Conversion Strategy 2: Unit Analysis

Recall that you need to multiply the original measurement by an appropriate conversion ratio when using the unit analysis strategy.

Example 3

How many miles are there in 5000 yards? Express your answer to the nearest hundredth of a mile.

A conversion ratio for yards and miles is $1 \text{ mi} = 1760 \text{ yd}$, which can also be written as $\dfrac{1 \text{ mi}}{1760 \text{ yd}} = 1$ or $\dfrac{1760 \text{ yd}}{1 \text{ mi}} = 1$.

Now, multiply the given value by the conversion ratio in the format that will allow for the elimination of the unwanted units.

$$5000 \text{ yd} \cdot \frac{1 \text{ mi}}{1760 \text{ yd}} = 5000 \; \cancel{\text{yd}} \cdot \frac{1 \text{ mi}}{1760 \; \cancel{\text{yd}}}$$
$$\doteq 2.84 \text{ mi}$$

Check Up

1. Convert 5 inches into feet.

Compare your answer.

1. Convert 5 inches into feet.

$$5 \text{ in} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = 5 \; \cancel{\text{in}} \cdot \frac{1 \text{ ft}}{12 \; \cancel{\text{in}}}$$
$$\doteq 0.417 \text{ ft}$$