

1. A bag contains 8 red disks, 9 yellow disks, and 5 blue disks. Two consecutive draws are made from the bag *without* replacement of the first draw. Find the probability of drawing a red first, yellow second.
(Answer: 12/77)
2. A bag contains 3 white cards, 2 black cards, and 5 red cards. Find the probability of drawing a white card.
(Answer: 3/10)

Use the following table of data from a survey on marital status in the United States for 1995 for the next two questions. Note not all ages are included on this table. The number of persons are in thousands.

Age	Total in age group	Never married	Married
20-24	18,142	13,372	4407
25-29	19,401	8373	9913
30-34	21,988	5186	14,645
35-39	22,241	3649	15,664
40-44	20,094	2271	14,779
Total (for 18+)	191,599	43,939	116,660

3. Suppose that a person were chosen at random from the population in 1995. Find the probability that the person is married, given that the person is 20-29 years old.
(Answer: 14,320/37,543 or 38.1%)
4. Suppose that a person were chosen at random from the population in 1995. Find the probability that the person has never been married, given that the person is 30-44 years old.
(Answer 11,106/64,323 or 17.3%)
5. A bag contains 5 white marbles and 3 green marbles. Find the probability of selecting 2 green marbles and 1 white marble.
(Answer: 26.8%)
6. Find the number of possible passwords for 3 digits followed by 2 letters followed by 1 digit.
(Answer: 6,760,000)
7. Evaluate $\frac{{}_{12}P_5}{{}_6P_5}$.
(Answer: 132)
8. Find the number of permutations of the letters in *bookkeeper*.
(Answer: 151,200)
9. Evaluate ${}_9C_5$ (do by hand-using formula and also by calculator).
(Answer: 126)

10. Find the number of ways in which a committee of 7 people can be selected from a group of 8.
(Answer: 8)

11. What is the probability of an event occurring if the odds are 4 to 5?
(Answer: 4/9)

12. A pizza parlor offers a selection of 3 different cheeses and 9 different toppings. In how many ways can a pizza be made with 2 cheeses and 3 toppings?
(Answer: 252)

13. Suppose that the probability of Kevin coming to a party is 80% and the probability of Judy coming to a party is 95%. Assuming that these events are independent, what is the probability that they both will come to a party?
(Answer: 76%)

14. Seven different types of sunglasses are to be placed on one level of a circular rack. In how many ways can they be arranged?
(Answer: 720)

15. A number cube is rolled once, and the number of the top face is recorded. Find the probability of rolling an even number or a 3.
(Answer: 2/3)

16. For one roll of a number cube, let A be the event "even" and B be the event "2." Find each probability:

a) $P(B)$ b) $P(B \text{ and } A)$ c) $P(A|B)$

(Answer: a) 1/6 b) 1/6 c) 1)

17. The table shows all of the possible outcomes of rolling two number cubes. Using the table, state whether a sum of less than 7 or a sum greater than 8 is inclusive or mutually exclusive. Find the probability.

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

(Answer: exclusive, 25/36)

18. The table shows all of the possible outcomes of rolling two number cubes. Using the table, state whether a sum of greater than 5 or a sum of less than 8 is inclusive or mutually exclusive. Find the probability.

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

(Answer: inclusive, 1)

19. Evaluate $\frac{{}^{14}C_5 \times {}_9C_7}{{}^{23}C_{12}}$.

(Answer: 0.053)

20. Find $P(E^c)$ if $P(E) = \frac{4}{11}$.

(Answer: 7/11)

21. Find the number of permutations of the first 8 letters of the alphabet if we take 5 letters at a time.

(Answer: 6720)

22. A tests consists of 20 questions and students are told to answer 15 of them. In how many different ways can they choose the 15 questions?

(Answer: 15,504)

23. A bag contains 8 red disks, 9 yellow disks, and 5 blue disks. Two consecutive draws are made from the bag *without* replacement of the first draw. Find the probability of drawing a red first, red second.

(Answer: 4/33)

24. What is the probability of rolling a number greater than 3 on a number cube?

(Answer: $\frac{1}{2}$)

25. The probability of event A and B are as follows: $P(A)=0.75$ and $P(B)=0.25$. Find $P(A \text{ and } B)$.

(Answer: 0.1875)

26. Evaluate ${}_{50}P_1$. (Do by hand-using formula and by calculator)

(Answer: 50)

27. A spinner is divided into 8 equal parts numbered 1 through 8. It is spun three different times. Find the probability that *all three numbers are 3 or greater than 5*.

(Answer: 1/8 or 12.5%)

