

Chapter 4 | Area of Parallelograms, Triangles, and Trapezoids

Worksheet C | Mixed Practice & Application

Name: _____ Grade: _____ Date: _____

Warm-up: Worked Examples

Example 1: Identify the Perpendicular Height

Problem: A triangle has base 11 cm, a slanted side 9 cm, and a perpendicular segment 6 cm. Which is the height?

Meets base at 90°

6 cm = height

Example 2: Area of a Parallelogram

Problem: Base 9.5 cm, perpendicular height 4 cm.

Multiply

$$9.5 \times 4 = 38$$

Answer

$$38 \text{ cm}^2$$

Example 3: Area of a Triangle

Problem: Base 13 m, perpendicular height 10 m.

Multiply, then halve

$$(13 \times 10) \div 2 = 65$$

Answer

$$65 \text{ m}^2$$

Example 4: Area of a Trapezoid

Problem: Bases 8 cm and 14 cm, height 7 cm.

Add bases

$$8 + 14 = 22$$

Multiply by height, halve

$$(22 \times 7) \div 2 = 77$$

Answer

$$77 \text{ cm}^2$$

Example 5: Decimal Measurement

Problem: A triangle has base 6.4 cm and perpendicular height 5 cm.

Multiply, then halve

$$(6.4 \times 5) \div 2 = 16$$

Answer

$$16 \text{ cm}^2$$

Example 6: Common-Trap Trapezoid Formula

Problem: A trapezoid has bases 12 cm and 18 cm and height 4 cm. A student calculates $12 \times 4 = 48 \text{ cm}^2$.

Explain the error.

Wrong (uses one base only)

$$12 \times 4 = 48$$

Correct (uses both bases)

$$((12 + 18) \times 4) \div 2$$

Answer

$$60 \text{ cm}^2$$

Practice

1. Parallelogram garden: $b = 18 \text{ m}$, $h = 7 \text{ m}$.

2. Triangular sail: $b = 9 \text{ m}$, $h = 6 \text{ m}$.

3. Trapezoid patio: bases 12 m and 20 m , $h = 8 \text{ m}$.

4. Triangle: $b = 14 \text{ cm}$, $h = 9 \text{ cm}$, slanted side 12 cm .

5. A parallelogram has area 112 cm^2 and base 16 cm . Find h .

6. A triangle has area 45 m^2 and base 15 m . Find h .

7. Trapezoid: bases 8 cm and 18 cm , $h = 6 \text{ cm}$.

8. Explain why a parallelogram and rectangle with same base and height have same area.

9. Explain how a right-angle marker prevents the slanted-side error.

10. Parallelogram: $b = 4.5$ m, $h = 8$ m.

11. Triangle: $b = 22$ cm, $h = 5$ cm.

12. Trapezoid: bases 15 m and 25 m, $h = 10$ m.

13. Triangle area 72 cm^2 , $h = 9$ cm. Find b .

14. Non-Routine Item 1: A rectangle has $b = 12$ cm and $h = 7$ cm. A triangle has the same base and height. Find both areas and explain why triangle is half.

15. Non-Routine Item 2: A trapezoid has bases 10 cm and 18 cm and $h = 5$ cm. A student writes $(10 + 18 + 5) \div 2$. Explain the missing operation and find area.
