Percent Change and Percent Error

Learning Target: I can use percents to calculate percent change.

Vocabulary

Skills Review - changing fractions to percents

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Decimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>0.375</td>
</tr>
<tr>
<td>12/25</td>
<td>0.48</td>
</tr>
<tr>
<td>11/200</td>
<td>0.055</td>
</tr>
</tbody>
</table>

Ashley earned $20 babysitting in January. In February she earned $32. What is the percent change in her earnings?

Step 1: Find the difference

Step 2: Set up the following ratio

Step 3: Change to a percent

Is it a percent increase or decrease? Explain.
Learning Target: I can use percents to calculate percent change.

<table>
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<tr>
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<td>Percent Change - ____________________________________________</td>
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<table>
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<tr>
<th>Skills Review - changing fractions to percents</th>
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<tr>
<td>$\frac{3}{8}$</td>
</tr>
</tbody>
</table>

Ashley earned $20 babysitting in January. In February she earned $32. What is the percent change in her earnings?

**Step 1: Find the difference**

$\underline{\text{ }} - \underline{\text{ }} = \underline{\text{ }}$

**Step 2: Set up the following ratio**

\[
\frac{\text{difference}}{\text{starting amount}}
\]

**Step 3: Change to a percent**

\[
\underline{\text{ }} = \underline{\text{ }}
\]

Is it a percent increase or decrease? Explain.
Learning Target: I can use percents to calculate percent error.

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The predicted temperature today was a high of 55°F. The actual high temperature was 47°F. Calculate the percent error.

**Step 1: Find the difference**

\[
\text{Predicted Temperature} - \text{Actual Temperature} = \text{Difference}
\]

**Step 2: Set up the following ratio**

\[
\frac{\text{difference}}{\text{actual value}}
\]

**Step 3: Change to a percent**

\[
\frac{\text{Difference}}{\text{Actual Value}} = \%
\]

**Try It Out!**

Haley thought 12 friends were coming to her party, but 15 friends showed up. Calculate the percent error.
### Calculating Percent Change and Percent Error

Show your work. Round to the nearest tenth of a percent.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alexis had a cell phone that cost $65. She recently bought a new phone that cost $79. What was the percent increase in the prices of the phones?</td>
</tr>
<tr>
<td>2</td>
<td>Kevin bought a used guitar at a garage sale for $150. He fixed it up and sold it for $200. What was the percent increase?</td>
</tr>
<tr>
<td>3</td>
<td>Elle earned $45 last month babysitting. This month she earned $35. What is the percent decrease?</td>
</tr>
<tr>
<td>4</td>
<td>Ray predicted that he would score 16 points during the basketball game. He only scored 12 points. What was his percent error?</td>
</tr>
<tr>
<td>5</td>
<td>Ainsley thought there were 25 students in her math class, but there were actually 27 students. What is her percent error?</td>
</tr>
<tr>
<td>6</td>
<td>Trent told his friends it would take him 90 minutes to mow the lawn. It only took him 75 minutes. What is his percent error?</td>
</tr>
</tbody>
</table>
Learning Target: I can use percents to calculate percent change.

### Vocabulary

**Percent Change** - the extent to which a value increases or decreases. Also known as percent increase or percent decrease.

### Skills Review - changing fractions to percents

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Percent</th>
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<tbody>
<tr>
<td>(\frac{3}{8})</td>
<td>37.5%</td>
</tr>
<tr>
<td>(\frac{12}{25})</td>
<td>48%</td>
</tr>
<tr>
<td>(\frac{11}{200})</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Jenny earned $20 babysitting in January. In February she earned $32. What is the percent change in her earnings?

**Step 1: Find the difference**

\[32 - 20 = 12\]

**Step 2: Set up the following ratio**

\[
\frac{\text{difference}}{\text{starting amount}} = \frac{12}{20}
\]

**Step 3: Change to a percent**

\[
\frac{12}{20} = 60\%
\]

Is it a percent increase or decrease? Explain.

Increase. She made more money in February than January. Her earnings increased over time.

---

Note: It is helpful to have students highlight this, since it’s so easy to confuse it with percent error.
Learning Target: I can use percents to calculate percent error.

**Vocabulary**

Percent Error - describes how far away from the expected value your result is.

The predicted temperature today was a high of 55°F. The actual high temperature was 47°F. Calculate the percent error.

**Step 1: Find the difference**

\[
\begin{array}{c}
55 \\
- \\
47 \\
\hline
8
\end{array}
\]

**Step 2: Set up the following ratio**

\[
\frac{\text{difference}}{\text{actual value}} = \frac{8}{47}
\]

**Step 3: Change to a percent**

\[
\frac{8}{47} = 17\%
\]

Try It Out!

Haley thought 12 friends were coming to her party, but 15 friends showed up. Calculate the percent error.

\[
\frac{3}{15} = 20\%
\]
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<td></td>
<td>Show your work. Round to the nearest tenth of a percent.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Alexis had a cell phone that cost $65. She recently bought a new phone that cost $79. What was the percent increase in the prices of the phones?</td>
<td>21.5%</td>
</tr>
<tr>
<td>2</td>
<td>Teney bought a used guitar at a garage sale for $150. He fixed it up and sold it for $200. What was the percent increase?</td>
<td>33.3%</td>
</tr>
<tr>
<td>3</td>
<td>Elle earned $45 last month babysitting. This month she earned $35. What is the percent decrease?</td>
<td>22.2%</td>
</tr>
<tr>
<td>4</td>
<td>Ray predicted that he would score 16 points during the basketball game. He only scored 12 points. What was his percent error?</td>
<td>33.3%</td>
</tr>
<tr>
<td>5</td>
<td>Aruna thought there were 25 students in her math class, but there were actually 27 students. What is her percent error?</td>
<td>7.4%</td>
</tr>
<tr>
<td>6</td>
<td>Trent told his friends it would take him 90 minutes to mow the lawn. It only took him 75 minutes. What is his percent error?</td>
<td>20%</td>
</tr>
</tbody>
</table>
Need more Resources?
Click on the links below!

Simple Interest
- Learning Target: I can use proportions to calculate simple interest.
- Simple Interest Formula: I = Prt
- Calculate the simple interest for each.
- Real World Problem: Jason borrowed $7500 for a year. The rate of interest was 4%. How much interest will he pay at the end of the year?

Sales Tax, Tips and Commission
- Learning Target: I can use proportions to calculate sales tax, tips, and commission.
- Sales Tax: $200 (tax rate 8%)
- Tip: $25
- Commission: $100 (commission rate 10%)

Percents
- Discount and Sale Price
- Percent Applications Scavenger Hunt!!

Multiple Ways to Use!!
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