KHANACADEMY

CollegeBoard SAT

Official SAT Practice

Lesson Plans

for Teachers by Teachers

LESSON 4 (4 OF 5 FOR HEART OF ALGEBRA)

Fluency in Solving Linear Equations, and Linear Inequalities, and Systems of Linear Equations

Subscore: Heart of Algebra

Focus: Fluency of solving linear equations, linear inequalities, and systems of linear equations

Objective:

- Students will solve linear equations, linear inequalities, and systems of linear equations without a context.

Before the Lesson:

- ☐ Make sure you have a way to share the Fluency Relay Race problems and directions with the students.
- ☐ Review the Teacher Notes.

Practice, Practice, Practice | 30 minutes

- Have students play a "Fluency Relay Race." Divide the class into teams of 3–4 students. Provide these problems to the team (one at a time). Use these directions:
  - Copy the given problem on the board.
  - Work as a team and race to solve each problem.
  - Each student completes one step of the problem and then goes to the back of their team's line.
  - The next student completes the next step. If the student before has made a mistake, this student should use his/her turn to correct the mistake.
  - Continue through all steps until the problem is solved.
  - Last student should circle/box the solution.
  - The first team to solve the problem correctly wins a point.
- Continue through the set of problems.

1. $3\left(\frac{1}{2} - y\right) = \frac{3}{5} + 15y$
2. $-2(3x - 2.4) = -3(3x - 2.4)$
3. $-2x = 4y + 6;\ 2(2y + 3) = -3x - 5$
4. $3l - 6 > 8$
5. $y = 3x;\ x = 3y$
6. $3 + 10x - 5 = (a + 1) \cdot x - 2$

What value of a will result in a system with infinitely many solutions?

Teacher Notes

- See pages 204–205 in Chapter 16 of the *SAT Study Guide for Students* for solutions and explanations for numbers 1–3.
- #4 is the Basic Example from "Solving linear equations and inequalities" on Official SAT Practice.
- #5 is the Basic Example from "Solving systems of linear equations" on Official SAT® Practice.
- #6 is the Harder Example from "Solving linear equations and inequalities" on Official SAT Practice. If students are struggling working through this problem during the race, go over this problem as a class and watch the video together (as needed). There will be additional time to work through and discuss problems like this during Lesson 5.

Whole Class Debriefing | 10 minutes

- Discuss how the teams solved their problems during the race.
  - Where were students successful?
  - Notice any common mistakes?
  - Recommend strategies for fluency?

Wrap-Up: For your term book | 5 minutes

- System
- Methods for solving systems: combination/elimination or substitution

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:
  - Solving linear equations and inequalities
  - Solving systems of linear equations
- For students who have not yet linked accounts or imported scores, take Diagnostic Quiz 4