M8 - 11.0 - Dice/Cards Tables Graphs Revoew

Rolling Two Dice

BLACK DIE

RED DIE	1	2	3	4	5	6
1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
2	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

36 different outcomes if different colored dice.

BLACK DIE

BLACK DIE	1	2	3	4	5	6
1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
2	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

21 different outcomes if same colored dice. $(2,1) = (1,2)$

Sum of two dice

	1	**2**	**3**	**4**	**5**	**6**
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

Product of two dice

	1	**2**	**3**	**4**	**5**	**6**
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30
6	6	12	18	24	30	36

Pick a Card (4 Suits/13 Cards per Suit/52 Cards)

Hearts ♥	Diamonds ♦	Spades ♠	Clubs ♣
Ace ♥	Ace ♦	Ace ♠	Ace ♣
2 ♥	2 ♦	2 ♠	2 ♣
3 ♥	3 ♦	3 ♠	3 ♣
4 ♥	4 ♦	4 ♠	4 ♣
5 ♥	5 ♦	5 ♠	5 ♣
6 ♥	6 ♦	6 ♠	6 ♣
7 ♥	7 ♦	7 ♠	7 ♣
8 ♥	8 ♦	8 ♠	8 ♣
9 ♥	9 ♦	9 ♠	9 ♣
10 ♥	10 ♦	10 ♠	10 ♣
Jack ♥	Jack ♦	Jack ♠	Jack ♣
Queen ♥	Queen ♦	Queen ♠	Queen ♣
King ♥	King ♦	King ♠	King ♣

What is the probability of drawing an Ace?

$$\frac{Ace\ ♣ + Ace\ ♥ + Ace\ ♦ + Ace\ ♠}{52\ \text{Cards}}$$

$$P(A) = \frac{4\ aces}{52\ total\ cards} = \frac{1}{13}$$

Now we remove an the Ace of Spades (Ace ♠) from the deck. What is the new probability of getting an Ace?

$$\frac{Ace\ ♥ + Ace\ ♦ + Ace\ ♣}{\text{All the cards except Ace ♠ (51 cards)}}$$

$$P(A|A♠) = \frac{3\ aces}{51\ total\ cards} = \frac{3}{51}$$

Dependent