ARIZONA BIOLOGY · UNIT 2 · 25 QUESTIONS

Genetics and Heredity — Practice Test

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.

1 **An allele is best defined as one version of a**



A Gene

B Chromosome

C Protein

D Cell

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2

An organism with two different alleles for a gene, such as Tt, is described as

A Homozygous recessive

B Heterozygous

C Haploid

D Homozygous dominant

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3 **The observable trait of an organism, such as tall stems in pea plants, is called its**



A Karyotype

B Allele

C Genotype

D Phenotype

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4 **In pea plants tall stems are dominant to short stems Two heterozygous tall plants are crossed The expected fraction of offspring that are short is**

ANSWER

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5 **Two heterozygous tall pea plants are crossed, where T is tall and t is short The expected ratio of tall offspring to short offspring is**

A 1 to 3

B 3 to 1

C 1 to 1

D 2 to 1

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6 **A cross between two heterozygous parents for one gene gives genotypes in the expected ratio of**

- A 3 to 1
- B 1 to 1
- C 9 to 3 to 3 to 1
- D 1 to 2 to 1

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7 **A homozygous recessive plant is crossed with a heterozygous plant for the same gene The expected fraction of offspring showing the recessive trait is**

ANSWER _____

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8 **A test cross is used to find the genotype of an organism showing a dominant trait by crossing it with an organism that is**

A Haploid

B Homozygous recessive

C Homozygous dominant

D Heterozygous

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9 **In incomplete dominance a cross between red flowered and white flowered snapdragons produces pink flowers because**



A Neither allele is fully dominant

B Both alleles are recessive

C The alleles are on different chromosomes

D The flowers mutate

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10 **In codominance both alleles are expressed in the heterozygote, as seen when a red and white flowered parent produces offspring with**

- **A** Pink flowers only
- **B** White flowers only
- **C** Red flowers only
- **D** Red and white spotted flowers

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11 **Human blood type is controlled by multiple alleles, and a person with genotype IAi has blood type**

- **A** AB
- **B** O
- **C** A
- **D** B

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12 **A person with blood type O has genotype ii and can receive blood from a donor with blood type**

- A B only
- B O only
- C AB only
- D A only

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13 **A trait carried on the X chromosome appears more often in males mainly because males have only**

- A One X chromosome
- B One Y chromosome
- C Two X chromosomes
- D No sex chromosomes

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14 **A pedigree uses squares for males, circles for females, and shading to show individuals who**

- A Are married
- B Have no children
- C Are twins
- D Express the trait studied

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15 **Meiosis produces sex cells with half the chromosome number because the cell divides**

- A Twice with DNA copied twice
- B Once with no DNA copying
- C Twice with DNA copied once
- D Once with DNA copied twice

