(TEACHER EXAMPLE) Investment Activity

Step 1 – Pick your investment fund.

You have just been given $10,000 that you will invest in a single fund for the next 50 years. Select a **fund category** from the following list:

a) Bond Funds – Considered to be less risky than stocks. You're less likely to "win big," but you're less likely to "lose big" if the stock market runs into trouble.
b) "Large Cap" Stocks – A mixture of different stocks of large companies.
c) "Small Cap" Stocks - A mixture of different stocks of small companies.
d) Balanced Funds – a mix of stocks and bonds

Which one will you choose? Explain your reasoning. Once you've chosen a type of fund, you can go to the link below and randomly select a fund (with a listed 10 year average) from your category.

Write down which of the 4 options you chose and write 3-5 sentences explaining your reasoning.

Once you've selected your fund category **Click here to play the "Investment Lottery"**

Which fund (in your fund category) were you randomly assigned? You should not have the same fund as any other student in the class.

Step 2 – Estimate your annual gains

Your fund will have listed its average gains "since inception." What is it? Convert your percentage interest rate into a decimal. (For example 5.37% = .0537)

Note: For this project, you can only use funds with a minimum of 10 year history.

Type the name of your fund and percentage rate as a decimal here:

Our example fund is "US Super-stock" (not a real fund...yours will be real) with an average growth rate of 7.19% over the past 10 years. It's growth rate, as a decimal has been **.0719**

Step 3 – Create your compound interest equation, assuming that your fund continues to grow at the 10 year average rate and that your initial investment is $10,000. Remember your compound interest formula.

$$y = P(1 + r)^x$$

P = principal

r = your interest rate as a decimal

x = number of years

y = the value of your investment after x years

Write your equation here: 7.19%

Y = 10000(1.0719)^x

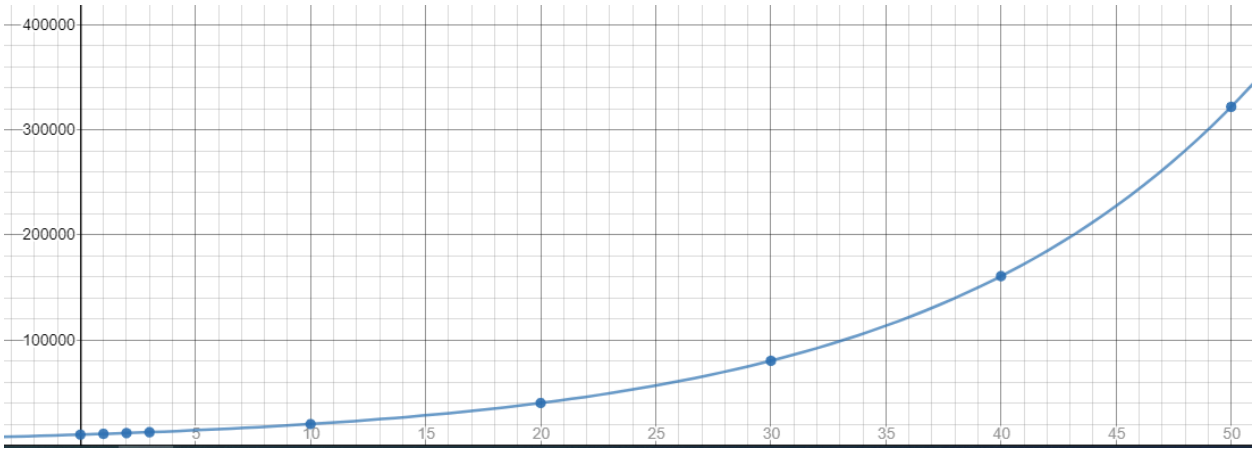
Step 4 & 5 - Create a Data Table & Graph (and take a screen-shot)

Go to this Desmos.com link and enter the information for your equation. (All you'll need to do is to enter your interest rate as 'a', we've done everything else for you.)

