

MeTEOR Performance Task

Seventh Grade

Mathematics
All About Boxes

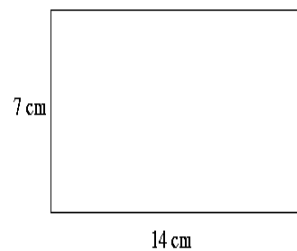
Performance Task Item: All about Boxes

Task/Question 1:

A. Write the formula for the volume of a right rectangular prism:

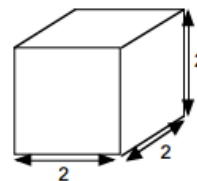
B. Describe what the surface area of a figure represents:

C. Determine the area of the following figure:



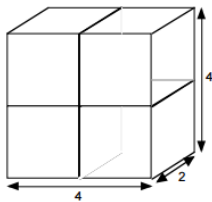
Task/Question 2:

- A.** Billy has a set of building blocks. Each block is 2 inches long, 2 inches wide and 2 inches high. What is the volume of the block in cubic inches?



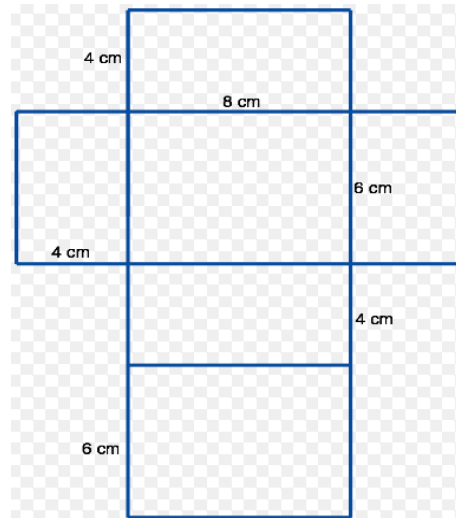
- B.** Explain how you determined the volume in Part A:

- C.** Billy has built this shape from his $2 \times 2 \times 2$ blocks. What is the new surface area of the shape in square inches?



Task/Question 3:

- A.** A grocer wants to sell fruit in boxes. He wants to make the boxes from cardboard as shown below.



Calculate the volume of the box:

- B.** Calculate the surface area of the box in part A. Show your work.

Task/Question 4:

You are hired as a new design engineer for Emoji Cereal Company. It is your job to design the next cereal box. The new cereal box must have a volume of 4000 cm^3 . Your task will be to create a flier that contains your proposal for the best cereal box design for the cereal that Emoji Cereal Co. will sell.

- A.** Create two different-sized cereal boxes that would hold a volume of 4000 cm^3 of cereal. Draw each box below and label its dimensions. Show your work to verify that the boxes you drew would hold 4000 cm^3 of cereal.

Cereal Box 1	Cereal Box 2

- B.** Find the surface area of each box you created in Part A. Show all your work.

Cereal Box 1	Cereal Box 2

- C.** It costs \$0.0002 per cm^2 for the cardboard used to make the boxes. How much will it cost to produce each box you created in part A? Defend your math.

Cereal Box 1	Cereal Box 2

- D.** The shelves at Super Size Mart that will sell your cereal are each 30 cm wide, 40 cm high and 600 cm long. There are 4 shelves in each unit. Based on this information, would you recommend producing either of the boxes you designed to hold the cereal? Defend your reasoning with mathematical arguments.



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