93. Solution: C
Define \( X \) and \( Y \) to be loss amounts covered by the policies having deductibles of 1 and 2, respectively. The shaded portion of the graph below shows the region over which the total benefit paid to the family does not exceed 5:

We can also infer from the graph that the uniform random variables \( X \) and \( Y \) have joint density function
\[
\frac{1}{10} \quad \text{for } 0 < X < 10, \ 0 < Y < 10
\]
We could integrate \( f \) over the shaded region in order to determine the desired probability. However, since \( X \) and \( Y \) are uniform random variables, it is simpler to determine the portion of the 10 x 10 square that is shaded in the graph above. That is,
\[
\text{Pr Total Benefit Paid Does not Exceed 5} = \frac{6 \times 2}{100} = 0.12
\]

94. Solution: C
Let \( f(t_1, t_2) \) denote the joint density function of \( T_1 \) and \( T_2 \). The domain of \( f \) is pictured below:

Now the area of this domain is given by
\[
A = 6^2 - \frac{1}{2} (6-4)^2 = 36 - 2 = 34
\]
Consequently, \( f(t_1, t_2) = \begin{cases} \frac{1}{34} & , \ 0 < t_1 < 6, \ 0 < t_2 < 6, \ t_1 + t_2 < 10 \\ 0 & \text{elsewhere} \end{cases} \)

and
\[
E[T_1 + T_2] = E[T_1] + E[T_2] = 2E[T_1] \quad \text{(due to symmetry)}
\]
\[
\begin{align*}
&= 2 \left\{ \int_0^4 t_1 \int_0^6 \frac{1}{34} \ dt_2 \ dt_1 + \int_4^6 t_1 \int_0^{10-t_1} \frac{1}{34} \ dt_2 \ dt_1 \right\} \\
&= 2 \left\{ \int_0^4 t_1 \left[ \frac{t_2}{34} \right]_0^6 \ dt_1 + \int_4^6 t_1 \left[ \frac{t_3}{34} \right]_0^{10-t_1} \ dt_1 \right\} \\
&= 2 \left\{ \int_0^4 \frac{3t_1}{17} \ dt_1 + \int_4^6 \frac{1}{34} (10t_1 - t_1^2) \ dt_1 \right\} = 2 \left\{ \frac{3t_1^2}{34} \left|_0^4 \right. + \frac{1}{34} \left( 5t_1^2 - \frac{1}{3} t_1^3 \right) \left|_4^6 \right. \right\} \\
&= 2 \left\{ \frac{24}{17} + \frac{1}{34} \left[ 180 - 72 - 80 + \frac{64}{3} \right] \right\} = 5.7
\]