NAEP Released Items Aligned to the Iowa Core

6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. 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.

6.SP.2 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.

Student	Score
A	88
B	65
C	91
D	36
E	72
F	57
G	50
H	85
I	62
J	48

The table above shows the scores of 10 students on a final examination. What is the range of these scores?

A. 33
B. 40
C. 55
D. 88

1992-12-5-9

Source: National Assessment of Educational Progress, 1992, Grade 12 Mathematics Assessment.

6.SP.3 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.

6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

6.SP.5 Summarize numerical data sets in relation to their context, such as by:

a. Reporting the number of observations.
b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

For a school report, Luke contacted a car dealership to collect data on recent sales. He asked, "What color do buyers choose most often for their car?" White was the response. What statistical measure does the response "white" represent?

A. Mean
B. Median
C. Mode
D. Range
E. Interquartile range

2009-8-10-11

Source: National Assessment of Educational Progress, 2009, Grade 8 Mathematics Assessment.

The table below shows the number of customers at Malcolm's Bike Shop for 5 days, as well as the mean (average) and the median number of customers for these 5 days.

Number of Customers at Malcolm's Bike Shop	
Day 1	100
Day 2	87
Day 3	90
Day 4	10
Day 5	91
Mean (average)	75.6
Median	90

Which statistic, the mean or the median, best represents the typical number of customers at Malcolm's Bike Shop for these 5 days?

Explain your reasoning.

2007-8-9-8

Source: National Assessment of Educational Progress, 2007, Grade 8 Mathematics Assessment.

The prices of gasoline in a certain region are $1.41, $1.36, $1.57, and $1.45 per gallon. What is the median price per gallon for gasoline in this region?

A. $1.41
B. $1.43
C. $1.44
D. $1.45
E. $1.47

2005-8-12-6

Source: National Assessment of Educational Progress, 2005, Grade 8 Mathematics Assessment.

4, 8, 3, 2, 5, 8, 12

What is the median of the numbers above?

A. 4
B. 5
C. 6
D. 7
E. 8

2003-8-6-28

Source: National Assessment of Educational Progress, 2003, Grade 8 Mathematics Assessment.

Score	Number of Students
90	1
80	3
70	4
60	0
50	3

The table above shows the scores of a group of 11 students on a history test. What is the average (mean) score of the group to the nearest whole number?

2003-8-7-13

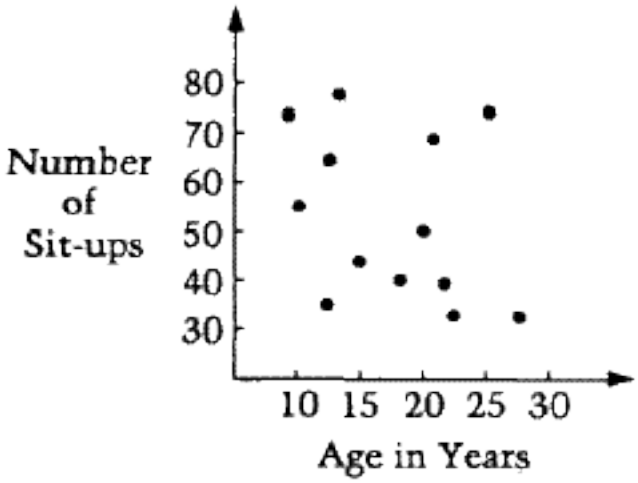
Source: National Assessment of Educational Progress, 2003, Grade 8 Mathematics Assessment.

Akira read from a book on Monday, Tuesday, and Wednesday. He read an average of 10 pages per day. Indicate in the ovals below whether each of the following is possible or not possible.

Possible	Not Possible		Pages Read		
			Monday	Tuesday	Wednesday
		(a)	4 pages	4 pages	2 pages
		(b)	9 pages	10 pages	11 pages
		(c)	5 pages	10 pages	15 pages
		(d)	10 pages	15 pages	20 pages

1992-8-7-12

Source: National Assessment of Educational Progress, 1992, Grade 8 Mathematics Assessment.



In the graph above, each dot shows the number of sit-ups and the corresponding age for one of 13 people. According to this graph, what is the median number of sit-ups for these 13 people?

A. 15
B. 20
C. 45
D. 50
E. 55

1992-8-14-3
1992-12-14-3

Source: National Assessment of Educational Progress, 1992, Grade 8 Mathematics Assessment.

The average weight of 50 prize-winning tomatoes is 2.36 pounds. What is the combined weight, in pounds, of these 50 tomatoes?

A. 0.0472
B. 11.8
C. 52.36
D. 59
E. 118

1990-8-7-5

Source: National Assessment of Educational Progress, 1990, Grade 8 Mathematics Assessment.

There are 15 girls and 11 boys in a mathematics class. If a student is selected at random to run an errand, what is the probability that a boy will be selected?

A. $\frac{4}{26}$

B. $\frac{11}{26}$

C. $\frac{15}{26}$

D. $\frac{11}{15}$

E. $\frac{15}{11}$

1990-8-7-18

Source: National Assessment of Educational Progress, 1990, Grade 8 Mathematics Assessment.

