

2.4 – Adding Probabilities

Probability of Mutually Exclusive Events →

If two events, A and B, are mutually exclusive (two events cannot occur at the same time), then the probability of one event or another event is _____

Example 1: Complete each problem about finding the probability of mutually exclusive events.

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|---|---------------------------------|---|-----------------------|
| a.) Keisha has a stack of 8 baseball cards, 5 basketball cards, and 6 soccer cards. If she selects a card at random from the stack, find the probability of the situations below. | | b.) A card is drawn from a standard deck of cards. Determine the probability. | |
| i.) P (baseball or soccer) | ii.) P (football or basketball) | i.) P (6 or king) | ii.) P (red or black) |

Probability of Inclusive Events →

If two events, A and B, are inclusive (two events can occur at the same time), then the probability one event or another event is _____

Example 2: Complete each problem about finding the probability of inclusive events.

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|--|----------------------------|---|-----------------------|
| a.) The enrollment at South High School is 1400. Suppose 550 students take French, 700 take Algebra, and 400 take both French and Algebra. | | b.) A card is drawn from a standard deck of cards. Determine the probability. | |
| i.) Draw a Venn Diagram to illustrate situation. | ii.) P (French or Algebra) | i.) P (queen or diamond) | ii.) P (black or ace) |

Example 3: Two cards are drawn from a standard deck of cards. Find each probability.

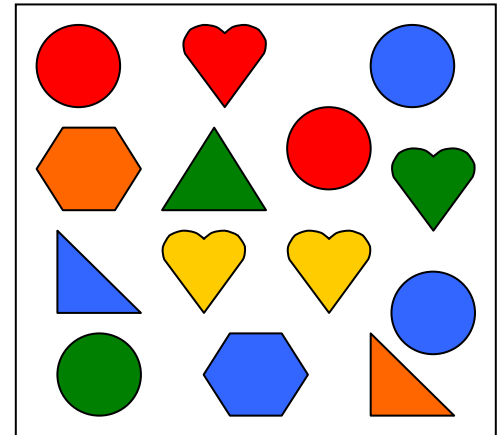
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|----------------------------|------------------------------|------------------------------|-------------------------|
| a.) P (2 kings or 2 black) | b.) P (both 8 or both jacks) | c.) P (both 3's or both < 5) | d.) P (2 face or 2 red) |
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Example 4: Determine whether the events are exclusive or inclusive. Then find the probability.

- a.) There are 3 literature books, 4 algebra books, and 2 biology books on a shelf.
If a book is randomly selected, what is the probability of selecting a literature book or an algebra book?
- b.) A die is rolled. What is the probability of rolling a 5 or a number greater than 3?
- c.) In the Math Club, 7 of the 20 girls are seniors, and 4 of the 14 boys are seniors. What is the probability of randomly selecting a boy or a senior to represent the club at a statewide math contest?

- d.) Jamie reaches into a dish and selects a token at random. Find the probability of each situation.

- i.) What is the probability of Jamie picking a circle or heart token?
- ii.) What is the probability of Jamie picking a triangle or blue token?
- iii.) What is the probability of Jamie picking an orange or hexagon token?
- iv.) What is the probability of Jamie picking a blue heart or green triangle?
- v.) What is the probability of Jamie picking a red or yellow token?



- e.) One tile with each letter of the alphabet is placed in a bag, and one is drawn at random.
What is the probability of selecting a vowel or a letter from the word EQUATION?
- f.) There are 7 girls and 6 boys on the junior class homecoming committee.
A subcommittee of 4 people is being chosen at random to decide the theme for the class float.
What is the probability that the subcommittee will be 3 girls or 2 boys?

- g.) The Venn Diagram below represents senior citizens and their music preferences.
The number of senior citizens surveyed was 60. Determine the probability of each situation.

- a.) P (only Western or only Classical)
- b.) P (Classical or 1940's Pop)
- c.) P (Classical and Western and 1940's Pop)

