Touchdown!

6676

Introduction

This activity uses two different models to provide students a context to develop meaning of integers.

Grades 6-8

NCTM Number and Operations Standards

• Understand numbers, ways of representing numbers, relationships among numbers, and number systems
• Develop meaning for integers and represent and compare quantities with them

Files/Materials Needed

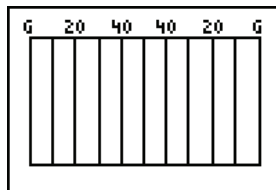*Football1.act, Football2.act, Integer_Model.act, Number_Line.act*

PART 1 FOOTBALL AND INTEGERS

1

a. Launch TI-Navigator™ on the computer and start the session.
b. Have each student log into NavNet on their calculator.

2

Load the **Football1.act** activity settings file into Activity Center. The diagram displayed in Activity Center will resemble a football field.

3

a. Assign each student a different *y*-value from the set {–9, –8.5, –8, …, 5, 5.5, 6}.

b. By starting the activity, student cursors will be positioned in the middle of the field on the left most 20-yard line. Have them move up or down to the y-value to which they have been assigned. Tell students that this will be their assigned row and that they are allowed to move left or right from this spot but not up and down. This will ensure that students remain spread out on the field during the activity.

4

a. Now tell students that there has been a 70-yard kick off with a 10-yard return.
b. Have students use their left and right arrow cursors to locate the approximate location of the ball (rightmost 20-yard line). Have them send their position when everyone is ready.
c. Discuss the results. If needed, remind students that positive integers are used to represent a gain and negative integers are used to represent a loss.
d. Repeatedly stop and restart the activity, calling out different scenarios each time, such as a loss of 10 yards, a gain of 50 yards, and so on. Clear the activity data between plays and have students begin each play at the approximate location where the last play ended. You can include several special circumstances such as penalties, interceptions, punts, and fumbles to make the activity more interesting.

Touchdown!

PART II: AN INTEGER MODEL

5

a. Load the ***Integer_Model.act*** activity settings file into Activity Center. The diagram displayed in Activity Center will resemble the one shown below.
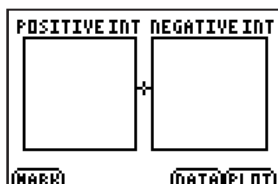
b. Start the activity and instruct students to mark a point in either the *Positive Integer* or *Negative Integer* region.

c. Ask students what exactly one *Positive Integer* mark and one *Negative Integer* mark represent (zero). Use **Quick Poll** (with *Open Response*) to ask students to determine the resulting integer found by combining all the markings that have been sent.

d. Challenge students to find a different configuration that yields the same result. Give students time to realize that some students will need to refrain from participating.

e. This activity can be repeated several times if additional practice is needed. Make sure that you clear the activity data each time.

EXTENSION

6

a. Prepare several 10, 20, and 30-yard questions related to integers in which the level of difficulty increases from the 10-yard questions up to the 30-yard questions. Individual students (or groups of students) can select a 10, 20, or 30-yard question.

b. Load the ***Football2.act*** activity settings file into Activity Center and log into the NavNet application on a calculator as a teacher.

c. Starting on the 20-yard line, pose the question.
  • If answered correctly, mark a point (the teacher should do this) the appropriate distance downfield.
  • If answered incorrectly, there is a loss on the play and the mark moves back the appropriate distance.
  • The students' goal is to score a touchdown.

d. Students can answer the questions using **Quick Poll**. This activity is configured to work with a maximum of 10 questions.

7

a. Alternatively, load the ***Number_Line.act*** activity settings file into Activity Center. This will prompt student calculators to display a number line from -8 to 8.

b. By starting the activity, students can draw up to four vectors to help them determine the result of an integer addition problem. For example, you can prompt them to use vectors to represent 5 + (-4) + (-2). Students can visually see the answer and send their vectors into Activity Center for review.

c. You can also adjust the number of vectors to be drawn, the size of the number line, and the step size.