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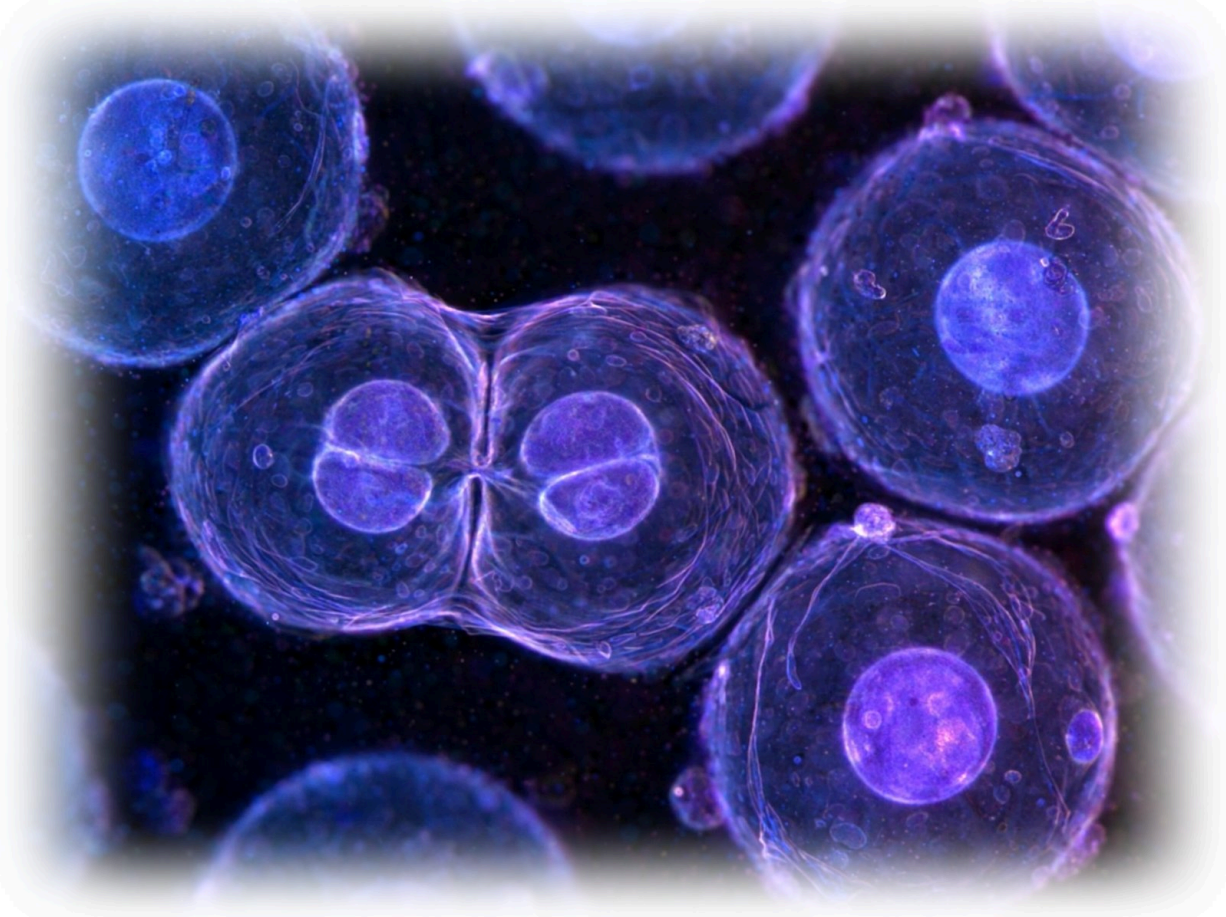
16 **A human body cell has 46 chromosomes After meiosis a human sex cell normally has**



ANSWER

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17 **Crossing over during meiosis exchanges segments between homologous chromosomes and increases**

A Genetic variation in offspring

B The chromosome number

C The rate of mitosis

D The size of the nucleus

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18 **Independent assortment means that alleles for different genes on different chromosomes are sorted into gametes**

A Always together

B Only in males

C Only in females

D Independently of each other

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19 **A dihybrid cross between two heterozygous parents for two genes gives an expected phenotypic ratio of**

A 1 to 2 to 1

B 1 to 1

C 9 to 3 to 3 to 1

D 3 to 1

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20 **A human cell that fails to separate one pair of chromosomes during meiosis can produce a gamete with an extra chromosome, a condition called**

A Fertilization

B Nondisjunction

C Crossing over

D Replication

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21 **Down syndrome in humans is most often caused by an extra copy of chromosome**

A 21

B 23

C 18

D 13

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22 **A mutation that changes one DNA base to a different base is called a**

A Deletion

B Duplication

C Translocation

D Substitution

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23 **An insertion or deletion of DNA bases can shift the reading frame of a gene and change many amino acids after the mutation, which is called a**

- **A** Point mutation only
- **B** Chromosome mutation
- **C** Frameshift mutation
- **D** Silent mutation

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24 **A mutation occurs in a sex cell rather than a body cell. What can happen to that mutation?**

- **A** Is always repaired
- **B** Can be passed to offspring
- **C** Always causes disease
- **D** Changes the whole genome

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25

Gel electrophoresis separates DNA fragments by size because smaller fragments move through the gel

A Farther than larger fragments

B Slower than larger fragments

C Only toward the negative end

D Only when heated

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ANSWER KEY

1.	A	**10.**	D	**19.**	C
2.	B	**11.**	C	**20.**	B
3.	D	**12.**	B	**21.**	A
4.	0.25	**13.**	A	**22.**	D
5.	B	**14.**	D	**23.**	C
6.	D	**15.**	C	**24.**	B
7.	0.5	**16.**	23	**25.**	A
8.	B	**17.**	A		
9.	A	**18.**	D		

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