

Lottery Solver¹

How to use the TVM Solver on the Ti-83+ to find the best payoff for winning the lottery:

1. Press the blue **APPS** key. You should see Figure 1.

Figure 1

```
APPS
-----
1: Finance...
2: CBL/CBR
3: Prob Sim
4: SciTools
5: StudyCrd
```

2. Select 1: TVM Solver. See Figure 2

Figure 2

```
APPS VARS
-----
1: TVM Solver...
2: tvn_Pmt
3: tvn_I%
4: tvn_PV
5: tvn_N
6: tvn_FV
7: ↓nPV()
```

3. Key in data. $N = 20$ years; $I\% = 10\%$ interest rate; $PMT = 1000000$; $FV = 0$; $P/Y = 1$ for 1 payment per year; $C/Y = 1$ for compounding periods; $PMT = END$ because the payment is received at the end of the month.

Figure 3

```
N=20
I%=10
PMT=1000000
FV=0
P/Y=1
C/Y=1
PMT: [END] BEGIN
```

4. Key in data.

Figure 4

```
N=20
I%=5
PMT=1000000
FV=0
P/Y=1
C/Y=1
PMT: [END] BEGIN
```

¹ This problem was taken from the Cartoon Introduction to Economics, Yoram Bauman and Grady Klein, pages 34 and 35, Hill and Wang, 2009.

How to Use an Excel Spreadsheet to Solve the Lottery Problem:

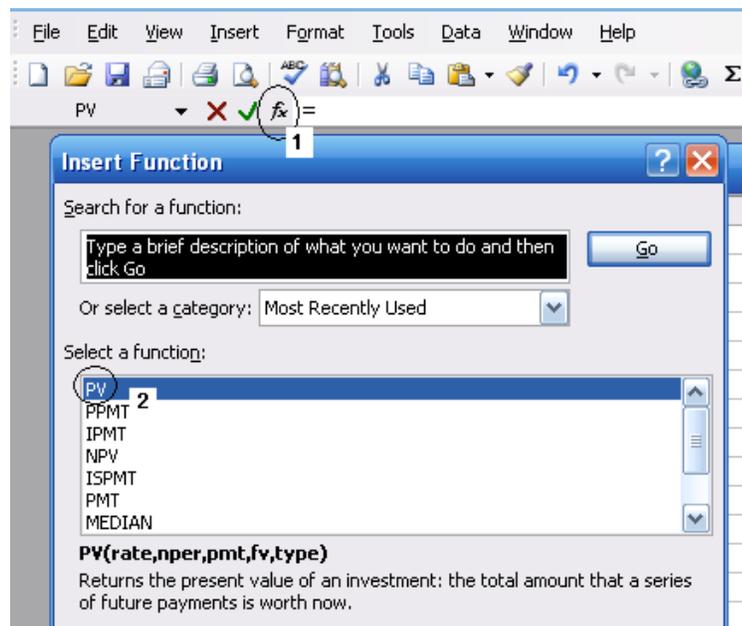
1. Open Excel and start a new book.

2. Enter the information in your spreadsheet. See Figure 1. Note that the interest rate is entered as **10**. This was not necessary as I could have entered **.10**.

	A	B
1	Interest Rate	10
2	Yearly Payment	100000
3	Number of Payments	20.00
4		
5		

Figure 1

3. Select the function. Next find PV, Present Value. Note you might have to select a category. The category to select is Financial. You will have to search for PV.



4. A dialog box will open. Simply plug the numbers in.

5. Click “OK” and you will see that the answer is \$8.5 million.

6. The winner should take the money now at a 10% interest rate because they are giving up \$1.5 million in consumption.

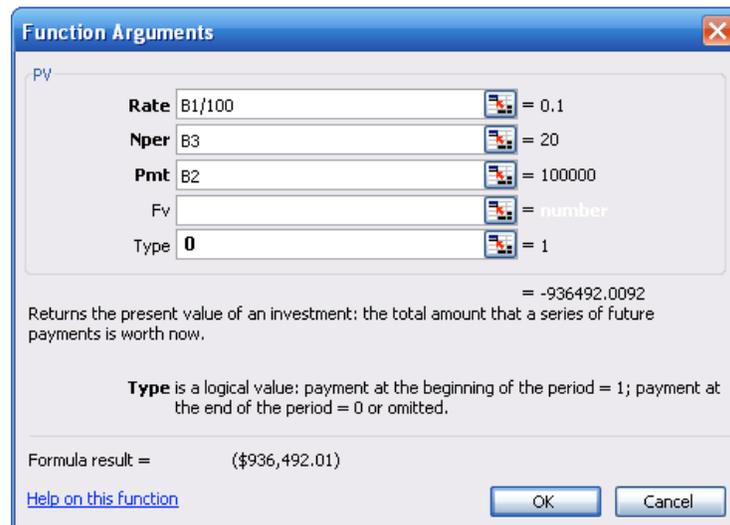


Figure 2