7.7 Changing Customary
Units

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Multiple units
→ single unit

$4ft\ 7in = \underline{\ 55\ }in$

ft → in

$4(12)in + 7in$

$48 + 7$

$6\ lb\ 5oz = \underline{\ 101\ }oz$

$6(16)oz + 5oz$

$96 + 5$

Single Unit
↳ multiple Unit

$33oz = \underline{\ 2\ }lb\ \underline{\ 1\ }oz$

$$16\overline{)33} \quad 2\ r\ 1$$
$$\underline{32}$$
$$1$$

$5385\ lb = \underline{\ 2\ }T\ \underline{\ 1385\ }lb$

$$2000\overline{)5385} \quad 2\ r\ 1385$$
$$\underline{4000}$$
$$1385$$

Unit Analysis
Multiplying by units of 1

$\dfrac{1yd}{3ft}$ Numerator and Denominator
are different units that
have the same value

$\dfrac{5280ft}{1mi} = \dfrac{1760yd}{5280ft}$

$$\frac{1\,gal}{4\,qt} \times \frac{1\,qt}{2\,pt} \times \frac{1\,pt}{2\,c} \times \frac{1\,c}{8\,fl\,oz}$$

$$\frac{1\,gal}{128\,fl\,oz}$$

$$\frac{2}{21} \cdot \frac{7}{8}$$

$$2\tfrac{3}{8}\,lb = \underline{38}\ oz$$

$$2\tfrac{3}{8}\,lb \cdot \frac{16\,oz}{1\,lb}$$

$$\frac{19}{8}\,lb \cdot \frac{16\,oz}{1\,lb} = 38\,oz$$

$$28\,fl\,oz = \tfrac{7}{8}\ qt$$

$$\frac{28\,fl\,oz}{1} \cdot \left(\frac{1\,c}{8\,fl\,oz} \cdot \frac{1\,pt}{2\,c} \cdot \frac{1\,qt}{2\,pt} \right)$$

Short version

$$28\,fl\,oz \cdot \frac{1\,qt}{32\,fl\,oz}$$

Adding / Subtracting Units

$$\begin{array}{r} 10\,lb\ 9\,oz \\ +\ 11\,lb\ 8\,oz \\ \hline 21\,lb\ 17\,oz \\ 22\,lb\ 1\,oz \end{array}$$

$$\begin{array}{r} 3\,ft\ 2\,in \\ +\ 1\,ft\ 11\,in \\ \hline 4\,ft\ 13\,in \\ 5\,ft\ 1\,in \end{array}$$

$$\begin{array}{r} \overset{2}{8}\,ft\ \overset{14}{2}\,in \\ -\ 1\,ft\ 11\,in \\ \hline 1\,ft\ 3\,in \end{array}$$

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2-40 even