12-5 Adding Probabilities

<u>Simple event</u>: An event that consists of only one event. <u>Compound event</u>: An event that consists of two or more simple events. <u>Mutually exclusive events</u>: Two events cannot occur at the same time.



Probability of Mutually Exclusive Events

If two events, A and B, are mutually exclusive, then the probability that A and B occurs is the sum of their probabilities. P(A or B) = P(A) + P(B)

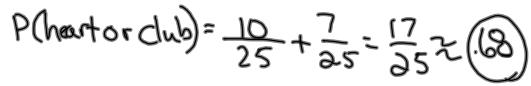
Ex1. Keisha has a stack of 8 baseball cards, 5 basketball cards, and 6 soccer cards. If she selects a card at random from the stack, what is the probability that it is a baseball or a soccer card?

P(baseballor soccer) = $\frac{8}{19}$ +

Ex2. 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 have at least 2 girls? **order does**

not matter = Platkasta Girls)

Ex3. Sylvia has a stack of playing cards consisting of 10 hearts, 8 spades, and 7 clubs. If she selects a card at random from this stack, what is the probability that it is a heart or a club?



Ex4. The Film Club makes a list of 9 comedies and 5 adventure movies they want to see. They plan to select 4 titles at random to show this semester. What is the probability that at least two of the films they select are comedies?

P(at least 2 comedies) P(2C2A, 3CIA, or 4C)(51) (914)

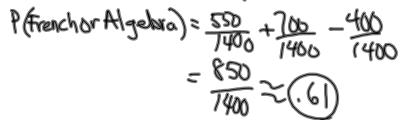
Inclusive events: Two events whose outcomes may be the same.

Probability of Inclusive Events

If two events, A and B, are inclusive, then the probability that A or B occurs is the sum of their probabilities decreased by the probability of both occurring.

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

Ex5. The enrollment at Southburg High School is 1400. Suppose 550 students take French, 700 take algebra, and 400 take both French and algebra. What is the probability that a student selected at random takes French algebra?



Ex6. There are 2400 subscribers to an Internet service provider. Of these, 1200 own Brand A computers, 500 own Brand B, and 100 own both A and B. what is the probability that a subscriber selected at random owns either Brand A or Brand B?

P(Brand Aor Brand B) = 1200 + 500 grings y silver = 1600 2400 14) P(allgold or all silver) = P (GGG or SSS) $\frac{5(3)}{9(2)} + \frac{C(4(3))}{C(9(3))} = \frac{1}{6} = .16$ [6] P(At kast 1 Silver) = P(1526 or 2016 or 30)