

1.2 Assessment

KEY

Match each term on the left with the best descriptor on the right. Each descriptor may be used only once.

TERM	DESCRIPTION
1. <u>H</u> gene	A. a characteristic
2. <u>A</u> trait	B. one form of a gene
3. <u>B</u> allele	C. two different alleles
4. <u>F</u> recessive	D. two alleles of the same type
5. <u>E</u> dominant	E. represented by a capital letter
6. <u>I</u> genotype	F. represented by a lower-case letter
7. <u>G</u> phenotype	G. physical appearance of an individual
8. <u>D</u> homozygous	H. hereditary unit that is passed from parent to offspring
9. <u>C</u> heterozygous	K. genetic make-up of an individual (combination of alleles in an organism)

Circle the letter of the best answer for questions 10 to 24.

10. Which of the following are related to phenotype?

I	Bb
II	long-haired dog
III	the physical appearance of a plant

- A. I and II only
 B. I and III only
 C. II and III only
 D. I, II, and III
11. A recessive trait is expressed only when the individual has
 A. one recessive allele.
 B. one dominant allele.
 C. two recessive alleles.
 D. two dominant alleles.
12. Which of the following shows a heterozygous $\times$ homozygous dominant cross?
 A. $Dd \times dd$
 B. $Dd \times Dd$
 C. $Dd \times DD$
 D. $DD \times dd$
13. A heterozygous yellow plant is crossed with a homozygous green plant. If the yellow gene is dominant, what are the possible genotypes of the offspring?
 A. Yy and yy
 B. YY and yy
 C. Yy and YY
 D. YY , Yy , and yy

14. The allele for trotting gait (G) is dominant over the allele for pacing gait (g). If two heterozygous horses mated, what percentage of offspring will have a pacing gait?
- A. 0%
B. 25%
C. 50%
D. 100%
15. A black true-breeding male mouse was mated with a white true-breeding female mouse. All the offspring were black. The male parent
- A. was heterozygous.
B. was homozygous dominant.
C. was homozygous recessive.
D. had the same genotype as the female parent.
16. In watermelons, the allele for solid green (G) is dominant over the allele for striped green (g). If two heterozygous plants are crossed, what are the possible genotypes of the offspring?
- A. Gg and gg
B. GG and gg
C. GG and Gg
D. GG , Gg , and gg
17. A genetic male who is a heterozygote for Type A blood and a genetic female who is a heterozygote for Type B blood have a child. What are the possible phenotypes that their child can have?
- A. Type AB blood
B. Type A blood and Type B blood
C. Type A blood, Type B blood, and Type AB blood
D. Type A blood, Type B blood, Type AB blood, and Type O blood
18. What is the probability that a man with Type AB blood and a woman with Type O blood will have a child with Type B blood?
- A. 0%
B. 25%
C. 50%
D. 100%

19. In radishes, colour is determined by incomplete dominance. When a red radish is crossed with a white radish, a purple radish results. If a purple radish plant is crossed with a white radish plant, what is the probability of the offspring being purple?
- A. 0% ☒ C. 50%
 B. 25% D. 100%
20. When a rooster with grey feathers is mated with a hen with grey feathers, 20 of their offspring have grey feathers, 11 have black feathers, and 9 have white feathers. What pattern of inheritance is described?
- A. sex-linkage C. complete dominance
 B. codominance ☒ D. incomplete dominance
21. The allele for red flowers is incompletely dominant over the allele for yellow flowers. When a red flower (F^R) is crossed with a yellow flower (F^Y), an intermediate orange flower results. What is the order of crosses, from least to greatest probability, of producing orange flowers?

Cross 1	$F^R F^Y \times F^R F^Y$
Cross 2	$F^R F^R \times F^Y F^Y$
Cross 3	$F^Y F^Y \times F^Y F^Y$

	Least Probability — Greatest Probability
A.	Cross 1 → Cross 2 → Cross 3
B.	Cross 1 → Cross 3 → Cross 2
C.	Cross 2 → Cross 1 → Cross 3
☒ D.	Cross 3 → Cross 1 → Cross 2

22. A carrier of an X-linked trait is a genetic female who
- A. shows the phenotype of the X-linked trait.
☒ B. has the recessive allele on one of her X chromosomes.
 C. has the recessive allele on both of her X chromosomes.
 D. has both parents expressing the phenotype of the X-linked traits.
23. A recessive X-linked trait has two alleles, R and r . A genetic male who expresses a recessive X-linked trait will have the genotype
- A. $X^R X^r$ C. $X^r Y^r$
☒ B. $X^r Y$ D. $X^R Y^r$

24. A woman is a carrier for colour vision deficiency. She marries a man who has colour vision deficiency. What is the probability of the couple having a child who will have colour vision deficiency?

A. 0%

B. 25%

☒ C. 50%

D. 100%

25. Complete the following spider map for the patterns of inheritance. Describe what happens in each situation.

