**Punnett Squares Practice Problems**

1. For each genotype, indicate whether it is heterozygous (HE) or homozygous (HO)

|  |  |  |  |
| --- | --- | --- | --- |
| 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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

In pea plants, **purple** flowers are **dominant** to **white** flowers. If a **white** flowered plant is crossed with a **heterozygous** plant, what are the chances that the offspring will be **white**?

**Step 1: Choose your symbols**

P = \_\_\_purple\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ p = \_\_\_white\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step 2: Assign Genotypes to parents**

Parent 1 \_\_pp\_\_\_\_\_\_ Parent 2 \_\_Pp\_\_\_\_\_\_

**Step 3: Punnett Square**

**Step 4: Answer the question**

-What are the chances that the offspring will be white? \_\_\_2\_\_\_\_\_ out of 4

**Punnett Squares Practice Problems**

**Yellow** pea pods (Y) are **dominant** over **green** pea pods (y). A **heterozygote** is crossed with a **homozygous** **dominant** pea plant. What are the chances that the offspring will have a **hybrid** genotype?

**Step 1: Choose your symbols**

Y = \_\_\_yellow\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ y = \_\_\_\_\_green\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step 2: Assign Genotypes to parents**

Parent 1 \_\_Yy\_\_\_\_\_\_ Parent 2 \_\_\_\_YY\_\_\_\_

**Step 3: Punnett Square**

**Step 4: Answer the question**

-What are the chances the offspring will be a **hybrid**? \_\_2\_\_\_\_\_ out of 4

In sheep, **white** is due to a dominant allele and **black** is due to its recessive allele. What are the chances that a white ewe and a white ram produce a **black** lamb if **both** **parents** are **heterozygous**?

**Step 1: Choose your symbols**

W = \_\_\_\_\_\_\_\_\_white\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ w = \_\_\_\_\_black\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step 2: Assign Genotypes to parents**

Parent 1 \_\_Ww\_\_\_\_\_\_ Parent 2 \_\_Ww\_\_\_\_\_\_

**Step 3: Punnett Square**

**Step 4: Answer the question**

-What are the chances that the offspring will be a black lamb? \_\_\_\_1\_\_\_\_ out of 4