# Introduction into Formulas
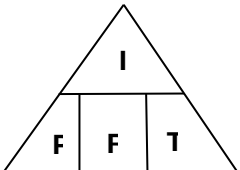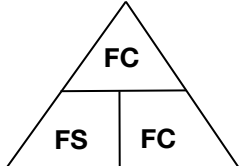# for Culinary Arts

A. Introduction to lesson: What if you get $10,000 for graduation, and want to invest to open your restaurant in 5 years.

    a. You have two investment options that both get simple interest (compounded annually)

        a. Option 1: a savings account that has an interest rate of 2.5%

        b. Option 2: a certificate of deposit (CD) that has an interest rate of 5%

    b. How do you calculate the amount of interest you will have after 5 years?

        a. Use the formula: $I = PRT$

        b. Option 1: $I = \$10,000 * .025 * 5 = \$1,250$, so after 5 years you will have $10,000+$1,250=$11,250

        Option 2: You think you will have twice as much, but

        $I = \$10,000 * .05 * 5 = \$2500$, so after 5 years you will have $10,000+$2,500=$12,500

    c. So why does this happen?

        a. Money grows exponentially (curving up) not linearly (straight)

    d. Let's change the question, how long will it take to have $15,000, or accumulate $5,000 in interest. You use the same formula, but in a different order.

        a. No need to do the algebra, use this                    trick:

        b. Option 1: $T = \dfrac{I}{P*R} = \dfrac{\$5,000}{10,000*.025} = 20$     years

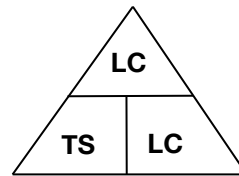        c. Option 2: $T = \dfrac{I}{P*R} = \dfrac{\$5,000}{10,000*.05} = 10$     years



This triangle method is useful for many types of formulas that involve multiplication and division. For example:

B. Food Cost = Food Sales * Food Cost %                 (FC=FS*FC%)

**Note that beverage cost is the same equation!**

a. If food cost percent was calculated at $25\%$ and sales generated equaled $4,000, how much was the cost of food?

    a. Do you remember how to solve this mentally?

    b. $\$4,0000 * .25 = \$1,000$

b. If food sales were $1,500 and food cost was $300, how much was food cost percent?

    a. Again, try this mentally first.

    b. $\$300 \div \$1,500 = 20\%$

c. If food cost was $30\%$ and cost of food was $10,000, how much was food sales?

    a. $\$10,000 \div .30 = \$3,000$

C. Labor Cost = Total Sales * Labor Cost %  $(\text{LC=TS}^*\text{LC}\%)$



a. If labor cost percent was calculated at $30\%$ and sales generated equaled $12,000, how much was the cost of labor?

    a. $\$12,000 * .30 = \$3,600$

b. If sales were $2,000 and labor cost was $500, how much was labor cost percent?

    a. $\$500 \div \$2,000 = 25\%$

c. If labor cost percent was $25\%$ and cost of labor was $1,000, how much was sales?

    a. $\$1,000 \div .25 = \$4,000$

D. Bringing it all together:

    a. If a restaurant has food sales of $12,502, beverage sales of $1,938, and runs a food cost of $23.43\%$, a beverage cost percent of $18.67\%$ and labor cost percent of $31.93\%$, how much is left for overhead and profit?

        i. First, find the total amount of sales (food and beverage): $\$12,502+\$1,938=\$14,440$.

ii.      Food cost is $\$12{,}502 * .2343 = \$2{,}929.22$

iii.      Beverage cost is $\$1{,}938 * .1867 = \$361.82$

iv.      Labor cost is $\$14{,}440 * .3193 = \$4{,}610.69$

v.      Total left over for overhead and profit is $\$14{,}440 - 2{,}929.22 - 361.82 - 4{,}610.69 = \$6538.27$