Lesson 6-3

Example 1 Convert Larger Units to Smaller Units
Convert 6 yards into feet.

Since 1 yard = 3 feet, the unit ratio is $\dfrac{3 \text{ ft}}{1 \text{ yd}}$.

$6 \text{ yd} = 6 \text{ yd} \cdot \dfrac{3 \text{ ft}}{1 \text{ yd}}$ Multiply by the unit ratio.

      $= 6 \cdot 3 \text{ ft or } 18 \text{ ft}$ Divide out common units and multiply.

So, 6 yards = 18 feet.

Example 2 Convert Larger Units to Smaller Units
HIKING   **Max is planning a hike which will cover $\dfrac{5}{8}$ of a mile. How long is the hike in feet?**

1 mile = 5,280 feet

$\dfrac{5}{8} \text{ mile} = \dfrac{5}{8} \text{ mile} \cdot \dfrac{5280 \text{ ft}}{1 \text{ mile}}$

        $= 3300 \text{ ft}$

So, the hike is 3,300 feet long.

Example 3 Convert Smaller Units to Larger Units
Convert 64 ounces into pounds.

Since 1 pound = 16 ounces, the unit ratio is $\dfrac{16 \text{ oz}}{1 \text{ lb}}$, and its reciprocal is $\dfrac{1 \text{ lb}}{16 \text{ oz}}$.

$64 \text{ oz} = 64 \text{ oz} \cdot \dfrac{1 \text{ lb}}{16 \text{ oz}}$ Multiply by the reciprocal of the unit ratio.

      $= 4 \text{ lb}$ Divide out common units, leaving the desired unit, pounds.

So, 64 ounces = 4 pounds.

Example 4

WOODWORKING Michael needs $7\frac{1}{2}$ feet of plywood for his woodworking project. How many yards of plywood does he need?

$7\frac{1}{2}$ ft $= 7\frac{1}{2} \cdot \frac{1 \text{ yd}}{3 \text{ ft}}$ Since 1 yard = 3 feet, multiply by the unit ratio. Then, divide out the common units.

$= \frac{15}{2} \cdot \frac{1}{3}$ yd   Write the mixed number as an improper fraction. Then divide out the common factors.

$= \frac{5}{2}$ yd or $2\frac{1}{2}$ yd   Multiply.

So, Michael needs $2\frac{1}{2}$ yards of plywood.

Example 5
FOOD A turkey breast weighing 5 pounds is cut into 10 pieces of equal weight. How many ounces does each piece weigh?

Begin by converting 5 pounds to ounces.

5 lb = 5 lb $\cdot \frac{16 \text{ oz}}{1 \text{ lb}}$

    = 80 oz

Find the unit rate which gives the number of ounces per piece of turkey breast.

$\frac{\text{ounces}}{\text{piece of turkey breast}} = \frac{80 \text{ oz}}{10 \text{ pieces}}$ or 8 ounces per piece of turkey breast

So, each piece of the turkey breast weighs 8 ounces.