Section 5.1

Simple Interest

The simple interest on an investment (or loan) of PV (principal or present value) dollars at an annual interest rate of r for a period of t years is

$$INT = PV\, rt.$$

Future Value for Simple Interest

The future value FV of an investment of PV dollars at an annual simple interest rate of r for a period of t years is

$$FV = PV + INT = PV + PV\, rt = PV(1 + rt).$$

Present Value for Simple Interest

The present value of an investment at an annual simple interest rate of r for a period of t years, with future value FV, is

$$PV = \frac{FV}{1 + rt}.$$

Problem 1. Compute the simple interest for the specified period and the future value at the end of the period.

a) $2000 is invested for 8 years at 5% interest per year.

b) $8,400 is invested for 9 months at 14% per year.

Problem 2. Find the present value of the given investment.

a) An investment earns 3% per year and is worth $15,000 after 15 months.

b) An investment earns 7% per year and is worth $1,000 after 6 months.

Problem 3. You take out a 6-month, $5,000 loan at 8% simple interest. How much would you owe at the end of the 6 months?

Problem 4. How much would you have to deposit in an account earning 4.5% simple interest if you wanted to have $1,000 after 6 years?

Problem 5. A 5-year bond costs $1,000 and will pay a total of $250 simple interest over its lifetime. What is its annual interest rate?

Problem 6. A $4,000 loan, taken now, with a simple interest rate of 8% per year, will require a total repayment of $4,640. When will the loan mature?

Problem 7. You are expecting a tax refund of $1,000 in 4 weeks. A tax preparer offers you a $1,000 for a fee of $50 to be repaid by your refund check when it arrives in 4 weeks. Thinking of the fee as simple interest, what simple interest rate would you be paying on this loan?

Homework: Read section 5.1, do #4, 10, 16, 22, 26