

PROPERTY OF:

## BIOLOGY – UNIT 4 – CHAPTERS 11 & 14 NOTES

### HEREDITY

#### **IMPORTANT VOCABULARY:**

1. dominant gene = a gene that is expressed in individuals whether there are 2 copies or just one
2. recessive gene = a gene that is expressed in individuals only when there are 2 copies
3. homozygous = a condition when both copies of the gene are the same (could be dominant or recessive)
4. heterozygous = a condition when both copies of the gene are different (almost always dominant)
5. co-dominance = a condition when the heterozygous form shows both the “dominant” and “recessive” traits
6. incomplete dominance = a condition when the heterozygous form shows a blending or mixture of the “dominant” and “recessive” traits
7. genotype = the letters that represent the genes for an individual
8. phenotype = the physical trait that results from an individual’s genotype
9. pedigree = a chart or “family tree” that shows a particular genetic trait

#### **HOW TO DO PUNNETT SQUARE WORD PROBLEMS:**

1. Use capital letters for dominant genes and lowercase letters for recessive genes.
2. List the genotypes of the mother and father.
3. Determine the genes for their gametes. Draw all the possible egg and sperm cells.
4. Determine the size of the Punnett Square by listing the father’s genes across the top and the mother’s genes down the side.
5. Fill in the Punnett Square, keeping similar letters together, but always with the capital letter first (if applicable).
6. Analyze the % of genotypes and phenotypes of the offspring.

#### **TYPES OF GENETICS WORD PROBLEMS:**

1. monohybrid = examines one genetic trait at a time (problem set 1)
2. incomplete dominance and co-dominance = examines one incompletely dominant or co-dominant trait at a time (problem set 2)
3. blood type = examines one blood-typing trait at a time (problem set 3)
4. dihybrid = examines two genetic traits at a time (problem set 4)
5. sex-linked = examines one X chromosome trait at a time (problem set 5)

#### **HOW TO DO PEDIGREE WORD PROBLEMS:**

1. Use circles for males and squares for females.
2. Parents are connected with horizontal lines.
3. Children are connected to their parents by drawing vertical lines down from their parents’ horizontal line.
4. Shade in the circles or squares of those people who express the particular trait.
5. Write everybody’s genotype inside the square or circle. It is not always possible to determine the genotype for every individual.