

8-6 Estimating with percents

Commonly used percents:

$$10\% = \frac{1}{10}$$

$$25\% = \frac{1}{4}$$

$$33\frac{1}{3}\% = \frac{1}{3}$$

$$20\% = \frac{1}{5}$$

$$50\% = \frac{1}{2}$$

$$33.\bar{3}\%$$

$$40\% = \frac{2}{5}$$

$$75\% = \frac{3}{4}$$

$$66\frac{2}{3}\% = \frac{2}{3}$$

$$60\% = \frac{3}{5}$$

$$100\% = 1$$

$$66.\bar{6}\%$$

$$80\% = \frac{4}{5}$$

Estimate each percent. (Answer is NOT a %)

1) 22% of 197

Fraction Method

20% of 200

$$\frac{1}{5} \cdot \frac{200}{1} = \boxed{40}$$

change
Prob.

10% method

5) 20% of 200

$$10\% \text{ of } 200 = 20$$

$$\times \frac{2}{20\% \text{ of } 200 = \boxed{40}}$$

10% Method (Move dec. 1 place left)

2) 10% of 70 = 7

3) 10% of 365 = 36.5

4) 10% of 84 = 8.4

b) 53% of 1512

frac.

10%

50% of 1500

$$\frac{1}{2} \cdot \frac{1500}{1} = \boxed{750}$$

50% of 1500

$$10\% \text{ of } 1500 = \overset{2}{150}$$
$$\begin{array}{r} \times 5 \\ \hline 50\% \text{ of } 1500 = \boxed{750} \end{array}$$

7) \$63.82 20% tip

20% of \$65

10% of \$65 = \$6.5

$$\begin{array}{r} \times 2 \\ \hline 20\% \end{array} = \boxed{\$13.0}$$

8) \$63.82 15% tip

15% of 65

$$\begin{array}{r} \therefore 10\% \text{ of } 65 = 6.5 \\ \therefore \frac{5\%}{15\%} \\ \hline \end{array} \begin{array}{r} + 6.5 \\ + 3.25 \\ \hline \end{array} = \boxed{\$9.75}$$

$$\begin{array}{r} 3.25 \\ 2 \overline{) 6.50} \\ \underline{-6} \\ 05 \\ \underline{-4} \\ 10 \end{array}$$

Bill \$48.31

9) 20% tip

20% of 50

10% of 50 = 5

$\times 2$
20% = $\boxed{\$10}$

15% tip

15% of 50

10% of 50 = 5

$\div 2$
+ 5%
 \hline
15%

$\frac{2.50}{2 \overline{) 5.00}}$

$\div 2$
= + 2.50
 $\boxed{\$7.50}$

10) 24% of 411
25% of 400

$$\frac{1}{4} \cdot \frac{400}{1} = \boxed{100}$$

OR

25% of 400

$$\begin{array}{l} 10\% \text{ of } 400 = 40 \\ \times 2 \\ \hline 20\% = 80 \end{array}$$

$$\begin{array}{l} 5\% \\ \hline 25\% = 20 \\ \hline \boxed{100} \end{array}$$

11) 78% of 1187

80% of 1200

$$\frac{4}{5} \cdot \frac{1200}{1} = \boxed{960}$$

OR

80% of 1200

$$\begin{array}{l} 10\% \text{ of } 1200 = 120 \\ \times 8 \\ \hline 80\% = 960 \end{array}$$