

Nidaa

1000

Want: Total Amount = \$2000  
 $A = P + I$

**Example 5:** Erin invests \$1000. Her account pays 10% simple interest per year. Determine how long she needs to invest her money if she wants her investment to double.  $\rightarrow 2000$

$$I = Prt$$

$$t = \frac{(A - P)}{Pr}$$

$$t = \frac{(2000 - 1000)}{1000 \times 0.10}$$

$$t = \frac{2000 - 1000}{1000 \times 0.10}$$

$t = 10$  year. she needs to invest her money to the double.

**Example 6:** Zak invests \$3000 in a simple interest account. He leaves it there for 6 years. Determine the annual interest rate if his investment is worth \$3090.  $P = \$3000$   $t = 6$  years  $A = \$3090$

$$A = P + Prt$$

$$(A - P) = Prt$$

$$r = \frac{(A - P)}{Pt}$$

$$r = \frac{(3090 - 3000)}{3000 \times 6}$$

$$r = 0.005$$

$$r = 0.5\%$$

the annual interest rate for 6 years

**THINK ABOUT IT!** Do you think the interest rate from Example 6 or the interest rate from Example 5 more is more realistic?

#### Homework:

- Suppose Hilliard put \$1500 in a bank account that pays 3% simple interest a year.  $t = 9$  year  $r = 3\%$   $P = 1500$ 
  - If he keeps his money in the bank for 9 years, how much interest does he make?  
 $I = Prt$   
 $I = 1500 \times 0.03 \times 9$   
 $I = 405$  the interest he made for 9 years
  - What is the final amount?  
 $A = P + I$   
 $A = 1500 + 405 \therefore A = 1905$  the final amount

- James borrows \$3000 to buy a used car. The loan charges 21% simple interest per year. Determine how much he will owe if he pays back the loan in 3 years.  $P = \$3000$   $r = 21\%$

$$A = P + Prt$$

$$A = 3000 + 3000 \times 0.21 \times 3$$

$$A = \$4890$$

- Natalina invests \$800 in a simple interest account. She leaves it there for 6 years. Determine the annual interest rate if her investment is worth \$1136 in the end.  $P = \$800$   $t = 6$  years  $A = \$1136$

$$(A - P) = Prt$$

$$r = \frac{(A - P)}{Pt}$$

$$r = \frac{(1136 - 800)}{800 \times 6}$$

$$r = 0.07$$

$$\therefore r = 7\%$$

the annual interest rate in the end. 7 percent.

- Sarah invested \$500 in a simple interest account. Her account pays her 0.6% interest. How long does she need to leave her money in the bank if she wants it to double in value?  $P = \$500$   $r = 0.6\%$

$$t = \frac{(A - P)}{Pr}$$

$$t = \frac{(1000 - 500)}{500 \times 0.006}$$

$$t = 166.66$$

$$t \approx 167$$
 years

$$t = \frac{500}{3}$$

$$A = \$1000$$

$$\frac{0.6}{100} = 0.006$$