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

I $\frac{3}{20} = \frac{p}{100}$

$\frac{20p}{20} = \frac{300}{20}$ 15%

b. original: 25
final: 17

D $\frac{8}{25} = \frac{p}{100}$

$\frac{25p}{25} = \frac{800}{25}$ 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

$\frac{17}{41} = \frac{x}{100}$ $\frac{41x}{41} = \frac{1700}{41}$ $x = 41$ D

3. original: 6 candles
new: 8 candles

$\frac{2}{6} \quad \frac{p}{100}$

$\frac{\text{diff}}{\text{orig}} = \frac{p}{100}$ $\frac{200}{6} = 33\frac{1}{3}\%$ I

I $\frac{47}{78} = \frac{p}{100}$ $78p = 4700$ 60.2564 (60%)

4. original: 35 computers
new: 32 computers

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

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

D $p = 9\%$

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?

-1.722

?

$B + 10\%B = 17.22$

$1B + 0.1B = 17.22$

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.

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

$1B + 0.054B$

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

$B = 31,696$

$+1711$

$(31,696)(0.084)$

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

I

$$\frac{12482}{73567} = \frac{P}{100}$$

$$73567P = 1248200$$

$$P \approx 17\%$$