NYS & CSEA Partnership

Common Math Problems Involving Percents

Calculating Rate of Return on an Investment

To calculate the rate of return on an investment for a given period, follow these steps:

1. Determine the change in the value of the investment.

2. Divide the amount of the change by the value of the investment at the beginning of the period.

3. Convert the answer to a percent by moving the decimal point two places to the right.

Example: Over a one-year period, the value of an investment grows from $1.6 million to $2.0 million. What is the rate of return?

> ***Step 1:*** $2.0 million – $1.6 million = $0.4 million
>
> ***Step 2:*** $0.4 million ÷ $1.6 million = $0.25 million
>
> ***Step 3:*** 0.25 = 25%

Forecasting the Effect of Inflation

To forecast the effect of inflation on prices, follow these steps:

1. Convert the predicted rate of inflation to a decimal by moving the decimal point two places to the left.

2. Multiply the current price by the decimal to find the expected increase.

3. Add the expected increase to the current price.

Example: The current annual cost of family health insurance coverage is $12,000. This price is expected to increase by 4.5% next year. What will the cost of coverage be next year?

> ***Step 1:*** 4.5% = .045
>
> ***Step 2:*** $12,000 x .045 = $540
>
> ***Step 3:*** $12,000 + $540 = $12,540

Computing the Value of Discounts

To compute the value of discounts expressed as a percent, follow these steps:

1. Convert the percent to a decimal by moving the decimal point two places to the left.

2. Multiply the price before the discount by the decimal.

Example: A vendor offers a 15% discount on a computer that has a list price of $1,800. How much do you save?

> ***Step 1:*** 15% = .015
>
> ***Step 2:*** $1,800 x .015 = $270

You save $270. The discounted price of the computer is $1,530 ($1,800 – $270 = $1,540).

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Working With Percents

In order to solve problems that involve percents, it is important to understand the relationship between percents and decimals.

- To convert a percent to a decimal, move the decimal point two places to the left: 20% = .20

- To convert a decimal to a percent, move the decimal point two places to the right: .20 = 20%

Common Types of Percent Problems

1: What is 35% of 170?

Step 1: Convert the percent to a decimal by moving the decimal point two places to the left: 35% = .35

Step 2: Multiply 170 by .35 = 59.5

2: What percent of 180 is 36?

Step 1: To determine what percent of a total is represented by a certain part, you divide the part by the total: 36 ÷ 180 = .20

Step 2: To convert this decimal to a percent, move the decimal point two places to the right: .20 = 20%

3: The cost of a prescription increased from $70 to $105. What was the percent increase?

Step 1: To establish percent increase or decrease, first determine the amount of the increase or decrease. The cost of the prescription increased by $35.

Step 2: Divide the amount of the increase by the original amount (NOT the ending amount):

35 ÷ 70 = .50

Step 3: To convert this decimal to a percent, move the decimal point two places to the right: .50 = 50%