

New York City College of Technology
MAT 1275/D529 - Spring 2017 - Prof. Ghezzi
\$\$\$ Let's talk about money! \$\$\$
Activity on compound interest, part 2

NAME OF TEAM MEMBERS: _____

Instructions: This activity will be done in groups (2-3 students) during class time on Wednesday, April 19. The activity (part 1 and part 2) is worth 2 percent of extra-credit when I compute your final grade. I will collect part 1 for each student and part 2 for each group.

Recall the Compound Interest Formula

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

where P is the principal (present value), r is the annual interest rate (decimal), n is the number of compounding periods in a year, t is the time in years, and A is the amount after t years (future value).

The Continuous Compound Interest Formula is $A = Pe^{rt}$.

1. Comparing interest rates.

If you borrow \$10000 compounded annually (once a year), how much do you owe after 5 years if the interest rate is

- a) 7%?
- b) 8%?

How much interest do you pay in each case? Round your answers to the nearest cent.

2. Comparing interest for various compounding periods.

If you borrow \$10000 at 6% compounded

- a) annually
- b) quarterly (4 times a year)
- c) monthly

How much do you owe after 5 years? How much interest do you pay in each case? Round your answers to the nearest cent.

3. If you invest \$10000 at 6% compounded

- a) annually
- b) quarterly
- c) monthly
- d) daily
- e) continuously

How much do you have after 5 years? How much interest do you earn in each case? Round your answers to the nearest cent.

4. What are your conclusions from Problems 1, 2 and 3?

5. Finding present value.

How much should you invest now at 3% compounded daily to have \$8000 in 4 years? Round your answers to the nearest dollar.

6. Computing growth time.

How long will it take \$5000 to double if it is invested at 4% compounded quarterly? Round your answer to 1 decimal place.

7. At what age should you invest \$6000 if you need \$7000 at age 25 and the interest is compounded continuously at a rate of 2%? Round your answer to the nearest integer.
8. **Shopping for interest rate.**
What interest rate do you need if you would like \$2000 to grow to \$3000 in 2 years and the interest is compounded annually? Round your answer to 2 decimal places. Is the answer realistic?
9. What else would you like to know about loans and investments? What are realistic current interest rates on deposits or loans? Share your experience/knowledge, if any.