

After Spring Break Review

Directions: Complete the Punnett Squares questions.

BASIC GENETICS

- 1 If a Red (RR) and White flower (rr) were crossbred, resulting in 100% Rr, what phenotype would be seen according to dominant/recessive genetics?

- A Pink
- B Red and White
- C Red
- D White

- 2 In dogs, the dominant allele (F) codes for grey fur and the recessive allele (f) codes for black fur. A female dog that is heterozygous is crossed with a male dog that is homozygous recessive. What percent of the offspring will have black fur?

- A 0%
- B 25%
- C 50%
- D 75%

CODOMINANCE

- 1 A Bleexo can be spotted black (B), spotted orange (O) or spotted black and orange (BO). If a black spotted Bleexo and a black/orange spotted Bleexo have a baby Bleexo, what is the probability that they will have a black/orange spotted Bleexo?

- A 0%
- B 25%
- C 50%
- D 100%

- 3 Alice has type A blood and her husband Mark has type B blood. Their first child, Amanda, has type O blood. Their second child, Alex, has type AB blood. What is Alice's genotype? What is Mark's genotype?

- A Alice is AA and Mark is BB
- B Alice is AO and Mark is BO
- C Alice is AA and Mark is BO
- D Alice is AO and Mark is BB

- 2 Birds can be blue (B), white (W), or white with blue-tipped feathers (WB). If both parent birds are white with blue-tipped feathers, what is the probability of having blue bird babies?

- A 0%
- B 25%
- C 75%
- D 100%

- 4 Crossing a black (B) cat with a tan (T) cat produces a tabby (BT) cat (combination of black and tan). Cross a tan cat with a tabby cat. What are the probable phenotypes of the offspring?

- A 50% tabby; 50% black
- B 100% tabby
- C 50% tan; 50% black
- D 50% tan; 50% tabby

- 5 For Blood Type Heterozygous A crosses with Heterozygous A. Calculate the probability of each phenotype being passed down to the offspring.

- A 25% probability for type AO blood
- B 50% probability for type AA blood
- C 25% probability for type OO blood
- D 50% probability for blood type OO

- 1 For blood type, let's say Beyonce is homozygous for the type B allele, and Jay-Z is type O. What is the probability that they will have a child with blood type B?

- A 0%
- B 75%
- C 25%
- D 100%

2 If a man with blood type AB marries a woman heterozygous for type A, what is the probability that their child will be type B?

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

3 Crossing a black (B) cat with a tan (T) cat produces a tabby (BT) cat (combination of black and tan). If you wanted all tabby cats, what color cats would you want to breed?

- A 2 tabby cats
- B a black cat and a tan cat
- C a tabby cat and a black cat
- D a tan cat and a tabby cat

2 Type A and Type B blood are codominant to each other. They are both dominant over Type O blood. What are the possible blood types for the offspring produced by a type "O" mother and an a Type "AB" father

- A 50% probability of type O blood
- B 100% probability of type A blood
- C 100% probability of type B blood
- D 50% probability of type A blood

4 Horses can be gray (G) or white (W). The heterozygous horses (GW) are an appaloosa horse (a white horse with gray spots on its rump and back legs). Cross a white horse with an appaloosa horse. What is the probability of producing a grey horse?

- A 25%
- B 50%
- C 78%
- D 0%

1 Use a punnett square to show the possible genotypes and phenotypes for blood type of the offspring of two parents, one with blood type O and one with blood type AB.

- A 50% blood type O
- B 25% blood type AO
- C 50% blood type BO
- D 100% blood type AO

SEX-LINKED TRAITS

1 Albinism is a sex-linked recessive disorder that causes the complete or partial absence of pigments in the skin, hair and eyes. If there is a cross between a normal female and an albino male, what is the probability they will have an albino child?

- A 0% probability
- B 25% probability
- C 50% probability
- D 75% probability

2 Earl has normal vision. His wife Erma is colorblind. Colorblindness is an X-linked trait, and the normal allele is dominant over the colorblindness allele. If they have a large family, in what ways should the colorblindness affect their children?

- A All of their sons will be carriers of the colorblindness allele
- B There will be a 50% change they will have a colorblind daughter
- C There will be a 50% change they will have a colorblind son
- D All of their sons will be colorblind

3 Ethan is colorblind. His wife, Edna, is homozygous for the normal color vision allele. If they have eight children, what percentage of them would you expect to be colorblind. Show a punnett square and list genotypic and phenotypic ratios.

- A 100% of their sons will be colorblind
- B 100% of their daughters will be homozygous for the normal color vision allele
- C 100% of their daughters will be carriers of the colorblind allele
- D 50% of their sons will be colorblind and 50% will have normal vision

4 Hemophilia is a disease caused by a gene found on the X chromosome. The recessive allele causes the disease. A man with hemophilia marries a woman that is carrier for the trait. What is the probability they will have a child with hemophilia?

- A 75% probability
- B 50% probability
- C 25% probability
- D 0% probability

1 In fruit flies, red eyes are dominant (E). White eyes are recessive (e). If the female fly has white eyes and the male fly has homozygous dominant red eyes, what percent of the offspring will have red eyes? Remember - Sex Linked

- A 0%
- B 50%
- C 75%
- D 100%

2 Why is colorblindness or hemophilia more common in males than in females?

- A The gene is carried on the Y chromosome
- B They are sex-linked recessive traits, carried on the X chromosome
- C They are sex-linked dominant traits, carried on the X chromosome

5 In fruit flies, eye color is x-linked, with a recessive white allele and a dominant red allele. If white-eyed female flies were bred to red-eyed male flies, what would be the expected offspring (assume all parental flies are purebred)?

- A 100% white-eyed females; 50% white-eyed males; 50% red-eyed males
- B 50% red-eyed males; 50% white-eyed males; 100% red-eyed females
- C 100% red-eyed females; 100% white-eyed males
- D 100% white-eyed females; 100% red-eyed males

REPRODUCTION

1 In Meiosis, what is created?

- A 4 genetically identical daughter cells
- B 4 genetically different daughter cells
- C 2 genetically different daughter cells
- D 2 genetically identical daughter cells

2 In Mitosis, what is created?

- A 4 genetically identical daughter cells
- B 4 genetically different daughter cells
- C 2 genetically different daughter cells
- D 2 genetically identical daughter cells

3 The offspring of asexual reproduction receives:

- A genetic material from one parent
- B genetic material from only one grandparent
- C genetic material from two parents
- D all of the above

4 The offspring of sexual reproduction receives:

- A genetic material from 1 parent
- B genetic material from only grandparents
- C genetic material from 2 parents
- D all of the above