Math Lab in a Box

Mid-Valley
STEM-CTE HUB

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

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Math Lab in a Box

The Math Lab in a Box STEAM Kit provides students with hands-on tools to explore a variety of math concepts, from measurement and fractions to basic operations and number relationships. By using the "How Much Does It Weigh?" Measurement Center Set, fraction stacks, math dice, and Cuisenaire rods, students can experiment with concrete materials to visualize abstract concepts. Encourages critical thinking, problem-solving, and collaboration, making math fun and interactive.

Grade Level

K - 3rd

Group Size

1 - 4

Time Duration

20 - 60 minutes

Content of Kits

Components

- 1 × “How Much Does it Weigh?” Measurement Center Set
- 15x fraction stacks
- 2x math dice
- 6x Cuisenaire rods

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Usage

Getting Started

1. **Unbox the kit and inspect all components -** Begin by carefully unboxing the Math Lab in a Box and ensuring all components are present and undamaged. This includes the "How Much Does It Weigh?" Measurement Center Set, fraction stacks, math dice, and Cuisenaire rods.

2. **Set up the "How Much Does It Weigh?" Measurement Center -** Position the balance scale on a flat, stable surface, and place the measuring objects on the scale. Explain how students can use this set to compare the weight of various objects and visually see the balance or imbalance.

3. **Organize the fraction stacks and math dice -** Arrange the fraction stacks by stacking them in their designated order (e.g., smallest to largest) to make it easy for students to identify and compare fractions. Keep the math dice together in a small container or pouch for easy access during activities.

4. **Introduce the Cuisenaire rods -** Lay out the Cuisenaire rods on a flat surface and explain how these rods represent numbers. Demonstrate how students can use them to solve basic math problems such as addition, subtraction, and multiplication through visual representation.

Storage

- **Measurement Center Set -** Store the balance scale and measuring objects in a sturdy box to avoid damage.
- **Fraction Stacks -** Keep the fraction stacks organized to prevent them from getting mixed up.
- **Math Dice -** Store the dice in a small pouch or container to keep them together and easy to find.
- **Cuisenaire Rods -** Keep the Cuisenaire rods in their original box to prevent loss and ensure easy access.

Troubleshooting

- **Cuisenaire Rods Not Fitting Together -** Make sure the rods are placed flat on a smooth surface.
- **Fraction Stacks Misaligned -** Ensure the stacks are placed in order from smallest to largest. If they seem off, double-check that the pieces are properly stacked and aligned.
- **Balance Scale Not Working Properly -** Make sure the scale is on a flat surface and that the balance arms are moving freely. If there are weight miscalculations, check if the scale's components are clean and undamaged.

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Activity Guide

Weight and Compare
Students will use the "How Much Does It Weigh?" Measurement Center Set to compare different objects based on weight. They will place objects on the balance scale and identify which is heavier or lighter. Students will explore the concept of balance and learn how to visually represent weight differences. This activity helps develop measurement and comparison skills.

Fraction Match
Students will work with the fraction stacks to visually compare different fractions. In this activity, students will match equivalent fractions by stacking the fraction pieces together. For example, they can combine a 1/2 stack with a 2/4 stack to see that they are equal. Encourage students to find different ways to combine the stacks and identify other equivalent fractions, reinforcing their understanding of fraction relationships.

Math Dice Challenge
Using the math dice, students will roll two dice and use the resulting numbers to create math problems. They will practice operations such as addition, subtraction, multiplication, and division. For example, if they roll a 4 and a 6, they might solve 4×6 or $6 - 4$. Challenge students to solve the problems within a time limit to build fluency and confidence with basic math operations.

Cuisenaire Rods Multiplication
Students will use the Cuisenaire rods to visualize multiplication problems. By combining rods to represent numbers and grouping them into sets, students can solve problems like 3×4 by stacking the rods to form a rectangular shape. This concrete method allows students to see multiplication as repeated addition and helps them better understand the concept of area and arrays.

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Learning Extensions

STEAM Connections: Math

Learning Objectives:

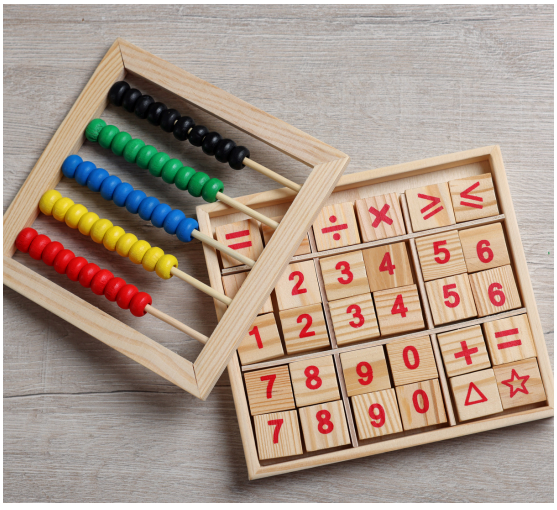
- Develop an understanding of measurement, weight, and comparison using the balance scale.
- Reinforce fraction concepts by comparing and combining fraction stacks.
- Build fluency in basic math operations using math dice.
- Use Cuisenaire rods to visualize and solve multiplication problems.
- Strengthen problem-solving and critical thinking skills through hands-on activities.

Career Connections:

- **Mathematician -** Uses mathematical concepts, such as fractions, operations, and measurement, to solve real-world problems.
- **Engineer -** Applies measurement and mathematical reasoning to design and create solutions.
- **Teacher -** Facilitates learning and provides hands-on experiences to help students grasp abstract math concepts.
- **Designer -** Uses measurement, fractions, and scaling principles in creative fields, such as architecture and product design.

Essential Employability Skills:

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



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Resources and Accessibility

Safety Guidelines

- Handle the balance scale gently to avoid damaging the scale mechanism.
- Keep small objects, like the fraction stacks, away from younger students to avoid choking hazards.
- Use the Cuisenaire rods on a flat, smooth surface to prevent them from being damaged or lost.

Accessibility

- Handle the balance scale gently to avoid damaging the scale mechanism.
- Keep small objects, like the fraction stacks and Cuisenaire rods, away from younger students to avoid choking hazards.
- Use the Cuisenaire rods on a flat, smooth surface to prevent them from being damaged or lost.

Library Catalog

Library Resources

Feedback

QR to feedback survey