Percent of a Number
Lesson 2.1
**Pets** Some students are collecting money for a local pet shelter. The model shows that they have raised 60% of their $2,000 goal or $1,200.

<table>
<thead>
<tr>
<th>Percent</th>
<th>Decimal</th>
<th>Fractions</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>1</td>
<td>(\frac{5}{5}) or 1</td>
</tr>
<tr>
<td>80%</td>
<td>0.80</td>
<td>(\frac{4}{5})</td>
</tr>
<tr>
<td>60%</td>
<td>0.60</td>
<td>(\frac{3}{5})</td>
</tr>
<tr>
<td>40%</td>
<td>0.40</td>
<td>(\frac{2}{5})</td>
</tr>
<tr>
<td>20%</td>
<td>0.20</td>
<td>(\frac{1}{5})</td>
</tr>
<tr>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Use the model to write two multiplication sentences that are equivalent to 60% of 2,000 = 1,200.

\[
0.60 \times 2,000 = 1,200; \\
\frac{3}{5} \times 2,000 = 1,200
\]
**Method 1:**

- Write the percent as a fraction and then multiply.

**Method 2:**

- Write the percent as a decimal and then multiply.
1. Find 5% of 300 by writing the percent as a fraction.

a) Write the percent as a fraction. \(rac{\%}{100}\)

\[5\% = \frac{5}{100} \div 5 = \frac{1}{20}\]

b) Multiply.

- Write whole numbers as fractions by putting 1 as the denominator
- Simplify when possible

\[
\frac{1}{20} \cdot 300 = \frac{15}{1} = 15
\]
Find the percent of each number.

a. 40% of 70

\[
\frac{40}{100} = \frac{2}{5}
\]

\[\frac{2}{5} \cdot \frac{70}{1} = \frac{28}{1} = 28\]

b. 15% of 100

\[
\frac{15}{100} = \frac{3}{20}
\]

\[\frac{3}{20} \cdot \frac{100}{1} = \frac{15}{1} = 15\]
2. Find 25% of 180 by writing the percent as a decimal.

a) Write the percent as a decimal.
   - Move decimal 2 places to the left

\[
25\% = 25.00 = 0.25
\]

b) Multiply.
   - Move decimal point for answer

\[
\begin{array}{c}
180 \\
\times 0.25 \\
\hline
900 \\
+ 360 \\
\hline
45.00
\end{array}
\]

\[\begin{array}{c}
\text{two decimal places} \\
\text{two decimal places}
\end{array}\]
Find the percent of each number.

c. 55% of 160

\[ 55\% = 55 \cdot 0.55 \]

\[ 0.55 \cdot 160 = 88 \]

d. 75% of 280

\[ 75\% = 75 \cdot 0.75 \]

\[ 0.75 \cdot 280 = 210 \]
Percents that are greater than 100% can be written as improper fractions, mixed numbers, or decimals greater than 1.

\[
150\% = \frac{150}{100} = \frac{3}{2} = 1\frac{1}{2} = 1.5
\]
3. Find 150% of 28

**Method 1:**

\[
\frac{150}{100} \div 50 = \frac{3}{2}
\]

\[
\frac{3}{2} \cdot \frac{14}{28} = \frac{42}{1} = 42
\]

**Method 2:**

\[
150\% = 150 = 1.5
\]

\[
\frac{28 \times 1.5}{140} + 28 = \frac{42}{42.0} = 1.0 \text{ one decimal place}
\]
Find the percent of each number.

Method 1:  e. 150% of 20

\[
\frac{150}{100} \div 50 = \frac{3}{2} \\
\frac{3}{2} \cdot \frac{20}{1} = 30
\]

Method 2:  f. 160% of 35

\[
160\% = 160 \cdot \frac{1}{1} = 1.6 \\
1.6 \cdot 35 = 56
\]
4. Refer to the graph. If 275 students took the survey, how many can be expected to have 3 televisions each in their houses?

Survey Results of Number of Televisions in House

<table>
<thead>
<tr>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2%</td>
</tr>
<tr>
<td>1</td>
<td>9%</td>
</tr>
<tr>
<td>2</td>
<td>17%</td>
</tr>
<tr>
<td>3</td>
<td>23%</td>
</tr>
<tr>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>More than 4</td>
<td>25%</td>
</tr>
</tbody>
</table>

= 5%

a) Write a percent of number problem:

\[ 23\% \text{ of } 275 = 23\% \cdot 275 \]

b) Choose Method 1 or Method 2 and multiply:

\[ \text{Method 1: } \frac{23}{100} \cdot \frac{275}{4} = 63 \frac{1}{4} \]

\[ \text{Method 2: } 0.23 \cdot 275 = 63.25 \]

\[ \text{about 63 students} \]
g. Mr. Sudimack earned a 4% commission on the sale of a hot tub that cost $3,755. How much did he earn?

a) Write a percent of number problem: \( 4\% \text{ of } $3,755 \)

\[ 4\% \cdot 3,755 \]

b) Choose Method 1 or Method 2 and multiply:

\( \#2 \)

\[ 4\% = 4. \Rightarrow 0.04 \]

\[ 0.04 \cdot 3,755 = \boxed{$150.20} \]
Homework:

Pg. 107 - 110
#1 -11 (all)
# 38-44 (evens)