

How Low Can You Go?

Summary

This activity teaches students about fractions and finding the lowest common denominator when dividing.

Materials

Invitation to Learn

- *Picture Pie*
Four inch circles
- [Fraction Cards](#) (pdf)

Instructional Procedures

- [Factor Tree](#) (pdf)
Factor Tree (overhead)
- [How to Find LCD](#) (pdf)

Additional Resources

Books

Picture Pie, by Ed Emberley; ISBN 0-316-78982-8

Background for Teachers

Before teaching this lesson the students need to have a knowledge of the parts of a fraction (numerator and denominator) and prime and composite numbers. They also need to know that fractions with like denominators can be added and subtracted. Students will also need to understand equivalent fractions.

In this activity students will use fraction circles to build equivalent fractions and manipulate them to discover the least common denominator. Graphic organizers will be used to compare the circle fraction with the numerals involved.

Instructional Procedures

Invitation to Learn

In this activity the students will be given five four-inch circles that have been cut with a die cut machine. Show the students the book *Picture Pie*, by Ed Emberley. Ask the students if they recognize any fractions in the pictures. The students will then make a picture by cutting their circles into halves, quarters, and eighths. They will then use these pieces to create a picture (do not use thirds, sixths, or fifths). The teacher will then hand out a fraction card to each of the students. This card will tell the student how many pieces of their circles they can use to make their picture. After the students have had time to make their pictures and have labeled each fraction piece, they will be paired up and they will need to make up an addition mathematical equation using their pictures. The students will write this equation somewhere on their pictures. The pictures will be used for the next activity.

Instructional Procedures

Distribute two *Factor Tree* handouts per student.

Identify the parts of their equations (whole number, numerator, denominator, symbols used).

Have each student identify the denominator of their fraction on their picture they created in the previous activity by placing a finger on it.

Have the students look at their partner's denominators to see if they have found it.

Ask if their denominators are the same? Or different?

If there are some that are the same ask the students if they can be added? YES!

Most of the student's fractions should have different denominators. These denominators will be

placed into the seed on the *Factor Tree* handouts. The students will then put their denominator into the denominator seed circle on one of their *Factor Tree* handouts.

The students will then put their partners denominator on the other *Factor Tree* handout that was given to them.

Explain that you will now be splitting the denominator seeds and watching them grow into prime factor fruit. (The teacher can tell the students that farmers pick their fruit when it is prime).

Show the students how this is done on the *Factor Tree* transparency.

After the students have come up with their factor fruit they will be using the *How to Find LCD* handout to accomplish the next part of the lesson. This handout should be placed into the student's math binder so it can be referred to in the future.

Count the number of times each prime number appears in each of the factorizations.

For each prime number, take the largest of these counts.

Write down that prime number as many times as you counted for it in step #2.

The least common denominator is the product of all the prime numbers written down.

Strategies for Diverse Learners

Advanced Learners could be given three or more denominators and asked to find the LCD.

Special needs students could be given a multiplication array to help with facts they do not know.

Extensions

Family Connections

Students can go home and show their parents how to get factor fruit from a denominator seed using the *Factor Tree* handout.

Students can create a story using the vocabulary from the lesson (denominator, numerator, whole number, prime number, etc.).

Assessment Plan

Observation

E.D.P. (Evaluate, Diagnosis, Prescribe)

Journal entry explaining how to find LCD

Bibliography

Moore, D.W., (1984). A quantitative and qualitative review of graphic organizer research. *Journal of educational research*. 78, 11-17.

Two research reviews sought to sort out the accumulated evidence of graphic organizer effects on learning. Moore applied meta-analysis procedures to integrate research findings from 16 graphic organizer studies. Strong effects were obtained when students constructed graphic organizers after encountering content.

Loewenberg, D.B. (1992). Magical hopes manipulatives and the reform of math education. *American educator*. Summer, 14-18, 46-47.

This article focuses on manipulatives and how they effect students understanding. It also explains how manipulatives have changed education in a positive way. It discusses real-life examples of how manipulatives have enhanced student understanding.

Authors

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