

HW: Worksheet/1-20, 24, 28, 29

You are dealt two cards from a deck. What is the probability that you are given a pair of aces?



For dependent events...

$$P(A, \text{ then } B) = P(A) \cdot P(B \text{ after } A)$$

Ex: You have a bag of 4 blue marbles, 5 red marbles, and 7 green marbles. If you pick a marble out of the bag, set it aside, and pick another, what is...

P(blue, then red) =

P(2 greens) =

Using the same marble bag...

1) $P(2 \text{ reds}) =$

2) $P(\text{red, then green}) =$

3) $P(3 \text{ reds}) =$

4) $P(4 \text{ blues}) =$

5) $P(2 \text{ reds, then 3 greens}) =$

What is the probability of being dealt the following cards in a card game?

6) $P(\text{A, then King}) =$

7) $P(\text{pair of Kings}) =$

8) $P(3 \text{ hearts}) =$

9) $P(5 \text{ spades}) =$

10) $P(3\text{-of-a-kind}) =$

1) P(2 reds) =

$$\frac{1}{4} \cdot \frac{3}{15} = \frac{1}{12}$$

The calculation shows the probability of drawing two red balls in a row without replacement. The first fraction, $\frac{1}{4}$, represents the probability of drawing a red ball from a set of 4 balls. The second fraction, $\frac{3}{15}$, represents the probability of drawing a second red ball from the remaining 3 red balls out of a total of 15 balls. The final result, $\frac{1}{12}$, is circled in green.

2) P(red, then green) =

$$1 \cdot \frac{\cancel{5}}{16} \cdot \frac{\cancel{2}}{\cancel{15}_3} = \frac{7}{48}$$

3) P(3 reds) =

$$\frac{1}{4} \cdot \frac{3}{16} \cdot \frac{2}{15} \cdot \frac{1}{14} = \frac{1}{56}$$

The calculation shows the probability of drawing three red balls in a row without replacement. The first fraction is $\frac{1}{4}$, the second is $\frac{3}{16}$, the third is $\frac{2}{15}$, and the fourth is $\frac{1}{14}$. The final result, $\frac{1}{56}$, is circled in green.

4) P(4 blues) =

$$\frac{1}{4} \cdot \frac{3}{16} \cdot \frac{2}{15} \cdot \frac{1}{14} \cdot \frac{1}{13} = \frac{1}{1820}$$

5) P(2 reds, then 3 greens) =

$$\frac{5}{16} \cdot \frac{4}{15} \cdot \frac{3}{14} \cdot \frac{2}{13} \cdot \frac{1}{12}$$

$$\frac{5}{624}$$

6) $P(A, \text{ then King}) =$

$$\frac{1}{13} \cdot \frac{4}{51} = \frac{4}{663}$$

7) P(pair of Kings) =

$$\frac{1}{13} \cdot \frac{1}{17} = \frac{1}{221}$$

8) P(3 hearts) =

$$\frac{\cancel{1}^1 \cancel{13}}{\cancel{4}_1 \cancel{52}} \cdot \frac{\cancel{3}^1 \cancel{12}}{\cancel{51}_{17}} \cdot \frac{11}{50} = \frac{11}{850}$$

9) $P(5 \text{ spades}) =$

10) $P(3\text{-of-a-kind}) =$

