

# Genetics Practice Multiple Choice

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

|     |  |   |    |    |            |     |                                  |    |  |
|-----|--|---|----|----|------------|-----|----------------------------------|----|--|
| 1.  | <p>Which of the following describes phenotype?</p> <table border="1" data-bbox="518 501 1190 772"><tr><td>I</td><td>TT</td></tr><tr><td>II</td><td>brown eyes</td></tr><tr><td>III</td><td>the genes for a particular trait</td></tr><tr><td>IV</td><td>the physical appearance of an organism</td></tr></table> <p>A. I and II only<br/>B. I and IV only<br/>C. II and III only<br/>D. II and IV only</p> | I | TT | II | brown eyes | III | the genes for a particular trait | IV | the physical appearance of an organism |
| I   | TT   |   |    |    |            |     |                                  |    |  |
| II  | brown eyes   |   |    |    |            |     |                                  |    |  |
| III | the genes for a particular trait   |   |    |    |            |     |                                  |    |  |
| IV  | the physical appearance of an organism   |   |    |    |            |     |                                  |    |  |
| 2.  | <p>A homozygous, long-tailed cat is mated with a homozygous, short-tailed cat. If long tails are the dominant trait, which of the following would be expected in the offspring?</p> <p>A. all long-tailed<br/>B. all short-tailed<br/>C. 50% long-tailed; 50% short-tailed<br/>D. 75% long-tailed; 25% short-tailed</p>  |   |    |    |            |     |                                  |    |  |
| 3.  | <p>If two cats heterozygous for long tails (Ll) are mated, what would be the expected percentages of phenotypes in their offspring?</p> <p>A. 100 % long tails<br/>B. 75% long tails, 25% short tails<br/>C. 50% long tails, 50% short tails<br/>D. 25% long tails, 75% short tails.</p>   |   |    |    |            |     |                                  |    |  |

4.

|   |   |   |
|---|---|---|
|   | P | Q |
| R | S | T |
| U | V | W |

Which of the following represent the position of the gametes?

- A. P, Q, S, T
- B. P, Q, R, U
- C. R, S, U, V
- D. S, T, V, W

5.

A purebred male brown hamster was mated with a purebred female golden hamster. All the offspring were brown.

**Brown Hamster (♂)**

**Golden Hamster (♀)**



Which of the following describes the genotype of the offspring?

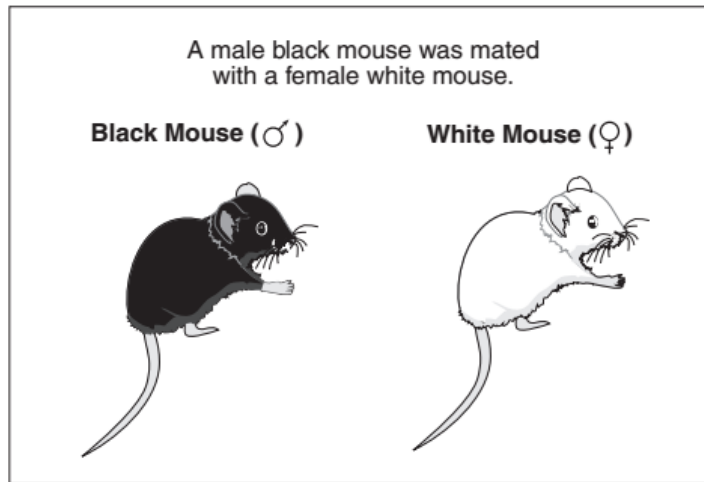
- A. heterozygous
- B. homozygous recessive
- C. homozygous dominant
- D. heterozygous dominant and homozygous recessive

6.

Which of the following crosses would result in only homozygous offspring?

- A.  $pp \times pp$
- B.  $Pp \times pp$
- C.  $Pp \times Pp$
- D.  $PP \times pp$

