

Assignment 4:

1. For a random variable X with a binomial $(20, 1/2)$ distribution, find the following probabilities.

- (i). Find $\Pr(X < 8)$
- (ii). Find $\Pr(X > 12)$
- (iii). Find $\Pr(8 \leq X \leq 1)$

2. Let X be the number of heads in 10 tosses of a fair coin.

- (i). Find the probability of getting at least 5 heads (that is, 5 or more).
- (ii). Find the probability of getting exactly 5 heads.
- (iii). Find the probability of getting between 4 and 6 heads, inclusive

3. A recent national study showed that approximately 55.8% of college students have used Google as a source in at least one of their term papers. Let X equal the number of students in a random sample of size $n = 42$ who have used Google as a source:

How is X distributed?

- I. Sketch the probability mass function (roughly).
- II. Sketch the cumulative distribution function (roughly).
- III. Find the probability that X is equal to 17.
- IV. Find the probability that X is at most 13.
- V. Find the probability that X is bigger than 11.
- VI. Find the probability that X is at least 15.
- VII. Find the probability that X is between 16 and 19, inclusive