§3.1 Simple Interest

In Algebra and in §1.1 we discussed **simple annual interest**, but the equation that we always use is just for computing the interest.

$$I = PRT$$

I = Interest, P = Principle, R = Rate, T = Time in Years

In this section we will use a little more sophisticated formula, which gives the total money earned at the end of the time period. In other words, it includes the principle.

$$A = P + PRT$$

A = Future Value, P = Principle, R = Rate, T = Time in Years

You will be practicing the skills needed to change percentages to decimals. (Exercises 1-8)

Recall: Move the decimal 2 places to the left

Practicing converting units of time to years. (Exercises 9-16)

Recall: Months divided by 12 yield a fractional portion of a year.
Quarters divided by 4 yield a fractional portion of a year.
Weeks divided by 52 yield a fractional portion of a year.
Days divided by 360* yield a fractional portion of a year.
*This is the assumption made by the text.

Using your basic math/algebra skills to evaluate a formula.

Recall: The values substituted in must be in appropriate form (see the last 2 reminders). Use parentheses to place each value for a variable into a formula. Don't forget that existing parentheses may be upgraded to brackets to help the process.

Using skills required for solving an formula for a variable. (Exercises 33-38)

Recall: Highlight the variable and using the steps for solving an equation (simplify, addition property (for those variables added to or subtracted from your variable), multiplication property to remove the numeric coefficient.)
Noticing the difference in linear equations based upon rate of change vs. vertical intercept (baseline).

Notices characteristics of a linear function from a graph. (Exercises 39&40)

Recall: The slopes of the lines change when the rate of change is different (rate of change is interest rate in the simple interest formula).\
The lines are parallel if the vertical intercept (baseline) is changed.

Example: A department store charges and 18% annual rate for overdue accounts. How much interest will be owed on an $835 account that is 2 months overdue?*(#44p.132)

Example: If you paid $120 to a loan company for the use of $2,000 for 90 days, what annual rate of interest did they charge?*(#50p.132)

There is one type of problem that we've never experienced in an Algebra class. This is an investment problem with a commission rate involved. We must consider the amount originally invested as the cost of the investment plus a commission rate. The amount of the original investment plus the commission is the cost of the investment. Next, the amount of money earned when the investment is sold must be considered and the commission rate on that money. The amount of money from the sale less the commission is the amount of net money earned (income). It is the amount earned that represents the A in our second formula and the cost is the P. We can then use this to find the rate of growth for our money.

Step Through Process

1) Calculate the amount of money needed to invest (simple multiplication)
2) Calculate the commission on the money invested (base + rate•invest from 1))
3) Add steps 1 & 2 to find the cost of investment
4) Calculate the money earned from the sale (simple multiplication)
5) Calculate the commission on the sale (base + rate•sale from 4))
6) Subtract steps 4 & 5 to find the net income from sale
7) Calculate the rate earned on the investment, P, (step 3) based on the net income, A, (step 6) using the formula $A = P(1 + Prt)$

Example: An investor purchases 450 shares at $21.40 a share (the commission rate on this amount of principle is $37 plus 1.4% of the principle), holds the stock for 26 weeks and then sells the stock for $24.60 per share ($107 + 0.7% of the principle).*(#60p.132)