

#### Vertical Progression:

<b>4<sup>th</sup> Grade</b>	<p><b>4.MD.B Represent and interpret data.</b></p> <ul style="list-style-type: none"> <li>○ <b>4.MD.B.2</b> Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Solve problems involving addition and subtraction of fractions by using information presented in line plots. <i>For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.</i></li> </ul>
<b>5<sup>th</sup> Grade</b>	<p><b>5.MD.B Represent and interpret data.</b></p> <ul style="list-style-type: none"> <li>○ <b>5.MD.B.2</b> Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Use operations on fractions for this grade to solve problems involving information presented in line plots. <i>For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.</i></li> </ul>
<b>6<sup>th</sup> Grade</b>	<p><b>ELG 6.9 Develop understanding of statistical variability.</b></p> <ul style="list-style-type: none"> <li>○ <b>6.SP.A.1</b> Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. <i>For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.</i></li> <li>○ <b>6.SP.A.2</b> Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.</li> <li>○ <b>6.SP.A.3</b> Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.</li> </ul>
<b>7<sup>th</sup> Grade</b>	<p><b>ELG 7.7 Use random sampling to draw inferences about a population.</b></p> <ul style="list-style-type: none"> <li>○ <b>7.SP.A.1.</b> Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</li> <li>○ <b>7.SP.A.2</b> Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. <i>For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.</i></li> </ul>

#### Students will demonstrate command of the ELG by:

- Understanding that there is variability in the responses to a statistical question.
- Knowing that data collected from a statistical question can be described by its center, spread, and shape.
- Recognizing that the measure of center summarizes all data with a single number.
- Recognizing that the measure of spread or variation summarizes all data with a single number.

#### Vocabulary:

- categorical data
- data
- measure of center
- measure of spread
- numerical data
- skew
- statistical question
- variability

#### Sample Instructional/Assessment Tasks:

##### 1) Standard(s): Standard: 6.SP.A.1

**Source:** Engage New York

**Item Prompt:**

For each of the following, determine whether the question is a statistical question. Give a reason for your answer.

- a. How many letters are in my last name?
- b. How many letters are in the last names of the students in my class?
- c. What are the colors of shoes worn by the students in my school?
- d. What is the maximum number of feet that roller coasters drop during a ride?
- e. What are the heart rates of the students in the 6<sup>th</sup> grade?
- f. How many hours of sleep per night do 6<sup>th</sup> graders usually get when they have school the next day?
- g. How many miles per gallon do compact cars get?

**Correct Answer:**

1. For each of the following, determine whether the question is a statistical question. Give a reason for your answer.

a. How many letters are in my last name?

*No, this question is not answered by collecting data that vary.*

b. How many letters are in the last names of the students in my 6th grade class?

*Yes, there is variability in the lengths of the last names.*

c. What are the colors of the shoes worn by the students in my school?

*Yes, we expect variability in the colors.*

d. What is the maximum number of feet that roller coasters drop during a ride?

*Yes, we expect variability in the feet to drop for different roller coasters; they are not all the same.*

e. What are the heart rates of the students in a 6th grade class?

*Yes, we expect variability – not all 6th graders have exactly the same heart rate.*

f. How many hours of sleep per night do 6<sup>th</sup> graders usually get when they have school the next day?

*Yes, we do not expect that all 6<sup>th</sup> graders sleep the same number of hours.*

g. How many miles per gallon do compact cars get?

*Yes, we expect variability in the miles per gallon – not all compact cars get the same miles per gallon.*

2) Standard(s): 6.SP.A.1

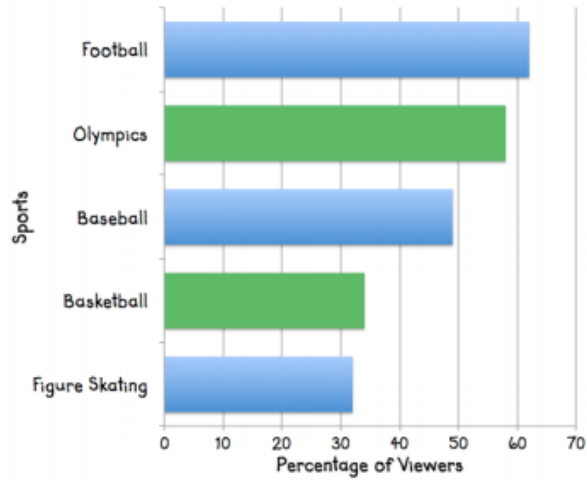
Source: Georgia Dept. of

Ed. [http://www.sandi.net/cms/lib/CA01001235/Centricity/Domain/13262/CCGPS\\_Math\\_6\\_6thGrade\\_Unit6SE.pdf](http://www.sandi.net/cms/lib/CA01001235/Centricity/Domain/13262/CCGPS_Math_6_6thGrade_Unit6SE.pdf)

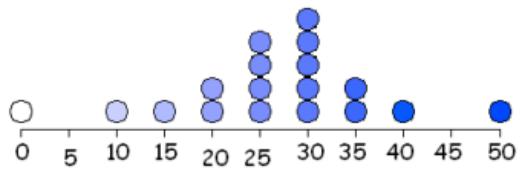
Item Prompt:

4. Look at each graphical display and write a question that COULD have been asked to collect the specific data.

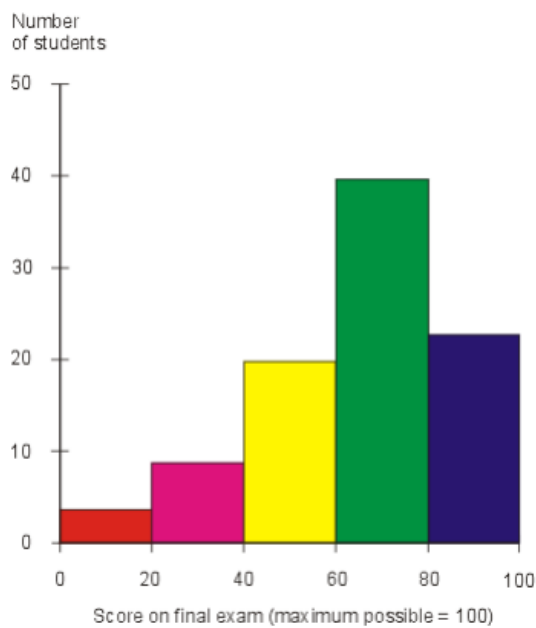
A



B.



C.



**Solution:**

Answers will vary.