

**Section 3.3:
Savings Accounts
Read pg. 131-132**

Savings account: An account in which the bank pays interest for the use of the money deposited in the account.

Interest: A percentage of the money that is in an account that a bank pays on some accounts.

Interest Rate: The percentage rate that is paid by a bank on money that is in some accounts.

Principal: The balance, or amount of money, in an account, or amount borrowed.

Simple Interest: Interest that is calculated on the principal in an account, using the formula, $I = prt$.

Simple Interest Formula: The formula $I = prt$, where p is principal, r is the interest rate, and t is the time in years.

Statement Savings: An account where a consumer receives a monthly statement showing all activity, including deposits, interest earned, and any fees.

Minimum Balance: A certain amount of money that must be kept in an account as required by that particular bank.

Money Market Account: An account that pays a higher interest rate than other types of accounts, but usually requires a higher initial deposit and a higher minimum balance requirement often with a limit on the number of transactions per month.

Certificate of Deposit (CD): A certificate that states there is a specific sum of money on deposit and guarantees the payment of a fixed interest rate after a certain period of time, usually seven days to ten years; deposits and withdrawals cannot be made with a CD.

Maturity: A specified date at which interest is paid on a CD.

1. Gary deposits \$3,700 in an account that pays 2.15% simple interest. He keeps the money in the account for three years, but doesn't make any deposits or withdrawals. How much interest will he receive after the three years?

$$p \times r \times t = I$$

$$3,700 \times 2.15\% \times 3 = I$$

$$3,700 \times \underline{.0215} \times 3 = \underline{238.65}$$

~~After 3 years, Gary will receive _____ in interest.~~

Write the percent as a decimal.

$$\begin{aligned} I &= ? \\ P &= 3700 \\ r &= 2.15\% \rightarrow .0215 \\ t &= 3 \end{aligned}$$

2. What simple interest rate, to the nearest tenth, is needed for \$15,000 to double in 8 years?

When \$15,000 doubles, it becomes 30000. This means the account would earn 15000 in interest.

~~$\frac{I}{P} = r \cdot t$~~ $I = Prt$

~~_____ = _____
 x~~

~~The simple interest rate needed is _____.~~

$$\begin{aligned} I &= 15000 \\ P &= 15000 \\ r &= ? \\ t &= 8 \end{aligned}$$

Write the decimal as a percent.

$$15000 = 15000 (r) \cdot (8)$$

$$\frac{15000}{120000} = \frac{120000r}{120000}$$

$$r = .125 = \boxed{12.5\%}$$

3. How much simple interest would \$1,500 earn in 11 months at an interest rate of 3.75%?

$$I = Prt$$

$$I = 1500(.0375)\left(\frac{11}{12}\right)$$

$$I = \$51.56$$

$$I = ?$$

$$P = 1500$$

$$r = 3.75\% \rightarrow .0375$$

$$t = \frac{11}{12}$$

4. Jesse estimates that it will cost \$300,000 to send his newborn son to a private college in 18 years. He currently has \$65,000 to deposit in an account. What simple interest rate would he need so that \$65,000 grows into \$300,000 in 18 years? Round to the nearest percent.

$$I = Prt$$

$$235000 = 65000(r)(18)$$

$$235000 = 1,170,000r$$

$$r = .20 = \boxed{20\%}$$

$$I = \overset{(300000 - 65000)}{235000}$$

$$P = 65000$$

$$r = r?$$

$$t = 18$$

5. How much principal would you have to deposit to earn \$700 simple interest in $1\frac{1}{2}$ years at a rate of 4%?

$$I = Prt$$

$$700 = P(.04)(1.5)$$

$$700 = .06P$$

$$P = \$11,666.67$$

$$I = 700$$

$$P = P?$$

$$r = 4\% \rightarrow .04$$

$$t = 1.5$$

7. How much simple interest would \$1,000 earn in 275 days at an interest rate of 4.21%?
(There are 365 days in a year.)

$$I = Prt$$
$$I = 1000(.0421)\left(\frac{275}{365}\right)$$

$I = \$31.72$

$$I = ?$$
$$P = 1000$$
$$r = 4.21\% \rightarrow .0421$$
$$t = \frac{275}{365}$$

Section 3.4:
Explore Compound
Interest
Read pg. 137

Compound Interest: Interest that is earned on the money deposited into an account plus previous interest.

