

Official SAT Practice

Lesson Plans

for Teachers by Teachers

LESSON 2 (2 OF 5 FOR HEART OF ALGEBRA)

Linear Equations, Linear Inequalities, and Linear Functions in Context

Subscore: [Heart of Algebra](#)

Focus: Using algebra to analyze and solve problems in context, otherwise known as word problems

Objectives:

Students will

- identify and implement the steps necessary to use algebra to analyze and solve problems in context.
- define one or more variables that represent quantities in context. They will write expressions, equations, inequalities, and/or functions that represent the relationships described in the context.
- solve equations and interpret their solutions in terms of the context.
- recognize that different questions could be asked about the same context.

Before the Lesson:

- Review the Teacher Notes.
- Make sure you have a way for students to access the Official SAT[®] Practice problems and the *SAT Study Guide for Students problem* during class.

Introductory Activity | 20 minutes

- Briefly discuss the importance of linking accounts or taking the Diagnostic Quizzes (review of prior night HW).

Teacher Notes

Once accounts are linked or students have taken Diagnostic Quizzes, they will be able to practice problems that are personalized to their skill level. On the SAT, within each section, there are easier, medium, and harder questions. Skill Level 2 practice problems are easier, Skill Level 3 are medium, and Skill Level 4 are harder. Ask students to provide some evidence of linked accounts.

- Have students go to Official SAT Practice on Khan Academy®.
 - ◆ Direct students to look at the full list of Math Practice on Official SAT Practice, and notice which skills are at Level 2 and Level 3. Let them know that as they continue to practice problems with Official SAT Practice, they will be able to “level up” to practice harder problems. For any given math concept, there may be easier, medium, and/or harder questions of this type on the SAT.
 - ◆ For Interpreting Functions, have students complete the Basic Example.
 - Have students click on the video and then pause it once they can see the problem. The goal is for students to work out the problem on their own without listening to the video. Teachers can also project the video for the class.
 - ◆ Now, have students complete the Harder Example for Interpreting Functions.
 - Again, have students click on the video and pause it once they can see the problem.
- Discussion:
 - ◆ Have students discuss the following questions with a partner, and then follow up with the whole class.
 - What do you need to know in order to answer these questions?
 - How is the Harder Example “harder” than the Basic Example?

Teacher Notes

- Watch the videos for the Basic Example and Harder Example for Interpreting Functions prior to having students work on these problems in class.
- The Harder Example is “harder” because the equation isn’t written in one of the common forms (slope-intercept or standard form). It’s important to analyze the form of the equation and be able to identify what each of the terms represents.
- In the Basic Example, it’s easier to make the connection that 3.53 represents the rate of increase from year-to-year (or rate of change) because this equation is written in a form that students should be familiar with (slope-intercept form).
- The Harder Example requires a deeper understanding of units and the ability to interpret how the units are represented in the problem, and to relate the context of the problem with the equation that is given.
- For these kinds of problems, it’s helpful to evaluate each of the answer choices.

On Your Own | 25 minutes

- Have students complete practice problems in Official SAT Practice on Khan Academy in these skill areas:
 - ♦ Interpreting linear functions
 - ♦ Linear equations word problems
 - ♦ Linear inequality word problems
 - ♦ Linear function word problems
- Circulate around the room and help students as needed. Encourage them to use the hints within the problems and watch the Basic and Harder Examples in areas where they need help.

Homework | 20 minutes

- For students who have linked accounts and have begun personalized practice, complete practice problems in Official SAT Practice on Khan Academy in these skill areas:
 - ♦ Interpreting linear functions
 - ♦ Linear equations word problems
 - ♦ Linear inequality word problems
 - ♦ Linear function word problems
- For students who have not yet linked accounts or imported scores, take Diagnostic Quiz 2