This worksheet will cover four different word problems that apply what students have learned about fractions, decimals, and percents.

Percent Increase and Percent Decrease

These types of problems occur all the time in real life and questions like these almost always show up on the SAT.

Formula: $\frac{\text{old} - \text{new}}{\text{old}}$

*Ignore negatives in front of answers and just treat every as if it were positive.

It's important to help students identify the "old" information from the "new" information so that they are able to properly able to set up the problems.

Practice Percent Increasing and Decreasing Problems:

- Someone (choose a student in class) is sick and is taking medication. They have been taking 150 mg daily. Now that they are getting better the doctor tells they to start taking 100mg of their medication. What is the percent decrease?

- Someone (choose a student in class) gets an 80 on the first test because they come to class prepared, does all their homework, and studies really hard. But then they start slacking! They all but stop doing homework and talk all during class. As a result, they get a 60 on the second test. Find the percent decrease in their grade.

- Someone (choose a student in class) has a great job and makes $16 per dollar. After becoming employee of the month they get a $1 raise. What is the percent increase of their pay?

Banking Problems

Formula: $I = P \cdot R \cdot T$

I is the interest or income. P is the amount of money that you start out with. It's also called the principal but since that has zero meaning to students stress that it's the money that you have in beginning. R is the rate. This will be a percent but remind students that you can't do math with percents so they will need to turn them into decimals to use them in the formula. T is the time in years.

Practice Banking Problems

- Someone (choose a student in class) puts $1,850 in the bank with a 3% interest payment. When they take the money out of the bank, the banks pays them $222 in interest. How long was the money in the bank?

- Someone (choose a student in class) puts $5,000 in the bank. They decide to keep in there for 7 years. When they take close their account, they receive $5,875. What was the interest rate?

Tax Rate Problems

Formula: $\text{tax rate} = \dfrac{\text{amount of tax}}{\text{selling price}}$

*Any problem that has the answer being an amount of money needs to be rounded to two decimal places.

Practice Tax Rate Problems

- Someone (choose a student in class) buys (something) for $58. She paid an 8% tax rate. How much will they be charged in tax?

- Someone (choose a student in class) goes to buy (something) for $64 at a sales tax rate of 7.5%. What is the price they will pay at the register?

Commission Rate Problems

Formula: $\text{commission rate} = \dfrac{\text{amount of commission}}{\text{selling price}}$

Explain how commissions work and when they are used.

Practice Commission Rate Problems

- Someone (choose a student in class) is a realtor and gets a 4% commission when they sell a house. They sell a house for $850,000. How much will they receive in commission?

- Someone (choose a student in class) sells cars. They sell cars at a commission rate of 5.5%. After selling a car they receive a commission check for $3,775. What was the selling price of the car?

This last problem requires no formula and needs to be thought through carefully. These questions give students the opportunity to practice critical thinking skills.

You are currently paying $600 per month for rent in a small apartment. Your landlord lets you know that next month your rent is going up by 8%. How much will your new rent be?