

Section 7.2 – Practice Problems

Given the information provided, solve for Interest

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

$$I = Prt$$

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

$$= \boxed{\$1620}$$

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

$$I = Prt$$

$$\downarrow$$

$$t = \frac{6}{12} \text{ mnth} = \frac{1}{2} \text{ yr}$$

$$I = 12250 \cdot 0.062 \cdot \frac{1}{2}$$

$$I = \boxed{\$379.75}$$

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

$$I = 47200 \cdot 0.03 \cdot 5$$

$$I = \boxed{7080}$$

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

$$I = 200 \cdot 0.28 \cdot 6$$

$$I = \boxed{\$336}$$

Given the information provided, solve for the missing value

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

$$I = Prt$$

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

$$P = \frac{150.30}{0.075 \cdot 4}$$

$$P = \boxed{\$501}$$

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

$$I = Prt$$

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

$$\downarrow$$

$$4 \text{ mnth} = \frac{4}{12} \text{ yrs} = \frac{1}{3} \text{ yrs}$$

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

$$r = \boxed{0.75\%}$$

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

$$I = Prt$$

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

$$r = \frac{675}{2500 \cdot 5}$$

$$r = 0.054$$

$$r = \boxed{5.4\%}$$

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

$$I = Prt$$

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

$$t = \frac{400000}{1250000 \cdot 0.08}$$

$$t = \boxed{4 \text{ yrs}}$$

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

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

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

$$A = \$10\,328.10$$

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:

$$A = 10000 \left(1 + \frac{0.11}{4}\right)^{4 \cdot 10}$$

$$A = \$29\,598.74$$

option 2:

$$A = 10000 \left(1 + \frac{0.09}{12}\right)^{12 \cdot 10}$$

$$A = 24\,513.57$$

↑ Better option by $\$50\,85.17$

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

$$A = 2500 \left(1 + \frac{0.06}{4}\right)^{4 \cdot 1}$$

2013

$$A = 2653.41$$

$$\downarrow$$

$$+ 1500$$

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

2014

$$A = 4408.28$$

$$+ 2000 \quad 2015$$

$$A = 6408 \left(1 + \frac{0.06}{4}\right)^4$$

$$= \$6801.22$$

✓ divide annual by 24

12. Steve makes \$120 000 annually, calculate his deductions from his semi-monthly paycheques.

$$120\,000 \cdot 0.3271 = 39\,252 \leftarrow \text{deducted}$$

Deductions

26.1 IT
1.66 EI
4.95 CPP

32.71% deducted

80 748 annual Take-Home

\$ 3364.50

13. Solace makes \$2450 Gross income bi-weekly, what is her annual salary? Use that info to calculate her deductions for her Net pay.

$$2450 \cdot 26 = 63\,700 \text{ annual}$$

$$63\,700 \cdot 0.2481 = 15\,803.97$$

Deducted

IT: 18.4%

CPP: 4.75% → 24.81%

EI: 1.66%

47 896.03 annual NET

14. If Simon had a deduction percentage of 27.2% what are the boundaries of his salary? Pick any annual salary in-between the boundaries and calculate the deductions and bi-weekly Net salary.

15. If Houssam has a semi-monthly Gross pay of \$5400, what is his annual salary and then calculate his deductions from his paycheck. What is his Net pay semi-monthly?

$$5400 \cdot 24 = 129\,600 \text{ annual Gross}$$

New Annual

$$129\,600 - 42\,392.16$$

26.1 } deductions
4.95 }
1.66 }

$$129\,600 \cdot 0.3271$$

$$42\,392.16 \text{ deducted}$$

$$87\,207.84 \text{ NET}$$

↓

$$87\,207.84 \div 24$$

32.71% total deductions

\$ 3633.66