

Cross Sections of Prisms and Pyramids

Grade 7 math · Test Answer Key · Standards: 7.G.A.3

Award points as marked. Accept any correct description in Question 8, and award the area point whenever the dimensions are used correctly, even if an earlier dimension was wrong and the multiplication is correct.

Standards: 7.G.A.3 · **Level:** Grade 7

Question 1 Name the Cross Sections (2 points)

- a. **A rectangle** (the same size as the base).
- b. **A triangle.**

Scoring: 1 point per part.

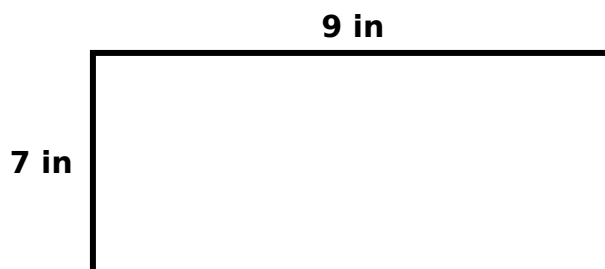
Question 2 A Slice That Misses the Apex (2 points)

- a. **A trapezoid.**
- b. The apex is not on the plane, so the slice does not come to a point. It keeps two parallel sides, one lower and one shorter, joined by two slanted sides.

Scoring: 1 point per part.

Question 3 Vertical Cut of a Prism (3 points)

- a. **A rectangle.**
- b. It copies the 9-by-7 face: **9 in by 7 in.**
- c. $9 \times 7 =$ **63 square inches.**

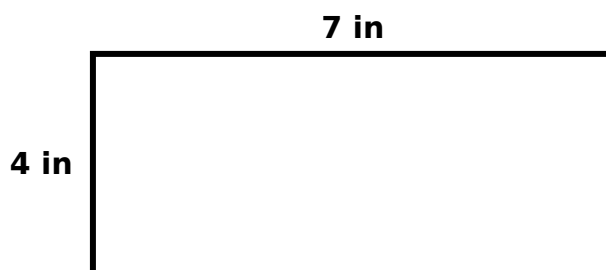


The cross section: a 9 in by 7 in rectangle.

Scoring: 1 point per part.

Question 4 Parallel Cut of a Pyramid (3 points)

- a. **A rectangle**, similar to the base.
- b. Scale factor: $5 \div 10 = \frac{1}{2}$. Dimensions: $14 \times \frac{1}{2} = 7$ and $8 \times \frac{1}{2} = 4$, so **7 in by 4 in**.
- c. $7 \times 4 =$ **28 square inches**.



The cross section: 7 in by 4 in.

Scoring: 1 point per part.

Question 5 Triangle Through the Apex (2 points)

The triangle has base 14 in and height 10 in. Area: $\frac{1}{2} \times 14 \times 10 = 70$.

Base 14 in, height 10 in; 70 square inches

Scoring: 1 point for the dimensions, 1 point for the area.

Question 6 Square or Not? (3 points)

- a. It copies the base: **6 in by 6 in**.
- b. One side is the height 11 in and the other is 6 in: **6 in by 11 in**.
- c. Only the cross section parallel to the base is a square, because its sides are equal ($6 = 6$), while $6 \neq 11$.

Scoring: 1 point per part.

Question 7 Fish Tank (3 points)

- a. $30 \times 12 =$ **360 square inches**.
- b. $360 \times 10 =$ **3,600 cubic inches**.
- c. $30 \times 10 =$ **300 square inches**.

Scoring: 1 point per part.

Question 8 Find the Flaw (2 points)

- a. A plane parallel to the base cuts the pyramid at some height.
- b. The cross section is a **rectangle**, smaller than the base. (A vertical cut missing the apex, a trapezoid, is also accepted.)

Scoring: 1 point per part.