

Name \_\_\_\_\_

Number \_\_\_\_\_

Date \_\_\_\_\_

## Guided Reading Chapter 2: Modern Genetics

### Section 2-1: Human Inheritance

1. The probability that two heterozygous parents for widow's peak will have a child with a straight hairline is \_\_\_\_\_ percent.
2. Is the following sentence true or false? Smile dimples are caused by the recessive allele of a gene.
3. A gene with three or more alleles for a single trait has \_\_\_\_\_.
4. Is the following sentence true or false? Even though a gene has multiple alleles, a person can carry only two of those alleles.
5. Complete the table by writing all possible combinations of alleles for each blood type.

Blood Types	
Blood Type	Combination of Alleles
A	or
B	or
AB	
O	

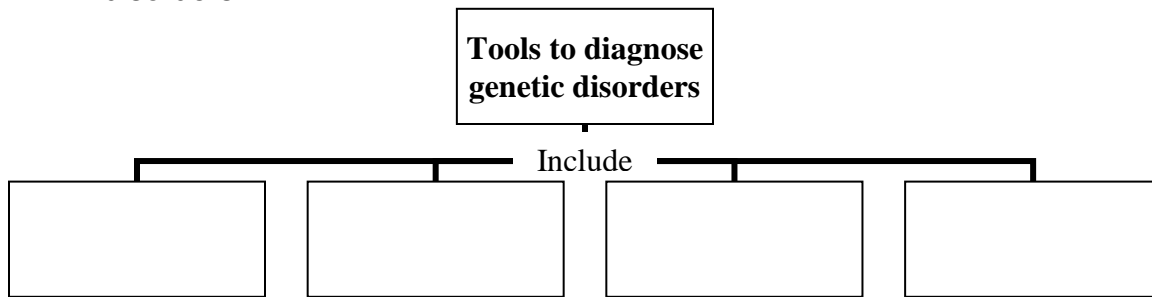
6. Why do some human traits, such as height and skin color, show a large number of phenotypes?
7. Is the following sentence true or false? Skin color is controlled by more than one gene.
8. The effects of genes are often altered by the \_\_\_\_\_.
9. List three environmental factors that have caused people to grow taller over time.
10. Is the following sentence true or false? Genes on chromosomes determine whether a baby is a boy or a girl.

11. Females have two \_\_\_\_\_ chromosomes. Males have one \_\_\_\_\_ chromosome and one \_\_\_\_\_ chromosome.
12. Circle the letter of each sentence that is true about the sex of chromosomes.
- All eggs have one X chromosome.
  - Half of a male's sperm cells have an X chromosome.
  - None of a male's sperm cells have a Y chromosome.
  - The egg determines the sex of the child.
13. Genes on the X and Y chromosomes are called \_\_\_\_\_.
14. Why are males more likely than females to have a sex-linked trait that is recessive?
15. Is the following sentence true or false? A carrier for colorblindness is colorblind.
16. Why is a son who receives the allele for colorblindness from his mother always going to be colorblind?
17. A chart or "family tree" that tracks which members of a family have a certain trait is called a(n) \_\_\_\_\_.
18. Is the following sentence true or false? On a pedigree, a circle represents a male.

## ***Section 2-2: Human Genetic Disorders***

- An abnormal condition that a person inherits through genes or chromosomes is called a(n) \_\_\_\_\_.
- What causes genetic disorders?
- What is cystic fibrosis?
- Is the following sentence true or false? Cystic fibrosis is caused by a mutation that is the dominant allele of a gene.
- Circle the protein that is not normal in people with sickle-cell disease.
  - mucus
  - hemoglobin
  - red blood cells
  - clotting protein

6. The allele for the sickle-cell trait is \_\_\_\_\_ with the normal allele.
7. Is the following sentence true or false? Hemophilia is caused by a dominant allele on the X chromosome.
8. Hemophilia occurs more often in \_\_\_\_\_.
9. How is hemophilia treated?
10. Circle the letter of the cause of Down syndrome.
  - a. recessive allele
  - b. dominant allele
  - c. too many chromosomes
  - d. too few chromosomes
11. Down syndrome most often occurs when \_\_\_\_\_ fail to separate properly during meiosis.
12. Complete the concept map to show some tools used by doctors to detect genetic disorders.

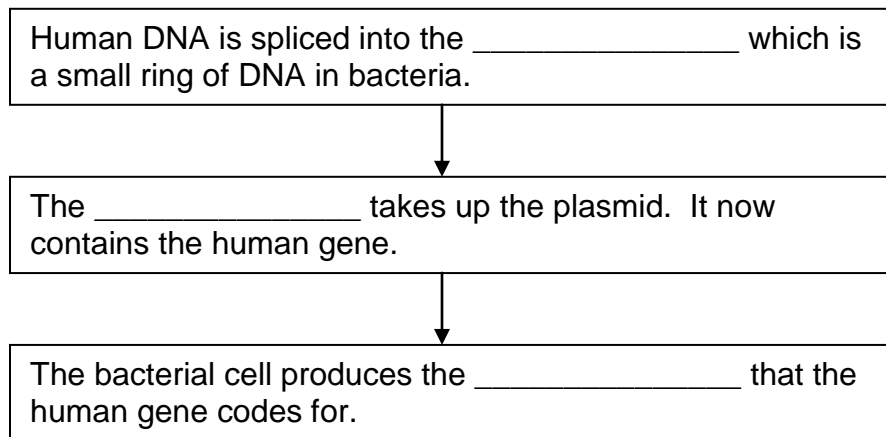


13. What happens during amniocentesis?
14. A picture of all the chromosomes in a cell is a(n) \_\_\_\_\_.
15. How do genetic counselors help couples?

### **Section 2-3: Advances in Genetics**

1. List the three methods that people have used to develop organisms with desirable traits.
2. The process of selecting a few organisms with the desired traits to serve as parents of the next generation is called \_\_\_\_\_.

3. What is inbreeding?
4. Is the following sentence true or false? In hybridization, breeders cross two individuals that are genetically identical.
5. What is commonly produced by hybridization?
6. Circle the letter of each sentence that is true about cloning.
  - a. A clone has exactly the same genes as the organism from which it was produced.
  - b. A cutting is one way to make a clone of an animal.
  - c. It's easier to clone an animal than it is to clone a plant.
  - d. Dolly, the lamb, was the first clone of an adult mammal ever produced.
7. Is the following sentence true or false? Cloning can be done only in animals.
8. In genetic engineering, genes from one organism are transferred into the \_\_\_\_\_ of another organism.
9. Complete this flowchart about genetic engineering in bacteria.



10. What is gene therapy?
11. How are DNA samples similar to fingerprints?
12. DNA fingerprinting is being used to help solve \_\_\_\_\_.
13. All the DNA in one cell of an organism is a(n) \_\_\_\_\_.
14. What is the goal of the Human Genome Project?