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16. Inequalities

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Learning Outcome: The student will display an ability to form the solution sets for basic linear inequalities.

NCTM Standards Addressed:

- 3. Reasoning
- 5. Algebra
- 14. Mathematical structure

Time: 45 minutes

Assessment Opportunities: Teacher observation, peer feedback, student work

Materials: A copy of one problem on Reproducible 16 for each team

Team Size: 3–4, selected randomly (six teams maximum)

Background: This activity utilizes *constructivist learning theory*. Students will explore a mathematical concept. They become mathematically literate in that concept and then edit their original work to reinforce their growth in the concept.

Present this activity when students have the mathematical literacy for **replacement set**, solving **linear equations**, and the structure of **whole numbers**, **integers**, and **rational numbers**.

Procedure

Copy Reproducible 16 and cut out one problem for each team. Form teams. Distribute the examples randomly.

Directions for students: *Solve the inequalities for each given replacement set:*

Whole numbers

Integers

Rational numbers

Inform students that each of them will be responsible for a paper at the end of the class.

Each team should present to the class its method of solving the problem. The presentation should be done with the entire team at the front of the classroom.

Your assessment of the accuracy and methodologies is critical. You may decide to respond to each team's presentation, or to wait until all presentations have been completed so as not to intimidate the students on teams that present later.

After all teams have presented, you have two options: (1) You may opt to instruct traditionally, using an appropriate method for solving linear inequalities; *or* (2) you may synthesize student responses to achieve the same result implied in the first option.

Give students the opportunity to edit their original responses for their examples. Ask each student to pass in his or her responses to the team problem.

Inequalities

Give one of the following to each team:

Team #: _____

Show the solution for the following replacement sets:

Whole Numbers, Integers, Rational Numbers

$$-3x + 8 > -3$$

Team #: _____

Show the solution for the following replacement sets:

Whole Numbers, Integers, Rational Numbers

$$2x - 5 > -11$$

Team #: _____

Show the solution for the following replacement sets:

Whole Numbers, Integers, Rational Numbers

$$2 - x > 4$$

Team #: _____

Show the solution for the following replacement sets:

Whole Numbers, Integers, Rational Numbers

$$3 - x < 7$$

Team #: _____

Show the solution for the following replacement sets:

Whole Numbers, Integers, Rational Numbers

$$3x - 4 > 5$$

Team #: _____

Show the solution for the following replacement sets:

Whole Numbers, Integers, Rational Numbers

$$2x + 3 > 5$$

