

6 Inflation 3 pts

Explanation: Inflation is a term economists use to refer to **the rate at which money loses its value**. There is no way to calculate inflation, so economists use tables to calculate inflation's effects. In this lab, you will calculate how much money a fixed rate investment makes for the investor, then you will calculate the buying power that the investment has after inflation has taken its toll. In part A, you will create a location to enter information and display results. There will be a great deal of attention to appearance and readability in this section. In part B you will create tables that will track economic factors over time. This section will be similar to the work you have done in prior labs. In part C you will write complex formulae to do the calculations that make the spreadsheet work, and you will put some finishing touches on the work you did in part A.

Directions: Create an investment analysis sheet from scratch like the one shown. Format all numbers as they are shown on the sample. Type in all the labels exactly as they are shown.

Create a new spreadsheet and save it as H:INFL. See the sample sheets below.

Part A: Build the input section, **Rows 1-7**. This section is used to input data for the rest of the analysis, and is the only section the user will need to change to analyze any of his investments.

1. Format the following cells so they have a box around them and they have an ivory colored background: **A2, A3, A5, A6**
2. Type the data shown on the sample page below, and format all the cells the way they are shown on the sample. Use line Insert Shapes for things that give you trouble.

Part B: Build the sheet reference tables.

Spreadsheets can be three dimensional. Until now, when you referenced a cell, you needed only with column letter and row number; now we are going to add sheet name. **Go to sheet2.**

Row 2:

Type the labels into row two. Use the wrap button and the right justify button from the home tab to format row two.

Rules for 3-D spreadsheet calculations

1. Switch to a different sheet by clicking on the sheet tab in the lower left.
2. If you leave the sheet name off, the sheet you are in is assumed.
3. The sheet name goes first when you refer to a cell.
4. The sheet name is followed by an exclamation mark.
5. You can change the name of your sheets from Sheet1, Sheet2, etc to what ever you want by right clicking them.
6. You can add sheets by right clicking or by clicking the icon at the end of the sheet tabs.

Column A and B: Year and Rate

Open a file named **InflationTable** in L:\1apps\assignments and copy the information over.

Column C: Inflation

1. Type **10** into **C3**.
2. Each cell from **C5** on is equal to the money we had before in the cell above plus the money we had before in the cell above times the **inflation rate** for that year.

Column D: Years Invested

Write a formula that counts starting from zero.

Column E: Total Money Growth

1. In E1, write a formula to retrieve the rate of return on investment on **sheet1 column A row 3**.

HINT: It will look like =Sheet!ColumnRow, for example, =Sheet2!C25

2. Next to the year zero (in column D) write a formula to retrieve the amount invested on sheet1
3. Each number in E after the first one is equal to the money we made to this point in the cell above plus that money times the rate of return in E1.

Column F: Net Gain

Starting in F4 take the rate of interest in E1 and subtract the year's inflation rate in column B.

Column G: Adjusted Money Growth

1. Type 10 in G3.
2. Each cell from this point on is equal to the total money accumulated so far listed in the cell above plus that money times the **Net Gain in Value** in column F.

Part C Do the calculations.

C8, **Number of Years Invested::** Subtract the **Year Invested** from the **Year Withdrawn**.

C9, **Total cash withdrawn:** Look up the **Number of Years Invested** in the **years invested table** created earlier.

C10, **Profit made:** **Total Cash Withdrawn** minus the **Amount Invested**.

E10, **Percentage Profit Made:** Divide **Profit Made** by the **Amount Invested**.

C11, **Total Inflation Over the Period:** The **Value in Dollars of the Year Withdrawn** minus by the **Value in Dollars of the Year Invested** all divided by the **Value in Dollars of the Year Invested**.

NOTE: both calculations of the **Value in Dollars** are calculated by looking up the appropriate year in the year table.

HINT: the formula will be of the form: (Table Lookup - Table Lookup)

Table Lookup

D14 to D16 To enter the labels that have numbers in them use the concatenate function. Careful of D16; it has two numbers embedded in it.

HINT: For D13, the function would look like:
=Concatenate("text here ",Reference," text here")

C15, **Investment Year Profit:** **Total Inflation for the Year Invested** subtracted from the **Total Inflation for the Year Withdrawn**, all divided by the **Total Inflation of the Year Invested** all multiplied by the **Amount Invested**.

C16, **Profit in Current Year Dollars:** Multiply the **Value of Profit** for the **Investment Year** in the cell above, by the **Money Growth** for the **Current Year** Divided by the **Money Growth** for the **Year Withdrawn**.

Embedding numbers in text

1. Concatenation is an operator like add or subtract, except it combines numbers, so two concatenate three is twenty three.
2. The Concatenate function combines numbers and labels.
3. Use quotes in equations to enter lettering.

C14, **Profit in Investment Year Dollars**: Do the same thing you did in F16, but for the **Investment Year** rather than the **Current Year**.

B14 and B15, The cell in C divided by the **Amount Invested**.

Row 18, Use the concatenate function to merge numbers and letters again.

C19 to C21, **Periodic analysis calculations**: The problem we have here is that we do not want to find information about the whole table. We only want the part that applies to our time period. To do that, we will need to create cell references by looking them up using MATCH and INDEX.

