

Study Guide

**Integration: Algebra
Using Formulas**

The following four-step plan can be used to solve any problem.

| Problem-Solving Plan | |
|---------------------------------|----------------------------------------|
| 1. <i>Explore</i> the problem. | Identify what you want to know. |
| 2. <i>Plan</i> the solution. | Choose a strategy. |
| 3. <i>Solve</i> the problem. | Use the strategy to solve the problem. |
| 4. <i>Examine</i> the solution. | Check your answer. |

When finding a solution, it may be necessary to use a formula. Two useful formulas are the area formula and perimeter formula for a rectangle.

| | |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Area of a Rectangle | The formula for the area of a rectangle is $A = \ell w$, where A represents the area expressed in square units, ℓ represents the length, and w represents the width. |
| Perimeter of a Rectangle | The formula for the perimeter of a rectangle is $P = 2\ell + 2w$, where P represents the perimeter, ℓ represents the length and w represents the width. |

Examples

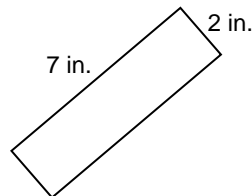
- 1 Find the perimeter and area of the rectangle at the right.

$$\begin{aligned} P &= 2\ell + 2w \\ &= 2(7) + 2(2) \\ &= 14 + 4 \text{ or } 18 \end{aligned}$$

The perimeter is 18 inches.

$$\begin{aligned} A &= \ell w \\ &= 7 \cdot 2 \text{ or } 14 \end{aligned}$$

The area is 14 in^2 .

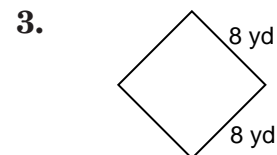
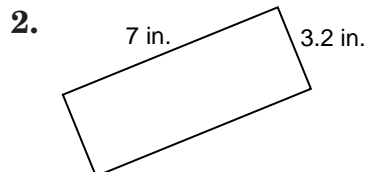
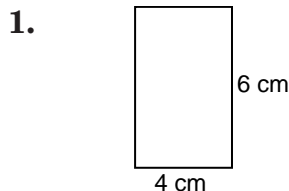


- 2 Find the width of a rectangle whose area is 52 cm^2 and whose length is 13 cm.

$$\begin{aligned} A &= \ell w \\ \frac{52}{13} &= \frac{13w}{13} \\ 4 &= w \end{aligned}$$

The width is 4 cm.

Find the perimeter and area of each rectangle.



Find the missing measure in each formula.

4. $\ell = 3, w = 7, P = \underline{\quad ? \quad}$

6. $w = 4, A = 36, \ell = \underline{\quad ? \quad}$

5. $w = 5.2, \ell = 6.5, A = \underline{\quad ? \quad}$

7. $P = 65, \ell = 18, w = \underline{\quad ? \quad}$