7. Solution: D
Let

\[ A = \text{event that a policyholder has an auto policy} \]
\[ H = \text{event that a policyholder has a homeowners policy} \]

Then based on the information given,

\[
\Pr( A \cap H ) = 0.15 \\
\Pr( A \cap H^c ) = \Pr( A ) - \Pr( A \cap H ) = 0.65 - 0.15 = 0.50 \\
\Pr( A^c \cap H ) = \Pr( H ) - \Pr( A \cap H ) = 0.50 - 0.15 = 0.35
\]

and the portion of policyholders that will renew at least one policy is given by

\[
0.4 \Pr( A \cap H^c ) + 0.6 \Pr( A^c \cap H ) + 0.8 \Pr( A \cap H )
\]

\[
= (0.4)(0.5) + (0.6)(0.35) + (0.8)(0.15) = 0.53 \quad (= 53\%)
\]

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100292 01B-9

8. Solution: D
Let

\[ C = \text{event that patient visits a chiropractor} \]
\[ T = \text{event that patient visits a physical therapist} \]

We are given that

\[
\Pr[ C ] = \Pr[ T ] + 0.14 \\
\Pr( C \cap T ) = 0.22 \\
\Pr( C^c \cap T^c ) = 0.12
\]

Therefore,

\[
0.88 = 1 - \Pr[ C^c \cap T^c ] = \Pr[ C \cup T ] = \Pr[ C ] + \Pr[ T ] - \Pr[ C \cap T ]
\]

\[
= \Pr[ T ] + 0.14 + \Pr[ T ] - 0.22
\]

\[
= 2 \Pr[ T ] - 0.08
\]

or

\[
\Pr[ T ] = (0.88 + 0.08)/2 = 0.48
\]