

GRADE
The grade reported is the grade at which your student was tested.

TEST DATE
The test date is the month and year that your student took this test.

SUBTESTS AND TOTALS
These are the subjects tested on the SAT 9. Some subjects, such as Reading, are separated into two subtest areas. In that case, the subtest areas are combined statistically to produce a "Total," as in Total Reading.

Number of Items
This number reports the total number of test questions on each test. In this example, there were 84 items that tested your student's knowledge of reading.

Number Correct
The numbers in this column report the number of correct answers your student made on each test. For instance, the student in our example answered 38 of the 84 reading items correctly.

National Scale
The national percentile tells how your student ranked compared to students' scores at the same grade level in a national sample. This rank tells the percent of students who had scores lower than your student's score. (See National Grade Percentile Ranks at the upper right.)

CALIFORNIA READING LIST NUMBER
The Reading List Number tells you which list of state-approved literature would be most appropriate for your student's reading level. The list will help you select books at the correct level for your student to read with you at home. Copies of the list will be available at your student's school in the fall. The list will also be available on the Internet at <http://www.startest.com>.

A Guide to Your Student's STAR Report

STANDARD CALIFORNIA READING LIST NUMBER 87

SCHOOL: DISTRICT: TEST TYPE: MULTIPLE CHOICE GRADE: TEST DATE: 01/08

STAR PARENT REPORT FOR

APR 15 TH 01 HIR GARDNER No. 0003111

NATIONAL GRADE PERCENTILE RANKS

Subtest	Number Correct	Number Tested	Percentile Rank
Reading	38	84	17
Writing	17	40	9
Mathematics	28	50	28
Language Arts	37	80	17
Total	120	254	17

CONTENT CLUSTERS

Cluster	No. of Items	Number Correct	Percentile Rank
Comprehension	16	9	9
Context	7	3	2
Multiple Reading	7	2	2
Writing	18	7	7
Text Organization	18	7	7
Formal	18	7	7
Logical Understanding	10	4	4
Inference	10	5	5
Analysis	10	5	5
Reasoning Strategies	10	5	5
Measurement	5	0	0
Elimination	5	0	0
Problem-Solving Strategies	5	0	0
Number & No. Relationships	5	0	0
No. Systems & No. Theory	5	0	0
Patterns & Functions	5	0	0
Algebra	5	0	0
Geometry	5	0	0
Probability	5	0	0

CALIFORNIA CONTENT STANDARDS

Standard	No. of Items	Number Correct	Percentile Rank
1.0	20	15	15
2.0	40	9	9
3.0	40	17	17
Total	100	41	41

CALIFORNIA READING LIST NUMBER 87

STANDARD LITERATURE: Appendix 27
THE MONKS: Poem 11: National

TO THE PARENTS OF:

NATIONAL GRADE PERCENTILE RANKS
This graph compares your student's performance with that of students at the same grade in a national sample. For example, the student in our example performed as well, or better than, 17 percent of students taking the reading test. The percentile rank is not the percentage of correct answers.

CONTENT CLUSTERS
This section of the report lists all of the tests. Under each subject are the skills tested by the items on that test.

Number of Items
This is the total number of items that test a specific skill. In this example, there were 8 items that tested your student's knowledge of Capitalization.

Number Correct
The number correct reports how many of the items your student answered correctly. For instance, the student in our example correctly answered 4 of the 8 Capitalization items.

CALIFORNIA CONTENT CLUSTERS
This section of the report shows the results on test questions that match the state-adopted content standards for reading, writing, and mathematics.

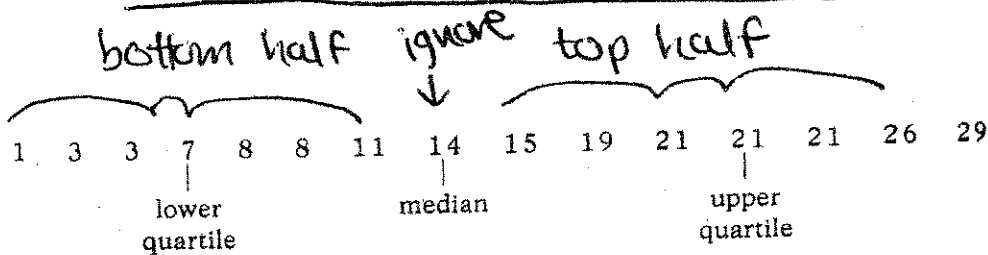
Number of Items
This number is the total number of items that test a specific skill. For example, on this test there were 50 questions related to reading.

