

ESTABLISHING PURPOSE

1

What are the key content standards I will focus on in this lesson?

Indiana Academic Standards:

3.C.2. Represent the concept of multiplication of whole numbers with the following models: equal-sized groups, arrays, area models, and equal "jumps" on a number line. Understand the properties of 0 and 1 in multiplication.

3.AT.2. Solve real-world problems involving whole number multiplication within 100 in situations involving equal groups, arrays, and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).

3.AT.4. Interpret a multiplication equation as equal groups (e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each). Represent verbal statements of equal groups as multiplication equations.

3.AT.6. Create, extend, and give an appropriate rule for number patterns using multiplication within 100.

Standards for Mathematical Practice:

- Make sense of problems and persevere in solving them.
- Model with mathematics.

2

What are the learning intentions (the goal and why of learning stated in student-friendly language) I will focus on in this lesson?

- Content: I am learning that the meaning of multiplication is a one-to-many constant relationship between two sets.
- Language: I am learning the language of mathematical modeling.
- Social: I am learning the expectations we hold for ourselves and each other as mathematicians.

3

When will I introduce and reinforce the learning intention(s) so that students understand it, see the relevance, connect it to previous learning, and can clearly communicate it themselves?

- Introduce and discuss related essential questions first: What is multiplication? How do we engage in the work of mathematicians?
- Facilitate partner and class discussion to answer essential questions.
- Facilitate small group and class discussion of learning intentions and success criteria with modeling of sticky notes and evidence to close the lesson.

SUCCESS CRITERIA

4

What evidence shows that students have mastered the learning intention(s)? What criteria will I use?

I can statements:

- I can extend a one-to-many constant relationship between two sets.
- I can explain why the growth of each set is multiplicative.
- I can use mathematical models to represent multiplicative relationships.
- I can describe multiplicative growth using multiplicative language and notation (equal groups, product, factor, \times)

5

How will I check students' understanding (assess learning) during instruction and make accommodations?

Formative Assessment Strategies:

- Observation/conference chart
- Student work
- Colored sticky notes with evidence

Differentiation Strategies:

- Differentiate the content and process by interest: partner and task category based on interest inventory
- Differentiate the process by interest: choice of tools from the mathematical toolbox

INSTRUCTION

6

What activities and tasks will move students forward in their learning?

- \$10,000 Pyramid
- The Hobbies and Activities We Love task with the mathematical toolbox (concrete, representational, and abstract [CRA] representations)

7

What resources (materials and sentence frames) are needed?

\$10,000 Pyramid terms

Mathematical toolboxes

Math binders

Cubes

Number charts

Graph paper

Open number lines and whiteboard markers

Colored pencils

Calculators

8

How will I organize and facilitate the learning? What questions will I ask? How will I initiate closure?

Instructional Strategies:

- Literacy comprehension strategies: visualizing, making connections, predicting, asking questions, and summarizing
- Anticipate, monitor, select, sequence, and connect students' CRA strategies
- Think-pair-share

Scaffolding Questions:

- What tool from your toolbox could you use?
- How is _____ changing each time?

Extending Questions:

- What pattern do you notice?
- How many _____ would you need for 10 students or 20 students? How do you know?
- How are the quantities changing?

Connecting Questions:

- Where do you see the number of students represented?
- Where do you see the number of _____ represented?
- How are the quantities changing?
- How does this model represent the relationship between the two quantities?
- How does this model help you clearly communicate your strategy and thinking?
- How does this model help you efficiently solve the problem?
- What is similar among the models? What is different?

Self-Reflection and Self-Evaluation for Closure:

- Colored sticky note class evaluation