Worksheet: Mendel and Genetic Crosses

BIOLoGY: CHAPTER 6

Directions: Answer the following questions using your notes and textbook (pages 166-197)

1. For each genotype below, indicate whether it is heterozygous (He) or homozygous (Ho)

<table>
<thead>
<tr>
<th>Genotype</th>
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</tr>
</thead>
<tbody>
<tr>
<td>AA _____</td>
<td>Ee ____</td>
<td>li _____</td>
<td>Mm _____</td>
</tr>
<tr>
<td>Bb _____</td>
<td>ff ____</td>
<td>Jj _____</td>
<td>nn _____</td>
</tr>
<tr>
<td>Cc _____</td>
<td>Gg ____</td>
<td>kk _____</td>
<td>oo _____</td>
</tr>
<tr>
<td>DD _____</td>
<td>HH ___</td>
<td>LL _____</td>
<td>Pp _____</td>
</tr>
</tbody>
</table>

2. For each of the genotypes below determine what phenotypes would be possible.

   - Purple flowers are dominant to white flowers.
     - PP ___________________
     - Pp ___________________
     - pp ___________________

   - Brown eyes are dominant to blue eyes
     - BB ___________________
     - Bb ___________________
     - bb ___________________

   - Bobtails in cats are recessive.
     - TT ___________________
     - Tt ___________________
     - tt ___________________

   - Round seeds are dominant to wrinkled seeds
     - RR ___________________
     - Rr ___________________
     - rr ___________________

3. For each phenotype below, list the genotypes (remember to use the letter of the dominant trait)

   - Straight hair is dominant to curly.
     - _____ straight
     - _____ curly

   - Pointed heads are dominant to round heads.
     - _____ pointed
     - _____ round

   - Long tails are dominant over short tails.
     - _____ long tail
     - _____ short tail

   - Long hair is dominant over short hair.
     - _____ long hair
     - _____ short hair
4. Set up the Punnet squares for each of the crosses listed below.

*Round seeds are dominant to wrinkled seeds.*

**RR x rr**
What percentage of the offspring will be round?

**Rr x rr**
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**Rr x Rr**
What percent of the offspring will be round?
Practice with Crosses. Show all work! 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 an 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?

11. Two plants, both **heterozygous** for the gene that controls flower color are crossed. What percentage of their offspring will have purple flowers? What percentage will have white flowers?

12. **In guinea pigs, the allele for short hair is dominant.** What genotype would a heterozygous short haired guinea pig have? What genotype would a purebreeding short haired guinea pig have? What genotype would a long haired guinea pig have?
13. Show the cross for a **pure breeding short haired** guinea pig and a **long haired** guinea pig. What percentage of the offspring will have short hair?

14. Show the cross for two **heterozygous** guinea pigs.

What percentage of the offspring will have short hair?

What percentage of the offspring will have long hair?

15. Two **short haired** guinea pigs are mated several times. Out of 100 offspring, 25 of them have long hair. What are the probable genotypes of the parents?

___________ x ___________ **Show the cross to prove it!**