1. Suppose E and F are mutually exclusive events, $P(E)$ =0.3, and $P(F)$ =0.5.

Find $P(E \cup F)$.

A. $P(E \cup F)$ =0.06

B. $P(E \cup F)$ =0.15

C. $P(E \cup F)$ =1

D. $P(E \cup F)$ =0

E. $P(E \cup F)$ =0.8

F. $P(E \cup F)$ =0.5

2. Suppose U and V are independent events, $P(U)$ =0.5, and $P(V)$ =0.1.

Find $P(U \cap V)$

A. $P(U \cap V)$ =0.11

B. $P(U \cap V)$ =0

C. $P(U \cap V)$ =0

D. $P(U \cap V)$ =0.6

E. $P(U \cap V)$ =0.05

F. $P(U \cap V)$ =0.67

G. $P(U \cap V)$ =0.65

H. $P(U \cap V)$ =0.01

3. Suppose you have a well-shuffled, 52-card deck lying on the table. Let event A be drawing an ace from the deck. Setting aside the first card, you let event B be drawing a second ace from the deck.

True or False: A and B are independent events.

A. False

B. True

4. Roll two fair dice. What is the probability of rolling at least one six? (Hint: think complementary events.)

A. The probability of rolling at least one six is $\frac{25}{36}$.

B. The probability of rolling at least one six is $\frac{4}{9}$.

C. The probability of rolling at least one six is $\frac{1}{6}$.

D. The probability of rolling at least one six is 1.

E. The probability of rolling at least one six is $\frac{11}{36}$.

F. The probability of rolling at least one six is $\frac{5}{6}$.

G. The probability of rolling at least one six is $\frac{5}{9}$.

5. Which of the following is always true for two mutually exclusive events?

A. $P(A \cup B) = P(A) + P(B)$

B. $P(B|A) = P(B)$

C. $P(A|B) = P(A)$

D. $P(A \cap B) = P(A) \cdot P(B)$

E. $P(S) = 1$

6. Suppose you have a well-shuffled, 52-card deck lying on the table. You also have a fair die. Let event A be drawing an ace from the deck, and let event B be rolling a 6.

True or False: A and B are independent events.

A. True

B. False

7. Let $S = \{5, 8, \blacksquare, \blacktriangle, \diamondsuit, \clubsuit, 0, \flat, \spadesuit, 3\}$ be the sample space where every element has an equal chance of being chosen.

Consider the two events $A = \{\flat\}$ and $B = \{\diamondsuit, \clubsuit, \flat\}$.

Are the events A and B mutually exclusive?

A. Yes. Events A and B are mutually exclusive.

B. No. Events A and B are not mutually exclusive.

8. Which of the following is NOT always a true statement?

A. $0 \leq P(A) \leq 1$

B. $P(A) = 1 - P(A')$

C. $P(A|B) = P(B|A)$

D. $P(S) = 1$

E. $P(A \cap B) = P(A|B) \cdot P(B)$