

## Lesson Plan

**Lesson:** Multiplying Integers

**Length:** 30-45 minutes

**Age or Grade Level Intended:** 8<sup>th</sup> grade students with learning disabilities in math.

**Academic Standard(s):** 8.2.1 Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) in multi-step problems.

**Performance Objective(s):** Given 10 problems that require students to multiply two integers together, students will solve the problem, with 80% accuracy.

**Assessment:** Give students 10 problems that involve multiplying two integers together. Have students solve the problem on individual marker boards, showing all the steps they went through to solve the problem. After students have obtained an answer, have students hold up their marker boards and visually check to see that they all have the right answer before moving on.

### Advance Preparation by Teacher:

- Prepare notes to write on the overhead projector (see attached).
- Have the numbers 1-9 written on slips of red construction paper and on blue construction paper. Put this paper into a hat or brown paper bag for students to draw from.
- Select approximately 20 problems that involve multiplying together two integers for use with students.

### Procedure:

**Introduction/Motivation:** Remind the students that they just finished working on adding and subtracting integers. Ask students to raise their hand and explain the rules for adding and subtracting integers (**Bloom, Knowledge**). Tell students that now that they know these skills, we are going to move on to multiplying integers.

## Step-by-Step Plan:

1. Have students pull out the notes that they have been previously using during our unit on adding, subtracting, multiplying and dividing integers (**Gardner, Visual/Spatial**).
2. Explain to students that they should already have the first two “flaps” of their notes filled out and so their notes on multiplying integers should go under the third flap (see attached for an example of the organizational tool used for the notes).
3. Write “Multiplying Integers” on the overhead projector. Have students write this on the outside of his or her flap.
4. Explain to students that they should already be aware that a positive integer multiplied by a positive integer produces another positive integer. Write “positive x positive = positive” on the overhead.
5. Write “ $6 \times 4 = \underline{\quad}$ ” on the overhead. Ask students to raise their hands to give the answer to this problem using the rule that they just learned (students should be writing all of the notes on the overhead, along with all examples, on the inside flap of their notes).
6. Explain to students that two negative numbers multiplied together produce a positive product. Write “negative x negative = positive” on the overhead.
7. Write “ $-8 \times (-2) = \underline{\quad}$ ” on the overhead. Ask students to raise their hands to solve this problem, keeping in mind the rule that they just learned about multiplying together two negative numbers.
8. Explain to students that a positive number multiplied by a negative number produces a negative product. Write “positive x negative = negative” on the overhead.
9. Write “ $5 \times (-7) = \underline{\quad}$ ” on the overhead. Ask students to raise their hands to solve the problem applying the rule that they just learned.
10. Tell students that there are steps that they can follow when multiplying two integers together. Tell students that the first step is to multiply the 2 numbers in the problem together. On the overhead, write “1. Multiply the 2 numbers”.
11. Tell students that the next step is to determine the sign of the answer based on the rules that they have just learned. On the overhead, write “2. Determine the sign of the answer (signs are the same = positive; signs are different = negative)”.
12. Write 2 or 3 more examples of problems on the overhead for students to see.
13. Tell students that now we are going to practice multiplying integers. Have students each get out a dry erase board, dry erase marker and eraser.
14. Have students come up one at a time to the blackboard. Have them draw two numbers from the bag. Tell them that the red paper represents a negative number, and the blue paper represents a positive number.
15. Have the student multiply the two numbers that he or she drew together. First, have them write the problem on the board and then solve it (**Bloom, Synthesis**).
16. While each individual student is at the board, the other students in the class should be practicing the problems on their marker boards, checking their work against the student’s at the front to see if they were correct (**Gardner, Intrapersonal**).

17. Have all students return to his or her seat.
18. Give students problems that involve multiplying two integers together and have them solve the problems on their marker board, showing all steps they went through to solve it (**Gardner, Logical/Mathematical**) (**Bloom, Application**).
19. Have students hold up their marker board when they finish the problem and visually check every student's answer before moving on to the next problem.
20. Continue giving student's problems in this fashion for 10 problems. If students are not getting 80% of the problems correct, continue to practice or set aside another class period for practice and review.

**Closure:** Explain to students that tomorrow they will be working on multiplying integers individually and will be given a homework assignment. Have students pack up and get ready for their next class.

**Adaptations/Enrichment:** The class that I observed in and designed this lesson for is a class of only 5 students who have learning disabilities in math as well as other areas. The standard that I taught is still at grade level for the students, but the students are working at a much slower pace and are much further behind their peers at this point in the year. For a general education classroom, adding, subtracting, multiplying and dividing integers could probably all be taught in one day. However, for these students, I have broken them down individually and students will spend a week on each concept, doing multiple activities until they have mastered it. Because it is such a small class, visually assessing students work on the marker boards is relatively easy. In a larger class, an alternative assessment would probably have to be given. Also, the students in this class have difficulty staying organized, so the note taking organizational tool that is used in this lesson helps them organize their notes so that they can more easily utilize them.

**Self-Reflection:** Did the students meet the performance objectives? Were the students actively involved in the lesson? How much time will I have to allot to have the students review and practice the concept before I can be confident that they have mastered it? What can I do to make this lesson better the next time that I teach it?

## Overhead notes for multiplying integers

### Multiplying Integers

Positive x positive = positive

$$6 \times (4) = 24$$

Negative x negative = positive

$$-8 \times (-2) = 16$$

Positive x negative = negative

$$5 \times (-7) = -35$$

Steps:

1. Multiply the 2 numbers.
2. Determine the sign of the answer (signs are the same= positive; signs are different= negative).

$$6 \times (-7) = -42$$

$$-3 \times (-4) = 12$$