Choose independently two numbers B and C at random from the interval [0, 1] with uniform density. Prove that B and C are proper probability distributions.
Note that the point (B,C) is then chosen at random in the unit square.

Find the probability that

(a) $B + C < 1/2$.

(b) $BC < 1/2$.

(c) $|B - C| < 1/2$.

(d) $\max\{B,C\} < 1/2$.

(e) $\min\{B,C\} < 1/2$.