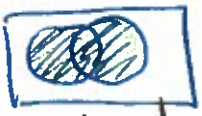
UNIT 6

1. **Probability** = $\frac{\#\text{ favorable outcomes}}{\text{total outcomes}}$

2. **Intersection** $A \cap B$ = A **and** B 
   "what's in common"

3. **Union** $A \cup B$ = A **OR** B 
   the union contains everything in both sets

4. **Independent Events** (with replacement)
   $P(A|B)=P(A)$ ✓ $P(B|A)=P(B)$ ✓
   1st events outcome does not affect 2nd events outcome
   $P(H, T) = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$
   $A \cap B = P(A) \cdot P(B)$
   A and B

5. **Dependent Events** (without replacement)
   - multiply probabilities

Compound Events

6. **Mutually Exclusive** vs. **Not Mutually Excl.**
   events cannot occur together
   Events can occur
   $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
   $P(A \text{ OR } B)$
   $P(A \cup B) = P(A) + P(B)$

7. **Conditional Probability**: an event will occur given that 1 or more events have occured
   "A given B"
   $P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{P(A) \cdot P(B)}{P(B)}$