

Chapter 2 Extra Lesson #2 Simple Interest

$$I = prt$$

I = interest

p = principle

r = rate (as a decimal)

t = time (in years)

Example 1 $t = 2$ $p = 5000$ $r = 6\% = \frac{6}{100} = .06$

Maria opened a savings account that earns 6% annual interest. If she deposited \$5000 when she opened the account, how much interest has she earned after 2 years?

$$\begin{aligned} I &= prt \\ I &= (5000)(.06)(2) \\ I &= \$600 \end{aligned}$$

Example 2 $t = \frac{6}{12} = .5$ $r = 8\% = \frac{8}{100} = .08$
 $I = \$100$

Guadalupe opened a savings account that earns 8% annual interest. After 6 months, she has received \$100 in interest. How much money had she deposited when she opened the account?

$$I = prt$$

$$100 = (p)(.08)(.5)$$

$$\frac{100}{.04} = \frac{.04 \cdot p}{.04}$$

$$\boxed{\$2500 = p}$$

Example 3 $p = \$6000$ $r = 9\% = \frac{9}{100} = .09$
 $I = \$1890$

Mike deposited \$6000 into a savings account that receives 9% annual interest. If he earns \$1890 in interest, how long was his money in the account?

$$I = prt$$

$$1890 = (6000)(.09)(t)$$

$$\frac{1890}{540} = \frac{540 \cdot t}{540}$$

$$\boxed{3.5 \text{ years} = t}$$

Example 4 $p = \$9000$ $t = 2 \text{ yrs } 3 \text{ mo} = 2 \frac{3}{12} = 2.25$
 $I = \$2430$

Jim deposited \$9000 into a savings account for 2 years and 3 months. If he earns \$2430 in interest, what is the annual interest rate?

$$I = prt$$

$$2430 = (9000)(r)(2.25)$$

$$\frac{2430}{20250} = \frac{20250 \cdot r}{20250}$$

$$.12 = r \leftarrow \text{change to } \%$$

$$\times 100$$

$$\boxed{12\% = r}$$

YOU TRY!

Gary wants to invest \$4200 at a 6% annual interest rate to earn \$756 in interest. How many years will this take?

$$p = 4200 \quad r = 6\% = \frac{6}{100} = .06 \quad I = 756$$

$$I = prt$$

$$756 = (4200)(.06)(t)$$

$$\frac{756}{252} = \frac{252t}{252}$$

$$\boxed{3 \text{ years} = t}$$

Harriet earns \$616 in interest after 4 years with a 5.5% annual interest rate. How much did she invest?

$$I = 616 \quad t = 4 \quad r = 5.5\% = \frac{5.5}{100} = .055$$

$$I = prt$$

$$616 = (p)(.055)(4)$$

$$\frac{616}{.22} = \frac{.22p}{.22}$$

$$\boxed{\$2800 = p}$$

YOU TRY!

Bob invests \$7500 at a 3% annual interest rate. After 5 years and 6 months, how much does Bob earn in interest?

$$p = 7500 \quad t = 5 \text{ yr } 6 \text{ mo} = 5 \frac{6}{12} = 5.5 \quad r = 3\% = \frac{3}{100} = .03$$

$$I = prt$$

$$I = (7500)(.03)(5.5)$$

$$I = \$1237.50$$

Shayla earned \$877.50 in interest when she invested \$3250 for 6 years and 9 months. What was her interest rate?

$$I = 877.50 \quad p = 3250 \quad t = 6 \text{ yr } 9 \text{ mo} = 6 \frac{9}{12} = 6.75$$

$$I = prt$$

$$877.50 = (3250)(r)(6.75)$$

$$\frac{877.50}{21937.5} = \frac{21937.5 r}{21937.5}$$

$$\frac{.04}{100} = r$$

$$4\% = r$$

YOU TRY!

Jack and Jill want to earn interest on their 2 year investments. Jack has \$8000 to invest and he receives a 3% annual interest rate from his bank. Jill only has \$6000 to invest but her bank has a 5% annual interest rate. Who earned the most and by how much?

JACK

$$p = 8000 \quad r = 3\% = .03 \quad t = 2$$

$$I = (8000)(.03)(2)$$

$$I = \$480$$

JILL

$$p = 6000 \quad r = 5\% = .05 \quad t = 2$$

$$I = (6000)(.05)(2)$$

$$I = \$600$$

$$\begin{array}{r} 600 \\ - 480 \\ \hline \end{array}$$

Jill earned most by \$120.