

Algebra 1 2.7

Find the percent of change.

Solve problems involving percent of change

increase
decrease
percent

$$\frac{\text{Percent}}{100} = \frac{\text{Change (part)}}{\text{Original (whole)}}$$



Example 1 Percent of Change

Determine whether each percent of change is a percent of *increase* or a percent of *decrease*. Then find the percent of change.

a. original: 20
final: 23

b. original: 25
final: 17

$$\text{I} \quad \frac{3}{20} = \frac{P}{100}$$

$$\frac{20P}{20} = \frac{300}{20} \quad 15\%$$

$$\text{D} \quad \frac{8}{25} = \frac{P}{100}$$

$$\frac{25P}{25} = \frac{800}{25} \quad 32\%$$

Guided Practice

1A. original: 66
new: 30

1B. original: 9.8
new: 12.1

1C. original: 24
new: 40

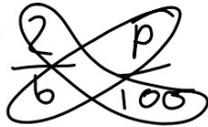
1D. original: 500
new: 131

State whether each percent of change is a percent of *increase* or a percent of *decrease*. Then find the percent of change. Round to the nearest whole percent.

1 original: 78
new: 125

2. original: 41
new: 24 $\frac{17}{41} = \frac{x}{100}$ $\frac{41x = 1700}{41}$ $x = 41 \leftarrow$ D

3. original: 6 candles
new: 8 candles



4. original: 35 computers
new: 32 computers

$$\frac{\text{diff}}{\text{orig}} = \frac{p}{100} \quad \frac{200}{6} = 33\% \quad \text{I}$$

$$\frac{3}{35} = \frac{p}{100}$$

$$\frac{35p}{35} = \frac{300}{35}$$

$$\text{D} \quad p = 9\%$$

$$\text{I} \quad \frac{47}{78} = \frac{p}{100} \quad 60.2564 \quad \text{I}$$

$$78p = 4700 \quad \text{60\%}$$

Real-World Example 2 Percent of Change



CRUISE The total number of passengers on cruise ships increased 10% from 2007 to 2009. If there were 17.22 million passengers in 2009, how many were there in 2007?

?

$$B + 10\% B = 17.22$$

$$1B + 0.1B = 17.22$$

15.65 million

▶ **Guided Practice** $\frac{1.1B}{1.1} = \frac{17.22}{1.1}$

2. **TUITION** A recent percent of increase in tuition at Northwestern University, in Evanston, Illinois, was 5.4%. If the new cost is \$33,408 per year, find the original cost per year.

$$B + 5.4\% B = 33,408$$

$$1B + 0.054B$$

$$B = 31,696$$

$$+ 1711$$

$$(31,696)(0.084)$$

$$\frac{1.054B}{1.054} = \frac{33,408}{1.054}$$

42. **RECREATIONAL SPORTS** In 1995, there were 73,567 youth softball teams. By 2007, there were 86,049. Determine the percent of increase.

$$\begin{aligned} \frac{12482}{73567} &= \frac{P}{100} \\ 73567P &= 1248200 \\ &\approx 17\% \end{aligned}$$

