Name: _____ Date: _____

Section 8.5 Effects of Changing Conditions on Investments and Loans

1. Enrica has $4000 to invest at 8% per year, compounded semi-annually. She will need the money in 8 to 10 years.
- **a)** Sketch the graph of $A = 4000(1.04)^{2n}$ using a graphing calculator.
- **b)** Using the [CALC] function on the graphing calculator to find the value of A for each value of n.
  - **i)** $n = 8$ **ii)** $n = 9$ **iii)** $n = 10$
- **c)** What advice would you give Enrica about when to cash in her investment? Justify your answer.

2. Joakim would like to have $8000 in 5 years. Determine the amount he would need to invest at each rate to reach his goal.
- **a)** 6% per year, compounded quarterly
- **b)** 5.2% per year, compounded monthly
- **c)** 4.8% per year, compounded weekly

3. Without graphing, describe the difference between the graphs of $y = 400(1.05)^n$ and $y = 400(1.07)^n$.

4. Your friend Steve does not understand the difference between some possible investment options, each with a different compounding period. To help him, calculate the future value of a $10 000 investment over 10 years at 8% per year for each compounding period.
- **a)** annually
- **b)** semi-annually
- **c)** quarterly
- **d)** monthly
- **e)** weekly

5. Jamie wants to invest $14 000 for 6 years. Calculate the future value of her investment for each rate.
- **a)** 5.8% simple interest
- **b)** 5.5% per year, compounded semi-annually
- **c)** 5.0% per year, compounded monthly

6. Damon has heard that the amount of time money is invested dramatically affects the future value of the investment. Illustrate this by determining the total amount of interest an investment of $300 will earn each year at 6% per year, compounded yearly, for 5 years.

7. Carlo asks his boss for an advance on his pay. His boss agrees, but only pays him $865 of the $925 he earns per week. What annual interest rate, compounded weekly, is Carlo paying for this "loan"?

8. Rachel invests $1500 in a plan for 4 years with interest compounded semi-annually. If her investment is worth $1840 at the end of the 4 years, what annual rate of interest did she receive?

9. Christina and Dasha are twins. They each invest $5000 on their 14th birthday. Christina invests in a plan with interest at 8% per year, compounded semi-annually. Dasha invests in a plan with interest at 5.5% per year, compounded quarterly. They both take their investments out on their 18th birthday. Which twin earned more interest? How much greater was her investment?

Copyright © 2007 McGraw-Hill Ryerson Limited

Name: _____ Date: _____

10. Kevin wants his $3500 investment to grow to $4100 in 3 years. What annual interest rate would he need to invest at, for each compounding period, to reach his goal?
a) annually
b) semi-annually
c) quarterly
d) monthly
e) weekly

11. A perpetuity is an investment that continues forever, paying out the interest but leaving the principal untouched. The interest rate depends on the economy at the time.
A school sets up a scholarship perpetuity with a donation of $50 000. The recipient receives a scholarship in the amount of the interest earned in the year. The interest rates for the last 5 years are shown in the table. Find the amount of each scholarship.

Annual Interest Rate (%)	Compounding Period	Scholarship Amount ($)
0.8	semi-annually	
7.5	quarterly	
5.5	semi-annually	
7	semi-annually	
9	annually	

Copyright © 2007 McGraw-Hill Ryerson Limited