

Chapter 8 Review

8.1 Future Value of an Ordinary Simple Annuity, pages 382-389

1. Consider an annuity with payments of \$1600 invested semi-annually for 4 years at 5.6% per year, compounded semi-annually.

- Draw a time line representing the future value of the annuity.
- Express the future value of the annuity as the sum of a series of compound interest investments.
- Use a TVM Solver to determine the future value of the annuity.
- Use the future value of an annuity formula to calculate the value of the annuity.

2. a) Choose a method to determine the future value of each ordinary annuity.
- \$2000 deposited annually for 8 years at 3.9% per year, compounded annually
 - monthly payments of \$90 at 7.8% per year, compounded monthly for 2 years
 - \$5000 deposited semi-annually for 5 years into a fund that pays 6.5% per year, compounded semi-annually
- b) Check one of your answers using a different method.

8.2 Present Value of an Ordinary Simple Annuity, pages 390-396

3. \$990 is paid monthly for 1 year at 5.4% annual interest, compounded monthly.
- Draw a time line representing the present value of the ordinary annuity.
 - Express the present value of the annuity as the sum of a series of individual present value calculations.
 - Use a TVM Solver to determine the present value of the annuity.
 - Use the relevant formula to calculate the present value of the annuity.

4. a) Choose a method to determine the present value of each ordinary simple annuity.
- annual payments of \$6500 at 3.5% per year, compounded annually, for 5 years
 - semi-annual income of \$15 000 for 4 years, at 10.2% per year, compounded semi-annually
 - monthly payments of \$1100, for 2 years at 6.9% per year, compounded monthly
- b) Use a TVM Solver to check your answers to part a).

8.3 Payments and Total Interest, pages 397-404

5. Determine the value of PV, i , and n in each situation.
- \$8000 is to be repaid quarterly for 2 years with interest at 9% per year, compounded quarterly
 - a \$17 500 car loan at 6.75% per year, compounded monthly, is to be repaid with monthly payments for 5 years
6. Substitute the values for PV, i , and n from each loan in question 5 into the formula
- $$PMT = PV \left[\frac{i}{1 - (1 + i)^{-n}} \right]$$
- to solve for the payment.
7. Calculate the total interest paid for each loan in question 5.
8. a) Determine the monthly investment needed to generate \$21 000 in 5 years if interest is earned at 4.2% per year, compounded monthly.
- How much of the \$21 000 is from
 - monthly investments into the account?
 - interest?

Name: _____

Date: _____

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8.4 Effects of Changing the Conditions of an Ordinary Simple Annuity, pages 405-411

- 9. a)** Determine the monthly payment on \$10 000 borrowed at 9.75% annual interest, compounded monthly, for
i) 5 years **ii)** 10 years
b) Calculate the total interest paid for each loan period in part a).
- 10. a)** Compare the amounts at age 18 that would result from making each monthly contribution to an RESP (Registered Education Savings Plan) that earns 6% annual interest, compounded monthly.
i) \$300, starting at age 14
ii) \$150, starting at age 10
iii) \$100, starting at age 6
iv) \$75, starting at age 2
b) What is the total of the deposits in each situation?
c) How much did each investment earn?
- 11.** Marie purchased a new SUV 3 years ago. She borrowed \$39 000 over 5 years at 8.4% interest, compounded monthly.
a) Determine Marie's monthly payment.
b) Calculate the total amount she has paid so far.
c) Marie wants to pay off the loan in full today. Determine the amount remaining on the loan.
d) How much interest will Marie save by paying off her debt today?