve. Rather than asking every single seventh-grader in the school, he decides to take a sample of students.

6. Suppose Nakota decides to use 10 seventh-graders from Mr. Brown's class as the sample. Is this sample a random sample? Explain your reasoning.

   The sample is not random because the students in other classrooms have no chance of being selected.

7. Suppose Nakota assigns every student in seventh grade a different number, writes each number on a slip of paper, places the slips in a cloth bag, and selects 10 slips from the bag without looking. Is this sample a random sample? Explain your reasoning.

   The sample would be a random sample. Every seventh grader in the school has the same chance of being selected.

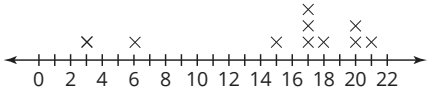
8. Joey has a collection of 48 stuffed animals in assorted sizes in his bedroom. He wants to calculate the approximate total volume of space that his stuffed animals take up. Brianna has a suggestion on how to randomly select stuffed animals. She says, "You can pick the 5 largest stuffed animals to estimate the total volume of space that the animals will take up." Will Brianna's method result in a random sample? Explain your reasoning or suggest a way to modify her strategy.

   Brianna's method will not result in a random sample. If Joey only selects the largest stuffed animals, the mean volume will be skewed.

58 MODULE 3 • TOPIC 2 • END OF TOPIC ASSESSMENT

Notes

9. Nicky wants to estimate the number of points each player earns while playing a math computer game. He decided to take a random sample of 10 anonymous players. The results are shown.



Calculate the mean absolute deviation for the number of points each player earns while playing the math computer game.

$$\frac{3 + 6 + 15 + 17 + 17 + 17 + 18 + 20 + 20 + 21}{10} = \frac{154}{10} = 15.4$$

$$|15.4 - 3| = 12.4$$

$$|15.4 - 6| = 9.4$$

$$|15.4 - 15| = 0.4$$

$$|15.4 - 17| = 1.6$$

$$|15.4 - 17| = 1.6$$

$$|15.4 - 17| = 1.6$$

$$|15.4 - 18| = 2.6$$

$$|15.4 - 20| = 4.6$$

$$|15.4 - 20| = 4.6$$

$$|15.4 - 21| = 5.6$$

$$\frac{12.4 + 9.4 + 0.4 + 1.6 + 1.6 + 1.6 + 2.6 + 4.6 + 4.6 + 5.6}{10} = \frac{44.4}{10} = 4.44$$

The mean absolute deviation is 4.44 points.

MODULE 3 • TOPIC 2 • END OF TOPIC ASSESSMENT 59

Notes

10. Mrs. Tanaka recorded the weight, in pounds, of each of her 8 great grandchildren. Her data is shown.
45, 52, 31, 27, 38, 60, 44, 55
What is the mean absolute deviation of the data?

$$\frac{45 + 52 + 31 + 27 + 38 + 60 + 44 + 55}{8} = \frac{352}{8} = 44$$

$$|44 - 45| = 1$$
$$|44 - 52| = 8$$
$$|44 - 31| = 13$$
$$|44 - 27| = 17$$
$$|44 - 38| = 6$$
$$|44 - 60| = 16$$
$$|44 - 44| = 0$$
$$|44 - 55| = 11$$

$$\frac{1 + 8 + 13 + 17 + 6 + 16 + 0 + 11}{8} = \frac{72}{8} = 9$$

The mean absolute deviation is 9 pounds.

60 MODULE 3 • TOPIC 2 • END OF TOPIC ASSESSMENT

MODULE 3, TOPIC 2 ASSESSMENT SCORING GUIDE

2 Variability and Sampling

Measurement and Data

1 DAY PACING = 45-MINUTE SESSION

The student is expected to:

8.11B Determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points

8.11C Simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected.

Question Number	TEKS*	Point Value	Scoring Guidance
1	8.11B	1	• The student selects the correct answer. (1 point) • The student does not select the correct answer. (0 points)
2	8.11B	1	• The student selects the correct answer. (1 point) • The student does not select the correct answer. (0 points)
3	8.11C	2	• The student selects both correct answers. (2 points) • The student selects one correct answer. (1 point) • The student does not select either of the correct answers. (0 points)
4	8.11C	1	• The student selects the correct answer. (1 point) • The student does not select the correct answer. (0 points)
5	8.11B	1	• The student correctly determines the mean absolute deviation. (1 point) • The student does not correctly determine the mean absolute deviation. (0 points)
6	8.11C	2	• The student correctly states the sample is not random and provides a correct explanation. (2 points) • The student correctly states the sample is not random, but does not provide a correct explanation. (1 point) • The student does not state the sample is not random or provide an explanation. (0 points)
7	8.11C	2	• The student correctly states the sample is random and provides a correct explanation. (2 points) • The student correctly states the sample is random, but does not provide a correct explanation. (1 point) • The student does not state the sample is random or provide an explanation. (0 points)
8	8.11C	2	• The student correctly states the sample is not random and provides a correct explanation. (2 points) • The student correctly states the sample is not random, but does not provide a correct explanation. (1 point) • The student does not state the sample is not random or provide an explanation. (0 points)

*Bold TEKS = Readiness Standard

Question Number	TEKS*	Point Value	Scoring Guidance
9	8.11B	1	• The student correctly determines the mean absolute deviation. (1 point) • The student does not correctly determine the mean absolute deviation. (0 points)
10	8.11B	1	• The student correctly determines the mean absolute deviation. (1 point) • The student does not correctly determine the mean absolute deviation. (0 points)

*Bold TEKS = Readiness Standard

Response to Student Performance

TEKS*	Question(s)	Recommendations
8.11B	1, 2, 5, 9, 10	**To support students:** • Use Skills Practice Sets I.A, I.B, and I.C for additional practice. • Review Lesson 1 Assignment Practice Questions 1-6. **To challenge students:** • Extend student knowledge with Skills Practice Extension Set I.
8.11C	3, 4, 6, 7, 8	**To support students:** • Use Skills Practice Sets II.A and II.B for additional practice. • Review Lesson 2 Assignment Practice Questions 3-4. **To challenge students:** • Extend student knowledge with Skills Practice Extension Set II.
NOTE: Both teachers and administrators should refer to the Assessment Guidance and Analysis section of the Course and Implementation Guide for additional support in analyzing and responding to student data.		

*Bold TEKS = Readiness Standard