91. Solution: D

We want to find P[X + Y > 1]. To this end, note that P[X + Y > 1]

$$= \int_0^1 \int_{1-x}^2 \left[\frac{2x+2-y}{4}\right] dy\,dx = \int_0^1 \left[\frac{1}{2}xy + \frac{1}{2}y - \frac{1}{8}y^2\right]_{1-x}^2 dx$$

$$= \int_0^1 \left[x + 1 - \frac{1}{2} - \frac{1}{2}x(1-x) - \frac{1}{2}(1-x) + \frac{1}{8}(1-x)^2\right] dx = \int_0^1 \left[x + \frac{1}{2}x^2 + \frac{1}{8} - \frac{1}{4}x + \frac{1}{8}x^2\right] dx$$

$$= \int_0^1 \left[\frac{5}{8}x^2 + \frac{3}{4}x + \frac{1}{8}\right] dx = \left[\frac{5}{24}x^3 + \frac{3}{8}x^2 + \frac{1}{8}x\right]_0^1 = \frac{5}{24} + \frac{3}{8} + \frac{1}{8} = \frac{17}{24}$$