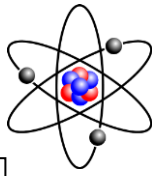
Name _____
Advanced Information Technology

Miami Southridge High School
Bouwsma Rm 323



4 Present Discount Value

9007610: 6.04, 05, 06, 07, 08. 9.02. 09.

Explanation: Money now is worth more than money later. No doubt, you would rater get $100 now, rather than the same $100, ten years from now. There are several reasons for this. First, time is an issue. You need to do without your money, for and something might happen, and you might not get your money. This is called Risk. Secondly, money can, and usually does inflate. That is, it will take more money later to buy the same things you would buy now, because our money itself is constantly losing value. Thirdly, people get old and want to enjoy the rewards of their work before they are old. They need an incentive to give up the freedom to enjoy their own money. The Present Discount Value **(PDF)** formula calculates the value of future money in current dollars using the rate banks charge for loans to their best customers. This rate is called the **prime rate**.

Assignment: In this assignment, you will do what twelfth graders in economic class are called to do. You will calculate your total life-long earning potential with a college degree and as a drop-out,
Turn in:

1. A copy of your spreadsheet
2. A list the web site(s) that show college or university costs
3. A bibliography of the web site(s) that show the average salary of your dream job and the average benefits package for that job.

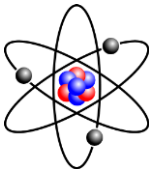
Step 1: Research Use the internet to find out the following information:

1. The **prime rate**. The prime rate will usually be expressed as a percentage.
2. The current **minimum wage**. This is the minimum amount anyone can be paid by law. We are going to assume, to make it easy, that this is the rate that you would make as a waiter or waitress without your degree. Be careful to get the current minimum wage. Congress recently decided to raise it in increments over time. The minimum wage is usually expressed in dollars per hour. Be careful to check if Florida has a higher minimum wage. If it does, Florida has made it illegal for you or anyone else to work for less money. **You will need to apply the higher of the two numbers**.
3. Think of a job you would like to do some day that requires a **college degree** - your dream job. Then look up what people who are already in the workforce make doing that job. A good place to start might be the US Bureau of Labor Statistics. Look for an average yearly salary. Try to get the value of a typical benefits package as well. Much of the pay given to workers in the US is in benefits rather than in wage. Employers do this to avoid taxation. Try to include things like medical benefits, life insurance, company car, travel, paid vacations and sick leave, to start with.
4. Find out what your dream college or **university expenses** will be. Include things like tuition, room and board (if you are going away) commute costs (if you are staying home) book costs, and fees, but also include grants or scholarships that would deliver you from some of the financial pain of college. A good place to start looking would be the home page for your dream college or university.

Step 2: Marking off the years

In column A the Years Column

1. Type the word **Years** in cell **A4**.
2. In column A, type the number one in cell **A5**.
3. Move down to **A6**.
4. Type **=A5+1** and press enter.
5. Move back up to **A6**.
6. Copy this cell to **A7** through **A57**.



In column B the Age Column

Now do the same thing in column B, except type the word **Age** and start with the number **18** instead of one. **B57** should have the number 70 in it, if you did everything correctly.

Formatting column A and B

1. Change the **size** of column A and B to a column width of 6.
   a. Click on the letter **A** at the top of the spreadsheet to highlight the A column..
   b. Hold down the **Ctrl** key and click the letter **B** that is right next to it to include that column as well.
   c. Right click over the A and B
   d. Click column width and change it to 6.
2. Angle the labels to 45˚
   a. Highlight **A4** to **B4**.
   b. Right click on them to pull up options
   c. Click **format cells**
   d. Click the **alignment tab**
   e. Drag the red dot in the orientation box at the right to a 45 degree angle.
   f. Click **OK**

Step 3: Adding constants and labels

1. Type the prime rate you found earlier in **A1**.
2. Type the minimum wage you found in **A2**.
3. Type in all the bold blue data just as shown on the example page below.

Step 4: Calculating your annual salary with a minimum wage job

We will assume that you work 8 hours a day, 5 days per week for 50 weeks out of the year, taking two weeks vacation at Christmas time.

1. Click on **F22**.
2. Type in a formula that multiplies **A2** (minimum wage per hour) by **8** (hours per day) and times **5** (days per week) and finally times **50** (weeks out of a year.)

