

# EXAM MLC QUESTIONS OF THE WEEK

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## Week of October 15/07

A pricing actuary is reviewing cash values on fully discrete whole life insurance policy. The estimated mortality probability for the 20th year is .006 and the estimated withdrawal probability for the 20th year is .03. Find the reduction in the 20th year-end asset share if the 20th year cash value is increased by \$100.

**The solution can be found below.**

## Week of October 15/07 - Solution

The accumulation relationship for the asset share for the 20th year

$$[{}_{19}AS + G(1 - c_{15}) - e_{15}](1 + i) - bq_{x+19}^{(1)} - {}_{20}CVq_{x+19}^{(2)} = p_{x+19}^{(\tau)} {}_{20}AS .$$

The 20th year asset share is  $\frac{{}_{19}AS + G(1 - c_{15}) - e_{15}}{p_{x+19}^{(\tau)}}(1 + i) - bq_{x+19}^{(1)} - {}_{20}CVq_{x+19}^{(2)}$  .

If  ${}_{20}CV$  is increased by 100 , then the asset share is decreased by

$$\frac{100q_{x+19}^{(2)}}{p_{x+19}^{(\tau)}} = \frac{100(.03)}{1 - (.006 + .03)} = 3.11 .$$