Independent Practice: **EFFECTS ON VOLUME AS A RESULT OF DIMENSIONAL CHANGES**

NAME: _____ DATE: _____ PERIOD: _____

For # 1 – , find the volume of each prism after undergoing the indicated changes.

1. V = _____   A rectangular prism has a volume of 344 cubic units. Find its volume if its dimensions are doubled.

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2. V = _____   If the volume of a rectangular prism is 420 cubic units, what is its volume if its dimensions are halved?

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3. V = _____   The volume of a right triangular prism is 300 cubic units. Find its volume if its dimensions are increased 1.5 times.

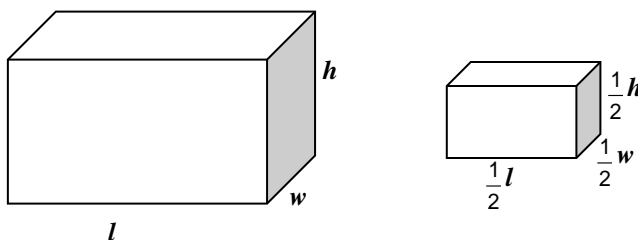--

4. V = _____   A triangular prism has a volume of 375 cubic units. Find its volume if all of its dimensions were reduced to one-fifth their original length?

5. V = _____

The Aquarium at Moody Gardens is 128 feet tall with a rectangular base of 220 feet wide and 322 feet long. What would be the volume of an aquarium if a smaller aquarium was built with each dimension 1/8 the size of the larger aquarium?

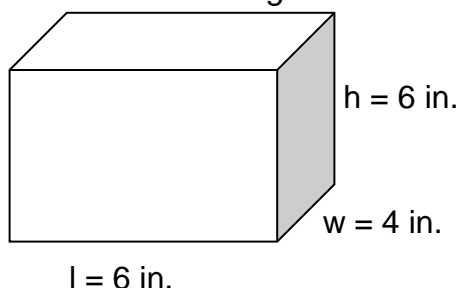- -

6. V = _____

A box in the shape of a cube containing a snow globe measures 8 inches per side. A crate contains boxes 15 rows by 15 columns by 15 high. What is the volume of the crate?

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7. Blocks = _____

Matt is building walls using the building blocks shown below. The dimensions of the small blocks are $\frac{1}{2}$ the size of the dimensions of the large blocks. Matt's wall has a **length (*l*) of 5 large blocks** and a **height (*h*) of 2** large blocks. How many blocks does Matt need to build a wall with the **same volume** as the wall he made with the large blocks?
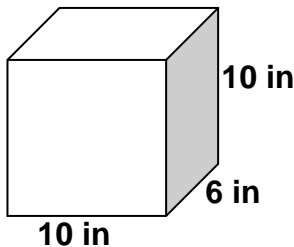
Matt's Building Blocks

For #'s 8-15, match the description of how the volume of the new figure compares to the volume of the original figure given the described changes. The drawing below represents the original figure.

h = 6 in.

w = 4 in.

l = 6 in.

- -

_____ 8. All dimensions changed to $\frac{1}{2}$ their original size.

_____ 9. All dimensions are doubled.

_____ 10. The height is $\frac{1}{3}$ its original size, the length is 1.5 times its original size and the width is doubled.

_____ 11. The length and the width are doubled, the height remains unchanged.

_____ 12. All dimensions are tripled.

_____ 13. The length and height are halved, the width remains unchanged.

_____ 14. The width is halved the height and the length remain unchanged.

_____ 15. The width and height are decreased by $\frac{1}{3}$, the length is unchanged.

a) The volume remains the same.

b) The volume increases 27 times.

c) The volume decreases by $\frac{1}{8}$.

d) The volume doubles.

e) The volume decreases by $\frac{1}{9}$.

f) The volume is quadrupled.

g) The volume decreases by $\frac{1}{4}$.

h) The volume is halved.

i) The volume increases 8 times.

For # 16 – 19, clearly circle the best answer.. <u>Work must be shown in order to receive credit!</u>

16. A package has dimensions 10 x 10 x 6 inches. Mrs. Jansen wants to gift wrap it for her grandson. What is the total surface area to be wrapped?
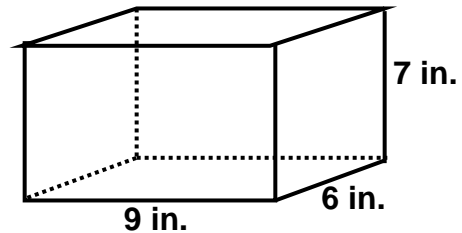
10 in

6 in

10 in

A 60 sq. in.

B 100 sq. in.

C 440 sq. in.

D 600 sq. in.

17. The volume of a rectangular prism is 298 cubic units. If the dimensions are tripled, what is the volume of the figure in cubic units?

Record your answer and fill in the bubbles on the grid below. Be sure to use the correct place value.

18. If the length and width of the figure below are doubled, how will it affect the volume of the figure?

7 in.

6 in.

9 in.

F   The volume will be doubled.

G   The volume will be quadrupled.

H   The volume will be 8 times greater.

J   The volume will be 14 times greater.

19. The marketing department of a company is considering making a key chain with a miniature replica of their top-selling dishwasher detergent. The dimensions of the dishwasher detergent box are 9 inches by 7.5 inches by 2.25 inches. If the replica will by $\frac{1}{5}$ the size of the regular box, what will be the volume of the miniature replica?

A 1.215 cu. in.

B 8.37 cu. in.

C 30.375 cu. in.

D 41.85 cu. in.