

Question #144**Answer: B**

Let $l_0^{(\tau)}$ = number of students entering year 1
superscript (f) denote academic failure
superscript (w) denote withdrawal
subscript is "age" at start of year; equals year - 1

$$p_0^{(\tau)} = 1 - 0.40 - 0.20 = 0.40$$

$$l_2^{(\tau)} = 10l_2^{(\tau)} q_2^{(f)} \Rightarrow q_2^{(f)} = 0.1$$

$$q_2^{(w)} = q_2^{(\tau)} - q_2^{(f)} = (1.0 - 0.6) - 0.1 = 0.3$$

$$l_1^{(\tau)} q_1^{(f)} = 0.4 \left[l_1^{(\tau)} (1 - q_1^{(f)} - q_1^{(w)}) \right]$$

$$q_1^{(f)} = 0.4(1 - q_1^{(f)} - 0.3)$$

$$q_1^{(f)} = \frac{0.28}{1.4} = 0.2$$

$$p_1^{(\tau)} = 1 - q_1^{(f)} - q_1^{(w)} = 1 - 0.2 - 0.3 = 0.5$$

$${}_3q_0^{(w)} = q_0^{(w)} + p_0^{(\tau)} q_1^{(w)} + p_0^{(\tau)} p_1^{(\tau)} q_2^{(w)}$$

$$= 0.2 + (0.4)(0.3) + (0.4)(0.5)(0.3)$$

$$= 0.38$$