

Mathematics: The Language of STEM

Show Me the Money – Lesson 1

Rick Glass

CONTENT AND TASK DECISIONS

Grade Level(s): 2

Description of the Task:

Students will become deeply familiar with the characteristics of particular coins.

Indiana Mathematics Content Standards: Identify (by number) and write the Indiana mathematics content standard(s) that your lesson will target.

2.M.7 - Find the value of a collection of pennies, nickels, dimes, quarters and dollars.

2.NS.1 - Count by ones, twos, fives, tens, and hundreds up to at least 1,000 from any given number.

Indiana Mathematics Process Standards: Identify (by number) the Indiana mathematics process standard(s) that your lesson will address, and describe how students will be engaged in the process(es).

PS1 – Make sense of problems and persevere in solving them.

PS2, - Reason abstractly and quantitatively.

PS3, - Construct viable arguments and critique the reasoning of others.

PS5 – Use appropriate tools strategically.

Mathematics Content Goals: State your specific mathematics goals for students' learning in this lesson.

Each kind of coin has a specific value unrelated to its physical size.

Language Objectives: With English Learners in mind, state your specific language objectives for this the lesson. On what will you intentionally focus?

Penny, Nickel, Dime, Quarter, Half-dollar, Cents

Materials:

Student sets of coins. Each set contains one each of a penny, nickel, dime, quarter, and half-dollar. Plastic coins should be accurate replicas of real coins.. Large scale paper coins that accurately reflect the characteristics of real coins but are also representative of the size differences of regular coins.

THE LESSON

Before: This phase of the lesson should be designed to get students ready for problem solving. It also provides an opportunity for you to find out what they already know about the topic. Describe how you will accomplish each of the following in this phase of the lesson:

- **Activate prior knowledge** (including the specific questions you will ask to raise students' curiosity and activate or determine their prior knowledge),
- **Be sure the problem is understood**, and
- **Establish clear expectations** (including the specific expectations you have for students to record their mathematical thinking in writing or drawing).

Teacher says, “Each of you has a bag of coins. Look at each coin carefully. Choose one coin. This will be your “favorite” coin.”

“Look very closely at your favorite coin. In your math notebook, write the NAME of your favorite coin. Now, write at least 3-5 things you notice about your coin.”

Give students time to complete the task

During: This phase of the lesson should be designed for students to explore the focus task. Describe specifically what the students will be doing in this phase. Include a description of how the students will record their mathematical thinking in writing or drawing throughout the investigation. Describe how you will accomplish each of the following in this phase of the lesson:

- **Let go,**
- **Listen actively,**
- **Provide appropriate support** (including the specific questions you will ask to focus students’ thinking on the critical features of the task or to help students who are stuck), and
- **Provide worthwhile extensions.**

Students are grouped according to their selected coins.

“Meet your new partners who share your love for your coin. You have each recorded things you noticed about your coin. Share that information with your partners and record new information in your notebooks. Review each statement and decide if it is accurate.

Give students time to complete the task.

Give each group a piece of chart paper and an oversized picture of their coin.

“Tape your coin on your chart paper. Write the name of your coin. From your notebooks, choose 7-10 of the best descriptions of your coin and record them on the chart paper.”

After: In this portion of the lesson, students should work as a community of learners, discussing, justifying, and challenging various solutions to the problem all have just worked on. Here is where much of the learning will occur. It is critical to plan sufficient time for a discussion and make sure the During portion does not go on for too long. Describe how you will accomplish each of the following:

- **Promote a mathematical community of learners** (Describe how the students will present their solution strategies. How will you organize the discussion to accomplish the mathematical goals? Which solutions will be shared and in what order?)
- **Listen actively without evaluation** (How will you respond to students’ presentations of their solutions?)
- **Make connections** (What questions will you ask to help students make sense of the mathematics, make connections, see patterns, and make generalizations?)
- **Summarize main ideas** (How will you formalize the main ideas of the lesson? How will you reinforce appropriate terminology, definitions, or symbols?)

Students’ charts are now hung about the classroom. Each group, in turn, presents their favorite coin to the rest of the class. Each group should explain why that coin is their favorite; what makes their coin special.

The teacher might ask questions like:

**Think of one of the coins that is not your favorite. What did you notice about it?
If you could choose a new favorite coin, which one would it be? Why?**

ASSESSMENT

Observe: Describe how you will observe students to gather evidence about what they are learning, and describe the specific evidence of mathematical understanding that you will look for in your observations.

Ask: List the specific questions you will ask students to assess their learning.

In your Math Notebook, you have already written a description of your favorite coin. Now, write the names of each of the other coins, and write a description of them as well.