At-Home Learning Presents CLASSROOM CONNECTION

Lesson Title: Volume and Division **Designer:** Jason Lineberger
Discipline: Math **Grade Level:** 4-5

Activity 1: Volume Scavenger BINGO!
(Appropriate for BEFORE the Broadcast Lesson)

Activity Goal: Calculating Volume

Targeted Math Skills: Multi-step multiplication; Estimation.

Materials: Household items, measuring tape, pencil, paper to draw a BINGO card, or create a digital BINGO card (Bingo Baker).

Steps:

1. Before the lesson, measure items of several sizes around the house to determine volume. If the items are not perfect rectangular prisms, use a close estimate, but try to choose items that are close to a rectangular prism in shape. For example, a refrigerator, coffee table, TV, bed, shoe box, jewelry box, tissue box, etc.
2. Measure nine items and create a BINGO card with the volume of these nine items. Students will use a measuring tape to get the dimensions of items to calculate volume. Since they only know the final volume numbers, they'll need to estimate before measuring to save time. When they find a match, they'll draw a picture or write a description of the item on the BINGO card.

Activity 2: Design a Carton
(Appropriate for AFTER the Broadcast Lesson)

Activity Goal: Use division to determine the height of a rectangular prism.

Targeted Math Skills: Calculating volume; Division.

Materials: Cardboard, tape, scissors, sand, and scale.

Steps:

1. Explain the situation - a company wants to sell play sand in a carton. Start with an amount of sand to be sold, such as 2 kilograms. Measure out that amount of sand using the scale. If we know that sand is approximately 1.6 grams per cubic centimeter, design a carton to hold 2 kilograms of sand.
2. Students will need to figure out the volume needed, then work backwards to determine a possible length, width, and height of the carton. When they have their numbers, have them check their answer by actually building a cardboard carton with those measurements and filling it with 2 kilograms of sand.

Bonus Challenge: Create a different carton with the same volume.

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Additional Resources for Lesson-Related Extension Activities:

- **Student-Facing**
  - Volume of rectangles inside rectangles (UNC TV/PBS Learning Media) - https://unctv.pbslearningmedia.org/resource/axhaq5l45fe/crates-in-boxcar-khan-axhaq5l45fe/
  - Math Mess: The Bulging Briefcase (UNC TV/PBS Learning Media) - https://unctv.pbslearningmedia.org/resource/865bd852-630b-464e-809e-02f71cc3f97a/the-bulging-briefcase/
  - Finding Volume (UNC TV/PBS Learning Media) - https://unctv.pbslearningmedia.org/resource/understanding-volume-interactive-lesson/skills-on-demand/

- **Teacher-Facing**
  - Educator Guide to the Bulging Briefcase (UNC TV/PBS Learning Media) - https://d43fweuh3sg51.cloudfront.net/media/media_files/MM5_Educator_Guide.pdf
  - Volume and Rectangular Prisms Lesson Plan (Education.com) - https://www.education.com/lesson-plan/volume-and-rectangular-prisms/