

4. A type of deafness is a single gene recessive disease trait that is not sex-linked.

Assume D = the normal allele and d = the deafness allele. Which of the following genotypes would cause the person to be deaf?

- A. Dd
- B. ddd
- C. DD
- D. dd
- E. none of the above

5. (see question #4 for genotypes) If a man who was heterozygous for this type of deafness had a child with a woman who was a carrier for deafness, what is the probability that they would have a child that has normal hearing (a child that does not have hearing loss)?

- 0%
- 25%
- 50%
- 75%
- 100%

DRAW A PUNNETT SQUARE FOR QUESTION #5 TO SHOW HOW YOU OBTAINED YOUR ANSWER.

6. (see question #4 for genotypes) If a man who was homozygous recessive for deafness had a child with a woman who was homozygous dominant for deafness, what is the probability that they would have a child that is deaf?

- 0%
- 25%
- 50%
- 75%
- 100%

DRAW A PUNNETT SQUARE FOR QUESTION #6 TO SHOW HOW YOU OBTAINED YOUR ANSWER.

7. An individual with hemophilia possesses a genetically inherited trait that prevents their blood from clotting normally. **Hemophilia is a sex linked, recessive trait carried on the X chromosome. H = normal blood clotting allele while h = hemophilia allele.** If a man who has hemophilia and a woman who is a carrier for hemophilia have a child, the probability that the child will have hemophilia is:

- A. 0%
- B. 25%
- C. 50%
- D. 75%
- E. 100%

DRAW A PUNNETT SQUARE FOR QUESTION #7 TO SHOW HOW YOU OBTAINED YOUR ANSWER.

8. Who was Gregor Mendel? What is his claim to fame?

9. In what organs does the process of meiosis occur? Why does it only occur in these organs? What is the purpose of meiosis?

10. Briefly describe what occurs in each of the following phases of mitosis:

PROPHASE

METAPHASE

ANAPHASE

TELOPHASE

11. What is cytokinesis?

12. During meiosis, what is crossing over? Why is crossing over important to sexual reproduction?

13. Briefly describe complementary base pairing in DNA. Which bases bind to each other?

14. Why is DNA called deoxyribonucleic acid?

15. What is nondisjunction during cell division? List one disease or developmental disorder caused by nondisjunction.