Genetics Test - Version 1

The pedigree below displays one of two possible phenotypes for a trait. Black (filled in) is phenotype #1 , white is phenotype #2. Use the figure below to answer questions 1-6

(Ask for pedigree chart #1)

1. Which male(s) have phenotype #1?

a. I-2, II-1, II-4, III-2

b. I-1, II-2, II-3, III-1

c. I-1, II-1, II-3

d. I-1, II-3

e. only II-1

2. Which phenotype is dominant?

a. black

b. white

c. can not be determined

3. If white is dominant, what is the genotype of III-2?

a. WW

b. Ww

c. ww

d. W-

4. If white is recessive what is the genotype of I-1?

a. ww

b. bb

c. Ww

d. Bb

e. W-

ab. B-

5. Which person in the second generation is the youngest?

a. II-1

b. II-2

c. II-3

d. II-4

ab. could be either male

ac. could be either female

ad. could be either individual with the black phenotype

ae. could be either individual with the white phenotype

bc. none of the choices above are correct

6. Which male in the pedigree is the oldest?

a. I-1

b. II-1

c. II-3

d. Could be II-1 or II-3

e. could be any male in the second generation

ab. could be any male in the third generation

ac. cannot be determined

7. Examine the pedigree to the right. Which is dominant? (ask for Pedigree #2)

a. Shaded

b. Not shaded

c. can not be determined

8. Tall stems are dominant to short stems in pea plants. If you cross two hybrids, what F1 genotypic ratio/percentage would you expect?

a. 4:0 (100%)

b. 3:1 (75%/25%)

c. 1:1 (50%/50%)

d. 1:2:1 (25%/50%/25%)

9. Tall stems are dominant to short stems. Is it possible to cross two homozygotes and get a heterozygote?

a. yes

b. no

10. Red color is incompletely dominant to white color. If you cross two hybrids, what F1 phenotypic ratio would you expect?

a. 4:0 (100%)

b. 3:1 (75%/25%)

c. 1:1 (50%/50%)

d. 1:2:1 (25%/50%/25%)

11. Examine the pedigree to the right. Each male has the same phenotype. Each female has the same phenotype (different from the males). Which gender displays the dominant phenotype? (ask for pedigree #3)

a. males

b. females

c. cannot be determined

Red color is codominant to blue color in a fictitious organism. The trait is also sex linked.

12. Which genotype would produce a red and blue female?

a. RB

b. Bb

c. X^R X^B

d. X^B X^b

e. could be two of the choices

ab. none of the choices are correct

13. Which genotype would produce a red and blue male?

a. RB

b. Rr

c. XRYB

d. XRYr

e. could be two of the choices

ab. none of the choices are correct

14. Examine the pedigree to the right. Unshaded is dominant to shaded. How many individuals MUST be carriers? (ask for pedigree #4)

a. all unshaded individuals must be carriers

b. no unshaded individuals must be carriers

c. 1 must be a carrier

d. 2 must be carriers

e. 3 must be carriers

ab. 4 must be carriers

ac. 5 must be carriers

ad. 6 must be carriers

ae. 7 must be carriers

15. A red male bird mates with a white female bird. The offspring are red and white. This is an example of:

a. Codominance

b. Incomplete dominance

c. Dominant/Recessive

16. Blood type A and B are codominant to each other. A and B are dominant to O. Is it possible for a parent with blood type A and a parent with blood type B to have a child with blood type O?

a. yes

b. no

17. Blood type A and B are codominant to each other. A and B are dominant to O. Is it possible for two parents with blood type AB to have a child with blood type O?

a. yes

b. no

There are four alleles for fur color in rabbits. Black (C), Chinchilla (c^ch), Himalayan (c^h) and white (c). Black is dominant to all. Chinchilla is dominant to Himalayan and white. Himalayan is dominant to white.

18. Is it possible to cross a black and white rabbit and get a chinchilla?

a. yes

b. no

19. Is it possible to cross two chinchilla rabbits and get a black?

a. yes

b. no

20. A buck (male rabbit) and doe (female rabbit) have 4 bouncing baby kits (a baby rabbit is a kit or kitten). The phenotypes of the kits are 2 black and 2 himalayan. Which genotypes are possible for the doe? (mark all that apply)

a. CC

b. Cc

c. c^ch c

d. Cc^ch

e. cc

21. Tt is an example of a

a. heterozygous phenotype

b. homozygous phenotype

c. incomplete dominance phenotype

d. heterozygous genotype

e. codominant genotype

22. Mr. Huber’s favorite drink is a

a. heterozygous espresso drink with a light brown phenotype called an iced caramel macchiato.

b. homozygous espresso drink with a black phenotype called coffee.

c. polyploidy espresso drink containing multiple sets of coffee plant chromosomes called something that I don’t know since I don’t think it actually exists because I am just being random and making up stuff.

d. all of the above

hint: the answer is A (you’re welcome ☺)

23. Two alleles are incompletely dominant to each other. Two homozygous parents with different phenotypes would produce

a. offspring with the same phenotype as only one of the two parent phenotypes

b. some offspring will the first parents phenotype and some offspring with the other parents phenotype

c. offspring with a new intermediate phenotype not identical to either of the parents phenotypes

d. offspring with a new phenotype containing both of the parent phenotypes

e. two of the choices are possible phenotypes of offspring

ab. three of the choices are possible phenotypes of offspring

ac. all four of the choices are possible phenotypes of offspring

ad. none of the choices are possible phenotypes of offspring

24. Two alleles are incompletely dominant to each other. Two heterozygous parents

a. would only produce offspring with the same phenotype as the parents

b. could produce some offspring with the same phenotype as the parents and some offspring with one phenotype different from the parents.

c. could produce some offspring with the same phenotype as the parents and some offspring with two phenotypes different from the parents.

d. could produce some offspring with the same phenotype as the parents and some offspring with three phenotypes different from the parents.

e. none of the choices are possible phenotypes of offspring

(Ask for Pedigree #5)

25. Which is dominant?

a. shaded

b. not shaded

c. can not be determined

26. How many marriages are in this pedigree?

a. 0-2

b. 3

c. 4

d. 5

e. more than 5

27. Three possible alleles exist for fur color in a fictitious animal. Red is dominant to blue. Red and blue are dominant to green. How many possible genotypes exist for fur color for this animal?

a. 2

b. 3

c. 4

d. 5

e. 6

ab. 7

ac. 8

28. How many phenotypes exist for the animal in question 27?

a. 2

b. 3

c. 4

d. 5

e. 6

ab. 7

ac. 8

Name:

Period:

1) Dihybrid cross! YAY! Tall stems are dominant to short stems. Purple flowers are dominant to white flowers. One parent is heterozygous for both traits. The other parent is homozygous dominant for both traits. Cross them and create a phenotype list below the punnett square.