

# Math 3 - Act. 04: Roll-ups

## Summary

This activity will help students understand multiplication's relationship to repeated addition.

## Main Core Tie

Mathematics Grade 3

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(3.OA\) Standard 3.OA.1](#)

## Materials

- *The Great Divide*  
by Dayle Ann Dodds (Candlewick Press)
- *What Comes in 2's, 3's, & 4's?*  
by Suzanne Akere (Scholastic) In this book children will see real-life things that come grouped in different ways. It explores groupings of 2, 3, and 4.  
10 Portion cups and 40 beans, per participant or student  
Blackline master to record division  
Blackline master of dot sheets (set includes 1's through 10's)  
Copy paper  
Glue stick

## Additional Resources

Books: Standard 1- Number and Operation: Addition, Subtraction, Multiplication, and Division

*The Great Divide* by Dayle Ann Dodds (Candlewick Press) The characters are participating in a race. With each page the group is cut in half. Helps students understand division.

*Each Orange Had 8 Slices* by Paul Giganti, Jr. (Greenwillow Books) This is a counting book which extends children's number sense. The children see the number but they also have to look for all the many and varied ways in which objects are grouped, and the number represented on the page.

*Only One* by Marc Harshman (Cobblehill.Books) This book looks at groups of items that when put together equal one. It looks at 12 eggs but it is only one dozen or a million stars but it is only one sky. This book generates ideas that help with number sense beyond just counting.

*Two of Everything* by L. T. Hong (Morton Grove, H: Albert Witman) An old man finds a pot as he is working. He takes it home to his wife. They discover that everything that put into the pot doubles. They are able to have lots of money and become very wealthy.

*Bunches and Bunches of Bunnies* by Louise Mathews (Dodd, Mead) This story begins with two bunnies and they just keep multiplying until there is bunches and bunches of bunnies.

*Too Many Kangaroo Things to Do!* Stuart J. Murphy (HarperCollins Publishers) It is Kangaroo's birthday and he tries to find other animals to play with him. They all tell him that they have too many things to do. Finally he goes back to his house sadly because no one will play with him. He discovers that all of his friends are at his house giving him a surprise party. Helps build student understanding of multiplication.

*A Remainder of One* by Elinor J. Pinczes (Houghton Mifflin) The Queen of the bugs wants the army to march in even lines. Private Joe divides them into more and more lines so that he will not be left out.

*Just Add Fun!* by Joanne Rocklin. (Scholastic Inc.) Develops children's understanding of multiplication. The Hershey's Multiplication Book by Jerry Pallotta (Scholastic, Inc.) Hershey candy bars are the tool utilized by the author to help children understand multiplication concepts and multiplication representation.

*Jump, Kangaroo, Jump!* by Stuart J. Murphy (HarperCollins Publishers) It is Field Day for Kangaroo and his friends. There are many different events. The friends have to divide into groups to participate

in the various events.

## Instructional Procedures

### Invitation to Learn

Read from the picture book *What Comes in 2's, 3's and 4's?* Remind the students of the pattern they built in the previous lesson when they discussed the multiple of \_\_\_\_\_.

Say, "Today we are going to look at the multiples of \_\_\_\_\_ with a different model than we built in our previous lesson. Today we are going to use a tool called a roll-up."

### Instructional Procedures

#### Day 1

Show and demonstrate the steps to be followed to create a roll-up.

Students will roll the dot sheet from the bottom to the top, one row at a time.

Students will glue a plain sheet of copy paper to the right side of their dot paper, for multiples of five through ten. Students will also glue a plain sheet of paper on the left side of the multiples of nine and ten.

Students will roll both sheets carefully, from the bottom to the top.

Students will label the top of the dot sheet with the multiple being developed that day (start with 1's and work up to 10's) as "Multiples of \_\_\_\_\_ developed by \_\_\_\_\_ (student's name)."

Students will label the top of the blank sheet of paper: "Repeated Addition and Its Relationship to Multiplication"

Students will circle the first group of dots under the title and label it with the representation ( $1 \times 2 = 2$ ). On the repeated addition side, the student will list the repeated addition problem ( $2 + 0 = 2$ ).

Students will continue this process by unrolling one line of dots at a time and labeling them ( $2 \times 2 = 4$ ) and label the repeated addition ( $2 + 2 = 4$ ).

This process will continue until all lines of dots have been circled, labeled as multiplication, and with the relationship to repeated addition.

Students will investigate these patterns, utilizing the repeat function of their calculators.

Students will record the pattern as it appears in the window on their calculators.

Students will sing about each of the multiples after completing the pictorial.

Collect these pictorial models from the students.

#### Day 2

Students will sing the multiple songs from the previous lesson to make the transition to the division relationship.

Read excerpts from *Great Divide*.

Make division models utilizing beans and portion cups.

Students will make a roll-up with the dot sheet, by rolling from the bottom to the top, one row at a time.

Students will glue a plain sheet of copy paper to the right side of their dot paper, for divisors of five through ten. Students will also glue a plain sheet of paper on the left side of the divisors of nines and tens.

Students will roll sheets carefully, from the bottom to the top.

Students will label the top of the dot sheet with the divisor being developed that day (start with 1's and work up to 10's). "Division by \_\_\_\_\_ developed by \_\_\_\_\_ (student's name)".

Students will label the top of the blank sheet of paper: "Repeated Subtraction and Its Relationship to Division".

Students will circle each group of dots under the title and label it with the representation starting at the bottom of the dot sheet (i.e. a divisor of 8:  $80 \div 10 = 8$ . On the repeated

subtraction side the student will list the repeated subtraction problem:  $80 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 = 0$ ).

Students will continue this process by rolling one line of dots under, at a time and labeling them. This process will continue until all 10 lines of dots have been labeled as division and as repeated subtraction.

Students will investigate these patterns utilizing the repeat function of their calculators.

Students will record the pattern as it appears in the window on their calculators.

Students repeat the functions on their calculators for each of these divisors.

#### Pacing Recommendation

Introduce 1's, 2's, and 3's in September. Introduce 4's and 5's in October. Introduce 6's and 7's in November. Introduce 8's and 9's in December.

#### Extensions

##### Possible Extensions/Adaptations

Make an array a day, and a fact power table to reinforce the multiples introduced each month.

This procedure should be revisited periodically and systematically to help students achieve mastery with each of the fact families through ten times ten and the related division facts and be able to describe their method.

**Pattern Block Multiplication:** Instruct student groups to use die cut pattern block pieces, or trace around pattern block pieces, to create a picture of a multiplication problem. Have students record the numerical multiplication sentence under their picture.

##### Homework & Family Connections

After working with these unifix flash cards in math class, have the students take the cards home and "teach" someone in their family how to use them. The family member will sign the envelope, indicating that they have worked together to enhance their mathematical understanding.

Students will use their roll-ups at home to practice visualizing multiplication and division facts.

Encourage students to play any of the following mathematics related board games and card games to reinforce Mathematics Standard I Rummikub, Triple Yahtzee, Yahtzee, Contig 60, FAB, Dreidel, Tower of Brahms, Aggravation, Backgammon, Chinese Checkers, Concentration, Connect 4, Dominoes, Life, Master Mind, Match 4, Monopoly, Perfection, Risk, Stratego, UNO.

#### Assessment Plan

Using a number line, have students create arrays for each of the numbers along the number line.

#### Authors

[Utah LessonPlans](#)