Percent Increase & Percent Decrease

1) $\frac{\text{change}}{\text{original}}$ (Subtract to find change, or it may be given.) (Reduce if it's easy.) | 2) Change to decimal. (Use long division.) | 3) Change to percent. (Move decimal 2 spaces towards the percent sign.)

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1) The temperature one hot summer morning in Florida was 90°F. By midnight the temperature had dropped to 70°F. What was the percent decrease in temperature? *Round to the nearest percent.*

90 − 70 = 20 (change)

$\frac{20}{90}$

.222 ; 9 | 2.000 ; −18 ; 20 ; −18 ; 2

.22 %

22% decrease

2) While walking, a 156 lb person burns about 5 calories per minute.* That same person running would burn about 11.25 calories per minute. What is the percent increase in calories burned if a person runs rather than walks?

11.25 − 5.00 = 6.25 (change)

$\frac{6.25}{5}$

1.25 ; 5 | 6.25 ; −5 ; 12 ; −10 ; 25 ; −25 ; 0

1.25 %

125% increase

*The source has 4.78 cpm; I rounded to 5 cpm to simplify calculations.
(Source: http://www.runnersworld.com/weight-loss/running-v-walking-how-many-calories-will-you-burn)

3) Say that your phone plan costs $50 per month. A company wants you to switch to them and promises it will cost you $15 less per month. What would be your percent decrease in cost per month?

15 (change)

$\frac{15}{50} = \frac{3}{10}$

.3 ; 10 | 3.0 ; −30 ; 0

.30 %

30% decrease

You don't have to use long division if you realize that $\frac{3}{10}$ is the same as .3, which is equivalent to 30%. Thus, you have a 30% decrease.

4) A skydiver in the standard "belly-to-earth" position has a maximum speed (terminal velocity) of about 120 mph. If this person shifts to a "head down" position, her speed may reach 180 mph.* What is her percent increase in speed?

180 − 120 = 60 (change)

$\frac{60}{120} = \frac{1}{2}$

.5 ; 2 | 1.0 ; −10 ; 0

.50 %

50% increase

You don't have to use long division if you realize that $\frac{1}{2}$ is the same as .5, which is equivalent to 50%. Thus, you have a 50% increase.

(Source: http://en.wikipedia.org/wiki/Speed_skydiving)
*Technically, speed and velocity do have different meanings. Regarding record speed in skydiving, it is much faster than 180 mph, in fact it's over 800 mph!

5) In 2012 there were 13,600 Respiratory Therapy Technicians. (average salary $46,700) The projection is for there to be 2,300 more jobs in 2022. What is the percent increase in the number of jobs? *Round to the nearest percent.*

2300 (change)

$\frac{2300}{13600}$

.16 ; 136 | 2123.000 ; −136 ; 940 ; −816 ; 1240

This digit is 5 or greater, so round up, from .16 to .17.

.17 %

17% increase

24 × 136 = 952 ; 23 × 136 = 816 ✓

(Source: http://www.bls.gov/ooh/about/data-for-occupations-not-covered-in-detail.htm#Healthcare%20Occupations)

6) A computer costs $900 new. Two years later its resale value is $243. What is the percent decrease in value?

900 − 243 = 657 (change)

$\frac{657}{900}$

.73 ; 900 | 657.00 ; −6300 ; 2700 ; −2700 ; 0

.73 %

73% decrease