Math: Percent Session #4

PERCENT of Change is how much something increases or decreases compared with its original value.

$$\%\ Change = \frac{amount\ of\ change\ (new - old)}{old}\ x\ 100$$

Always **divide by the original (old) number, because that's the number that changed.**

Calculate the percent change for:

20 to 16

10 to 16

$30 to $65

$2.50 to $1.97

Word Problem 1: Shoes

In 1970, a pair of tennis shoes was _____

Today, a pair of tennis shoes are _____

What is the percent change?

Word Problem 2: Gas

In 1970, gas was _____

Today, gas is _____

What is the percent change?

Word Problem 3: Eggs

One dozen eggs were _____ in 1970.

Today, 12 eggs cost _____

What is the percent change?

Word Problem 4: Camera

In 1970, a new camera was _____

Today, a similar model camera sells for _____

What is the percent change?

Word Problem 5: Weight Loss

Sara weighed _____ pounds. She got a personal trainer and new best friends who all helped her eat well and exercise each day (and she enjoyed it too!) She lost one pound each week. What is her weight six months later *and* her percent change in her weight?

Sara was so excited with her progress that she decided to keep going for an entire year. What is her current weight at the end of one year, and what is her total percent change?

Percent Change

Review: write 33% as a fraction ($\frac{33}{100}$)

what is 50% of 20? (10)
[$x = 0.5 * 20$]

6 is 40% of what #? (15)

$$\left[\frac{6}{x} = \frac{40}{100}\right]$$

$$\text{Percent change} = \frac{\text{new} - \text{old}}{\text{old}} \times 100$$

Always ÷ by old bc that's the # that changed

ex: 20 to 16 (old, new)

$$\frac{16-20}{20} \times 100 = \frac{-4}{20} \times 100 = -0.2 \times 100$$

$$= -20\%$$

decrease

ex: 10 to 16
old new

$$\frac{16-10}{10} \times 100 = \frac{6}{10} \times 100 = 0.6 \times 100$$

$$= \boxed{60\%} \leftarrow \text{increase}$$

ex: \$30 → \$65
old new

$$\frac{65-30}{30} \times 100 = 1.167 \times 100$$

$$= \boxed{116.7\%} \leftarrow \text{increase}$$

ex: \$2.50 → \$1.97
old new

$$\frac{1.97-2.50}{2.50} \times 100 = -0.212 \times 100$$

$$= \boxed{-21.2\%}$$

decrease

 Name_____

Word Problem 1: Shoes

In 1970, a pair of tennis shoes was $5.99 old

Today, a pair of tennis shoes are $63.99 new

What is the percent change?

$$\% \text{ change} = \frac{63.99 - 5.99}{5.99} * 100$$

$$= 968\% \text{ increase}$$

Word Problem 2: Gas

In 1970, gas was $0.34/gal old

Today, gas is $5.64/gal new

What is the percent change?

$$\% \text{ change} = \frac{5.64 - 0.34}{0.34} * 100$$

$$\% \text{ change} = 1{,}558.8\% \text{ inc.}$$

Word Problem 3: Eggs

One dozen eggs were $0.62 (old) in 1970. inc

Today, 12 eggs cost $4.99 (new)

What is the percent change?

$$\%\ \text{change} = \frac{4.99 - 0.62}{0.62} * 100$$

$$= 704.8\%\ \text{inc}$$

Word Problem 4: Camera

In 1970, a new camera was $399 (old)

Today, a similar model camera sells for $149 (new)

What is the percent change?

$$\%\ \text{change} = \frac{149 - 399}{399} * 100$$

$$= \frac{-250}{399} * 100$$

$$= -62.7\%\ \text{dec}$$

(decrease)

 Name_____

Word Problem 5: Weight Loss

Sara weighed 190 (old) pounds. She got a personal trainer and new best friends who all helped her eat well and exercise each day (and she enjoyed it too!) She lost one pound each week. What is her weight six months later *and* her percent change in her weight?

$6\text{ mo}\left(\frac{4\text{ wks}}{1\text{ mo}}\right) = 24\text{ wks}\left(\frac{1\text{ lb}}{1\text{ wk}}\right) = 24\text{ lb}$

$$190 - 24 = 166\text{ lbs}$$ (new)

$$\%\text{ change} = \frac{\text{new} - \text{old}}{\text{old}} * 100$$

$$\%\text{ change} = \frac{-24}{190} * 100$$

$$\% = -12.6\%\text{ (dec)}$$

Sara was so excited with her progress that she decided to keep going for an entire year. What is her current weight at the end of one year, and what is her total percent change?

$1\text{ yr} = 52\text{ wks}\left(\frac{1\text{ lb}}{1\text{ wk}}\right) = 52\text{ lbs lost}$

$$190\text{ lb} - 52\text{ lb} = 138\text{ lbs}$$

$$\%\text{ change} = \frac{-52}{190} * 100$$

$$= -27.4\%\text{ dec}$$