

## Apple Boxes Grade 3 Operations and Algebraic Thinking

**Topic:** Represent and Solve Problems Using Multiplication

### Task Background

In this task, students develop an understanding of the meaning of multiplication of whole numbers through a problem involving equal-sized groups, arrays, and/or area models. Students are given a situation with a farmer who needs to pack apples and the students need to help find possible boxes that can hold all the apples. The combination of a story context, tools to represent the context, and open task structure supports students' ability to represent and solve problems using multiplication. Example representations and/or tools could include 10-frames, multi-link cubes or the *Number Frames* app<sup>1</sup>.

### Content Standards

- » *Operations and Algebraic Thinking*
  - » Represent and solve problems involving multiplication and division.
  - » Understand properties of multiplication

### Practice Standards

- » *Make sense of problems and persevere in solving them*  
Students persevere to understand and solve the problem.
- » *Model with mathematics*  
Students create representations and number sentences associated with the problem.
- » *Use appropriate tools strategically*  
Students use tools and/or hands-on manipulatives to show or create representations associated with the problem.

### Materials

Students can use paper and writing tools, concrete or virtual manipulatives (Number Frames), and/or a screen-recording app.

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<sup>1</sup>Apps © 2005-2017 Math Learning Center

## Apple Boxes Problem

### **Problem:**

Joe works at an apple orchard. He has 24 apples that he needs to pack in a box. There are many different size boxes he can choose from in the packing room.

- He wants to find a box that will hold all 24 apples.
- He wants to fill the box completely leaving no empty spaces in the box.
- Each box is a rectangle shape.

Pair up with a partner and talk about the problem.

- Use the Number Frames app to find 3 or more different size boxes he could use to pack all 24 apples.
- Show the boxes you were able to create to pack all the apples. Create a number sentence for each box you and your partner found.