

Finding the Complement of an Event:

The event A' (called A Prime) is called the complement of event A and consists of all outcomes that are not in A.

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

Ex. 1 The probability of having choosing a red marble out of a bag of marbles is 0.26. What is the probability of NOT choosing a red marble?

$$1 - 0.26 = 0.74$$

Finding the Complement of an Event:

Standard 52-card deck

K	♠	K	♣	K	♦	K	♥
Q	♠	Q	♣	Q	♦	Q	♥
J	♠	J	♣	J	♦	J	♥
10	♠	10	♣	10	♦	10	♥
9	♠	9	♣	9	♦	9	♥
8	♠	8	♣	8	♦	8	♥
7	♠	7	♣	7	♦	7	♥
6	♠	6	♣	6	♦	6	♥
5	♠	5	♣	5	♦	5	♥
4	♠	4	♣	4	♦	4	♥
3	♠	3	♣	3	♦	3	♥
2	♠	2	♣	2	♦	2	♥
A	♠	A	♣	A	♦	A	♥

Using a standard deck of 52 cards as shown, find the following probabilities: $\frac{\text{nots}}{\text{total}} = P(A')$

Ex. 2 The card is not a King.

$$\frac{48}{52} = 0.92$$

Ex. 3 The card is not a face card (Face cards include J,Q,K)

$$\frac{40}{52} = 0.77$$

Ex. 4 The card is not less than or equal to 4 (an ace is one)

$$\frac{36}{52} = 0.69$$

Finding the Probability of Compound Events:

A union or intersection of two events is called a compound event. If no outcomes are in the intersection of two events, then the events are mutually exclusive.

Probability of Compound Events: Or = \cup And = \cap

If A and B are two events, then the probability of A or B is

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$


If A and B are mutually exclusive, then the probability of A or B is:

$$P(A \text{ or } B) = P(A) + P(B)$$


Hint... Probability of one + the probability of another but you must take out the duplicates.

Finding the Probability of Compound Events:

Ex 1: A standard 6-sided number cube is rolled.

a. What is the probability that it is a 4 or a prime number?

$$1 \text{ (2) (3) (4) (5) 6} \quad \frac{4}{6} = 0.67$$

b. What is the probability that it is an even number or a prime number?

$$1 \text{ (2) (3) (4) (5) (6)} \quad \frac{5}{6} = 0.83$$

Prime #'s

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Divisible by 1 and itself.

* You can use the formula or do something more visual.

Finding the Probability of Compound Events:

Ex 2: A standard 6-sided number cube is rolled.
Find the probability of the given event:

a. an even number or a one

$\textcircled{1} \textcircled{2} 3 \textcircled{4} 5 \textcircled{6}$ $\frac{4}{6} = \textcircled{.67}$

b. a six or a number less than 3

$\textcircled{1} \textcircled{2} 3 4 5 \textcircled{6}$ $\frac{3}{6} = \textcircled{.5}$

c. an even number or number greater than 5

1 $\textcircled{2}$ 3 $\textcircled{4}$ 5 $\textcircled{6}$ $\frac{3}{6} = \textcircled{.5}$

d. an odd number or a number divisible by 3

$\textcircled{1}$ 2 $\textcircled{3}$ 4 $\textcircled{5}$ $\textcircled{6}$ $\frac{4}{6} = \textcircled{.67}$