

Grade 7 · Area, Surface Area and Volume of Prisms · Test Answer Key

Common Core 7.G.B.6 · mathovore.fr

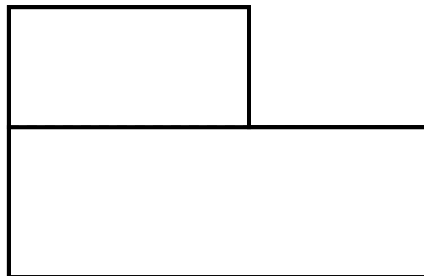
This answer key for the area, surface area, and volume test gives a worked solution for each question and a scoring guide that shows how the 20 points are earned. Award partial credit for correct setups, even when the final arithmetic or units contain a slip.

Grade 7 Common Core: 7.G.B.6

Question 1: Area of an L-shaped figure (3 points)

Split into a bottom rectangle $14 \times 5 = 70$ and a top rectangle $8 \times 4 = 32$: $70 + 32 = 102$. Or subtract: $14 \times 9 = 126$ and $126 - 6 \times 4 = 102$.

102 ft^2



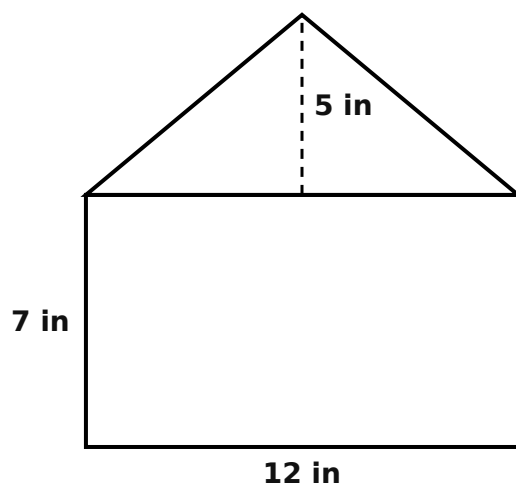
Solved figure: $70 + 32 = 102$.

Scoring: 1 point for a valid way to break up (or complete) the figure; 1 point for correct partial areas; 1 point for 102 ft^2 with square units.

Question 2: Area of a pennant (2 points)

Rectangle: $12 \times 7 = 84$. Triangle: $\frac{1}{2} \times 12 \times 5 = 30$. Total: $84 + 30 = 114$.

114 in^2



Solved figure: $84 + 30 = 114$.

Scoring: 1 point for the rectangle area (84) and the triangle area (30); 1 point for the total with square units.

Question 3: Volumes of prisms (3 points)

a. $9 \times 6 \times 4 = 216$: 216 in^3

b. Base area: $\frac{1}{2} \times 8 \times 6 = 24$. Volume: $24 \times 11 = 264$: 264 cm^3

Scoring: part (a) 1 point; part (b) 1 point for the base area, 1 point for the volume with cubic units.

Question 4: Surface area of a box (2 points)

$$2(10 \times 6) + 2(10 \times 4) + 2(6 \times 4) = 120 + 80 + 48 = 248.$$

$$248 \text{ cm}^2$$

Scoring: 1 point for finding all six faces (three pairs); 1 point for 248 cm^2 with square units.

Question 5: Surface area of a triangular prism (3 points)

Bases: $2 \times \frac{1}{2} \times 8 \times 6 = 48$. Rectangles: $(8 + 6 + 10) \times 12 = 24 \times 12 = 288$. Total: $48 + 288 = 336$.

$$336 \text{ cm}^2$$

Scoring: 1 point for the area of the two bases; 1 point for the three rectangular faces; 1 point for the total with square units.

Question 6: Missing height (2 points)

$$B = 12 \times 5 = 60. \text{ Then } 60h = 360, \text{ so } h = 360 \div 60 = 6.$$

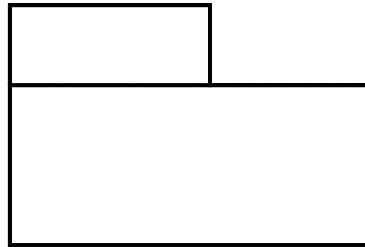
6 ft

Scoring: 1 point for the base area (60) or a correct equation; 1 point for 6 ft.

Question 7: Volume of a composite solid (3 points)

Area of the L-shaped face: $9 \times 6 - 4 \times 2 = 54 - 8 = 46$. Volume: $46 \times 5 = 230$.

230 cm³



Solved figure: face area $36 + 10 = 46$.

Scoring: 1 point for the area of the face (46); 1 point for multiplying by the depth; 1 point for 230 cm³ with cubic units.

Question 8: Wrapping a gift (2 points)

Surface area: $2(14 \times 10) + 2(14 \times 6) + 2(10 \times 6) = 280 + 168 + 120 = 568$ in².

Since $568 \leq 600$, one sheet is enough, with 32 in² left over.

Scoring: 1 point for the surface area (568); 1 point for comparing with 600 and answering yes.

Total
20 points