

## Section 2.1

### 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 for this section: Read the section and watch the videos/tutorials. Then do these problems in preparation for the quiz do #3, 9, 13, 15, 25, 26