Assignment Number \_\_\_\_\_\_\_\_\_\_\_

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour:\_\_\_\_\_\_\_\_\_\_\_

**Simple Genetics Practice Problems**

1. For each genotype, indicate whether it is **heterozygous** (HE) or **homozygous dominant** (HO-D) or **homozygous recessive** (HO-R)

|  |  |  |  |
| --- | --- | --- | --- |
| AA \_\_\_\_ Bb \_\_\_\_ Cc \_\_\_\_ Dd \_\_\_\_ | Ee \_\_\_\_ ff \_\_\_\_ GG \_\_\_\_  HH \_\_\_\_ | Ii \_\_\_\_ Jj \_\_\_\_ kk \_\_\_\_ Ll \_\_\_\_ | Mm \_\_\_\_ nn \_\_\_\_ OO \_\_\_\_ Pp \_\_\_\_ |

2. For each of the genotypes below, determine the **phenotype**.

|  |  |
| --- | --- |
| *Purple flowers are dominant to white flowers* PP \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pp \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pp \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | *Brown eyes are dominant to blue eyes* BB \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Bb \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bb \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| *Round seeds are dominant to wrinkled* RR \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Rr \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rr \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | *Bobtails are recessive (long tails dominant)* TT \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Tt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

3. For each phenotype, list the **genotypes**.

|  |  |
| --- | --- |
| *Straight hair is dominant (S) to curly (s).* \_\_\_\_\_\_\_\_\_\_\_\_ straight \_\_\_\_\_\_\_\_\_\_\_\_ straight \_\_\_\_\_\_\_\_\_\_\_\_ curly | *Pointed heads are dominant(P) to round heads(p).* \_\_\_\_\_\_\_\_\_\_\_\_ pointed \_\_\_\_\_\_\_\_\_\_\_\_ pointed \_\_\_\_\_\_\_\_\_\_\_\_ round |

4. Set up the square for each of the crosses listed below. The trait being studied is round seeds (dominant) and wrinkled seeds (recessive)

|  |  |  |
| --- | --- | --- |
| Rr x rr | http://www.biologycorner.com/resources/punnett_blank.gif | What percentage of the offspring will be round? \_\_\_\_\_\_\_\_\_\_\_ |
| Rr x Rr | http://www.biologycorner.com/resources/punnett_blank.gif | What percentage of the offspring will be round? \_\_\_\_\_\_\_\_\_\_\_ |
| RR x Rr | http://www.biologycorner.com/resources/punnett_blank.gif | What percentage of the offspring will be round? \_\_\_\_\_\_\_\_\_\_\_ |

**Practice with Punnett Squares. Show all work!**

5. A TT (tall) plant is crossed with a tt (short plant).   
What percentage of the offspring will be tall? \_\_\_\_\_\_\_\_\_\_\_

6. A Tt plant is crossed with a Tt plant. What percentage  
of the offspring will be short? \_\_\_\_\_\_

7. A heterozygous round seeded plant (Rr) is crossed with a  
homozygous round seeded plant (RR). What percentage of   
the offspring will be homozygous (RR)? \_\_\_\_\_\_\_\_\_\_\_\_

8. A homozygous round seeded plant is crossed with a homozygous   
wrinkled seeded plant. What are the genotypes of the parents?   
\_\_\_\_\_\_\_\_\_\_ x \_\_\_\_\_\_\_\_\_\_

What percentage of the offspring will also be homozygous? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. In pea plants purple flowers are dominant to white flowers.   
If two white flowered plants are cross, what percentage of their   
offspring will be white flowered? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. A white flowered plant is crossed with a plant that is   
heterozygous for the trait. What percentage of the   
offspring will have purple flowers? \_\_\_\_\_\_\_\_\_\_\_\_\_