UNITED SCIENTIFIC SUPPLIES, INC.

Learning to Measure - Building STEM Skills Kit

NEW

United's series of STEM based curriculum kits accent the scientific method and independent inquiry featuring hands-on learning materials and exciting interactive digital content that can be accessed on a computer, tablet or your mobile device. Kits contain structured, guided, and open investigations, at introductory, intermediate, and advanced levels, to make inquiry based learning affordable and fun. Requires additional household materials for independent investigations.

Our Learning to Measure Kit contains 5 classroom activities and 5 independent investigations for students to measure lengths and distances, volumes, mass, temperature, and time, and also investigates conservation of mass. The kit includes enough materials for 40 students working in groups of 4, as well as a DVD with PDF Teacher and Student Guides and other digital content.

Item No.	Description
AISMEKIT	Learning to Measure - Building STEM Skills Kit

Activity Summaries

Activity 1 - Learning to Measure Lengths and Distances

(GUIDED – MODEL EXPERIMENT)

1. **Learning To Measure Lengths & Distances** (BEGINNER)
   Student groups practice measuring printed type fonts and longer distances.

(GUIDED INQUIRY – INDEPENDENT INVESTIGATION)

2. **Can Measurement Accuracy be Affected by Temperature?** (BEGINNER – INTERMEDIATE)
   Student groups assess how changes in temperature affect the accuracy of a scale.

Activity 2 - Learning to Measure Volumes

(GUIDED – MODEL EXPERIMENT)

3. **Learning To Measure Volumes** (BEGINNER)
   Student groups use graduated cylinders to measure volumes (reading a meniscus).

(GUIDED INQUIRY – INDEPENDENT INVESTIGATION)

4. **Determining the Volume of a Regular and Irregular Solid** (BEGINNER)
   Students assess the volume of a regular and irregular solid by displacement. They also make indirect measurements (by calculation).

Activity 3 - Learning to Measure Mass

(GUIDED – MODEL EXPERIMENT)

5. **Learning To Measure Mass on a Triple-Beam Balance** (BEGINNER)
   Measuring mass using a triple-beam balance. (Step-by-step)

(GUIDED INQUIRY – INDEPENDENT INVESTIGATION)

6. **Detecting a Mint Change**
   Students compare the masses of US one-cent coins (pennies) to determine which year a major change was made.

Activity 4 - Learning to Measure Temperature

(GUIDED – MODEL EXPERIMENT)

7. **Learning To Measure Temperature** (BEGINNER)
   Student groups use measure temperature under various conditions – converting from Fahrenheit to Celsius scales.

(GUIDED INQUIRY – INDEPENDENT INVESTIGATION)

8. **How much heat is lost in an endothermic reaction?** (INTERMEDIATE)
   Students measure the change in temperature during an endothermic reaction (adding Alka-Seltzer to a glass of water).

Activity 5 - Learning to Measure Time

(GUIDED – MODEL EXPERIMENT)

9. **Constructing a Time Machine (sundial)** (INTERMEDIATE)
   Student groups use a GPS app to determine latitude, and use this information to help them construct a sundial for time measurement. They determine the precision and accuracy of their constructed instruments.

Going Further

(OPEN INQUIRY – INDEPENDENT INVESTIGATION)

10. **Demonstrating Conservation of Mass in a Closed System** (BEGINNER / INTERMEDIATE)
    Students design an investigational protocol that demonstrates conservation of mass in a chemical reaction.

Background Information

Keywords & Analysis Skills Audit, Overview, Time & Space, Volume, Mass, Time, Temperature, Indirect Measuring

Measurement Review

Precision vs. Accuracy, Worksheet Table, SI Units

References and Resources

Websites, PDF Resources, YouTube, eBooks (Kindle), Apps (iTunes)

All Activities are aligned to Common Core Standards

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