

Official SAT Practice

Lesson Plans

for Teachers by Teachers

LESSON 7 (2 OF 5 FOR PROBLEM SOLVING AND DATA ANALYSIS)

Ratio, Proportion, Units, and Percentage—Part 2

Subscore: Problem Solving and Data Analysis

Focus: Using ratios and proportions to solve problems

Objectives:

Students will

- solve problems that require them to pay attention to units.
- solve problems that require them to convert units either between the English system and the metric system or within those systems.
- solve problems involving percentages, specifically involving the concepts of percentage increase and percentage decrease.

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.

Warm Up | 10 minutes

- Have students complete the question below and then discuss it with a partner.
On an architect's drawing of the floor plan for a house, 1 inch represents 3 feet. If a room is represented on the floor plan by a rectangle that has sides of lengths 3.5 inches and 5 inches, what is the actual floor area of the room in square feet?
 - A. 17.5
 - B. 51.0
 - C. 52.5
 - D. 157.5
- After students have completed this question, have them find the constant of proportionality for the situation.

Teacher Notes

- See page 211 in [Chapter 17 of the SAT Study Guide for Students](#) for answers and explanations.
- In order to find the constant of proportionality, students need to keep track of units. It might be helpful to walk through how to do this with the class (details on how to do this are included on page 211 in [Chapter 17 of the SAT Study Guide for Students](#)).

Class Work and Discussion | 30 minutes

- Have students complete these example problems in groups of 2–3 and then discuss their work with each other:
 1. Scientists estimate that the Pacific Plate, one of Earth's tectonic plates, has moved about 1,060 kilometers in the past 10.3 million years. What was the average speed of the Pacific Plate during that time period, in centimeters per year?
 - A. 1.03
 - B. 10.3
 - C. 103
 - D. 1,030
 2. County Y consists of two districts. One district has an area of 30 square miles and a population density of 370 people per square mile, and the other district has an area of 50 square miles and a population density of 290 people per square mile. What is the population density, in people per square mile, for all of County Y?
 3. A furniture store buys its furniture from a wholesaler. For a particular table, the store usually charges its cost from the wholesaler plus 75%. During a sale, the store charged the cost from the wholesaler plus 15%. If the sale price of the table was \$299, what is the usual price for the table?
 - A. \$359
 - B. \$455
 - C. \$479
 - D. \$524
- Have students complete the Basic and Harder Examples for “Percents” and “Units” 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.

Teacher Notes about Units and Percents

- Remind students to pay close attention to units, and convert units if required by the question.
- Writing out the unit conversion as a series of multiplication steps will help ensure accuracy. Intermediate units should cancel, leaving you with the desired unit.
- See pages 212–213 in [Chapter 17 of the SAT Study Guide for Students](#) for explanation and discussion.

Wrap-Up: For your term book | 5 minutes

Unit Conversion

Homework | 20 minutes

Complete practice problems in Official SAT Practice on Khan Academy® in these skill areas:

- ◆ Percents
- ◆ Units
- ◆ Encourage students to move on to the higher skill level once they complete the problems in their current skill level and can “level up.”