

Exercise 1A.1

A deck of cards has 52 total cards: $\{A, K, Q, J, 10, 9, 8, 7, 6, 5, 4, 3, 2\}$ in each of 4 suits: $\{\text{diamonds } \diamond, \text{hearts } \heartsuit, \text{spades } \spadesuit, \text{clubs } \clubsuit\}$.

Diamonds and hearts are red, spades and clubs are black.

You randomly draw 1 card from the deck. Define:

A = event that the card is a king (K)

B = event that the card is a “face card” (J, Q, or K)

C = event that the card is “red” (either hearts or diamonds)

(a) What is the complement of C ?

(b) Are any of these events disjoint?

(c) Is A a subset of B or B a subset of A ?

(d) What is $A \cap B$?

(e) How many outcomes (cards) are in $A \cap B \cap C$?