There's Nothing Improper About Them

Summary

Students will learn about fractions and mixed numbers by manipulating shapes.

Materials

Invitation to Learn

- *Shape Shift Sheet* (pdf)

Assorted Shape Tiles

Instructional Procedures

Assorted shape tiles

- *Improper Instructions #1* (pdf)
- *Improper Instructions #2* (pdf)
- *Blank Fraction Bingo Card* (pdf)
- *Improper Fraction Answers* (pdf)
- *Mixed Number Squares* (pdf)

Paper bag

Bag of candy

Background for Teachers

Before teaching this lesson, mixed and improper fractions should be introduced. The students need to know the definition to numerator, denominator, and whole number.

In this activity students will review what an improper fraction and a mixed number are and how they relate to one another using shapes. Students will then practice converting improper fractions to mixed numbers and vice versa using the well-known game Bingo.

Instructional Procedures

Invitation to Learn

This activity is called shape shifting. In this activity the class is split up into pairs. Each pair is randomly given small shapes that can be manipulated and combined to make larger shapes (hand out enough for the pair to be able to make at least two big shapes). Explain that the triangles will need to be combined with the other triangles, squares with the squares, rectangles with rectangles. Do not combine different shapes. The teacher will then ask the question how many small shapes did it take to make your larger shape? Ask each pair to write down their mixed number and draw a picture on the *Shape Shift Sheet*. The groups that do not have whole shapes will need to write them down as fractions. Discuss how one small shape is a fraction of the larger shape.

Instructional Procedures

Hand out *Improper Instructions #1* and *Improper Instructions #2*, have students use shapes to work through the instructions with the teacher as a review.

Pass out *Blank Fraction Bingo Cards* to students.

Have students fill in bingo cards with fractions located on overhead *Improper Fraction Answers*.

The teacher should have cut up *Mixed Number Squares*.

Students will take turns choosing the mixed number out of the bag.

Students will place a candy on the block on their card that has the appropriate improper fraction.

Students will take turns until a student covers a line (horizontally, vertically, or diagonally). The teacher may provide prizes (optional).

Students will use website to check their problems. Students should type in the improper fraction; the web site will change the fraction into a mixed number.

Strategies for Diverse Learners

Advanced learners could write story problems using improper fractions, or list examples of real life situations where they observe improper fractions/mixed numbers.
Learners with special needs could draw or use manipulatives to show examples of improper fractions/mixed numbers.

Extensions

Family Connections

Students could list examples of improper fractions/mixed numbers that they see at their home (improper fraction hunt).
Students could ask parents if they use improper fraction/mixed numbers, then write a paragraph explaining how, when, and where their parents use them.

Assessment Plan

Graphic Organizer (Bingo card)
E.D.P. (Evaluate, Diagnosis, Prescribe)
Observation of correctly converting fractions

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.
Ellis, E., (2004). *Q&A: What's the big deal with graphic organizers?* Retrieved December 30, 2006, from http://graphicorganizers.com/about.html.
This article answers some common questions about graphic organizers. It discusses many misconceptions about the use of graphic organizers and describes when and how to use them properly. It also discusses how graphic organizers can be valuable assessment tools.

Authors

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