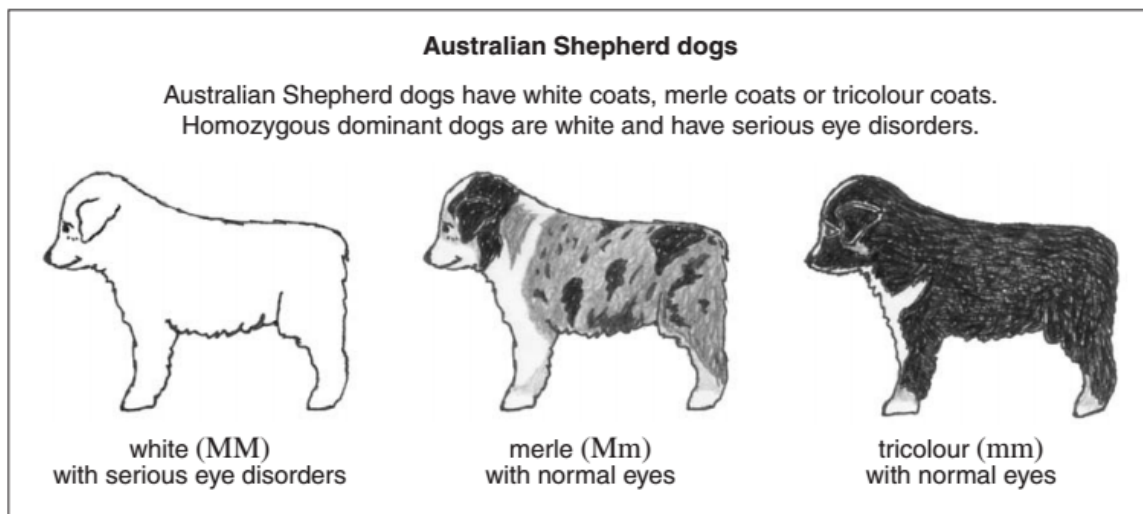
7.



Which of the following describes the allele for black if all of the offspring were white?

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

8.



If two heterozygous merle dogs are crossed, what is the probability of the offspring being white and having serious eye disorders?

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

|     |  |
|-----|--|
| 9.  | <p>What will produce a white flower with a red trim when a white flower is crossed with a red flower?</p> <p>A. mutation<br/> B. dominance<br/> C. codominance<br/> D. incomplete dominance</p>  |
| 10. | <p>Blue-haired blips are crossed with yellow-haired blips. All of the offspring have green hair. Hair color in blips is an example of what?</p> <p>a. codominance<br/> b. incomplete dominance<br/> c. recessive alleles<br/> d. complete dominance</p>  |
| 11. | <p>In codominance, heterozygous individuals have both phenotypes.</p> <p>A. True<br/> B. False</p>   |
| 12. | <p>The father is Type O and the mother is type AB. Which statement is true about the probabilities of blood type in their offspring?</p> <p>A. 100% AB<br/> B. 50% A and 50% B<br/> C. 25% A<br/> D. 50% AB and 50% A</p>  |
| 13. | <p>A woman with heterozygous Type A blood (<math>I^A i</math>) marries a man with homozygous Type B blood (<math>I^B I^B</math>). What are the chances of having a child that is blood type B?</p> <p>A. 0%<br/> B. 25%<br/> C. 50%<br/> D. 100%</p>   |
| 14. | <p>How is the sex of a human offspring determined?</p> <p>A. The egg from the mother contains two Y chromosomes.<br/> B. The sperm from the father contains two Y chromosomes.<br/> C. The egg from the mother contains an X or a Y chromosome.<br/> D. The sperm from the father contains an X or a Y chromosome.</p> |

