

Peter Regan teaching MBA Math at Tuck

## MBA Math Sample Exercise

### Finance: Constant Annuity Present Value

Moving well beyond generic GMAT aptitude questions, the MBA Math sample exercises allow prospective MBA students to self assess their proficiency with the quantitative building blocks of the MBA first year curriculum.

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## Exercise

What is the present value of an annuity in which \$300 is paid each year for 4 years, assuming a discount rate of 8% and the first payment is received one year from now?

## Solution

### Solution Commentary

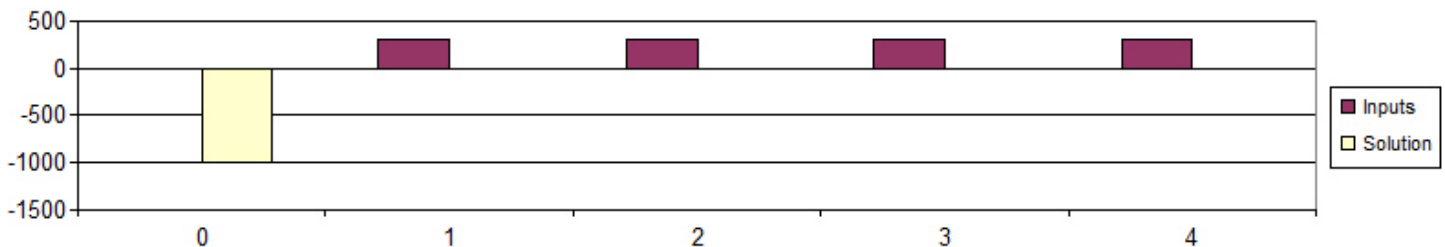


(3:57)

### Variable Assignments

Present Value PV = ?  
Payment PMT = 300  
Discount Rate r = 0.08  
Years n = 4

### Cash Flow



By 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
1	Period	0	1	2	3	4
2	Inputs	0	300	300	300	300
3	Solution	-993.6381	0	0	0	0

Sheet1

### Manual Solution

$$PV = (PMT/r)[1-(1/(1+r)^n)]$$

$$PV = (300/0.08)[1-(1/(1+0.08)^4)]$$

$$PV = 3,750.00*[1-(1/1.08^4)]$$

$$PV = 3,750.00*[1-0.74]$$

$$PV = 993.64$$

### Excel Solution

	A	B	C	D	E
1	Payment	\$300.00			
2	Discount Rate	8.0%			
3	# Years	4			
4	PV	\$993.64	\$993.64		
5					
6					
7					

Sheet1

### Financial Calculator Solution

300	[PMT]
8	[i]
4	[n]
HIT [PV] TO SOLVE...	-993.64

**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.**