

The FRAME Routine

Key Topic Chapter 5

Is about...

Probability, Permutations & Combinations

Main Idea

General Probability

Favorable Outcomes
= Total Possible Outcomes

Main Idea

Conditional Probability

$P(B|A) = \frac{P(B \text{ and } A)}{P(A)}$

Main Idea

Permutations and Combinations

Complement (probability something does NOT happen)

$$P(A^c) = 1 - P(A)$$

P(At Least One)

$$= 1 - P(\text{None})$$

Or $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

Mutually Exclusive

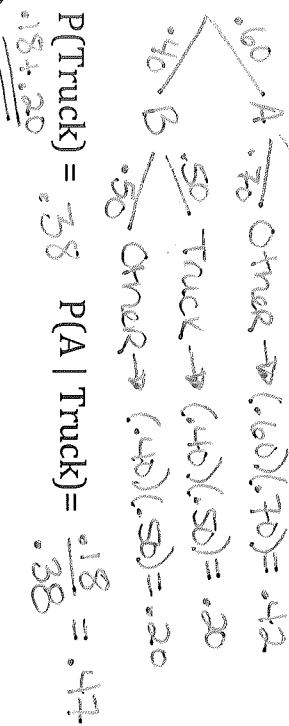
Event CANNOT occur at the same time. NO OVERLAP

And $P(A \cap B)$

Independent $P(A|B) = P(A)$

OR
 $P(A \text{ and } B) = P(A)$

Tree Diagrams: Factory A produces 60% of vehicles of which 30% are trucks. Factory B produces 40% of vehicles of which 50% are trucks.



Two Way Tables

	A	B	
Female	4	6	10
Male	22	11	33
	26	17	43

Find $P(\text{Female or A}) = 26 + 10 - 4 = 32$

Find $P(\text{Female} | A) = \frac{\text{Female \& A}}{A} = \frac{4}{26}$

Counting Principle

Multiply the # of options for each choice together.

Factorial

$$5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$$

Permutation

$$nPr \quad \text{ORDER MATTERS}$$

Combination

of groups that can be chosen.

$$\binom{n}{r} = nCr \quad \text{ORDER DOES NOT MATTER}$$