

Official SAT Practice

Lesson Plans

for Teachers by Teachers

LESSON 9 (4 OF 5 FOR PROBLEM SOLVING AND DATA ANALYSIS)

More Data and Statistics, Part 1

[More Data and Statistics, Part 2](#)

Subscore: [Problem Solving and Data Analysis](#)

Focus: Analyzing data presented in a table, bar graph, histogram, line graph, or other display

Objectives:

Students will

- analyze data in a table.
- use data to calculate probability.
- answer questions that involve a measure of center for a data set (mean and median) and draw conclusions about these measures.

Before the Lesson:

- Review the Teacher Notes.
- Make sure you have a way to share the example problems with students.
- Make sure students have access to Official SAT[®] Practice during class.
- Preview Part 2 of More Data and Statistics.

Warm Up | 20 minutes

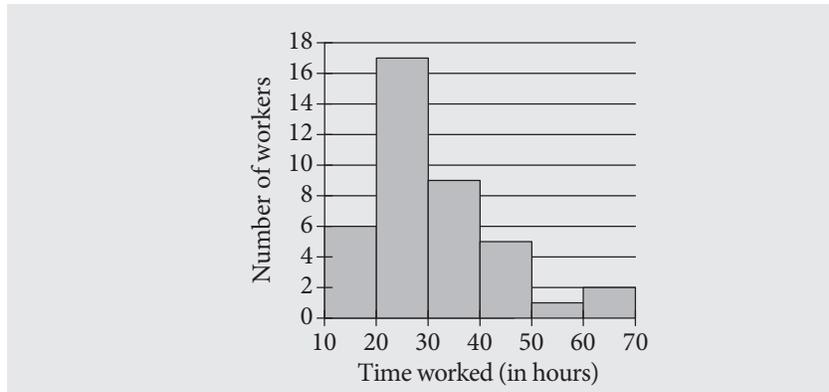
- Have students complete the example problems below and then discuss them as a class. Review terms and definitions, as needed.
1. A store is deciding whether to install a new security system to prevent shoplifting. Based on store records, the security manager of the store estimates that 10,000 customers enter the store each week, 24 of whom will attempt to shoplift. Based on data provided from other users of the security system, the manager estimates the results of the new security system in detecting shoplifters would be as shown in the table below.

	Alarm Sounds	Alarm does not sound	Total
Customer attempts to shoplift	21	3	24
Customer does not attempt to shoplift	35	9,941	9,976
Total	56	9,944	10,000

According to the manager’s estimates, if the alarm sounds for a customer, what is the probability that the customer did *not* attempt to shoplift?

- A. 0.03%
- B. 0.35%
- C. 0.56%
- D. 62.5%

2.



The histogram above summarizes the distribution of time worked last week, in hours, by the 40 employees of a landscaping company. In the histogram, the first bar represents all workers who worked at least 10 hours but less than 20 hours; the second represents all workers who worked at least 20 hours but less than 30 hours; and so on. Which of the following could be the median and mean amount of time worked, in hours, for the 40 employees?

- A. Median = 22, Mean = 23
- B. Median = 24, Mean = 22
- C. Median = 26, Mean = 32
- D. Median = 32, Mean = 30

(Note: On the SAT, all histograms have the same type of boundary condition. That is, the values represented by a bar include the left endpoint but do not include the right endpoint.)

Teacher Notes

- See Examples 11 and 12 on pages 219–220 in [Chapter 17 of the SAT Study Guide for Students](#) for answers and explanations.
- Probability is the measure of how likely an event is. When calculating the probability of an event, use the following formula:
 - ◆ $\text{Probability} = \frac{\text{number of favorable (or desired) outcomes}}{\text{total number of possible outcomes}}$
- Mean, median, and mode are measures of center for a data set, while range and standard deviation are measures of spread.

Class Work and Discussion | 20 minutes

Have students complete the Basic and Harder Examples for “Table data” and “Center, spread, and shape of distributions” in Official SAT Practice on Khan Academy®.

- ◆ Remind students to pause the video as soon as they can see the problem. Once students have worked through the problem, have them watch the video to check their work.

Wrap-Up: For your term book | 5 minutes

- Conditional probability
- Mean
- Median
- Mode
- Range
- Outliers
- Histogram
- Box Plot

Homework | 20 minutes

- Complete practice problems in Official SAT Practice on Khan Academy in these skill areas:
 - ◆ Table data
 - ◆ Center, spread, and shape of distributions
- Encourage students to move on to the higher skill level once they successfully complete the problems in their current skill level and can “level up.”