Number Correct
The number correct reports how many of the items your student answered correctly. For instance, the student in our example answered 28 of the 50 reading items correctly.

FINDING QUARTILE SCORES

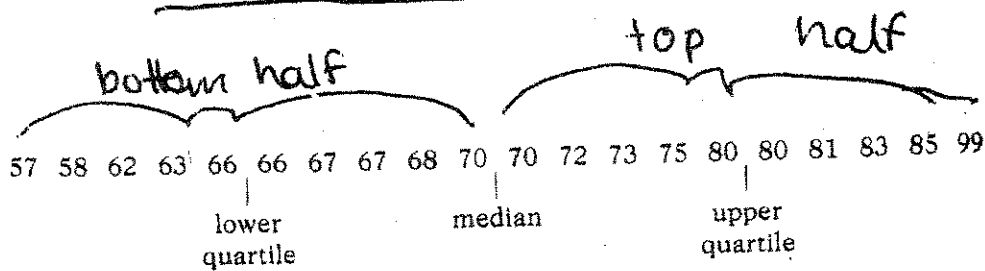
1. Arrange data from smallest to largest (a stem & leaf plot may be useful)
2. Find the median or second quartile score (Q_2). This is the number in the middle of the data set (if an odd number of data values) or the average of the two middle numbers (if an even number of data values).
3. The first (lower) quartile score (Q_1) is the middle number (or average of two middle numbers) of the lower half of the data set. *Always ignore the median when counting the lower or upper half.*
4. The third (upper) quartile score (Q_3) is the middle number (or average of two middle numbers) of the upper half of the data set.

EXAMPLES: odd number of data values



$$Q_1 = 7 \qquad Q_2 = 14 \qquad Q_3 = 21$$

Even number of data values



$$Q_1 = \frac{66 + 66}{2} \qquad Q_2 = \frac{70 + 70}{2} \qquad Q_3 = \frac{80 + 80}{2}$$

$$Q_1 = 66 \qquad Q_2 = 70 \qquad Q_3 = 80$$

STEPS FOR CALCULATING OUTLIERS & 5-NUMBER SUMMARY

Range: Difference between the highest and lowest data values in a set.
(actually subtract: high - low)

Inner-quartile range: Difference between Q3 (highest quartile score) and Q1 (lowest quartile score). $IQR = Q3 - Q1$

1. Order the data set and compute Q1, Q2 (median), and Q3.
2. Find the IQR
3. Multiply the IQR by the number 1.5 (always use 1.5)
4. Compute your *test values*. Find these by the following:
 $Q3 + (1.5)(IQR) = \underline{\hspace{2cm}}$
 $Q1 - (1.5)(IQR) = \underline{\hspace{2cm}}$
5. Compare these test values to your data set. If you have any data values larger or smaller than these numbers are outliers. (Note: *the #'s for in #4 are not outliers or data values, they are just used to test for outliers*).
6. The five-number summary consists of the following 5 numbers:
 - Smallest data value (not an outlier)
 - Q1
 - Q2 (median)
 - Q3
 - Largest data value (not an outlier)
7. The box plot graphs these 5 numbers above (or below) a number line. Outliers are included in a box plot, but are graphed as dots or *

30.3 worksheet

Consider the following data set consisting of 14 test scores:

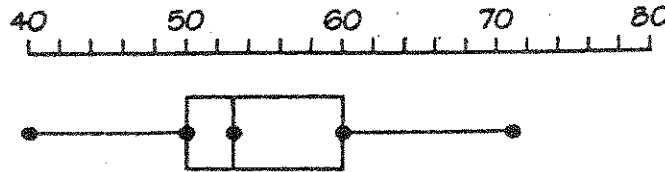
39, 52, 56, 70, 72, 75, 79, 80, 84, 88, 90, 91, 95, 99

- a) Find the quartile scores Q1: _____, Q2: _____, Q3: _____.
- b) Outliers will be observations greater than _____ or less than _____.
- c) List the 5-number summary: _____, _____, _____, _____, _____.
- d) Make a boxplot of the data

Math 312 - Warmup Boxplots

Ages of U.S. Vice-Presidents

The following box plot shows the ages of the 20 twentieth-century vice-presidents at their inaugurations.



