

4. What is the probability of flipping a coin and getting tails and then getting a blue marble from a bag that contains 4 red, 6 green, 8 blue and 2 orange marbles?

$$P(\text{Tails \& Blue}) = \left(\frac{1}{2}\right)\left(\frac{8}{20}\right) = \frac{8}{40} = \frac{1}{5}$$

5. You have a bag that contains 100 number tiles numbered 1 - 100.

a) What would be the probability of selecting one number tile that is either odd or greater than 80 on one pull?

$$P(\text{ODD OR } \# > 80) = \frac{60}{100} = \frac{3}{5}$$

b) What formula could you use to solve this probability?

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

6. You are rolling a regular 6-sided die 120 times.

a) How many times would you expect to get a number less than 3?

$$\mu = np = (120)\left(\frac{1}{3}\right) = 40$$

b) What would be the standard deviation for number of times you roll less than a 3?

$$\sigma = \sqrt{120\left(\frac{1}{3}\right)\left(\frac{2}{3}\right)} \approx 5.164$$

c) If thousands of people rolled the die 120 times each and someone stated that they rolled a number less than 3 fifty-five times, approximately what percentage of people rolled a number less than 3 more than that person did?

$$Z = \frac{55 - 40}{5.164} \approx \frac{15}{5.164} \approx 2.9$$

Look up $Z = 2.9$ to get .9981

To get more than $1 - .9981$

$$\approx .0019 \approx .19\%$$