TEMPERATURES ON OCTOBER 1ST
FOR FIVE CITIES (in °F)

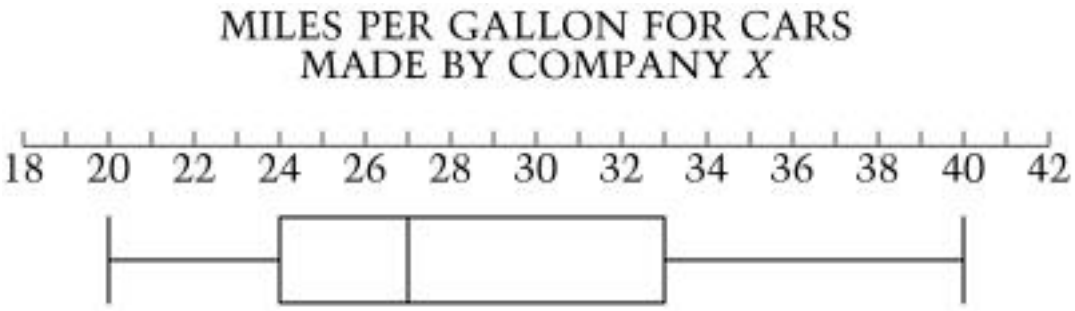
	High	Low
City A	72	50
City B	90	75
City C	83	72
City D	50	37
City E	92	72

The table above shows the high and low temperatures on October 1st for five cities. Which city had the greatest temperature range?

A. City A
B. City B
C. City C
D. City D
E. City E

2009-12-7-1

Source: National Assessment of Educational Progress, 2009, Grade 12 Mathematics Assessment.

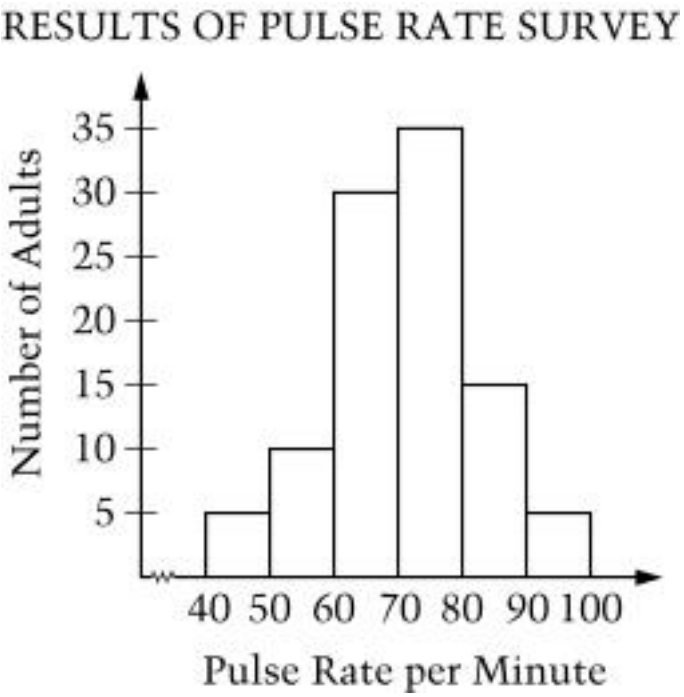


According to the box-and-whisker plot above, three-fourths of the cars made by Company *X* got fewer than how many miles per gallon?

A. 20
B. 24
C. 27
D. 33
E. 40

2005-12-2-3

Source: National Assessment of Educational Progress, 2005, Grade 12 Mathematics Assessment.



The pulse rate per minute of a group of 100 adults is displayed in the histogram above. For example, 5 adults have a pulse rate from 40-49 inclusive. Based on these data, how many individuals from a comparable group of 40 adults would be expected to have a pulse rate of 80 or above?

2005-12-4-15

Source: National Assessment of Educational Progress, 2005, Grade 12 Mathematics Assessment.

This question requires you to show your work and explain your reasoning. You may use drawings, words, and numbers in your explanation. Your answer should be clear enough so that another person could read it and understand your thinking. It is important that you show all of your work.

The table below shows the daily attendance at two movie theaters for 5 days and the mean (average) and the median attendance.

	Theater A	Theater B
Day 1	100	72
Day 2	87	97
Day 3	90	70
Day 4	10	71
Day 5	91	100
Mean (average)	75.6	82
Median	90	72

(a) Which statistic, the mean or the median, would you use to describe the typical daily attendance for the 5 days at Theater A? Justify your answer.

(b) Which statistic, the mean or the median, would you use to describe the typical daily attendance for the 5 days at Theater B? Justify your answer.

1996-12-10-10

Source: National Assessment of Educational Progress, 1996, Grade 12 Mathematics Assessment.

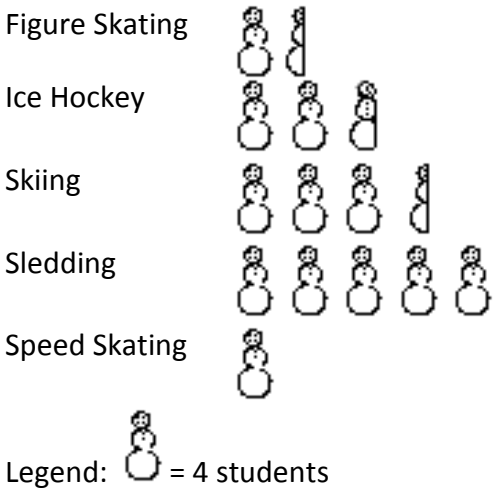
Which of the following pieces of information would NOT be useful in deciding what type of car is the most economical to drive?

A. Median income of drivers
B. Range of insurance costs
C. Average miles per gallon
D. Typical cost of repairs per year
E. Cost of routine maintenance

1996-12-13-5

Source: National Assessment of Educational Progress, 1996, Grade 12 Mathematics Assessment.

FAVORITE WINTER SPORTS
OF EIGHTH GRADE STUDENTS



According to the graph above, about how many students chose skiing as their favorite winter sport?

A. 3½
B. 4
C. 12½
D. 14
E. 16

1990-12-9-6

Source: National Assessment of Educational Progress, 1990, Grade 12 Mathematics Assessment.