Genetics:
Risk Assessment 1

- What is the probability that if a couple has 4 children that all 4 will be males?
  Ans: 1/16

- What is the probability that if a couple has 4 children that all 4 will be females?
  Ans: 1/16

- What is the probability that if a couple has 4 children that all 4 will be the same gender?
  Ans: 2/16

- A woman has a father who died from Huntington's disease. What is the probability that she will develop the symptoms of the disease?(hint: draw or think of a pedigree for those types of questions)
  Ans: 1/2

- A couple were both tested and found to be carriers of the Cystic Fibrosis gene. If they have 2 children:
  - What is the chance that both will be affected by Cystic Fibrosis?
    Ans: 1/16
  - What is the chance that both will be carriers?
    Ans: 1/4
  - what is the chance that they will have 2 girls that are both affected by Cystic Fibrosis?
    Ans: 1/64

- The ability to taste the chemical PTC is determined by a single gene in humans with the ability to taste given by the dominant allele “T” and the inability to taste by the recessive allele “t”. Suppose two heterozygous tasters (Tt) have a large family:
    - Predict the proportion of their children who will be tasters & non-tatsers. Use a Punnett square to illustrate how you make these predictions.
      Ans: 3/4
    - What is the likelihood that their first child will be a taster?
      Ans: 3/4
    - What is the likelihood that their fourth child will be a taster?
      Ans: 3/4

- For a Caucasian couple with no family history, what is the chance they will have a child with Cystic Fibrosis? Knowing that Caucasian population carrier frequency is 1/25.
  Ans: 1/2500

- For a Caucasian couple with diagnosis of CF in the mother's nephew. What is the risk for the fetus?(carrier frequency is 1/25)
  Ans: 1/200

Genetics:
Risk Assessment 2

- A father from a Caucasian couple was tested and found to be a carrier of the CF gene:
  (carrier frequency 1/25)
  - What is the probability that they will have an affected child?
    Ans: 1/100
  - What is the probability that they will have 2 affected children?
    Ans: (1/100)^2
  - What is the probability that they will have an affected girl?
    Ans: 1/200

- For a Caucasian couple with diagnosis of CF in the mother's nephew:
    - What is the probability that the fetus is a female and is affected?(carrier frequency is 1/25)
      Ans: 1/400
    - What is the probability that they will have 2 affected females?(carrier frequency is 1/25)
      Ans: (1/400)^2
- For a couple with the diagnosis of CF in the father's brother. What is the risk for the fetus?
  Ans: 1/150