

1. Flip three coins. Then draw with replacement from a word (specified below) until you get **one more vowel than the number of heads you got**. The word to be used also depends on the number of heads thrown:

Number of heads thrown	Word to use
0H	ZERO
1H	ONE
2H	TWO
3H	THREE

What is the expected number of letters drawn?

2. Find
- the expected value
 - the variance
- for the number of different suits in a 9-card hand.
3. Find
- the expected value
 - the variance
- for the number of aces in a 9-card hand.
4. An urn contains 8 balls each of 7 different colors. Draw 5 times with replacement. Find the
- the expected value
 - the variance
- for the number of different colors drawn.
5. A chocolate chip cookie vat contains 12,000 chocolate chips and makes 1,000 cookies. What is the probability a randomly chosen cookie will have at least 3 chips in it?
6. Suppose that

$$f(z) = \frac{2}{(3-z)}$$

is the generating function for a random variable X . Find

- a) $P(X > 0)$ b) $P(X < 3)$ c) $E(X)$ d) $\text{Var}(X)$