

Single Event Probability

One of these names is to be drawn from a hat. Determine each probability below:

Mary Jenny Bob Marilyn Bill Jack Jerry Tina Connie Joe

- 1) $P(4\text{-letter name}) =$ _____ 2) $P(\text{name starting with B}) =$ _____
3) $P(\text{name starting with T}) =$ _____ 4) $P(7\text{-letter name}) =$ _____
5) $P(\text{name starting with S}) =$ _____ 6) $P(\text{name ending with Y}) =$ _____
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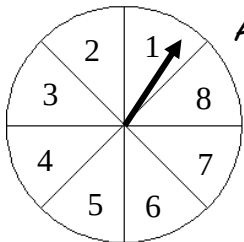
One of these cards will be drawn without looking.



- 7) $P(5) =$ _____ 8) $P(J) =$ _____ 9) $P(\text{a number}) =$ _____
10) $P(4) =$ _____ 11) $P(T) =$ _____ 12) $P(\text{a letter}) =$ _____
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One card is drawn from a well-shuffled deck of 52 cards. What is the probability of drawing...

- 13) $P(\text{ace}) =$ _____ 14) $P(\text{face card - K, J, Q}) =$ _____
15) $P(\text{a red 10}) =$ _____ 16) $P(\text{NOT a diamond}) =$ _____
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A spinner, numbered 1-8, is spun once. What is the probability of spinning...

- 17) an EVEN number? _____ 18) a multiple of 3? _____
19) a PRIME number? _____ 20) a 9? _____

Basic Counting Principle

21) You go to an ice cream shop and take a look at the menu before ordering. What are the possible combinations of your order if you can get a cup or cone, single, double, or triple scoop, chocolate, vanilla, strawberry, or swirl, and with or without whip cream? _____

22) You go to buy a car from a used lot. The only options available for the 6 different models on the lot are: automatic or manual, 3 different types of stereo equipment, with or without a sunroof, and with or without AC. How many different options do you have? _____

Inclusive vs. Mutually Exclusive Events

For any event A , $P(A) + P(A') = \underline{\hspace{2cm}}$, that is $P(A') = \underline{\hspace{2cm}} - P(A)$.

30) Suppose that an event A has probability of $\frac{3}{8}$. What is $P(A')$? _____

31) Suppose that the probability of snow is 0.58. What is the probability that it will NOT snow? _____

If A and B are mutually exclusive events, then $P(A \text{ or } B) = P(A) + P(B)$.
and

If A and B are inclusive events, then $P(A \text{ or } B) = P(A) + P(B) - P(A \cap B)$.

A card is chosen from a well-shuffled deck of 52 cards.

What is the probability that the card will be:

32) a king OR a queen? _____

33) a red jack OR a black king? _____

34) a face card OR a card with a prime number? _____

35) an even card OR a red card? _____

36) a spade or a jack? _____

A spinner number 1-10 is spun. Each number is equally likely to be spun.

What is the probability of spinning:

37) an even number OR a power of three? _____

38) an odd number OR a power of three? _____

39) a number less than 8 OR a factor of 15? _____

40) Which of the problems above are about: (write the problem number under its type)

COMPLEMENTARY events?

INCLUSIVE events?

MUTUALLY-EXCLUSIVE events?

Independent vs. Dependent Events

Independent events

41) Bag A contains 9 red marbles and 3 green marbles. Bag B contains 9 black marbles and 6 orange marbles. Find the probability of selecting one green marble from bag A and one black marble from bag B.

42) Two seniors, one from each government class are randomly selected to travel to Washington, D.C. Wes is in a class of 18 students and Maureen is in a class of 20 students. Find the probability that both Wes and Maureen will be selected.

43) If there was only one government class, and Wes and Maureen were in that class of 38 students, what would be the probability that both Wes and Maureen would be selected as the two students to go to Washington? Is this still an example of independent events?

Dependent Events

43) A box contains 5 purple marbles, 3 green marbles, and 2 orange marbles. Two consecutive draws are made from the box **without replacement** of the first draw. Find the probability of each event.

a. $P(\text{orange first, green second})$ _____

b. $P(\text{both marbles are purple})$ _____

c. $P(\text{the first marble is purple, and the second is ANY color EXCEPT purple})$

44) If you draw two cards from a standard deck of 52 cards **without replacement**, find:

a. $P(\text{King first, Jack second})$ _____

b. $P(\text{face card first, ace second})$ _____

c. $P(2 \text{ aces})$ _____