Build It: Area and Volume

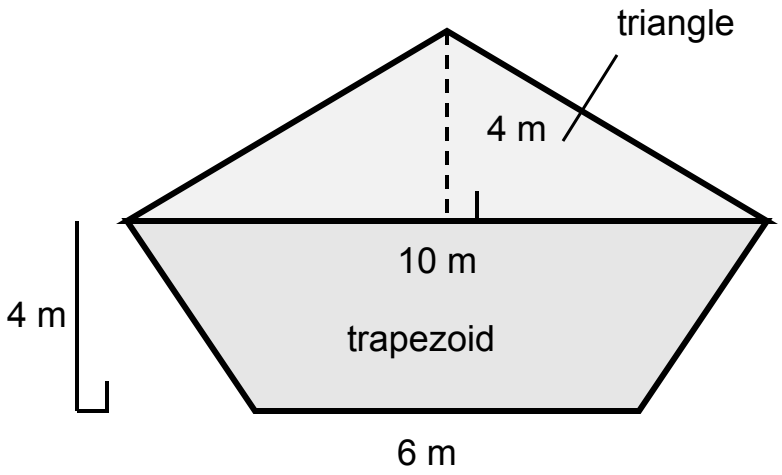
Find the area of a triangle-and-trapezoid figure and the volume of a right triangular prism.

Name: _____ Date: _____

Part 1 - Composite Area

Focused practice: This page practices one subset of the standard. Find the area of a figure made from a trapezoid and a triangle.

A school is planning a flower bed in the shape below. The dashed segment separates the two parts. All measurements are in meters. The right-angle marks show perpendicular heights.



1. Show a decomposition and calculation. Then write the total area of the flower bed. Include units.

Area of the flower bed: _____

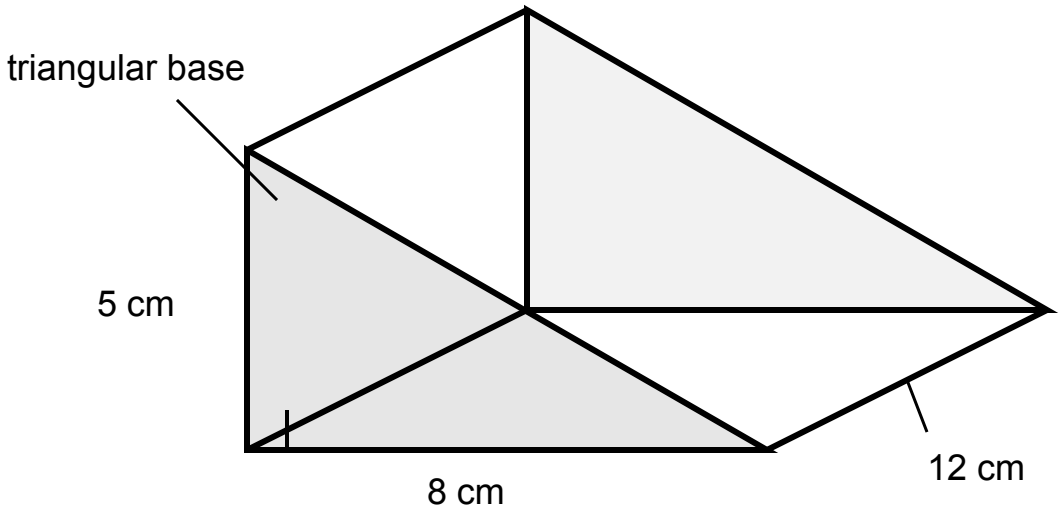
Build It: Area and Volume

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Name: _____ Date: _____

Part 2 - Volume of a Right Triangular Prism

A storage container is a **right triangular prism**. First find the area of its triangular base. Then multiply by the prism length. The triangular base has perpendicular legs 8 cm and 5 cm. The prism length along a lateral connecting edge is 12 cm.



2. What is the volume of the container? Show the area of the triangular base and your volume calculation. Include cubic units.

Volume: _____

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Answer Key and Teaching Notes

Materials and setup: Print and supply all student pages, keeping teacher-key pages separate. Students need pencils, rulers, and optional scratch paper. No measuring is needed because all necessary dimensions are labeled. Display or read the task directions only after students have their own copies.

Teaching script: “Today we are using two different measurements. Area tells how much flat space is covered, so its units are square units. Volume tells how much space is inside a solid, so its units are cubic units. In Part 1, the dashed line shows one useful way to split the flat figure. In Part 2, identify the triangular base before using the prism length.”

Observation method: While students work, check whether each student (1) uses the perpendicular heights rather than a slanted side, (2) adds the two non-overlapping areas in Part 1, and (3) finds triangular-base area before multiplying by prism length in Part 2. Ask: “Which measurement is perpendicular to the base?” Record each skill as secure, developing, or needs support. Do not tell students an answer; prompt them to label each part.

1. Composite area: The triangle base and the trapezoid's top base are the same dashed segment, labeled 10 m. Trapezoid area = (10 + 6) / 2 x 4 = 32 m^2. Triangle area = 1/2 x 10 x 4 = 20 m^2. Total area = 32 + 20 = **52 m^2**. Accept equivalent correct decomposition and calculations.

2. Prism volume: The 12 cm label identifies a lateral connecting edge, the prism length. Triangular base area = 1/2 x 8 x 5 = 20 cm^2. Volume = 20 x 12 = **240 cm^3**. A complete response shows both the base-area calculation and multiplication by the prism length.

Source credit: New York State Next Generation Mathematics Learning Standards, NY-7.G.6, supplied task contract: https://lessonmakerpro.com/standards/ny-nextgen-math/ny-7-g-6