

Lesson: Multiplying Whole Numbers

Common Core Standard: 3.OA.A.3 – Multiply multi-digit whole numbers.

A. GRADE LEVEL: 4th–5th Grade

B. SUBJECT: STEM/Mathematics

C. DATE: [Insert Date]

D. DURATION: 3 Days (1 hour/day)

E. LESSON FOCUS: Understanding and applying multiplication of multi-digit whole numbers in real-world situations, such as scaling recipes.

F. MATERIALS:

- Whiteboard and markers.
- Paper and pencils.
- Recipe cards (with simple ingredients and quantities).
- Calculators (optional for advanced learners).
- Rulers (optional for measuring quantities).

G. LESSON OBJECTIVES: By the end of the lesson, students will be able to:

1. Multiply multi-digit whole numbers accurately.
2. Apply multiplication skills in real-world scenarios, such as scaling a recipe.
3. Demonstrate an understanding of how multiplication is used in everyday life.

H. PROCEDURES:

1. INTRODUCTION:

- Review basic multiplication facts (e.g., $3 \times 4 = 12$) and multi-digit multiplication methods (e.g., partial products or long multiplication).
- Introduce the concept of **scaling recipes**, explaining that multiplication can be used to adjust ingredient quantities when cooking for more or fewer people.
- Show an example of a recipe, such as a recipe for cookies that makes 12 servings. Ask, "What if we need to make 24 servings?"

2. EXPERIMENT:

Activity 1: Multiplying Whole Numbers

- Write several multiplication problems on the board involving multi-digit numbers (e.g., 32×5 , 46×8).
- Solve these problems together using the long multiplication method, breaking down each step as you go.
- Allow students to try a few problems on their own or in pairs for practice.

Activity 2: Scaling Recipes

- Provide each student or pair of students with a recipe card. The recipe should include a list of ingredients and quantities.
- Ask the students to scale the recipe to serve a larger or smaller group. For example, if a recipe serves 4 people, scale it up to serve 8 or 12 people by multiplying the ingredient amounts.
- Walk through the process of multiplying the quantities together to find the new amounts for each ingredient.

3. OBSERVATION:

- As students work on scaling the recipes, observe their understanding of the multiplication process. Are they multiplying each ingredient correctly?

- Encourage them to check their work and discuss the reasoning behind their multiplication steps.

4. GENERALIZATION:

- Discuss how multiplication is useful in everyday tasks such as cooking, shopping, or even organizing events.
- Ask students to reflect on other real-life scenarios where they can use multiplication (e.g., dividing candy among friends, figuring out how many hours they will work over multiple days).

5. ASSESSMENT:

- Give students a worksheet with multi-digit multiplication problems and a few recipe scaling exercises.
- Have students complete the worksheet independently to assess their understanding of multiplying whole numbers and applying it to real-world problems.
- Review the answers as a class and provide additional practice if needed.

Note 1: Safety

While handling ingredients for recipe scaling activities, ensure that all materials are safe and non-toxic. If students are using food items, avoid allergens and supervise handling. Keep classroom materials clean and organized to avoid spills.

Note 2: Accommodations

For ELL students, use visual aids such as pictures of ingredients and quantities to reinforce vocabulary. Offer additional time and support as needed. For ESE students, provide step-by-step guides for solving multiplication problems and scaling recipes. Allow the use of calculators for advanced learners or those needing extra support.