DNA Quiz Study Guide – 8

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section: \_\_\_\_\_\_\_\_\_\_\_\_\_

Define/Describe the following vocabulary:

DNA: the genetic information for life that is inherited from parents that is found in all organisms. Shape described as a double-helix: 2 connected backbones, twisted.

Gene: A specific sequence of DNA base pairs that holds the instructions to make specific proteins, which then to jobs in the organism.

Chromosome: A chunk of DNA, held within the nucleus of eukaryotic cells. Humans have 23 pairs, or a total of 46.

Base pair: 4 molecules that make up the backbones of the DNA double-helix. Adenine-thymine, cytosine – guanine.

Allele: The different forms that a gene can take, ex: brown eyes vs blue eyes. Make up genotypes, which cause phenotypes.

Dominant: The allele that is more likely to be seen in offspring. When paired with a recessive allele, will usually cover the recessive allele.

Recessive: The allele that is less likely to be seen in offspring. When paired with a dominant allele, will usually be covered.

Genotype: The combination of the allele from mom and the allele from dad for a certain gene.

Phenotype: The physical trait expressed by a genotype. (hair color, eye color, height)

Homozygous dominant: Genotype with two dominant alleles (HH)

Homozygous recessive: Genotype with two recessive alleles: (hh)

Heterozygous: Genotype with one dominant allele and one recessive allele (Hh)

In the space below, draw a diagram (labeled picture) that includes and describes the relationship between the following terms: **DNA, chromosome, gene, base pair.**

Look at the gene below, and fill in the missing base pairs:

A T C C T T G G C A A T G C T

T A G G A A C C G T T A C G A

A certain species of monster can either have a round head (dominant phenotype) or a square head (recessive phenotype.) Two monster couples, when they are in committed relationships and at the point in their lives when they can responsibly care for children, decide to have a baby monster. Use the information below to calculate the genetic probability of different head shapes in their offspring.

**Couple 1:**

Parent 1: Heterozygous:

|  |  |
| --- | --- |
|  |  |
|  |  |

 Genotype: \_\_\_\_\_\_\_\_

 Phenotype: \_\_\_\_\_\_\_\_\_

Parent 2: Heterozygous:

Genotype: \_\_\_\_\_\_\_\_

 Phenotype: \_\_\_\_\_\_\_\_\_

What is the probability of these two parents having a heterozygous offspring?

What is the probability of these two parents having a homozygous recessive offspring?

What is the probability of these two parents having an offspring with a round head?

What is the probability of these two parents having a square head?

**Couple 2:**

Parent 1: Homozygous recessive

|  |  |
| --- | --- |
|  |  |
|  |  |

Genotype: \_\_\_\_\_\_\_\_

 Phenotype: \_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
|  |  |
|  |  |

Parent 2: Heterozygous:

Genotype: \_\_\_\_\_\_\_\_

 Phenotype: \_\_\_\_\_\_\_\_\_

What is the probability of these two parents having a homozygous dominant offspring?

What is the probability of these two parents having a homozygous recessive offspring?

What is the probability of these two parents having a heterozygous offspring?

What is the probability of these two parents having an offspring with a round head?

What is the probability of these two parents having a square head?