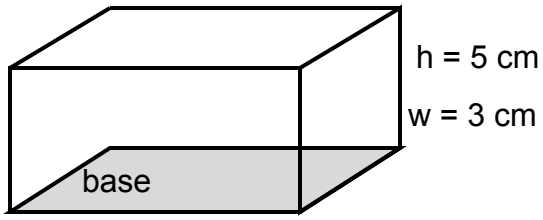
Rectangular Prism Volume

Use length x width x height or base area x height

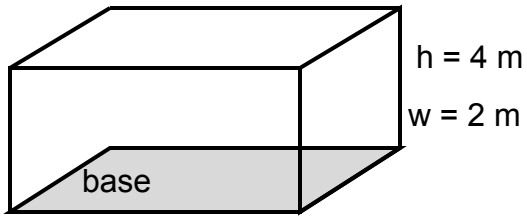
Name: _____ Date: _____

Part 1 - Measure all three edges

Volume formulas: V = l x w x h and V = B x h. Here, **B** means the area of the shaded bottom base, not the length of one edge. Write every volume in cubic units.



l = 8 cm



l = 9 m

1. Find the volume of this crate. Show one equation.

2. Find the volume of this storage bin. Show one equation.

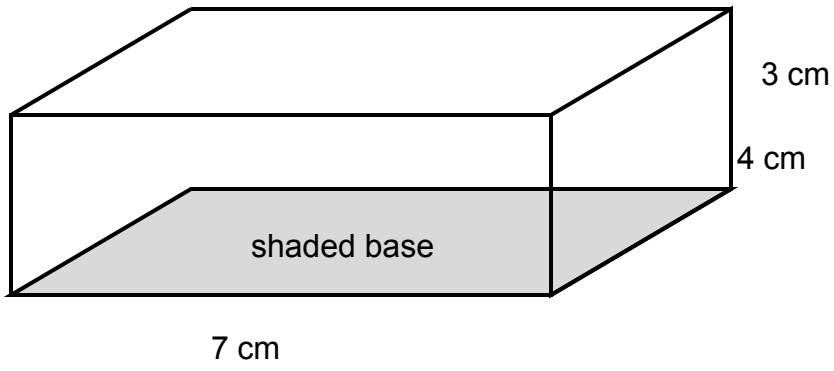
Rectangular Prism Volume

Use length x width x height or base area x height

Name: _____ Date: _____

Part 2 - Start with the base area

3. A right rectangular aquarium has a base area of **42 square inches** and a height of **6 inches**. Find its volume using V = B x h. Show an equation and include units.



4. For the prism shown, find the volume two ways: first with l x w x h, then with B x h. What is B? Explain why both methods give the same volume.

Rectangular Prism Volume

Use length x width x height or base area x height

Answer key and teaching notes

Materials and setup: Print and supply all student pages, keeping teacher-key pages separate. Supply a pencil for each student; a ruler is optional and is not needed to measure the drawings. Tell students that every needed dimension is printed on a diagram or in the problem, so they must not estimate an unmarked edge. Have students complete Part 1 before Part 2.

Teaching script: Say: “Volume tells how much space fills a solid. A cubic centimeter, cubic meter, or cubic inch is a small cube of space. In V = B x h, B is the area of the entire base face. It is not a base edge length. The height tells how many equal base layers are stacked.” Point to a shaded base and ask students to name its two edge dimensions before they calculate its area.

Observe: As students work, look for (1) multiplication of all three dimensions in Items 1-2, (2) square units for B and cubic units for V in Items 3-4, and (3) an explanation that links base area to equal layers. Prompt only: “What does B stand for here?” Do not supply a missing dimension or answer.

1. V = 8 cm x 3 cm x 5 cm = 120 cm^3. **2.** V = 9 m x 2 m x 4 m = 72 m^3.

3. V = B x h = 42 in^2 x 6 in = 252 in^3. The 42 is already an area, so students should not treat it as one side length.

4. Method 1: V = 7 cm x 4 cm x 3 cm = 84 cm^3. Method 2: B = 7 cm x 4 cm = 28 cm^2; V = 28 cm^2 x 3 cm = 84 cm^3. Sample explanation: “The base has 28 square centimeters. There are 3 layers with the same base, so 28 x 3 is 84 cubic centimeters. Multiplying 7 x 4 x 3 groups the same factors.” Accept equivalent clear explanations.

Quick rubric: For each item, award credit when the student uses the given dimensions or stated base area, computes accurately, and labels volume in cubic units. For Item 4, also require B = 28 cm^2 and a layer/base-area explanation. A response that calls B “7 cm” or “4 cm” needs reteaching.

Source credit: NY-5.MD.5.b, New York Next Generation Mathematics Learning Standards, https://lessonmakerpro.com/standards/ny-nextgen-math/ny-5-md-5-b