

**Section 1.4 – Practice Problems**

Given the information provided, solve for Interest

1.  $P = \$4500$   $r = 12\%$   $t = 3$  yrs  $I = ?$

$$I = Prt$$

$$I = 4500 \cdot 0.12 \cdot 3$$

**\$1620**

2.  $P = \$12\,250$   $r = 6.2\%$   $t = 6$  mnths  $I = ?$

6 mnths  
is  $\frac{6}{12}$  yr  
 $\frac{1}{2}$  yr

$$I = Prt$$

$$I = 12\,250 \cdot 0.062 \cdot \frac{1}{2}$$

**\$379.75**

3.  $P = \$47\,200$   $r = 3\%$   $t = 5$  yrs  $I = ?$

$$I = Prt$$

$$47\,200 \cdot 0.03 \cdot 5$$

**\$7080**

4.  $P = \$200$   $r = 28\%$   $t = 6$  yrs  $I = ?$

$$I = Prt$$

$$200(0.28)(6)$$

**\$336**

Given the information provided, solve for the missing value

5.  $P = ?$   $r = 7.5\%$   $t = 4$  yrs  $I = \$150.30$

$\frac{I}{rt} = \frac{Pr}{rt}$  need P so use algebra

$$\frac{I}{rt} = P$$

$$\frac{150.30}{(0.075)(4)} = \text{\$}501$$

6.  $P = \$4800$   $r = ?$   $t = 4$  mnths  $I = \$12$

$\frac{4}{12} = \frac{1}{3}$  yr

$$\frac{I}{Pt} = r$$

$$\frac{12}{4800(\frac{1}{3})} = 0.0075$$

**0.75%**

7.  $P = \$2500$   $r = ?$   $t = 5$  yrs  $I = \$675$

$$\frac{I}{Pt} = r$$

$$\frac{675}{(2500)(5)} = 0.054$$

↓

**5.4%**

8.  $P = \$1\,250\,000$   $r = 8\%$   $I = \$400\,000$   $t = ?$

$$\frac{I}{Pr} = t$$

$$\frac{400\,000}{(1\,250\,000)(0.08)} = 4$$

**t = 4 yrs**

9. What amount will an account have after 4 years, if \$7500 is invested at an annual rate of 8% compounded daily?

compound interest  $A = P(1 + \frac{r}{n})^{n \cdot t}$

$P = 7500$

$n = 365$

$t = 4$

$r = 0.08$

$A = 7500(1 + \frac{0.08}{365})^{365(4)}$

$A = \$10\,328.10$

10. An investment opportunity of \$50 000 for 10 years has two options: the first pays 11% compounded quarterly, the second pays 9% compounded monthly. Which is the better investment, and by how much?

option 1:  $P: 50000$   $A = 50000(1 + \frac{0.11}{4})^{4 \cdot 10}$   
 $t: 10$   
 $n = 4$   $A = 147\,993.70$   
 $r = 11\%$

option 2:  $P: 50000$   $A = 50000(1 + \frac{0.09}{12})^{12 \cdot 10}$   
 $t: 10$   
 $n = 12$   
 $r = 9\%$   $A = 122\,567.85$

OPTION 1 BETTER BY  $\$25\,425.85$

11. John started an RRSP on January 1<sup>st</sup>, 2013, with a deposit of \$2500. He added \$1500 on January 1<sup>st</sup>, 2014, and \$2000 on January 1<sup>st</sup>, 2015. What is the accumulated value of his account on January 1<sup>st</sup>, 2016, if the interest is 6% compounded quarterly?

$$\text{Jan 1}^{\text{st}} \text{ 2013} \quad A = 2500 \left(1 + \frac{0.06}{4}\right)^{4 \cdot 1}$$

$$r = 0.06$$

$$A = 2653.41$$

$$n = 4$$

$$\text{Jan 1 2014: } 2653.41 + 1500 = 4153.41$$

$$A = 4153.41 \left(1 + \frac{0.06}{4}\right)^{4 \cdot 1}$$

$$A = 4408.28$$

$$\text{Jan 1 2015: } 4408.28 + 2000 = 6408.28$$

$$A = 6408.28 \left(1 + \frac{0.06}{4}\right)^{4 \cdot 1}$$

$$= 6801.51$$

$$\boxed{\$6801.51}$$