Practice Problems: Incomplete Dominance and Codominance

Define Codominance –

Define Incomplete Dominance –

If you have type A blood, what are your possible genotypes? _____
If you have type B blood, what are your possible genotypes? _____
If you have type AB blood, what are your possible genotypes? _____
If you have type O blood, what are your possible genotypes? _____

Could two individuals with type A blood ever produce offspring with Type O? Explain with punnett square.

Could two individuals with type O every produce offspring with Type A? Explain with punnett square.

What is the chance that a type O and Type AB couple could produce offspring with type A?

A woman sues for support of her child. She has Type A, her child is Type O, the man is B. Is the man the father? Explain.

Cross a woman with type AB to a man with type AB. Show punnett square, genotypes and phenotypes.

A homozygous type B woman marries a heterozygous Type A man. Show punnett square, genotypes and phenotypes.

A type B woman whose father was Type O marries a Type O man. Show punnett square, genotypes and phenotypes.

A type A woman whose mother was Type B marries a Type B man whose mother was Type A. Show punnett square, genotypes and phenotypes.

A couple has a child with Type A blood. If one parent is Type O, what are the possible genotypes of the other parent?

A wealthy elderly couple die together in an accident. Soon a man shows up to claim their fortune, saying that he is their only son who ran away from home as a boy. Other relatives dispute his claim. Hospital records show that the deceased couple were Type AB and O. The claimant to the fortune is Type O. Could he be their son? Explain.

Two newborn babies were accidentally mixed up at the hospital. Determine the parents of the babies by blood type.

Individual	Blood Type	Genotype	Parents Name
Baby 1	A		
Baby 2	O		
Mrs. Brown	B		----------
Mr. Brown	AB		----------
Mrs. Smith	B		----------
Mr. Smith	B		----------

a) Birds can be blue, white, or white with blue-tipped feathers.

b) Flowers can be white, pink, or red.

c) A Hoo can have curly hair, spiked hair, or a mix of both curly and spiked.

d) A Sneech can be tall, medium, or short.

e) A Bleexo can be spotted, black, or white.

Which of the letters represent codominant traits and which are incomplete?

1. Codominant _____
2. Incompletely Dominant _____

3. In Smileys, eye shape can be starred, circular, or a circle with a star. Write the genotypes for the pictured phenotypes

4. Show the cross between a star-eyed and a circle eyed.
What are the phenotypes of the offspring? _____
What are the genotypes? _____

5. Show the cross between a circle-star eyed, and a circle eyed.
How many of the offspring are circle-eyed? _____

How many of the offspring are circle-star eyed? _____

6. Show the cross between two circle-star eyed.
How many of the offspring are circle-eyed? _____
How many of the offspring are circle-star eyed? _____
How many are star eyed? _____

SpongeBob loves growing flowers for his pal Sandy! Her favorite flowers, Poofkins, are found in red, blue, and purple. Use the information provided and your knowledge of incomplete dominance to complete each section below.

1. Write the correct genotype for each color if R represents a red gene and B represents a blue gene.
Red - _____ Blue - _____ Purple - _____
2. What would happen if SpongeBob crossed a Poofkin with red flowers with a Poofkin with blue flowers. Complete the Punnett square to determine the chances of each flower color.
(a) Give the genotypes and phenotypes for the offspring.
(b) How many of the plants would have red flowers? _____%
(c) How many of the plants would have purple flowers? _____ %
(d) How many of the plants would have blue flowers? _____ %

3. What would happen if SpongeBob crossed two Poofkins with purple flowers? Complete the Punnett square to show the probability for each flower color.
(a) Give the genotypes and phenotypes for the offspring.
(b) How many of the plants would have red flowers? _____%
(c) How many of the plants would have purple flowers? _____ %
(d) How many of the plants would have blue flowers? _____ %

4. What would happen if SpongeBob crossed a Poofkin with purple flowers with a Poofkin with blue flowers? Complete the Punnett square to show the probability for plants with each flower color.
(a) Give the genotypes and phenotypes for the offspring.
(b) If SpongeBob planted 100 seeds from this cross, how many should heexpect to have of each color?
Purple flowers - _____ Blue flowers - _____ Red flowers - _____

SpongeBob and his pal Patrick love to go jellyfishing at Jellyfish Fields! The fields are home to a special type of green jellyfish known as Goobers and only really great jellyfishermen are lucky enough to catch some on every trip. Many of the jellyfish are yellow (YY) or blue (BB), but some end up green as a result of incomplete dominance. Use this information to help you complete each section below.

5. What would happen if SpongeBob and Patrick crossed two "goobers" or green jellyfish? Complete the Punnett square to help you determine the probability for each color of jellyfish.
(a) Give the possible genotypes and phenotypes for the offspring.
(b) What percentage of the offspring would be yellow? _____%
(c) What percentage would be blue? _____ %
(d) What percentage would be "goobers" (green)? _____ %

6. What would happen if they crossed a yellow jellyfish with a goober? Complete the Punnett square to help you determine the probability for each color of jellyfish.
(a) Give the possible genotypes and phenotypes for the offspring.
(b) What percentage of the offspring would be yellow? _____%
(c) What percentage would be blue? _____ %
(d) What percentage would be "goobers" (green)? _____ %

7. What would happen if they crossed a blue jellyfish with a yellow jellyfish? Complete the Punnett square to help you answer the questions.
If 100 jellyfish were produced from this cross, how many would you expect for each?
Yellow - _____ Blue - _____ Goobers - _____

8. What would happen if they crossed a blue jellyfish with a goober? Complete the Punnett square to help you answer the questions.
If 100 jellyfish were produced from this cross, how many would you expect for each?
Yellow - _____ Blue - _____ Goobers - _____

9. In some chickens, the gene for feather color is controlled by codiminance. The allele for black is B and the allele for white is W. The heterozygous phenotype is known as erminette.
a. What is the genotype for black chickens? ____
b. What is the genotype for white chickens? ____
c. What is the genotype for erminette chickens? ____

10. If two erminette chickens were crossed, what is the probability that:
a. They would have a black chick? ____%

b. They would have a white chick? ____%

11. A black chicken and a white chicken are crossed. What is the probability that they will have erminette chicks? ____%

12. In snapdragons, flower color is controlled by incomplete dominance. The two alleles are red (R) and white (W). The heterozygous genotype is expressed as pink.
a. What is the phenotype of a plant with the genotype RR? _____
b. What is the phenotype of a plant with the genotype WW? _____
c. What is the phenotype of a plant with the genotype RW? _____
