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

**Test for Advanced Animal Science- Unit 4**

Questions will pertain to Genetics of cattle and reproduction of cattle.

Multiple Choices:

1. Purebred animals consist of how many breeds?
2. One
3. Three
4. Four
5. Too many to count
6. What type of selection is under Human Control?
7. Natural Selection
8. Replacement Selection
9. Artificial Selection
10. General Selection
11. How can a scientist tell the difference between Polygenic Traits and Simply-Inherited Traits?
12. Simply-Inherited traits are traits that you simply get from being born.
13. Polygenic traits are traits affected by many genes, on no single gene.
14. They both can only happen in certain animals, that’s how scientists can tell.
15. Genetic prediction is able to tell the difference between the two traits.

Matching Questions:

1. Gene a. Alternative form of a Gene

2. Chromosome b. Have corresponding loci

3. Homolog c. Basic unit of Inheritance

4. Locus d. Present in Pairs

5. Allele e. Specific location of a Gene

True/False Questions:

1. The combination of genes at a particular locus is called a Genotype.

True

1. Homozygous has one-locus genotype containing functionally different genes. False
2. Heterozygous has one-locus genotype containing functionally identical genes.

False

Fill in the Blank:

1. Linkage is the occurrence of how many Loci of interest on the same chromosome? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2 or more loci

1. When does Crossing Over occur? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

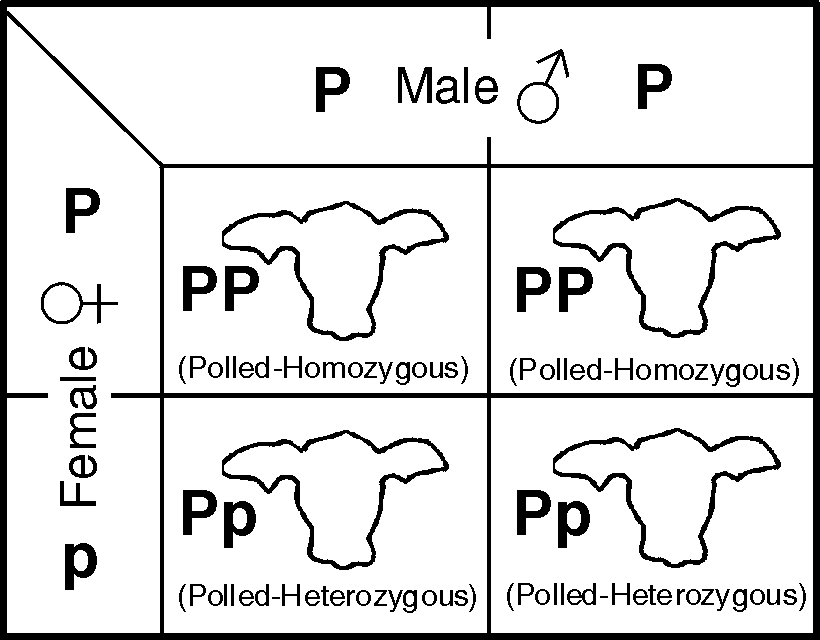
Prior to the time chromosomes are separated to form gametes during meiosis

1. Recombination is a result of what? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Result of crossing over

Short answer:

1. Show the proper use of a Punnett Square using horned and polled bulls.



1. Discuss the difference between Sex-linked and Sex-influenced traits.

Sex Linked - The X chromosome is larger and longer than the Y chromosome, which means a portion of the X chromosome does not pair with genes on the Y chromosome.

Sex-Influenced - Modes of gene expression differ between males and females. An allele may be expressed as a dominant in one sex and a recessive in the other. Scurs on cattle is a sex-influenced inheritance.

1. Define heritability and give at least 2 examples.

**Heritability**: the capacity of a trait to be passed down from a parent to offspring.

Fertility, Weaning Weight, Postweaning rate of gain, fat thickness, LEA, percent lean

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BW | WW | Milk | YW | Marb | REA | FAT | %IMF | RE | FAT | %RP |

1. Define phenotype and genotype.
   1. Phenotype – The appearance of an animal.
   2. Genotype – What genes are present and how they are combined.