The Match Function	The Index Function
<p>The MATCH function searches for a specified item in a range of cells, and then returns the relative position of that item in the range. For example, if the range A1:A3 contains the values 5, 25, and 38, then the formula</p> <p style="text-align: center;">=MATCH(25,A1:A3,0)</p> <p>returns the number 2, because 25 is the second item in the range.</p> <p>Use MATCH instead of one of the LOOKUP functions when you need the position of an item in a range instead of the item itself.</p>	<p>Returns a value or the reference to a value from within a table or range.</p> <p style="text-align: center;">=INDEX(A2:C26,2,3)</p> <p>Returns the number in B3, or the number in column 2, row 3.</p>

Use the Match Function to find the how many down we need to go in the inflation table in sheet2. Put that result into the index function to turn the number we found in the table into a reference that will be used by MIN, MAX and AVERAGE to calculate the numbers you need in your spreadsheet.

=Function (-----First Cell Reference----- INDEX(table , -----Second Cell Reference----- MATCH(Investment Year , table)) : INDEX(table , MATCH(Withdrawal Year , table)))

THE TABLE Sheet2, b3 to b213
FUNCTIONS MIN, MAX and AVERAGE

Part D

Extra Credit: Make a table of the inflation rate from 1801 to 2010 and place it at the bottom of the sheet1.

Turn it in:

Change A2 to **6000**, A3 to **8%** A5 to **1973** and A6 to **1978**, then check your answers against the answers posted on the bulletin board. After you are sure your sheet works put in **500, 6%, 1900, 2000**, then submit a **printed copy**.

Notes

Forcing Text

Type an apostrophe first

6. Press Enter

Adding Functions

1. Click on the cell to have a sum
2. Click the Home tab
3. Click Σ button
4. Find the function you need
5. Highlight the numbers to add

Adding a graph

1. Highlight
2. Click Insert.
3. Click Column.
4. Choose a graph style you like.
5. Size it and move it.

	A	B	C	D	E	F	G	H
1				Inflation Adjusted				
2	1000	= Amount Invested		Return on Fixed				
3	5%	= Interest rate		Investments				
4								
5	1951	= Year Invested		<-- Enter your information in the yellow boxes.				
6	1952	= Year Withdrawn						

ANALYSIS OF INVESTMENT

8			1	<-- Number of years invested
9	Current		\$1,050	<-- Total cash withdrawn
10	Year		\$50	<-- Profit 5.0%
11	2010		2.3%	<-- Total Inflation Over Period

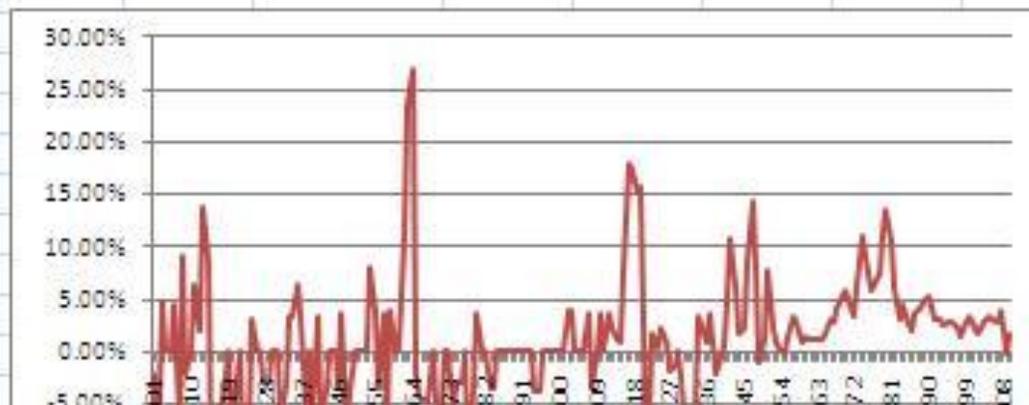
AFTER INFLATION REAL PROFIT

14		2.6%	\$25.71	<-- Value of profit in 1951 dollars, going in.
15		2.7%	\$27.00	<-- Value of profit in 1952 dollars, coming out.
16			\$457.45	<-- Profit of \$27 in 2010 dollars.

ANALYSIS OF THE TIME PERIOD 1951 TO 1952

19			5.1%	<-- Average inflation
20			7.9%	<-- Highest inflation
21			2.3%	<-- Lowest inflation

Inflation 1801 to 2010



	A	B	C	D	E	F	G
1					5%		
2	Year	Rate of Inflation	Value in Dollars	Years invested	Money Growth	Net Gain in Value	Adjusted Money Growth
3	1800		10	0	1000		10
4	1801	-2.00%	9.8	1	1050	7.00%	10.7
5	1802	-14.00%	8.428	2	1102.5	19.00%	12.733
6	1803	4.70%	8.824116	3	1157.625	0.30%	12.7712
7	1804	0.00%	8.824116	4	1215.506	5.00%	13.40976
8	1805	0.00%	8.824116	5	1276.282	5.00%	14.08025
9	1806	4.40%	9.212377	6	1340.096	0.60%	14.16473
10	1807	-6.40%	8.622785	7	1407.1	11.40%	15.77951