



Peter Regan teaching MBA Math at Tuck

## MBA Math Sample Exercise

### Finance: Time Value of Money Future Value with SubAnnual Compounding

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## Exercise

You deposit \$500 in a bank account that pays 7% stated annual interest compounded semi-annually. What is the value of your investment at the end of 4 years?

## Solution

### Solution Commentary

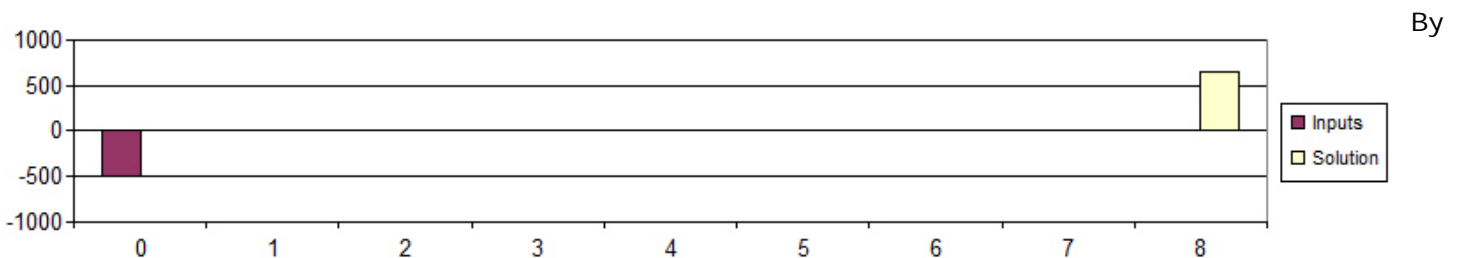


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### Variable Assignments

Present Value PV = 500  
 Rate  $r = 0.07$   
 Years  $n = 4$   
 Periods per Year  $p = 2$   
 Future Value FV = ?

### Cash Flow



convention for charting, Present Values are depicted as negative, reflecting an initial investment outflow in return for future cash inflows.

	A	B	C	D	E	F	G	H	I	J
1	Period	0	1	2	3	4	5	6	7	8
2	Inputs	-500	0	0	0	0	0	0	0	0
3	Solution	0	0	0	0	0	0	0	0	658.4045

Sheet1

### Manual Solution

$$FV = PV * (1 + (r/p))^{np}$$

$$FV = 500 * (1 + (0.07/2))^{(4*2)}$$

$$FV = 500 * 1.035^8$$

$$FV = 658.40$$

### Excel Solution

	A	B	C	D	E
1	PV	\$500.00	input		
2	# Periods/year	2	input		
3	Stated Annual Rate	7.0%	input		
4	# Years	4	input		
5	# Periods	8	computed		
6	Period Rate	3.5%	computed		
7	FV	\$658.40	\$658.40	computed	

Sheet1

### Financial Calculator Solution

500	[CHS][PV]
0	[PMT]
7	[ENTER]
2	[÷][i]
4	[ENTER]
2	[×][n]
HIT [FV] TO SOLVE...	658.40

*Peter Regan teaches decision science courses at Dartmouth's Tuck School and Duke's Fuqua School. He also teaches pre-term quantitative skills courses at Tuck and Cornell's Johnson School. He created the MBA Math self-paced, online pre-MBA quantitative skills course covering finance, accounting, economics, statistics, and spreadsheets.*