APPLYING PERCENTS

Applying percents is a term that refers to the different ways that percents can be used. The **percent of change** refers to the percent an amount either increases or decreases based on the previous amounts or numbers. The percent of change can be used when determining the percent increase of the cost of any item over time, for example movie tickets, clothing or food. It can also be used to determine the percent decrease in the value of any item over time such as a car, house or boat.

Applying percents also means to calculate **simple interest** using the interest equation, $I = P \cdot r \cdot t$, where P is the principal; r is the rate and time is the time. In this equation, the rate is a percent that is changed to a decimal and then calculated. Calculating **discounts, sales tax and tip** are others ways to apply percents in real life applications.

How to a

Percent i ormula:
percent inc decrease
divided by 3 to 89,
the percen

Percent of **increase** =
(89 -33) ÷ 33 = 56 ÷ 33 ≈ 1.6969 ≈170%

When a number decreased, the percent of decrease is found using the same formula. If a number changes from 75 to 55, the percent of decrease would be:

Percent of **decrease** =
(75 - 55) ÷ 75 = 20 ÷ 75 ≈ .266667 ≈ 27%

Simple interest is also calculated using percents. The interest equation, $I = P \cdot r \cdot t$, is used to find the simple interest when given the principle, rate and time are given. If interest is given, along with two other values, such as rate or time, inverse operations can be used to solve for the missing value. For example, how long should $1000 be in an account at a rate of 5% in order to earn $200 in interest?

Ex. $I = P \cdot r \cdot t \rightarrow 200 = 1000 \cdot 5\% \cdot t \rightarrow 200 = (1000)(.05)t \rightarrow 200 = 50t \rightarrow 200/50 = t \rightarrow 4 = t$

Since t = 4, it means that the money should be in the account for 4 years in order to earn $200 interest.

Applying percents can also be used to find the **sales tax** on a bill, the **tip** for a bill or the **discount** if an item is marked down a certain percent.

Ex. The bill is $53 and the tax is 8%. how much tax is there?

To fi ount of
$4.2 nt off
cloth

The **perce** rcent
decrease f ginally
$899 and be:

Percent **discount** = (899 - 699) ÷ 899 = 200 ÷ 899 ≈ .2225 ≈ 22%

Try This!

1. What is the **percent increase** of a gallon of milk that was originally $1.79 and is now $2.29?

2. What is the **percent decrease** in the value of a boat that originally cost $12,000 and now sells for $8,000?

3. What is the **simple interest** using, $I = P \cdot r \cdot t$:

   P = $1000, r = 8%, t = 2 years

   P = $5000, r = 4%, t = 1 year

4. What is

   I = $50, P = $2000, t = 1 year

5. What is 10% **tax on a bill** of $63?

6. What is 15% **tip on a bill** of $74

7. What is a 25% **discount on a total** of $30?

8. What is the **percent discount** on a desk that originally cost $99 and now costs $59?