

Adding Integers with Two colour counters – Script

This sketch is one of many tools that can be used to explore the concept of integer addition. The colour blue is used to represent negative integers. This colour was chosen to represent cold or negative numbers, as used on water taps. The colour red is used to represent positive integers. This colour was chosen to represent hot or positive numbers.

It is recommended that students work through the sketches as outlined on page 1 of the sketch. This sketch is meant primarily to reinforce concepts already explored in class. You are encouraged to introduce the features and activities in this sketch prior to independent student exploration.

The Zero Principle:

This page introduces the Zero Tool. This tool is used to demonstrate the Zero Principle in which a single positive and negative counter represents a sum of zero.

If students continue to struggle with this concept, you may consider encouraging them to use manipulatives for additional support. By encouraging students to physically move the pairs of counters into Zero Groups, it may provide the necessary scaffolding for conceptual development. For example, on Screen 2, students would create +6 and -3 with the colour counters on their desks, lining them up as on the GSP sketch. As you pull the Zero Tool over each pair of counters, encourage your students to slide the zero pairs upward or pull a sheet of paper over each pair. This connects the visual representation on GSP with the tactile experience of moving the counters.

Discuss the question: What happens when the Zero Tool covers a pair of red/blue counters? Encourage students to justify their response. Ensure that students notice the difference in shading (the ghosting effect) of Zero Pairs.

Activity #1: Adding Integers

Prior to student exploration, it is important that you demonstrate the features of the activity. Specifically, the first integer is represented on the left side of the screen. Click on the red “Positive” button to add a positive integer and the blue “negative” button to add a negative integer. Similarly the second integer is located on the right side of the screen. Counters may be added using the same technique.

(Demonstrate a question)

The Zero Tool should be demonstrated and student answers discussed prior to selecting the “determine your answer” button.

To select a new question, simply click on the “new question” button in the top left side of the screen.

Activity #2: Missing Addends

In this activity, students are required to solve for missing addends as well as missing sums. This activity encourages the development of algebraic thinking.

Activity #3: Integer Explorer

This is a fun activity which allows students to create their own equations. You may want students to keep a record of their work.

Extension Activity – What d’ya Know?

This page provides discussion and demonstration questions that can be used as homework or in class discussions. There are some questions well suited for Think-Pair-Share.

A final thought:

We suggest that many students may also benefit from a more kinaesthetic exploration of integers. One such activity could be the utilization of a Human Number Line. Simply create a number line on the floor of your classroom (approximately -10 to +10). Students are instructed to walk forward when representing a positive integer and backwards when representing a negative integer. For example, to demonstrate $(-4) + (+5)$, a student would walk backwards from zero to -4 then walk forward 5 steps to represent +5; ending on the +1 location.