Once you have created your data table & graph, cut & paste a screenshot below.

x	$10000(1+.0$
0	10000
1	10719
2	11489.696
3	12315.805
10	20023.625
20	40094.557
30	80283.838
40	160757.35
50	321894.49

$a = 7.19$



Step 6 - Answer each of these questions:

a) **How much was your $10,000 investment worth after 50 years?**

$321,894

b) **How much did your investment grow during the first 10 years (from 0-10 years)?**

$20,024 - $10,000 = **$10,024**

c) **How much did your investment grow during the last 10 years (from 40-50 years)?**

$321,894 - $160,757 = **$161,137**

d) **What do you notice about the shape of your graph? Why do you think it's that shape?**

Provide an answer in your own words

Extra Credit - Solve the Exponential Equation using a Logarithm to determine the exact day when your investment will be worth exactly $50,000.

50000 = 10000(1.0719)^x

5 = 1.0719^x

X = (log 5)/(log 1.0719)

X = .699 / .030

X = 23.3

Our investment will be worth $50,000 in approximately 23 years and 4 months.

Honors Section (Super-Extra-Credit for everyone else)

Step 1 – Select 3 funds for your portfolio.

You have now been given another $10,000 that you will invest across 3 different funds for the next 50 years. Select 3 fund categories from the following list. You'll invest 50% in your 1st fund category, 30% in your 2nd fund category, and 20% in your 3rd category.

a) Bond Funds – Considered to be less risky than stocks. You're less likely to "win big," but you're less likely to "lose big" if the stock market runs into trouble.
b) "Large Cap" Stocks – A mixture of different stocks of large companies.
c) "Small Cap" Stocks - A mixture of different stocks of small companies.
d) Balanced Funds – a mix of stocks and bonds

Which 3 did you choose? Which did % did you allocate towards each? Explain your reasoning. Once you've chosen your 3 types of funds, you can go to the link below and use a random number generator to select funds (with a listed 10 year average) from each category.

Write down which 3 options you chose and write 3-5 sentences explaining your reasoning.

"Investment Lottery" Funds

Step 2 – Estimate your annual gains

Your fund will have listed its average gains "since inception." What is it? Convert your percentage interest rate into a decimal. (For example 5.37% = .0537)

Note: For this project, you can only use funds with a minimum of 10 year history. (**Type each fund & percentage gains on the provided lines**)

(All made-up...you'll use real funds)

Fund #1 __Big Tech Fund 9.52% **Fund #2 _Mom&Pop Biz Fund 11.31%**
Fund #3 _Steady-Eddie Bond Fund 5.64%

Step 3 – Create your compound interest equation, assuming that your fund continues to grow at the 10 year average rate and that your initial investment is $10,000. Remember your compound interest formula.

$$y = .50P(1 + r)^x + .30P(1 + r)^x + .20P(1 + r)^x$$

P = principal r = your interest rate as a decimal x = number of years

y = the value of your investment after x years

Type your equation here:

Y = 5000(1.0952)^x + 3000(1.1131)^x + 2000(1.0564)^x

Step 4 - **Create a data table**

Create a data table by plugging in the following x values and solving for y. Round your y values to the nearest dollar. You have 2 choices of how you want to do this, you could either:

a) Do the algebra by hand (and take a picture of your work) or

b) Create a spreadsheet to do the work (and attach a link to the spreadsheet)

X	Y
0	**10000**
1	**10928**
2	**11946**
3	**13063**
4	**14290**
5	**15636**
10	**24635**
20	**62387**
30	**161562**
40	**425950**
50	**1139298**

Step 5 - Reflection Questions:

Imagine that you are a financial advisor. (3-5 sentences for each)

a) What investing advice would you give to a recent high school or college graduate?

Type your own thoughts

b) What investing advice would you give to a 60 year old woman who is hoping to retire in the next 7 years?

Type your own thoughts

c) What investing advice would you give to a 40 year old man with a wife and 2 kids?

Type your own thoughts

d) Would you give the same advice to all 3 people? Why or why not?

Type your own thoughts