Percent Notation

From MAT 040 textbook Chapter 6.

SECTION 6.1 – PERCENT NOTATION

NOTATION FOR *n*%

Percent notation, *n*%, can be expressed using:

Ratio => $n\%$ = the ratio of n to 100 = $\frac{n}{100}$

Fraction notation => $n\% = n \times \frac{1}{100}$

Decimal notation => $n\% = n \times 0.01$

CONVERT PERCENT TO DECIMAL

1. Replace % with $\times 0.01$
2. Multiply by 0.01 (move decimal 2 places to left)

CONVERT DECIMAL TO PERCENT

1. Move decimal 2 places to right
2. Write % symbol

SECTION 6.2 – PERCENT NOTATION AND FRACTION NOTATION

CONVERT FRACTION TO PERCENT

1. Divide fraction to get decimal
2. Convert decimal to percent (see Section 6.1)

CONVERT PERCENT TO FRACTION

1. Use definition of percent as a ratio => $n\% = \frac{n}{100}$
2. Simplify

SECTION 6.3 – SOLVING PERCENT PROBLEMS USING PERCENT EQUATIONS

KEY WORDS IN PERCENT TRANSLATIONS

"**Of**" translates to " • " or "×"
"**Is**" translates to "="
"**What number**" or "**what percent**" translates to a variable (a letter)
"**%**" translates to "$\times \frac{1}{100}$" or "$\times 0.01$"

PERCENT EQUATION

Amount = Percent × Base

Percent = $\frac{\text{Amount}}{\text{Base}}$

Base = $\frac{\text{Amount}}{\text{Percent}}$

Hint: The **base** usually follows the word "of" in word problems.

SECTION 6.4 – SOLVING PERCENT PROBLEMS USING PROPORTIONS

PROPORTION

$$\frac{N}{100} = \frac{a}{b}$$

Hint: The **base** usually follows the word "of" in word problems.

N is the percent number
a is the amount (the part)
b is the base (the whole)

SECTION 6.5 – APPLICATIONS OF PERCENT

PERCENT OF INCREASE

1. Get **amount** of increase by subtracting *original* value (lesser) from *new* value (greater).
2. Set up percent equation (Section 6.3) or proportion (Section 6.4).
    a. Use **amount** from step 1 above as the *amount* in percent equation or proportion.
    b. Use **original** from step 1 above as the *base* in percent equation or proportion.

PERCENT OF DECREASE

1. Get **amount** of decrease by subtracting *new* value (lesser) from *original* value (greater).
2. Set up percent equation (Section 6.3) or proportion (Section 6.4).
    a. Use **amount** from step 1 above as the *amount* in percent equation or proportion.
    b. Use **original** from step 1 above as the *base* in percent equation or proportion.

SECTION 6.6 – SALES TAX, COMMISION, AND DISCOUNT

SALES TAX

Sales tax = Sales tax rate × Purchase price
Total price = Purchase price + Sales tax

COMMISSION

Commission = Commission rate × Sales

DISCOUNT AND SALE PRICE

Discount = Rate of discount × Original price
Discount = Original price − Sale price
Sale price = Original price − Discount
Original price = Sale price + Discount

$$\textbf{Original price} = \frac{\text{Discount}}{\text{Rate of discount}}$$

Hint: Solving a word problem may involve 2 steps.

SECTION 6.7 – SIMPLE INTEREST AND COMPOUND INTEREST

SIMPLE INTEREST

$I = Prt$

I is simple interest
P is principal
r is interest rate
t is time in years

COMPOUND INTEREST

$A = P\left(1 + \frac{r}{n}\right)^{nt}$

Compound interest is interest paid on interest already earned.

A is amount
P is principal
r is interest rate
n means compounded *n* times per year
t is time in years