Visualizing Fractions

Mid-Valley
STEM-CTE HUB

www.midvalleystem.org
midvalleystemctehub@linnbenton.edu
Linn-Benton Community College
Albany Campus - CC-212

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Visualizing Fractions

The Visualizin' Fractions STEAM Kit provides a hands-on way for students to explore and understand fractions, using visual aids and manipulatives to build a solid foundation in fraction concepts. With fraction stax, integer chips, fraction whiteboards, Cuisenaire rods, and graph paper, students can model, compare, and solve problems involving fractions. This kit is designed for students in grades 3-6 and encourages experimentation, visual learning, and collaborative problem-solving.

Grade Level

3rd - 6th

Group Size

1 -4

Time Duration

15 - 40 minutes

Content of Kits

Components

- 5 Fraction Stax,
- 2 sets of integer chips,
- 30x fraction number lines
- 3x Cuisenaire rods

Consumables

- Graph paper

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Usage

Getting Started

1. **Unbox and Inspect Components -** Start by carefully unpacking the Visualizing Fractions kit and ensuring all components are present and undamaged. This includes the fraction stax, integer chips, fraction whiteboards, Cuisenaire rods, and graph paper.

2. **Organize the Fraction Stax and Integer Chips** - Group the Fraction Stax according to their fraction values, and place the integer chips in a separate container for easy access during activities. These items will help visualize the concept of fractions and their equivalents.

3. **Prepare the Fraction Whiteboards -** Hand out the fraction whiteboards to students. Ensure they are ready to be used for visualizing and solving fraction problems. Encourage students to write problems or represent fractions on the whiteboards as you proceed through the activities.

4. **Set Up the Cuisenaire Rods -** Lay out the Cuisenaire rods and explain their use for modeling fractions and solving problems. Show how the rods represent numbers and their fractions with one another.

Storage

- **Fraction Stax -** Store these in their mesh bags to keep them organized and avoid losing pieces.
- **Integer Chips -** Keep the integer chips in their pouch to prevent them from being scattered or lost.
- **Fraction Whiteboards -** Store the whiteboards flat in a designated container, along with dry-erase markers and erasers.
- **Cuisenaire Rods -** Keep the rods in their pouches to ensure organization and prevent damage.

Troubleshooting

- N/A

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Activity Guide

Beginner

Building Fractions
Students will use the Fraction Stax to build simple fractions. For example, they can create 1/2, 1/3, or 1/4 using the corresponding fraction pieces. As they build the fractions, they will visually see how fractions can be combined or split, helping them understand equivalence and fraction sizes. Students can also represent their fraction on the fraction whiteboard.

Intermediate

Fraction Comparison
Students will use Fraction Stax and Cuisenaire rods to compare fractions. For example, they will compare 1/2 and 1/3 by stacking the corresponding fraction pieces and seeing which one is larger. They will also use the fraction whiteboards to write down the fractions and draw representations of the two fractions for visual comparison. This activity helps students grasp the relative size of fractions.

Advanced

Adding Fractions
Students will use the Fraction Stax to add fractions with like denominators. For example, they might add 1/4 and 2/4 by stacking the corresponding pieces together and seeing the result. Once they've added the fractions, they will use the fraction whiteboards to write down the problem and solution, reinforcing the concept of fraction addition. For a challenge, students can use the integer chips to represent the total value and subtract parts, illustrating the concept of finding a common denominator.

Extension Activities:

Fraction on a Number Line
Students will use graph paper to draw a number line and place fractions along the line, including 1/2, 3/4, and other simple fractions. They will then use the Cuisenaire rods to show how fractions relate to whole numbers and each other. This will reinforce their understanding of fraction placement and the concept of equivalency, helping students visualize where fractions fit in relation to whole numbers.

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Learning Extensions

STEAM Connections: Math

Learning Objectives:

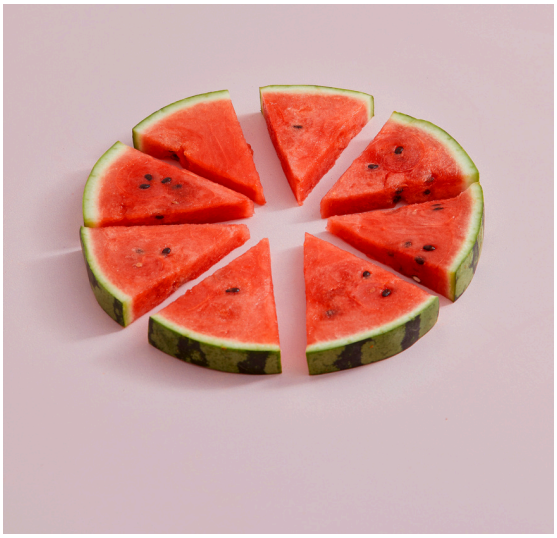
- Develop a clear understanding of how fractions are represented visually.
- Learn how to compare and combine fractions using hands-on tools.
- Improve problem-solving and critical thinking skills through practical activities.
- Build proficiency in adding and comparing fractions.
- Understand how fractions relate to whole numbers and each other through visual aids.

Career Connections:

- **Mathematician -** Analyzes and interprets numerical data, often working with fractions and ratios.
- **Engineer -** Uses fractions to solve problems in design, construction, and measurement.
- **Architect -** Applies fractions and measurements to design structures and spaces.
- **Educator -** Teaches foundational math concepts using hands-on tools to engage students.

Essential Employability Skills:

- Critical Thinking
- Problem-Solving
- Collaboration
- Communication
- Attention to Detail



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Resources and Accessibility

Safety Guidelines

- Handle all components gently.
- Keep small items out of reach of younger students to prevent choking hazards.
- Store components properly after each use to prevent damage and loss.

Accessibility

- Allow extended time for activities and assist with handling small components like Fraction Stax.
- Provide verbal explanations and visual aids to reinforce learning. Simplify fraction problems and gradually increase complexity.

Library Catalog

Library Resources

Feedback

QR to feedback survey