1. The youngest vice-president was Richard Nixon. How old was he at his inauguration?
2. The oldest vice-president at inauguration was Alben William Barkley (Truman's V.P.) How old was he at his inauguration?
3. What was the median age at inauguration?
4. What percentage of the vice-presidents were over 60 (the upper quartile)?
5. What percentage of the vice-presidents were younger than 50 (the lower quartile)?
6. Al Gore was 44 at his inauguration. Complete this sentence: There were at least _____ vice-presidents who were older at the time of their inaugurations.
7. Are any of the vice-presidents outliers? How can you tell?

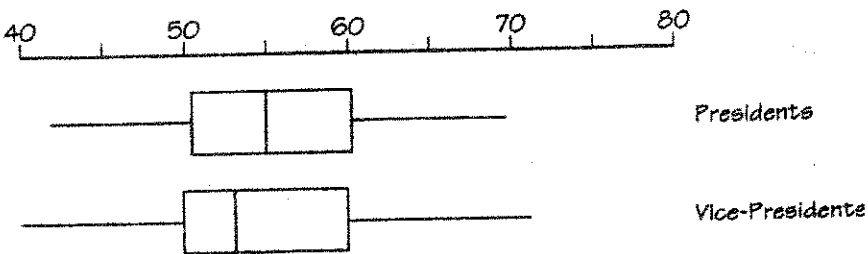
The following table gives the ages of the 17 twentieth-century presidents at the time they took office.

President	Age at Inauguration
T. Roosevelt	42
Taft	51
Wilson	56
Harding	55
Coolidge	51
Hoover	54
F. Roosevelt	51
Truman	60
Eisenhower	62
Kennedy	43
Johnson	55
Nixon	56
Ford	61
Carter	52
Reagan	69
Bush	64
Clinton	46

8. Make a box plot of the ages of the presidents. Below the same number line, copy the box plot of the ages of the vice-presidents.

Answer Key

1. 40 years old
2. 71 years old
3. 53 years old
4. 25%
5. 25%
6. 15, 75%
7. No. We can either estimate the IQR and compute using the $1.5 \times \text{IQR}$ rule or we can imagine one-and-a-half boxes added to the each end of the box. Using either method, there are no outliers.
- 8.



$$Q_1 = 51$$

$$\text{Median} = 55$$

$$Q_3 = 60.5$$

$$\text{IQR} = 9.5$$

$$Q_1 - (1.5 \times \text{IQR}) = 51 - 14.25 = 36.75$$

$$Q_3 + (1.5 \times \text{IQR}) = 60.5 + 14.25 = 74.75$$

no outliers

5 number summary

$$\underline{42}, \underline{51}, \underline{55}, \underline{60.5}, \underline{69}$$

Section 30.3

2. In general they are average to above average readers. Some of the students scored as well as or better than 69% of the students tested, while all of the students in the reading group scored as well as or better than 47% of the students tested. (Instructor only)
6.
 - a. It is difficult to judge without knowing more about the nature of the test. But the scores look typical.
 - b. 25% of the 32, plus the outlier, for a total of 9
 - c. About 5
 - d. Perhaps the aide recorded this test score incorrectly on the computer, and the student actually scored a 95 rather than a 5. Mr. Meyer will probably go back and look at the test scores as they are recorded on each student's test!
7.
 - a. Samples: What is the (1st, 2nd, 3rd) quartile for...? How many women/men...? What are some outliers for the women/men? What is the interquartile range for...?
 - b. What is the average (mean) weight for women in the study? What is the mean weight for the men? How many men weighed between 150 and 160 pounds?
 - c. Women's weights are generally less than men's weights, but men's weights are somewhat more spread out.
 - d. No, since twice as many women as men were surveyed. (7 Instructor only)
8. Without more marks on the scores, the weights are just estimates. With 60 people involved, we will be looking for weights that give four intervals with about 15 people in each. About 10 women (W) weigh less than about 120, plus a few men (M) and more of the W to make 15--1st quartile about 122, say. Similarly, the median might be around 130, and the third quartile about 150. The low woman's weight is about 75 pounds, and the high man's weight is about 255 pounds. $1.5 \times (150 - 122) = 42$, so the 75 is an outlier and the low weight is 100, and the 255 is also an outlier, so the high weight is about 215.
9. On examining the box plot of the distribution of the weights of the 20 men in item 7, one could conclude that about 5 men have weights between about 115 and 150 pounds (so not histograms B and C), about 5 men have weights between 150 and 170 pounds, about 5 men have weights between 170 and 190 pounds, and about 4 men have weights between 180 and 220 pounds (not histogram D). One man has a weight of about 255 pounds. Histogram A looks best. (Instructor only)