

# Tuesday, September 18, 2012

## TISK Problems

1) Convert the number to a percent:  $\frac{1}{6}$

2) Write and solve an equation:

Horace has 3 more marbles than twice as many as Johanna. If Horace has 27 marbles, how many does Johanna have?

3) Simplify:  $5k + 8 - (-6k - 9)$

No Mental Math today.

Homework: p. 418 #17–29 odd

## §8-4 Percent Increase & Decrease

- ▶ When an amount changes, we can compare the original amount to the changed amount using a percent.

# Lesson: Percent Increase & Decrease

## ▶ Formula:

$$P_{I \text{ or } D} = \left( \frac{\text{new amount} - \text{old amount}}{\text{old amount}} \right) 100$$

Percent Increase  
or Decrease

Changes the  
amount you get  
into a percent.

$P_{I \text{ or } D} > 0$  Then it is a Percent Increase.

$P_{I \text{ or } D} < 0$  Then it is a Percent Decrease.

Example. Find the percent of change and state whether it is an increase or a decrease.

- ▶ A computer company sold a laptop for \$1,200 in 1997. Now, the same laptop could be bought for \$300.

$$P_{I \text{ or } D} = \left( \frac{300 - 1200}{1200} \right) 100$$

$$P_{I \text{ or } D} = \left( \frac{-900}{1200} \right) 100 = \left( \frac{-9}{12} \right) 100 = (-0.75) 100 = -75$$

$P_{I \text{ or } D} < 0$  Then it is a Percent Decrease.

The laptop has had a 75% decrease in price.

# Finding the old/new amounts.

- ▶ Sometimes rather than finding the percent of change, we will have to find one of the missing amounts **GIVEN** the percent of change.

# Example.

- ▶ A salesman increased his 150 sales from last month by 40%. How many sales did he make this month?

$$40\% = \left( \frac{\text{new amount} - 150}{150} \right) 100$$

$$\frac{40}{100} = \left( \frac{n - 150}{150} \right) 100$$

$$150 \cdot 0.40 = \frac{n - 150}{150} \cdot 150$$

$$60 = n - 150$$
$$+150 \quad +150$$

$$n = 210$$

The salesman made 210 sales this month.

# Check Points

- ▶ When Jim was exercising, his heart rate went from 70 beats per minute to 98 beats per minute. What was the percent increase?

$$P_I = \left( \frac{\text{new} - \text{old}}{\text{old}} \right) 100$$

$$P_I = \left( \frac{98 - 70}{70} \right) 100$$

$$P_I = \frac{28}{70} \cdot 100$$

$$P_I = \frac{4}{10} \cdot 100$$

$$P_I = 0.4(100) = 40$$

Jim had a 40% increase in heart rate.

# Check Points

- ▶ In 1999, a certain stock was worth \$1.25 a share. In 2002, the same stock was worth \$0.85 a share. What was the percent decrease?

$$P_D = \left( \frac{\text{new} - \text{old}}{\text{old}} \right) 100$$

$$P_D = \left( \frac{0.85 - 1.25}{1.25} \right) 100$$

$$P_D = \frac{-0.40}{1.25} \cdot 100$$

$$P_D = -\frac{40}{125} \cdot 100$$

$$P_D = -\frac{8}{25} \cdot \frac{4}{1} \cdot 100 = -32$$

The stock decreased 32% in price.



# Check Points

- ▶ Sarah bought a DVD player originally priced at \$450 that was on sale for 20% off. What was the sale price? (Hint: How much was the discount?)

The Sale price is \$360.

$$P_D = \left( \frac{\text{new-old}}{\text{old}} \right) 100$$

$$-20 = \frac{n-450}{450} \cdot 100$$

$$\frac{-20}{100} = \frac{n-450}{450}$$

$$(-0.2) \cdot 450 = \left( \frac{n-450}{450} \right) 450$$

$$-90 = n - 450$$

$$\begin{array}{r} -90 = n - 450 \\ +450 \quad +450 \\ \hline 360 = n \end{array}$$

# Check Points

- ▶ Mr. Olsen has a computer business in which he sells everything at 40% above the wholesale price. If he purchased a printer for \$85 wholesale, what will be the retail price?

$$P_I = \left( \frac{\text{new-old}}{\text{old}} \right) 100$$

The retail price is \$119.

$$\frac{40}{100} = \frac{n-85}{85} \cdot 100$$

$$85 \left( \frac{4}{10} \right) = \left( \frac{n-85}{85} \right) 85$$

$$\frac{17}{85} \cdot \frac{4}{10} \cdot 85$$

$$\begin{array}{r} 34 = n - 85 \\ + 85 \quad + 85 \\ \hline 119 = n \end{array}$$

# Homework

- ▶ p. 418 #17–29 odd