

MAT 1275/D526 - Spring 2018 - Prof. Ghezzi
\$\$\$ Let's talk about money! \$\$\$
Activity on compound interest

NAME OF TEAM MEMBERS: _____

Instructions: This activity will be done in groups (2-3 students) during class time on Wednesday, April 18. The activity is worth 2 percent of extra-credit when I compute your final grade. I will collect one activity for each group. Show all your work on a separate sheet of paper and attach it to this cover sheet.

• Watch the video “The constant e and compound interest” from the MAT 1275 Student Video Resource page (<https://openlab.citytech.cuny.edu/math1275videolibrary/>), under “Compound Interest”:
<https://www.khanacademy.org/math/algebra2/exponential-and-logarithmic-functions/e-and-the-natural-logarithm/v/e-through-compound-interest>

• 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 for 5 years 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 for 5 years at 6% compounded

- a) annually
- b) quarterly
- c) monthly

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 did you learn 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.

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.

7. 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.