Annual Compounding: A method for calculating interest so that it is paid once a year.

Semiannual Compounding: A method for calculating interest so that it is paid twice a year, or every six months.

Quarterly Compounding: A method for calculating interest so that it is paid four times a year, or every three months.

Daily Compounding: A method for calculating interest so that it is paid daily.

Crediting: Interest that is compounded daily but is paid either quarterly or semiannually.

1. How much interest does \$5,300 earn at a rate of 2.8% interest compounded quarterly, in three months?

$$p \times r \times t = I$$

For interest compounded quarterly, $t = 0.25$.

$$5,300 \times 2.8\% \times 0.25 = I$$

$$\underline{5300} \times \underline{.028} \times \underline{.25} = \underline{\$37.10}$$

Write the percent as a decimal.

~~In 3 months, the account earns _____ in interest.~~

2. How much interest would \$2,000 earn, compounded annually in two years at the rate of 4.2%?

$$p \times r \times t = I$$

$$2,000 \times \underline{.042} \times 1 = \underline{84} \text{ 1st Yr}$$

$$2,000 + \underline{84} = \underline{2084} \leftarrow \text{End 1st Yr}$$

$$2,084 \times \underline{.042} \times 1 \approx \underline{87.53} \leftarrow I \text{ 2nd}$$

$$2,084 + \underline{87.53} = \underline{2171.53} \leftarrow \text{End 2nd Yr}$$

$$I = ?$$

$$P = 2000$$

$$r = .042$$

$$t = 1$$

$$\# \text{ of times} = 2$$

Add the interest to the principal.

The account balance is 2171.53 after two years. The account would earn 171.53 in interest, compounded annually, in two years.

3. Margaret deposits \$1,000 in a savings account that pays 5.4% interest compounded semi-annually. What is her balance after one year?

$$I = Prt$$

$$T = 1000(.054)(.5) = 27$$

$$1000 + 27 = 1027$$

$$I = 1027(.054)(.5) = 27.73$$

$$1027 + 27.73 = \boxed{\$1054.73}$$

$$I = ?$$

$$P = 1000$$

$$r = .054$$

$$t = .5$$

$$\# \text{ of times} = 2$$

4. Jonathan deposits \$6,000 in a savings account that pays 3.2% interest compounded quarterly. What is his balance after one year?

$$I = 6000(.032)(.25) = 48$$

$$B = 6000 + 48 = 6048$$

$$I = 6048(.032)(.25) = 48.38$$

$$B = 6048 + 48.38 = 6096.38$$

$$I = 6096.38(.032)(.25) = 48.77$$

$$B = 6096.38 + 48.77 = 6145.15$$

$$I = 6145.15(.032)(.25) = 49.16$$

$$B = 6145.15 + 49.16 =$$

$I = ?$
 $P = 6000$
 $r = .032$
 $t = .25$
of times = 4

$\$6194.31$

5. How much interest would \$1,000,000 earn at 5% compounded daily, in one day?

$$I = 1,000,000 (.05) \left(\frac{1}{365}\right)$$

$$I = 136.99$$

$$I = ?$$

$$P = 1,000,000$$

$$r = .05$$

$$t = \frac{1}{365}$$

$$\# \text{ of times} = 1$$

6. Kristin deposited \$9,000 in an account that has an annual interest rate of 4.1% compounded monthly. How much interest will she earn at the end of one month?

$$I = 9000(.041)\left(\frac{1}{12}\right)$$

$$I = \boxed{30.75}$$

$$I = ?$$

$$P = 9000$$

$$r = .041$$

$$t = \frac{1}{12}$$

$$\# \text{ of times} = 1$$

7. Kelly has d dollars in an account that pays 3.4% interest compounded weekly. Express her balance after one week algebraically.

$$d(.034)\left(\frac{1}{52}\right) + d$$

$$I = ?$$

$$P = d$$

$$r = .034$$

$$t = \frac{1}{52}$$

$$\text{\# of times} = 1$$

Homework:
pg. 135-136:
2,3,5,7-11
&
pg. 141:
2-4,6-8