Paper:	Odo.FinReg	(2015.Fall #18a) Question
Problem:	2013.Fall #18a	
Problem Type:	Calculate PV(commuted claims), WITH risk margin	

Notation: TMF = Total Margin Factor

Concept: TMF = (req'd margin) x (target cap to req'd *ratio*) x (risk cost of capital)

Given: All information is as at yr-end: 2012

undiscounted liabilities to be commuted:	500,000
risk-free rate:	1.0%
required margin:	10%
target capital to required ratio:	180%
risk cost of capital:	5%

calendar yr payments:

2013	350,000
2014	150,000
2015	0
2016	0

Assume: All pmts are made in the middle of the year

PV(**with** margin) = 501,820

(2015.Fall #18a) Answer

PV(w/o margin):

	(1)	calendar year pmts	# yrs to discount (3)	discount @ 1% (4)
2013		350,000	0.5	348,263
2014		150,000	1.5	147,778
2015				
2016				
				496,041

that's why the exponents for the margin are integers

margin:

TMF = 0.90%

pmt rem @ beg yr (5)	TMF x (5) = (6)	# yrs to discount (7)	discount @ 1% (8)
500,000	4,500	1	4,455
150,000	1,350	2	1,323
			5,779

Note 1: The (# of yrs to discount) is DIFFERENT for calc'ing the PV(w/o margin) and the corresponding margin. Refer to columns (3) and (7).

Note 2: Think of (6) as the "cost of capital". The intermediate steps are:

req'd margin	=	(5) x req'd margin
target capital	=	(5) x req'd margin x (target capital to req'd RATIO)
cost of capital	=	(5) x req'd margin x (target capital to req'd RATIO) x risk cost of capital