

SOLVING FORMULAS

1. **To evaluate a formula** substitute the given value(s) for the variable(s) and simplify using the order of operations.

Example: The formula for the area of a trapezoid is given by

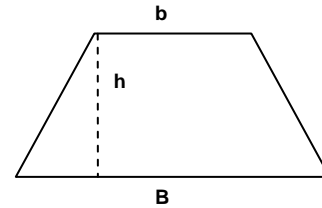
$$A = \frac{1}{2}(B + b)h, \text{ where } \mathbf{B} \text{ is the lower base, } \mathbf{b} \text{ is the upper base, and } \mathbf{h} \text{ is the height}$$

Find the area when $B = 15$ ft, $b = 9$ ft, and $h = 6$ ft.

Solution: Substitute the given values for B , b and h , then simplify as shown.

$$A = \frac{1}{2}(B + b)h$$

$$A = \frac{1}{2}(15 + 9) \cdot 6 = \frac{1}{2}(24)(6) = 12(6) = 72 \text{ ft}^2$$



2. **To solve a formula** for a specified variable

- 1) Clear fractions and decimals if necessary.
- 2) Combine like terms if necessary.
- 3) Add or subtract to get the term with the variable on one side of the equation.
- 4) Multiply or divide to solve for the specified variable.

Example: Solve $A = \frac{1}{2}(B + b)h$ for b

Solution:

$$A = \frac{1}{2}(B + b)h$$

$$2 \cdot A = \cancel{2} \cdot \frac{1}{\cancel{2}}(B + b)h \quad \leftarrow \text{Clear fractions - multiply each term by the LCD 2.}$$

$$2A = (B + b)h \quad \leftarrow \text{Remove parentheses - distribute h.}$$

$$2A = Bh + bh$$

$$2A - Bh = Bh + bh - Bh \quad \leftarrow \text{Isolate the term bh - subtract Bh from both sides.}$$

$$2A - Bh = bh$$

$$\frac{2A - Bh}{h} = \frac{b\cancel{h}}{\cancel{h}} \quad \leftarrow \text{Solve for b - divide both sides by h.}$$

$$\frac{2A - Bh}{h} = b$$