# 4.6
## Probability and Counting Rules

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# Probability and Counting Rules

(ex) 50 tickets, of them 5 are winners, you draw 3 find

$$P(\text{win twice}) = \frac{\#\text{ of ways to get 2 wins \& one loss}}{\text{total \# of draws}}$$

$$= \frac{{}_5C_2 \cdot {}_{45}C_1}{{}_{50}C_3}$$

$$= \frac{10 \cdot 45}{19600} = .023$$

(ex) I have 10 people, I randomly select 3 people to be president, vice president, and secretary.
find $P(\text{Jill is President}) = \frac{\#\text{ of chances Jill is Pres}}{\text{total \# of trios}}$

$$= \frac{{}_9P_2}{{}_{10}P_3} = \frac{72}{720} = .1$$