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Teacher Notes

Visualizing Fractions Introduction

In this activity, students will explore visual models of fractional parts of a whole. By using fraction strips on the computer, the students will be able to compare equivalent fractions, reduce fractions, and create mixed numbers from improper fractions. Students will use a paint computer program to fill and compare fraction strips.

Students will develop a number of key concepts related to fractions and whole numbers including:

1. investigating the concepts of comparison and equivalence of fractions;

2. using the part-whole interpretation of fractions to create representative fraction strips;

3. applying knowledge gained by fractions strips to name, estimate, and compare fractions.
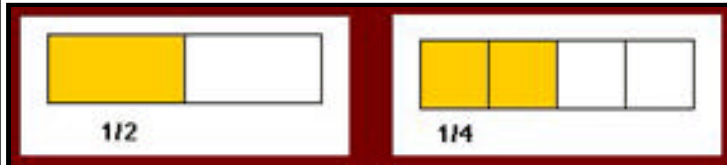
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Visualizing Fractions Teacher Notes

Discussion Guide

Introduce the term equivalent fractions by sharing the two fraction strips shown below.

Ask the students to work within their groups to define equivalent fractions. Summarize their explanations by stating that any two fractions that name the same quantity are considered equivalent. In reality, any quantity can be described by an infinite number of different fractions. Ask the students to list other examples of equivalent fractions. After about 10 minutes allow the students to share their examples.

Direct the students to "Thinking About the Question". Have the students share their paper fraction strips with the class.

Open "fractionstripsdoc" and demonstrate filling the segments with the paint bucket. Tell the students that they will be using this document to demonstrate equivalent, reduced and improper fractions and mixed numbers. Ask the students what they know about any of these terms. Have the students note their responses and encourage them to reflect on them after the Investigations are finished.

Remind the students that the use of fraction strips is just a way of visualizing fractions. Often it is necessary to use other methods to find equivalent fractions including number lines, square or area models, and picture and pie charts. Ask the students to find six fractions that are equivalent to 4/5. Allow the students to use any method and share with the class.

Direct the students to "Investigation I".

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Visualizing Fracitons Teacher Notes

Additional Teacher Background

You can focus on the part-whole interpretation by talking with the students about the numerator and denominator. The denominator represents how many equal-size parts the whole has been divided into, while the numerator represents how many equal-size parts show the quantity to which you are referring.

Besides using fraction strips, there are many different models that can be used to help visualize fractions. They include number lines, square or area models, and picture or pie charts. All models provide another possible view that may help students understand fractions.

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Visualizing Fractions Suggested Timeline

The amount of time you spend on introductory discussions, data collection, and analysis, will determine your overall timeline. The following represents a possible timeline.

- One class period - Introductory Discussion
- One class period - Investigation I: Using computer fraction strips
- One class period - Investigation II: Reducing fractions
- One class period - Investigation III: Displaying improper fractions and mixed numbers
- One class period - Analysis

Additional days can be used for further investigations.

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