

Magic Vase Lesson Plan

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The Task

You're planting in the garden and uncover a vase buried in the soil. After cleaning the vase, you place it on your bedside table. You notice something shiny in the vase before you go to sleep. You pull out a handful of pennies and count them up. There are 6 pennies in the vase. When you check the vase at the end of the second day, you count 12 pennies. At the end of Day 3, you count 18 pennies. How many pennies will be in the vase after 10 days? 25 days? 100 days? Can you come up with a rule to find the number of pennies in the vase on any day?

Materials

- The task
- Vase (available to model task)
- Coins/counters (available for students)
- cm grid paper (available for students)
- Newsprint (for groups to record rule)
- Poster paper (for recording class data table)
- Poster inch grid paper (for graphing class data)

Facilitating Task

- Read task and clarify as needed
- Give individual think time before sharing with a partner
- Small groups (3-5 students)
 - Compare and come to consensus on days 10, 25, 100
 - Record your rule on poster
- Whole group
 - Record class data in 3 column table for days 0-10, 25, 100
 - Record class data on graph for days 0-10
 - Share out rules and connect words to symbolic notation
 - Discuss connections between representations - story context, table, graphs, verbal rule, symbolic rule

Misconceptions

- Day 0, the start, has 6 pennies (Day 0 has 0 pennies)
- Students might have difficulty identifying the pattern that relates the day to the total number of pennies. While it will likely be easy for students to notice the pattern from one day to the next, this iterative pattern requires you to know the previous day, in order to determine the day you are on. This makes finding the total pennies for any day challenging.

Suggested Prompts or Questions

- What patterns do you notice?
- What's the relationship between the day and the number of pennies?
- How did you find the total number of pennies for day 3? What expression could you write to show this? ($6+6+6$ or 6×3)
- Is there a quicker way to figure it out?
- Can you figure out the total number of pennies on day 25 without doing every day?
- How would you figure out the total number of pennies for day 100?