

C3 Punnett Square Practice (8th Grade)

Name: _____

Date: _____

1. Garden pea plants can have yellow seeds or green seeds. In a pea plant that is heterozygous for seed color, the allele for yellow seeds masks the effects of the allele for green seeds.

Which of the following terms best describes the allele for yellow seeds?

- A. codominant B. dominant
C. recessive D. sex-linked

2. Many ranchers prefer cattle without horns. The presence or absence of horns is genetically determined. The allele for the absence of horns (**A**) is dominant to the allele for the presence of horns (**a**).

A male with horns is mated with a heterozygous female without horns. What percentage of the offspring would be expected to have horns?

- A. 25% B. 50% C. 75% D. 100%

3. A dog gives birth to five puppies. What percentage of its chromosomes does each puppy share with the mother?

- A. 25% B. 50% C. 75% D. 100%

4. Use this Punnett square to answer the question.

	W	W
w		
w		

In horses, the gene for white hair (**W**) is dominant to the gene for non-white hair (**w**). A horse with genotype (**WW**) was crossed with a horse with genotype (**ww**), as shown in the Punnett square.

What fraction of the offspring should be expected to have white hair?

- A. none B. one-half
C. three-quarters D. all

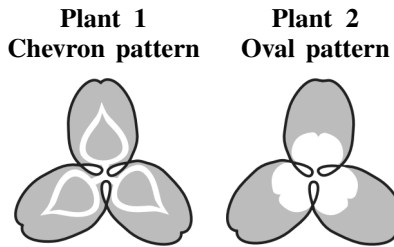
5. A partial Punnett square is shown below.

AA	AA
Aa	Aa

Which of the following statements describes the parental genotypes that would result in this Punnett square?

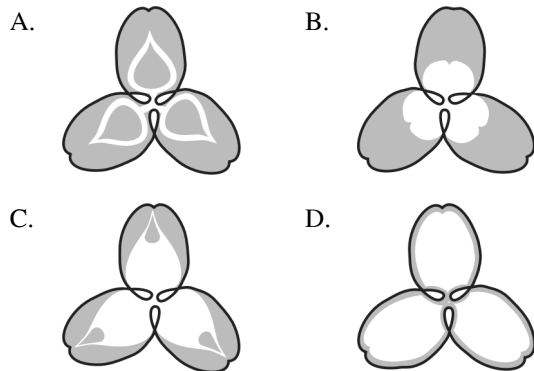
- A. Both parents are heterozygous.
B. Both parents are homozygous dominant.
C. One parent is homozygous recessive and the other parent is heterozygous.
D. One parent is homozygous dominant and the other parent is heterozygous.

6. Leaves from two white clover plants, each with a different pattern, are shown below.



The leaf patterns are genetically determined by alleles of a single gene. Plant 1 is homozygous for the chevron allele. Plant 2 is homozygous for the oval allele. The chevron and oval alleles are codominant.

If plant 1 and plant 2 are crossed, the codominance of the alleles will *most likely* result in which of the following leaf patterns on the offspring plants?



7. In mussels, the allele for brown coloring (**B**) is dominant, and the allele for blue coloring (**b**) is recessive. For which parental genotypes are 100% of the offspring expected to be blue?

- | | |
|--------------------------|--------------------------|
| A. Bb × Bb | B. BB × bb |
| C. bb × bb | D. BB × BB |

8. In guinea pigs, the allele for black hair (**B**) is dominant to the allele for brown hair (**b**). Two black-haired guinea pigs are crossed. One of the guinea pigs is homozygous for black hair and one is heterozygous.

What percentage of the offspring are expected to have black hair?

- A. 25% B. 50% C. 75% D. 100%

9. In humans, **B** is the allele for brown eyes and **b** is the allele for blue eyes. Two brothers both have brown eyes, but one of them has both the **B** and **b** alleles while the other only has **B** alleles. Which statement is true about the brothers?

- A. They have the same genotype and phenotype.
 B. They have different phenotypes and genotypes.
 C. They have the same phenotype but different genotypes.
 D. They have the same genotype but different phenotypes.

10. The ability to roll the tongue is a dominant trait, designated by **R**. The inability to roll the tongue is a recessive trait designated by **r**. Kathy's mother has a genotype of **RR**, and her father cannot roll his tongue.

- a) What is her father's genotype?
 b) What is the probability that Kathy will be able to roll her tongue?

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1.
Answer: B
2.
Answer: B
3.
Answer: B
4.
Answer: D
5.
Answer: D
6.
Answer: C
7.
Answer: C
8.
Answer: D
9.
Answer: C
10.
Answer: The father's genotype would be rr.
There is a 100 percent likelihood that
Kathy will be able to roll her tongue.