

### Section 3—Financial Security

**Title of Lesson/Subject:** Investing & Compound Interest

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**Time Allotment:** One Class Period

**Grade Level or Target Audience:** Grades 9-12

**ND Standards Competencies:**

Consumer & Family Resources –

2.1.1 Apply management and planning skills and processes to organize tasks and responsibilities

2.5.2 Apply management principles to individual and family financial practices

9-10.1.9 Select and use a computational technique to solve problems involving real numbers

**Key Economic Concepts:** Saving, Investing, Compound Interest

**Brief Description:** In this lesson, students will learn the importance of investing early and how compound interest helps to increase your investment earnings.

**Learner Objectives:** Students will understand the importance of investing early.  
Students will understand how compound interest increases your investment earnings  
Students will know how to use the Rule of 72.

**Introduction:** Tell students that today's lesson will hopefully convince them that the best thing that they can do to prepare for their retirement is to start saving/investing today.

**Materials Needed:** Computer for each student with Internet access

**Audio/Visual Equipment Needed:** Whiteboard or projector

**Lesson Outline:** Introduce lesson by discussing students ideas of what is needed for retirement.  
Compute interest using the simple interest formula  
Explain what compound interest is and demonstrate using financial calculators  
State the Rule of 72 and how to use it  
Experiment with the financial calculators to see how time, interest rates and initial investments affect investing  
Conclude lesson by having students reevaluate how they will save for their retirement  
Assign worksheet

**Resources:** [Compound Interest Calculator](http://www.1728.com/compint.htm) <http://www.1728.com/compint.htm>  
[Investment Calculators](http://atb.com/dev/investing/inv_calculators.asp) [http://atb.com/dev/investing/inv\\_calculators.asp](http://atb.com/dev/investing/inv_calculators.asp)  
[Compound Interest and the Rule of 72 Worksheet](#) - see last pages of document

**Activities:**

Ask students how much money they think they will need to have for their future retirement. Discuss with them how they plan on saving this money in terms of where it will come from and when they will save it.

Review with students the simple interest formula ( $I=Prt$ ). Calculate the simple interest earned on \$1,000 invested at 10% annual interest for 20 years. Next explain to students that interest on investments is typically computed using compound interest. Explain to students that compound interest allows you to earn money on your initial investment as well as any interest already earned on the investment. Have students use the Internet to navigate to the [Compound Interest Calculator](#) to calculate the interest earned on the same amount of money invested for the same number of years at the same interest rate as in the earlier example but figured using interest compounded annually. Students should compare the results of using compounding with the results when they used simple interest. Next have students change the compounding time period so that they can see the difference with the different compounding options.

Tell students that there is a simple formula to estimate how long it will take to double their investment – the Rule of 72. Explain to students that given a known interest rate, dividing 72 by that interest rate will result in the number of years it will take for the investment to double in value. Show them that they can also divide 72 by the number of years that they want to invest a certain amount and the result will be the interest rate needed in order to double their investment in that particular number of years.

Next, explain to students that there are three critical factors in determining how fast your investment will grow – the initial amount invested, the amount of time that you are investing and the rate at which you are investing. Have students go to [Investment Calculators](#) and select Advantage of Early Investing under the Investment and Savings Calculators section. Take students through several examples that will demonstrate what happens when you start investing at different ages, invest at different rates, invest different initial amounts, etc.

Now have students refer back to the original question concerning their retirement. Using their knowledge of compound interest and these investment calculators, have students come up with a plan for how they will save enough money for their retirement.

,Application/Assignment: Assign students to complete the [Compound Interest and the Rule of 72 Worksheet](#). On the back side of the worksheet, have students answer the following question: What have you learned from this lesson concerning saving for your retirement?

Evaluation Plan: Students will be evaluated on their participation in the class discussions and activities. They will also be evaluated on the worksheet and their response to the question.

1. What is the Rule of 72?

How many years would it take you to double your money at the following interest rates?

2. 32%
3. 18%
4. 5%

What interest rate would you need to invest your money at in order to double your money in the given number of years?

5. 40 years
6. 15 years
7. 2 years

Use the compound interest calculator at <http://www.1728.com/compint.htm> to answer the following questions.

8. Suppose you invest \$2100 in an account that earns interest at an APR of 4.3%. Determine the accumulated balance after 3 years if:
  - a. the interest is simple interest ( $I = Prt$ )
  - b. the interest is compounded annually
  - c. the interest is compounded semi-annually

d. the interest is compounded quarterly

e. the interest is compounded monthly

f. the interest is compounded daily

g. the interest is compounded continuously

9. Larry invests \$3100 in a savings account that compounds interest monthly at an APR of 5.3%. Theo invests \$2900 in a savings account that compounds interest annually at an APR of 5.6%. Who will have the higher accumulated balance after 5 years? After 20 years?
10. Suppose that you want to have a \$90,000 retirement fund after 35 years. How much will you need to deposit now if you can obtain interest at an APR of 12%, compounded quarterly? What if the interest is compounded daily? Assume that no additional deposits are to be made to the account.