| 15.   | <p>Why is colour blindness a sex-linked trait?</p> <p>A. Only males can have colour blindness.<br/>         B. Only females can have colour blindness.<br/>         C. The allele causing colour blindness is on a Y chromosome.<br/>         D. The allele causing colour blindness is on an X chromosome.</p>   |   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
|---|---|---|---|--------------------|-------------|---------------------------|-------------|----------------------------------|--------------|--|---------------|---|-----------------|--|------------------------------|
| 16.   | <p>A woman who is heterozygous for colour blindness and a man with colour blindness are considering having children. What is the probability of having a child who is <b>both</b> male and colour-blind?</p> <p>A. 100%<br/>         B. 75%<br/>         C. 25%<br/>         D. 0%</p>  |   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
| 17.   | <table border="1" data-bbox="285 863 935 1094" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>P</td> <td>Q</td> </tr> <tr> <td>R</td> <td>S</td> <td>T</td> </tr> <tr> <td>U</td> <td>V</td> <td>W</td> </tr> </table> <p>What lettered spaces in the Punnett square would show the probable genotypes of this cross?</p> <p>A. R, S, V, W<br/>         B. P, Q, R, U<br/>         C. S, T, V, W<br/>         D. P, Q, S, T</p>   |   | P | Q                  | R           | S                         | T           | U                                | V            | W  |               |   |                 |  |                              |
|   | P   | Q   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
| R   | S   | T   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
| U   | V   | W   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
| 18.   | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center; padding: 5px;"> <b>Match each Description on the left with the correct Term on the right.</b><br/> <b>Each Term may be used as often as necessary. Record your answers on the Answer Sheet.</b> </th> </tr> <tr style="background-color: #e0e0e0;"> <th style="width: 60%; padding: 5px;"><b>Description</b></th> <th style="width: 40%; padding: 5px;"><b>Term</b></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">15. two different alleles</td> <td style="padding: 5px;">A. genotype</td> </tr> <tr> <td style="padding: 5px;">16. two alleles of the same type</td> <td style="padding: 5px;">B. phenotype</td> </tr> <tr> <td style="padding: 5px;">17. the physical appearance of an organism</td> <td style="padding: 5px;">C. homozygous</td> </tr> <tr> <td style="padding: 5px;">18. the combination of alleles in an organism</td> <td style="padding: 5px;">D. heterozygous</td> </tr> <tr> <td></td> <td style="padding: 5px;">E. F<sub>1</sub> generation</td> </tr> </tbody> </table> | <b>Match each Description on the left with the correct Term on the right.</b><br><b>Each Term may be used as often as necessary. Record your answers on the Answer Sheet.</b> |   | <b>Description</b> | <b>Term</b> | 15. two different alleles | A. genotype | 16. two alleles of the same type | B. phenotype | 17. the physical appearance of an organism | C. homozygous | 18. the combination of alleles in an organism | D. heterozygous |  | E. F <sub>1</sub> generation |
| <b>Match each Description on the left with the correct Term on the right.</b><br><b>Each Term may be used as often as necessary. Record your answers on the Answer Sheet.</b> |   |   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
| <b>Description</b>  | <b>Term</b>   |   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
| 15. two different alleles   | A. genotype   |   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
| 16. two alleles of the same type  | B. phenotype  |   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
| 17. the physical appearance of an organism  | C. homozygous   |   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
| 18. the combination of alleles in an organism   | D. heterozygous   |   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |
|   | E. F <sub>1</sub> generation  |   |   |                    |             |                           |             |                                  |              |  |               |   |                 |  |                              |

19.

|     |         |
|-----|---------|
| I   | Hh × Hh |
| II  | Hh × hh |
| III | HH × Hh |
| IV  | HH × hh |

|                 |
|-----------------|
| H = hairy toes  |
| h = smooth toes |

The hairy toe allele is dominant and the smooth toe allele is recessive. Which of the following crosses have equal chances of producing heterozygous hairy toed individuals?

- A. I, II and III only
- B. I, II and IV only
- C. I, III and IV only
- D. I, II, III and IV

20.

The following coat colors are known to be determined by alleles at one locus in horses:  
 Palomino = golden coat; Cremello = almost white; Chestnut = brown.

The following table gives the ratios obtained in matings of the above varieties:

Cremello x cremello – all cremello

Chestnut x chestnut – all chestnut

Cremello x chestnut – all palomino

Palomino x palomino – ¼ chestnut, ½ palomino, ¼ cremello

Based on these data, what are the genotypes of each type of horse?

- A. AA = Chestnut; Aa = Cremello; aa = Palomino
- B. AA = Cremello; Aa = Chestnut; aa = Palomino
- C. AA = Palomino; Aa = Cremello; aa = Chestnut
- D. AA = Palomino; Aa = Chestnut; aa = Cremello
- E. AA = Chestnut; Aa = Palomino; aa = Cremello

21.

In pea plants, when seeds are formed, the regular allele, R, is dominant over the wrinkled allele, r.

**Regular Seed Appearance**







**Wrinkled Seed Appearance**







Which of the following diagrams shows the results of a cross between a heterozygous regular seed plant and a homozygous wrinkled seed plant?





A.

|   | R  | r  |
|---|--|--|
| r |   |   |
| r |  |  |





B.

|   | R  | r  |
|---|--|--|
| r |   |   |
| r |  |  |

C.

|   | R   | r   |
|---|---|---|
| r |  |  |
| r |  |  |

D.

|   | R   | r   |
|---|---|---|
| r |  |  |
| r |  |  |