

Answer on Question #81476 — Math — Statistics and Probability

Question

Consider the game of value three points; shuffle a deck of three cards: ace of diamond, queen of diamond, king of diamond. with the ace worth 1 point, queen 2 points and king 3 points. Draw cards until total points are 3 or more, you win if your total is exactly 3 points. What is the probability that you win?

Solution

Let Ace = A, Queen = Q, King = K.

A(1) + Q(2) — win

A(1) + K(3) — loss

A(1) + A(1) + A(1) — win

A(1) + A(1) + Q(2) — loss

A(1) + A(1) + K(3) — loss

Q(2) + A(1) — win

Q(2) + K(3) — loss

Q(2) + Q(2) — loss

K(3) — win

Let's calculate the probability that you win.

Each probability to draw cards equals $1/3$.

Thus,

$$P = (1/3)*(1/3) + (1/3)*(1/3)*(1/3) + (1/3)*(1/3) + 1/3 = 1/9 + 1/27 + 1/9 + 1/3 = 16/27 = 0.5926$$

Answer: The probability that you win is 0.5926.