* **Def.** Suppose an experiment consists of a sequence of trials with the following conditions:

1. The trials are **­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
2. **\_\_\_\_\_\_\_\_\_** trial can result in one of**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, success and failure.
3. The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of success is the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** for all trials.

* A geometric random variable is defined as:

X = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* The probability distribution of X is called the geometric probability distribution.

probability of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Y = the number of rolls until get 6 on fair die

What is the probability of P(Y=1)?

What is P(Y=10)?

What is the value of P(Y=n)?

* Geometric Probability Distribution:

P(Y=y) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E(Y) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Var(Y) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Practice:

1. Suppose a playlist on an MP3 music player consists of 100 songs, of which eight are by a particular artist. Suppose that songs are played by selecting a song at random (with replacement) from the playlist. The random variable X represents the number of songs played until a song by this artist is played.
2. Explain why the probability distribution of x is not binomial.
3. Find the following probabilities:

P(X=4) =

P() =

P() =

P() =

1. Suppose that 5% of cereal boxes contain a prize and the other 95% contain the message, “Sorry, try again.” Consider the random variable X, where X = number of boxes purchased until a prize is found.
2. What is the probability that at most two boxes must be purchased?
3. What is the probability that exactly four boxes must be purchased?
4. What is the probability that more than four boxes must be purchased?