3 points 1. A fair six-sided die is tossed 10 times. Find the probability the first is a 6 given there are exactly three 6’s.

6 points 2. A box contains 4 red and 3 blue balls. A person chooses one at a time without replacement until he gets a red ball. The he stops. X is the number of balls he chooses.

a) Make a tree diagram for this experiment.

b) Write the distribution of X.

c) Find E(X) and σ(X).
8 points 3. A person tosses a six-sided die twelve times. \( X \) is the number of times the top number is either a 1 or a 6.

a) Verify that \( X \) has a binomial distribution. There are three things to verify.

b) Find \( E(X)=\mu \) and \( \sigma(X) \).

c) Find \( P(X=\mu) \)

d) Find \( P(3 \leq X \leq 5) \)
Project 4
6 points 1. Heights of a certain population of males are normally distributed with mean 70 inches and standard deviation 2 inches.
a) Find the probability that a randomly selected male is between 67 and 73 inches tall.

b) Find a height, h, so that the probability a male is shorter than h is 0.3. Round to 2 decimal places.

c) Find a height, H, so that the probability a male is taller than H is 0.8. Round to 2 decimal places.

2 points 2. X is a normal random variable with mean 40 and unknown standard deviation. It is known that \( P(X < 55) = 0.65 \). Use symmetry to find \( P(25 < X < 55) \).