EXAM FM QUESTIONS OF THE WEEK

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Week of August 6/07

Find the present value at time 0 of the following sequence of annual payments at annual effective rate of interest 8% (payments increase by 2 per year up to time 10 and then increase by 1 per year until time 20).

Time	0	1	2	•••	9	10	11	12	13	•••	19	20
Pmt.		2	4		18	20	21	22	23		29	30
A) Les	ss than	125	B) At l	east 125	5 but les	s than 1	35	C) At l	east 13	5 but les	ss than [145
D) At	least 14	45 but le	ss than	155	E) At l	least 15	5					

The solution can be found below.

Week of August 6/07 - Solution

The present value at time 0 of the first 10 payments is $2(Ia)_{\overline{10}|.08}$.

The present value at time 0 of the final 10 payments is $v^{10}[(Ia)_{\overline{10}|.08} + 20a_{\overline{10}|.08}]$.

 $(Ia)_{\overline{10}|.08} = \frac{\ddot{a}_{\overline{10}|.08} - 10v^{10}}{.08} = 32.6869 \text{ and } a_{\overline{10}|.08} = 6.7101 \text{ and } v^{10} = .4632 \text{ .}$

The total present value is $2(32.6869) + \left[(.4632)(32.6869 + 20(6.7101))\right] = 142.68 \; .$