

Unfolding Solids: Nets and Surface Area

Grade 6 math · Test Answer Key · Standards: 6.G.A.4

Award the points in each scoring line. Accept any correct organization of the face areas, such as listing every face or using the formula. Take off the units point when square units are missing.

Standards: 6.G.A.4 · **Level:** Grade 6

Question 1 Surface area of a carton (2 points)

$2(7 \times 3) = 42$, $2(7 \times 5) = 70$, $2(3 \times 5) = 30$. $SA = 42 + 70 + 30 = 142$.

142 square inches

Scoring: 1 point for the three pair areas, 1 point for the total with square units.

Question 2 Triangular prism (3 points)

Triangles: $2 \times (\frac{1}{2} \times 7 \times 24) = 168$. Rectangles: $(7 + 24 + 25) \times 12 = 56 \times 12 = 672$. Total: $168 + 672 = 840$.

840 square centimeters

Scoring: 1 point for the triangles, 1 point for the rectangles, 1 point for the total with units.

Question 3 Cube (2 points)

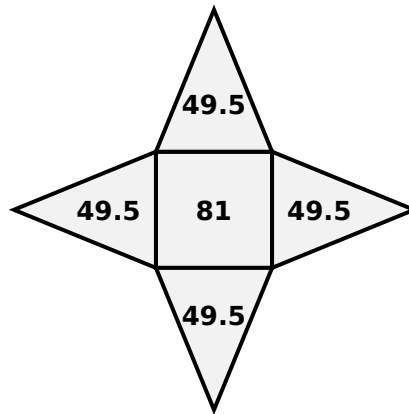
One face: $15 \times 15 = 225$. Six faces: $6 \times 225 = 1,350$.

1,350 square centimeters

Scoring: 1 point for a face area of 225, 1 point for the total.

Question 4 Square pyramid (3 points)

Base: $9 \times 9 = 81$. Triangle: $\frac{1}{2} \times 9 \times 11 = 49.5$. Four triangles: 198. Total: $81 + 198 = 279$.



Face areas in square inches.

279 square inches

Scoring: 1 point for the base, 1 point for the four triangles, 1 point for the total with units.

Question 5 Pet crate without a lid (3 points)

- a. $30 \times 20 = \mathbf{600 \text{ square inches.}}$
- b. $2(30 \times 18) + 2(20 \times 18) = 1,080 + 720 = \mathbf{1,800 \text{ square inches.}}$
- c. $600 + 1,800 = \mathbf{2,400 \text{ square inches.}}$

Scoring: 1 point for each part.

Question 6 Wrapping a box (3 points)

- a. $2(12 \times 9) + 2(12 \times 5) + 2(9 \times 5) = 216 + 120 + 90 = \mathbf{426 \text{ square inches.}}$
- b. $426 \div 300 = 1.42$, so **2 sheets.**

Scoring: 2 points for part (a), with 1 point for correct pair areas; 1 point for rounding up to 2.

Question 7 Missing height (2 points)

$122 = 2(11 \times 3) + 2(11h) + 2(3h) = 66 + 28h$. Then $28h = 56$, so $h = 2$. Check: $2(33 + 22 + 6) = 122$.

2 inches

Scoring: 1 point for the equation, 1 point for the answer.

Question 8 Name the solid (2 points)

- a. A square base with four triangles is a **square pyramid**.
- b. The base has 4 edges and 4 more edges go up to the top, so **8 edges**.

Scoring: 1 point for each part.