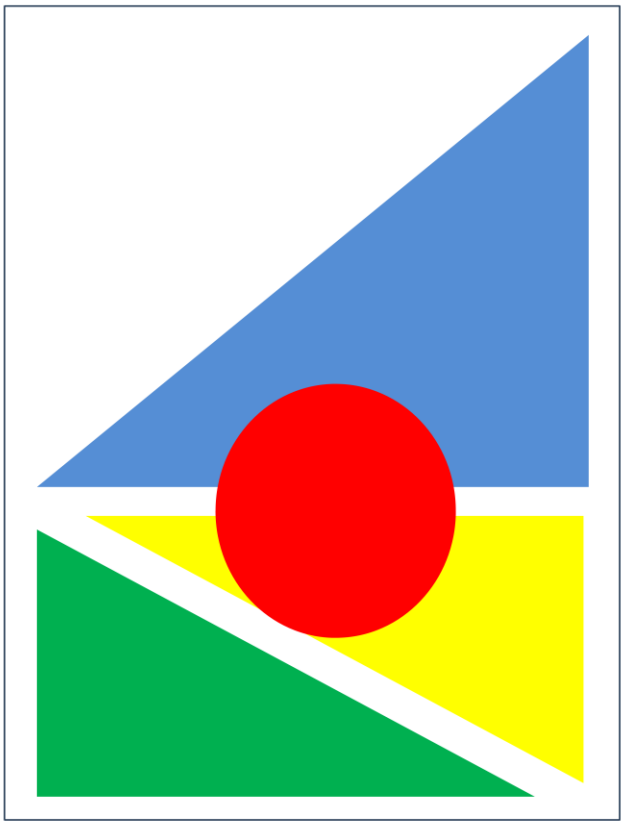
Kasthalab-1

A wooden STEAM resource material

User Manual



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Overview

Kasthalab-1 is a compact, wooden STEAM resource material designed for use in classrooms and science or math labs. It supports the teaching of basic scientific and mathematical principles through hands-on experimentation.

Features:

- Demonstrates four simple machines: Lever, Pulley, Inclined Plane, Wheel and Axle
- Includes geometric shapes: Circle, Square, Rectangle, Right-Angled Triangle
- Portable, durable, made entirely of wood

Operating Instructions

Kasthalab-1 functions as a single integrated unit. Change its orientation to demonstrate different concepts.

1. **Pulley Mode**
    - Pass a rope through the wheel.
    - Attach weight to the rope and pull to lift.
2. **Lever Mode**
    - Place horizontally on a flat surface
    - Use the two arms as fulcrum points for the lever and apply force at one end.
    - Adjust load and effort positions for experimentation.
3. **Inclined Plane Mode**
    - Place horizontally on a flat surface to make the ramp ready for use.
    - Place objects at the top and observe sliding motion

4. **Wheel and Axle Mode**
    - Lay the unit vertical.
    - Rotate the wheel and the axle attached to it shows mechanical rotation.

Learning Applications

Science Curriculum Integration:

- **Pulley**: Load and effort, direction of force
- **Lever**: Fulcrum, effort arm vs. load arm
- **Inclined Plane**: Friction, slope, work reduction
- **Wheel and Axle**: Rotational motion, mechanical advantage

Mathematics Curriculum Integration:

- Identifying shapes: circle, square, rectangle, triangle
- Calculating area and perimeter
- Demonstrating the Pythagorean theorem with the triangle form

Maintenance and Safety

- Clean with dry cloth only
- Avoid exposure to water or heat
- Handle gently; do not apply excessive force
- Store in dry, stable location (flat or upright)

Tips for Teachers

- Encourage open exploration before explanation
- Use questions to guide observations and conclusions
- Assign student roles in experiments (observer, measurer, recorder)

Contact

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