Delightfully Different Fractions!

Summary

A hands-on activity helps students understand equivalent fractions and common denominators.

Group Size

Large Groups

Materials

- Egg cartons
- Small objects
- *Egg Carton Fractions*
- *Pattern Block Equivalent Fractions*
- *Fruit Salad*
- *Fruit Salad Fractions*
- Overhead fraction pieces
- Pattern Blocks
- *Fraction Song*

Additional Resources

Books

The Doorbell Rang, by Pat Hutchings, ISBN978-0-688-09234-4 Reys, R. E., Suydam, M. N., and Lindquists, M. M. (1995).

Helping Children Learn Mathematics, 4th ed. Needham Heights, MA: Allen and Bacon.

Background for Teachers

Students should be familiar with the concept of fraction and that a fraction is obtained when a whole is partitioned. When dealing with fractions, partitions must be of equal size. Students should understand that the total amount of material is not affected by partitioning.

The more partitions the whole is divided into, the smaller the pieces. The size of the partitions also depends on the size of the whole.

Students should realize that every fraction has an infinite number of names. It should also be understood that when a whole is partitioned, the numerator and the denominator are increased by the same factor. Students should be familiar with equivalent fractions and feel comfortable adding and subtracting fractions with the same denominators.

Intended Learning Outcomes

1. Become effective problem solvers by selecting appropriate methods, employing a variety of strategies, and exploring alternative approaches to solve problems.

Instructional Procedures

Invitation to Learn

Play "Multiples Game". Have all students stand around the room. Call out a number from 1 to 12. When the number is called, students must get into groups the size of the number that was called and lock arms. Any one not in a group stands out. A different number is called each round. Call out numbers that are factors of 12 (2, 3, 4, 6, 12) to begin. Then call out a number that is not a factor of 12 (e.g. 5, 7, 8). Discuss with students why when you called out 5, why did classmates have to stand out. Why did no one leave the game when you called out 2 or 3 or 4 or 6 or 12? Everyone got into a

new sized group but no one was eliminated. What could we deduce from this? Lead the discussion to multiples and what numbers divide evenly into 6, 8, 9 & 12.

Instructional Procedures

When denominators are DELIGHTFULLY DIFFERENT (like apples & oranges), you must find a common denominator before you can add or subtract the fractions. This is like mixing the fruit together in a fruit salad!

Sing *Fraction Song.*

Fraction Masquerade--Did you know that fractions wear masks? They wear masks every day of the week, not just on Halloween. You often put masks on fractions to make them easier to add or subtract. These masks come out when the fraction is renamed so it can be added or subtracted.

Give each student their 12 small objects. Have them separate into halves, thirds, fourths, sixths and twelfths using their egg cartons. Although they can show halves, thirds, etc. in many different ways, it is easier to identify the fractional part if they put objects close together, side by side. Discuss multiples.

Complete *Egg Carton Fractions* worksheet. Have students use their objects and egg cartons to work out problems.

Have students explore with pattern blocks and come up with equivalent fractions. Remind them of the Power of ONE and the magic box as a way of creating equivalent fractions.

Work with students to find common denominators for basic fractions using the pattern blocks.

Extensions

Curriculum Extensions/Adaptations/ Integration

Using the fractions that have different denominators, have advanced students write and illustrate their own book about what could happen to a fourth grader during the day.

List adaptations for learners with special needs.

Include ideas for integration for other curricular areas (use appropriate subject area headings).

Family Connections

Have students do the *Fruit Salad* worksheet at home with a parent. Let them teach their parent, older brother or sister or other adult about common denominators and the adding and subtracting of fractions. Have parents sign and return worksheet for a small reward or extra credit.

Let students check out a set of pattern blocks to take home to teach a parent to find common denominators using pattern blocks. Have them do one worksheet (have parents sign) and then have them come up with an addition or subtraction problem of their own using pattern blocks. Give extra credit for those who return the worksheet signed.

Assessment Plan

Allow students to use pattern blocks, an egg carton, or fraction bars when testing.

For struggling students who stress over a paper and pencil assessment, have them demonstrate with one of their manipulatives and describe orally how they add or subtract fractions with different denominators.

Bibliography

Research Basis

Jensen, E. (1999). Teaching with the Brain in Mind. *Association for Supervision and Curriculum Development*, Alexandria, VA.

To our brain, we are either doing something we already know how to do or we are doing something new. Repetition of previous learning is likely to make the neuron pathways more efficient and therefore makes the brain more efficient. Reviewing what students already know on a regular, daily

basis has great benefits. Reviewing and assessing what students already know about a concept helps them make more connections.

Memory is the only real evidence of learning. Lasting learning seems to be a function of the repeated electrical stimulations of a neuron. Quality education will provide multiple and varied explorations of concepts for increased connections and advanced memory.

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