Tiered Lesson

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Essential Question: How can we derive the formula for finding the surface area of right rectangular prisms?

Explanation of Task for Gifted Students:

The gifted students will be deriving the formula for the surface area of right rectangular prisms and will use their surface area calculations to determine which dimensions (length, width, and height) will be most cost effective for companies to use in packaging products.

Working in small groups (2-3 students), here is their task:

a. Decide how many different right rectangular prisms can be made from prisms with a volume of : 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20un^3.

b. Record the dimensions (length, width, and height) for all of the prisms.

c. Calculate the surface area for each prism.

d. Develop a rule or formula to calculate the surface area of a rectangular prism if given length, width, and height.

e. Discuss with your group, which dimensions would be the least cost effective for a company to use when packaging a product.

Final Product:

Think of a product that companies could package more efficiently and prepare a presentation for their board of directors explaining to them ways in which their company could save money.

Explanation of Task for On-Level Students:

These students will also be deriving the formula for the surface area of right rectangular prisms, but will do so with the use of manipulatives and a teacher handout.

Working in small groups (2-3 students), here is their task:

a. Using unit cubes which link together, construct right rectangular prisms of volume: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 un^2.

b. After they construct each right rectangular prism, they will use a chart provided by the teacher to list the dimensions (length, width, and height) of each prism created.

c. Using their dimensions, the students will generate a formula for calculating the surface area of right rectangular prisms. They will define their variables and explain why each is important to the formula.

Final Product:
Create a flip book that summarizes their findings which could be used to teach another student how to use the formula for surface area.