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Grade level: 3rd grade

Measuring Millimeters Lab

GOALS

Content Area: math

Common Curriculum Goal:

Standard/Benchmark: MA.03.ME.09 Determine measurements of volume to the nearest milliliter or liter of measuring cups, beakers, or graduated cylinders.

Language Arts Standards: EL.03.RE.09 Draw upon a variety of comprehension strategies as needed – re-reading, self-correcting, summarizing, class and group discussions, generating and responding to essential questions, making predictions, and comparing information from several sources.

EL.03.RE.22 Follow simple multiple-step written instructions (e.g., how to assemble a product or play aboard game).

ESOL Goal (Function): Cause and Effect Relationship.

OBJECTIVES

Content: Students will be able to determine the correct measurements and number sentences for 5 of the 6 exercises. Students will also have the 6 rainbow colors in their 6 cups, 11 mL each, as evidence that they read and followed the instructions.

Objectives (Forms):

I: “The yellow turned green when I added blue”

EA: “when I added blue to yellow the water turned green.”

PRIOR KNOWLEDGE

- Students should know how to write addition number sentences

MATERIALS

- 3 beakers or pitchers per group (each will contain colored water – one of each)
- One graduated cylinder per group (50 ml capacity, measurements increasing by 10ml.)
- 6 small clear plastic cups (labeled A-F)
- Red, blue, and yellow food coloring (used to color the water in the beakers or pitchers – one of each color per group)
- Water
- Graduated cylinder work sheet – one per student
- Measurement Work sheet – one per student

- Instruction sheet – one per group
- Transparency of graduated cylinder (or draw it on an easel or white board)
- Instructions written on poster paper for class to read
- Sample work sheet sentences to “fill in” during modeling

PROCEDURE

Anticipatory set

Day 1: 15-20 minutes

- “What happens when we mix yellow and blue?” Students should **Think-Pair-Share** their predictions.
- “Have you ever helped someone in your family cook?”
- “Today we are going to practice measuring liquid and mixing colors.”
- Be sure the **procedural instructions are posted on the board** for students to read along with.
- **Model** a measurement on the transparency by coloring in an amount and ask the students to do the same on their practice worksheet.
- **Model** how to add a measurement to the first and ask the students to do the same on their practice worksheet. Model the number sentence.
- Ask a volunteer to complete the next one on the worksheet.
- Students should complete the last few individually or with partners.

Teaching

Day 2: 1 hour

- * Students should be arranged into groups of three ideally. The group should circulate through roles: Measurer, Pourer, and Recorder.
- **Review** how to count the marks on the graduated cylinder.
- **Model** how to pour liquid into graduated cylinder. Use colorless water.
- **Model** how to add a second measurement to the first. Use colorless water
- **Review** how to determine the new total amount.
- **Review** how to write the number sentence (15 mL + 15 mL = 30 mL)

Guided practice

- **Model** how to read and follow the instruction chart
- together, complete the first measurement
- confirm that everyone has red water and 11 mL
- confirm that everyone has used cup A
- measure and complete the instructions for cup B
- together, write in the number sentence

- Complete the **form sentence** “when I added _____ to the _____ water it turned _____.”
- Continue guided practice until students appear to understand
- Can anyone see any patterns yet? Ask students to **T-P-S**

Independent practice

- * Groups should stop at the worksheet check-points so teacher can check to be sure groups are on the right track, correcting any misconceptions or mistakes.
- Students will complete the remaining measurements
- Students will find the sum of each cup by pouring into and measuring with the graduated cylinder
- Students will compose the final sentence on their own
- Students will alphabetize the cups and respond to the final question on the work sheet

Closure

- Check to see if all the cups measure 11 mL by pouring each into the graduated cylinder, one at a time.
- Discuss observations that groups made as they were working.

DIFFERENTIATION

- Realia and manipulatives used to enhance comprehension.
- Further differentiation is **highlighted**.

ASSESSMENT

Informal: observe progress and understanding during activity.

Formal: After students perform the measure activity they will be able to produce the cause/effect sentence on the worksheet and accurately write the correct measurement sentence for cup F.

REFLECTION

Note progress toward objectives

Lesson Planning Checklist:

Targeted Language Skills:

Reading: Students will read the instructions as teacher reads them out loud.

Writing: Students will be writing down their measurements and observations (cause/effect sentences).

Listening: Students will listen to each other during T-P-S and while working in teams to properly measure liquids.

Speaking: Students will be speaking to each other during T-P-S and while working in teams to properly measure liquids.