Step 5: Calculate salary plus benefits and total educational costs

1. Type in the numbers you got from your research on college and your dream job. Change any labels that you need to.
2. Put a sum formula in **F11** and **G5** that sums the numbers below. (See the notes below.)

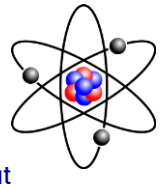
Step 6: Calculate the present discount value of your minimum wage job

The present discount value is the value of future money in current dollars. To calculate it divide the amount of money you will receive in the future by the prime rate plus one, all to the power of the number of years that will pass before you receive the money.

$$PDV = \frac{\text{Future Pay}}{(1 + \text{Prime Rate})^{\text{Years}}}$$

1. Click on **D5**.
2. Type **=$F$22/((1+$A$1)^A5)**. Remember that the dollar signs before letters and numbers make them **absolute**, that is, they do not change when they are copied.
3. Press Enter
4. Copy **D5** down.

Step 7: Calculate the present discount value of your salary plus



1. *This one you are going to do on your own.* Use the same formula as you did in step 6, but you are going to change $F$22. In C5 through C8, or possibly even more if you do graduate school, you need to use the total annual cost of your college or university. It is important to put a **negative sign** in front of the number, because you are paying out, money not earning it. The numbers shown in the example are red and have parentheses around them. Parentheses are the way accountants show negative dollar amounts.
2. For the cells after C8, use the total you calculated for salary and benefits.

Step 8: Adding a graph

1. Highlight the college and drop-out life totals in C3 and D3.
2. Click Insert.
3. Click Column.
4. Choose a graph style you like.
5. Size it and move it.

Step 9: Making the graph look better

1. Remove the Series 1 label
   a. Click Series 1.
   b. Press Delete.
2. Labeling the graph
   a. Click on 1 2 below the graph
   b. Right click.
   c. Click Select Data.
   d. Click Edit.
   e. Click collapse (the box with the red arrow in it.)
   f. Highlight the labels you want, C4 and D4.
   g. Press Enter
   h. Click OK.
   i. Click OK.

Notes

Forcing Text
Type an apostrophe first

Changing Column Width
1. Hold down CTRL and click top letters
2. Right click
3. Click column width

Angling Text
1. Highlight
2. Right click
3. Format cells
4. Alignment tab
5. Drag red dot in orientation box

Summing numbers using =SUM
1. Click on the cell to have a sum
2. Click the Home tab
3. Click ∑ button
4. Click Sum
5. Highlight the numbers to add
6. Press Enter

Adding a graph
1. Highlight
2. Click Insert.
3. Click Column.
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	A	B	C	D	E	F	G	H
1	4.0%	= Prime Rate						
2	$7.50	= Minimum Wage						
3	Life Total ·		$1,911,852	$339,352				
4	Year	Age	College	Drop Out		Salary and benefits		
5	1	18	($29,394)	$14,423		Total ->	$106,500	
6	2	19	($28,264)	$13,868		Salary	$89,000	
7	3	20	($27,177)	$13,335		Benefits	$17,500	
8	4	21	($26,131)	$12,822				
9	5	22	$87,535	$12,329				
10	6	23	$84,168	$11,855		College Cost		
11	7	24	$80,931	$11,399		$30,570	<- Total	
12	8	25	$77,819	$10,960				
13	9	26	$74,825	$10,539		$21,460	Tuition	
14	10	27	$71,948	$10,133		$7,460	Room & B	
15	11	28	$69,180	$9,744		$500	Books	
16	12	29	$66,520	$9,369		$1,000	Transportation	
17	13	30	$63,961	$9,009		$150	Fees	
18	14	31	$61,501	$8,662		$0	Scholarships	
19	15	32	$59,136	$8,329				
20	16	33	$56,861	$8,009				
21	17	34	$54,674	$7,701		Annual Minimum wage		
22	18	35	$52,571	$7,404		$15,000		
23	19	36	$50,549	$7,120				
24	20	37	$48,605	$6,846				
25	21	38	$46,736	$6,583				
26	22	39	$44,938	$6,329				
27	23	40	$43,210	$6,086				
28	24	41	$41,548	$5,852				
29	25	42	$39,950	$5,627				
30	26	43	$38,413	$5,410				
31	27	44	$36,936	$5,202