BIOLOGY · ALASKA

Biology
Practice Test

Unit 2: Genetics and Heredity

25 Questions

Original practice test based on the Alaska curriculum. Work through each question, then check your answers at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

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Question 1

An allele is best defined as

A) A whole chromosome

B) A cell that divides

C) One form of a gene

D) A protein in blood

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Question 2

An organism with two identical alleles for a gene is

A) Homozygous

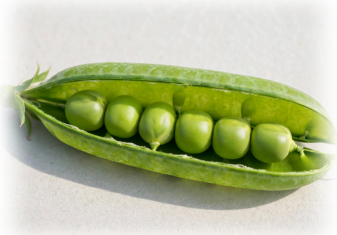
B) Heterozygous

C) Haploid

D) Hybrid only

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Question 3

A pea plant with genotype Aa is crossed with a plant with genotype aa where A is dominant What fraction of the offspring are expected to show the dominant trait

A) None

B) One half

C) Three quarters

D) All

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Question 4

An organism shows a recessive trait Its genotype for that gene must be

A) Homozygous dominant

B) Heterozygous

C) Haploid

D) Homozygous recessive

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Question 5

In snapdragons flower color shows incomplete dominance A red flowered plant crossed with a white flowered plant produces offspring with

A) Pink flowers

B) Red flowers only

C) White flowers only

D) Yellow flowers

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Question 6

A person with blood type AB has which genotype

A) IA IA

B) IA IB

C) i i

D) IB IB

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Question 7

A person with blood type A could have which genotype

A) IB i

B) IA IB

C) IA IA or IA i

D) i i

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Question 8

A recessive trait carried on the X chromosome appears more often in males mainly because males have

A) Two X chromosomes

B) No X chromosome

C) Two Y chromosomes

D) Only one X chromosome

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Question 9

Meiosis produces cells that have half the chromosome number of the parent cell These cells are called

A) Gametes

B) Somatic cells

C) Stem cells

D) Zygotes

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Question 10

Crossing over happens during prophase I of meiosis and increases

A) Chromosome number

B) Genetic variation

C) Cell size

D) Mutation rate to zero

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Question 11

Independent assortment means that genes on different chromosomes are inherited

A) Always together

B) Only in females

C) Independently of each other

D) Only in males

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Question 12

Homologous chromosomes separate from each other during

A) Anaphase I

B) Anaphase II

C) Prophase I

D) Interphase

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Question 13

DNA replication is semiconservative because each new DNA molecule contains

A) Two new strands

B) One old strand and one new strand

C) Two old strands

D) No old strand

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Question 14

A point mutation that swaps one DNA base for another is called a

A) Frameshift mutation

B) Deletion

C) Substitution

D) Duplication

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Question 15

An insertion of one base into a DNA sequence can shift every codon after it This is called a

A) Silent mutation

B) Point mutation only

C) Deletion of a chromosome

D) Frameshift mutation

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Question 16

Down syndrome most often results from nondisjunction that gives a child an extra copy of

A) Chromosome 21

B) Chromosome 1

C) The X chromosome

D) The Y chromosome

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Question 17

In a pedigree two unaffected parents have a child who shows a trait This pattern best fits inheritance that is

A) Dominant

B) Recessive

C) Acquired

D) Linked to diet only

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Question 18

Human height and skin color show a wide range of values because they are controlled by

A) One gene each

B) The environment only

C) Many genes

D) One chromosome pair

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Question 19

The color of hydrangea flowers can change with soil acidity This shows that phenotype is affected by

A) Genotype only

B) Chromosome number only

C) Meiosis only

D) The environment

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Question 20

A dihybrid cross between two heterozygous parents is expected to give a phenotype ratio of

A) 9 to 3 to 3 to 1

B) 3 to 1

C) 1 to 1

D) 1 to 2 to 1

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Question 21

To find the genotype of an organism showing a dominant trait it is crossed with an organism that is

A) Heterozygous

B) Homozygous recessive

C) Homozygous dominant

D) Unrelated

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Question 22

A karyotype is a picture of chromosomes arranged by

A) Color

B) Age of the person

C) Size and centromere position

D) Function in the body

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Question 23

Sickle cell disease is recessive Two carrier parents each with genotype Aa have a child What is the chance the child has the disease

A) Zero

B) One half

C) Three quarters

D) One quarter

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Question 24

Pea plants were crossed and the offspring were counted Tall plants numbered 602 Short plants numbered 201 Which conclusion best fits these results

A) Tall is dominant with about a 3 to 1 ratio

B) Short is dominant with about a 3 to 1 ratio

C) Tall and short are codominant

D) Height is not inherited

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Question 25

A cross between two heterozygous parents gives 400 offspring About how many are expected to be homozygous recessive

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ANSWER KEY

1. C
2. A
3. B
4. D
5. A
6. B
7. C
8. D
9. A
10. B
11. C
12. A
13. B
14. C
15. D
16. A
17. B
18. C
19. D
20. A
21. B
22. C
23. D
24. A
25. 100

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