

Refer to page 652 in your textbook for pictures of each of the following traits.

Name: \_\_\_\_\_ Row: \_\_\_\_\_

Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Pea Plant Punnett Square Worksheet

1) Yellow seeds are dominant over green seeds in pea plants. Fill in the Punnett square and determine the expected genotypic and phenotypic ratios from crossing homozygous recessive and homozygous dominant parents.

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Genotypes: \_\_\_\_\_ Genotypic Ratio: \_\_\_\_\_

Phenotypes: \_\_\_\_\_ Phenotypic Ratio: \_\_\_\_\_

2) Green pod color is dominant over yellow pod color in pea plants. Fill in the Punnett square and determine the expected genotypic and phenotypic ratios from crossing homozygous dominant and heterozygous parents.

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Genotypes: \_\_\_\_\_ Genotypic Ratio: \_\_\_\_\_

Phenotypes: \_\_\_\_\_ Phenotypic Ratio: \_\_\_\_\_

3) Round seeds are dominant over wrinkled seeds in pea plants. Fill in the Punnett square and determine the expected genotypic and phenotypic ratios from crossing homozygous recessive and heterozygous parents.

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Genotypes: \_\_\_\_\_ Genotypic Ratio: \_\_\_\_\_

Phenotypes: \_\_\_\_\_ Phenotypic Ratio: \_\_\_\_\_

4) Smooth pod shape is dominant over constricted pod shape in pea plants. Fill in the Punnett square and determine the expected genotypic and phenotypic ratios from crossing homozygous recessive and homozygous dominant parents.

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Genotypes: \_\_\_\_\_ Genotypic Ratio: \_\_\_\_\_

Phenotypes: \_\_\_\_\_ Phenotypic Ratio: \_\_\_\_\_

5) Tall pea plants are dominant over short pea plants. Fill in the Punnett square and determine the expected genotypic and phenotypic ratios from crossing heterozygous and heterozygous dominant parents.

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Genotypes: \_\_\_\_\_ Genotypic Ratio: \_\_\_\_\_

Phenotypes: \_\_\_\_\_ Phenotypic Ratio: \_\_\_\_\_

6) The axial flower position is dominant over the terminal flower position. Fill in the Punnett square and determine the expected genotypic and phenotypic ratios from crossing heterozygous and homozygous dominant parents.

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Genotypes: \_\_\_\_\_ Genotypic Ratio: \_\_\_\_\_

Phenotypes: \_\_\_\_\_ Phenotypic Ratio: \_\_\_\_\_

7) Gray seed coat color is dominant over white seed coat color. Fill in the Punnett square and determine the expected genotypic and phenotypic ratios from crossing homozygous dominant and homozygous dominant parents.

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Genotypes: \_\_\_\_\_ Genotypic Ratio: \_\_\_\_\_

Phenotypes: \_\_\_\_\_ Phenotypic Ratio: \_\_\_\_\_

8) Tall pea plants are dominant over short pea plants. Fill in the Punnett square and determine the expected genotypic and phenotypic ratios from crossing homozygous recessive and homozygous recessive parents.

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Genotypes: \_\_\_\_\_ Genotypic Ratio: \_\_\_\_\_

Phenotypes: \_\_\_\_\_ Phenotypic Ratio: \_\_\_\_\_

Refer to page 662 in your textbook as a reference for complete and incomplete dominance.

Name: \_\_\_\_\_ Row: \_\_\_\_\_

Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Incomplete and Codominant Traits

**Background Information:** In incomplete dominance, the heterozygous genotype will express a phenotype somewhere in-between the dominant and the recessive. With codominance, the heterozygous genotype will express both phenotypes.

1) In a chestnut horse, their coat (hair) color can be reddish brown (AA), light red/pink (Aa), and creamy white (aa). Fill in the Punnett square and determine the expected genotypes and phenotypes from crossing heterozygous and heterozygous parents.

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Genotypes: \_\_\_\_\_

Phenotypes: \_\_\_\_\_

Is this an example of incomplete or codominance? \_\_\_\_\_

2) Camellia flowers can be red, white or white and red. The red color is dominant. Fill in the Punnett square and determine the expected genotypes and phenotypes from crossing homozygous red and heterozygous red white parents.

|   |   |   |
|---|---|---|
|   | R | R |
| R |   |   |
| W |   |   |

Genotypes: \_\_\_\_\_

Phenotypes: \_\_\_\_\_

Is this an example of incomplete or codominance? \_\_\_\_\_

3) Humans can be one of the four possible blood types. Blood types A and B are dominant over type O. Fill in the Punnett square and determine the expected genotypes and phenotypes from crossing a person who has homozygous type A and a person with type AB.

|                |                |                |
|----------------|----------------|----------------|
|                | I <sup>A</sup> | I <sup>A</sup> |
| I <sup>A</sup> |                |                |
| I <sup>B</sup> |                |                |

Genotypes: \_\_\_\_\_

Phenotypes: \_\_\_\_\_

Is this an example of incomplete or codominance? \_\_\_\_\_

4) Blood types A and B are dominant over type O. Fill in the Punnett square and determine the expected genotypes and phenotypes from crossing a person who has heterozygous type B and a person with heterozygous type A.

|       |       |     |
|-------|-------|-----|
|       | $I^B$ | $i$ |
| $I^A$ |       |     |
| $i$   |       |     |

Genotypes: \_\_\_\_\_

Phenotypes: \_\_\_\_\_

Is this an example of incomplete or codominance? \_\_\_\_\_

5) Blood types A and B are dominant over type O. Fill in the Punnett square and determine the expected genotypes and phenotypes from crossing a person who has type AB and a person with type O.

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|  |  |  |

Genotypes: \_\_\_\_\_

Phenotypes: \_\_\_\_\_

Is this an example of incomplete or codominance? \_\_\_\_\_

6) Blood types A and B are dominant over type O. Fill in the Punnett square and determine the expected genotypes and phenotypes from crossing a person who has heterozygous type B with a person who has type AB.

|  |  |  |
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|  |  |  |
|  |  |  |

Genotypes: \_\_\_\_\_

Phenotypes: \_\_\_\_\_

Is this an example of incomplete or codominance? \_\_\_\_\_

7) In humans, sickle-cell anemia is an autosomal recessive genetic disorder that causes red blood cells to change shape and can cause the red blood cells to become stuck in blood vessels. This blocking can deprive tissues of oxygen and cause organ damage like strokes. One benefit of it is that people who have one or two alleles of the sickle cell disease are resistant to malaria since their red blood cells are not conducive to the parasites. People with a heterozygous genotype don't have the disease but their red blood cells are slightly changed and have immunity to malaria. Fill in the Punnett square and determine the expected genotypes and phenotypes from crossing homozygous recessive (aa) and homozygous dominant parents (AA).

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Genotypes: \_\_\_\_\_

Phenotypes: \_\_\_\_\_

Is this an example of incomplete or codominance? \_\_\_\_\_