A box contains a red pen, a green pen, and a blue pen. You pick one of these 3 pens randomly. The probability of choosing the red pen is $\frac{1}{8}$ and of choosing the green pen is $\frac{1}{4}$. Define random variables X and Y as follows:

$$\begin{aligned} X(\text{red}) &= 1/2 & Y(\text{red}) &= 1/4 \\ X(\text{green}) &= 1/4 & Y(\text{green}) &= 1/2 \\ X(\text{blue}) &= 1/2 & Y(\text{blue}) &= 1/2. \end{aligned}$$

What is the probability that $X^2 + Y^2$ is less than $\frac{1}{2}$?

(a) 3/8

(b) 5/8

(c) 1/16

(d) 1/2

(e) 1/4

(f) 3/4

(g) 2/3

(h) 1/8

(i) 7/8

(j) 0

(k) 0.2

(l) None of these