

Assess Your Understanding

What Is Heredity?

What Did Mendel Observe?

1a. **DEFINE** What happens during fertilization? _____

b. **COMPARE AND CONTRAST** In Mendel's cross for stem height, how did the plants in the F_2 generations differ from the F_1 plants? _____

got it?

I get it! Now I know that Mendel found that one form of a trait _____

I need extra help with _____

How Do Alleles Affect Inheritance?

2a. **RELATE CAUSE AND EFFECT** Why is a pea plant that is a hybrid for stem height tall? _____

b. **CHALLENGE** Can a short pea plant be a hybrid for the trait of stem height? Why or why not? _____

got it?

I get it! Now I know that an organism's traits are controlled by _____

I need extra help with _____

Place the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto letter-size paper.

Lesson Quiz

What Is Heredity?

If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.

- _____ The scientific study of heredity is called fertilization.
- _____ A hybrid organism is the offspring of many generations that have the same form of a trait.
- _____ Capital letters are used to represent recessive alleles.
- _____ Mendel called an individual that has one dominant allele and one recessive allele for a trait a purebred.
- _____ Mendel said that the factors that control a trait exist in pairs.
- _____ Mendel's experiments showed that the traits of an offspring were not a blend of the characteristics of the parents.

Write the letter of the correct answer on the line at the left.

- | | |
|--|---|
| <p>7. ___ What Mendel called factors are now called</p> <p>A heredity</p> <p>B genes</p> <p>C purebreds</p> <p>D traits</p> | <p>8. ___ When parent plants are crossed, scientists refer to the first generation of offspring as</p> <p>A P</p> <p>B F_2</p> <p>C 1^F</p> <p>D F_1</p> |
| <p>9. ___ A seed can be round or wrinkled. Seed shape is</p> <p>A a trait</p> <p>B an allele</p> <p>C a factor</p> <p>D a gene</p> | <p>10. ___ The alleles for a hybrid tall pea plant are represented as</p> <p>A TT</p> <p>B Tt</p> <p>C TS</p> <p>D tt</p> |

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Assess Your Understanding

Probability and Heredity

How Is Probability Related to Inheritance?

1a. REVIEW What is probability? _____

b. APPLY CONCEPTS What is the probability that a cross between a hybrid pea plant with round seeds and one with wrinkled seeds will produce offspring with wrinkled seeds? (Draw a Punnett square on other paper to find the answer.) _____

got it?.....

I get it! Now I know that the combination of alleles parents can pass to offspring _____

I need extra help with _____

What Are Phenotype and Genotype?

2a. RELATE CAUSE AND EFFECT Explain how two organisms can have the same phenotype but different genotypes. _____

b. **CHALLENGE** In their lifetimes, two guinea pigs produce 40 black pups and 40 white pups. On a separate paper, make a Punnett square and find the likely genotypes of these parents. _____

got it?.....

I get it! Now I know that phenotype and genotype are terms that describe _____

I need extra help with _____

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Lesson Quiz

Probability and Heredity

Fill in the blank to complete each statement.

1. The physical appearance of an organism is its _____.
2. A number that describes how likely it is that an event will occur is the _____ of the event.
3. An organism that is _____ has two identical alleles for a trait.
4. A Punnett square shows the combination of _____ that parents can pass on to offspring.
5. The genetic makeup of an organism is its _____.
6. An organism that is _____ has two different alleles for a trait.

Write the letter of the correct answer on the line at the left.

7. ____ Which of these genotypes is heterozygous?
A *AA*
B *Bb*
C *Cd*
D *ee*
8. ____ Which of these is **NOT** a phenotype?
A tall
B short
C homozygous
D round
9. ____ In a cross between individuals that are $Aa \times Aa$, how many boxes of the Punnett square will show an offspring that is AA ?
A 1
B 2
C 3
D 4
10. ____ Which of these is **NOT** a way to express probability?
A 1 in 4
B 50 percent
C $\frac{3}{4}$
D 25

Assess Your Understanding

Patterns of Inheritance

How Are Most Traits Inherited?

- 1a. **DESCRIBE** How are the symbols written for alleles that share incomplete dominance? _____

- b. **CHALLENGE** How is polygenic inheritance different from the patterns described by Mendel? _____


got it?.....

- I get it! Now I know that most traits are produced by _____

- I need extra help with _____

How Do Genes and the Environment Interact?

- 2a. **REVIEW** Only genetic changes in (sex cells/body cells) can be passed to offspring.
- b. **DESCRIBE** Give one example of how environmental factors affect gene expression. _____

- c. **ANSWER**  Why don't offspring always look like their parents? _____

got it?.....

- I get it! Now I know that the environment can affect _____

- I need extra help with _____

Use the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto letter-size paper.

Lesson Quiz

Patterns of Inheritance

Fill in the blank to complete each statement.

1. A cow with a mix of red hairs and white hairs has the genotype $H^R H^W$. This is an example of _____.
2. Having pierced ears is an example of a(n) _____ trait.
3. Four alleles determine if a rabbit is white, brown, or gray. This is an example of _____.
4. The pattern of inheritance in which more than one pair of genes affects a trait is _____.
5. If a plant with red flowers crossed with a plant with white flowers produces a plant with pink flowers, it is an example of _____.
6. Only changes in _____ cells can be passed to offspring.

Write the letter of the correct answer on the line at the left.

- | | |
|---|--|
| <p>7. ___ Height in humans is an example of</p> <p>A incomplete dominance</p> <p>B codominance</p> <p>C polygenic inheritance</p> <p>D multiple alleles</p> | <p>8. ___ The pattern of inheritance in which one allele is only partially dominant is</p> <p>A incomplete dominance</p> <p>B codominance</p> <p>C polygenic inheritance</p> <p>D multiple alleles</p> |
| <p>9. ___ The pattern of inheritance in which there are three or more possible alleles for a trait is</p> <p>A incomplete dominance</p> <p>B codominance</p> <p>C polygenic inheritance</p> <p>D multiple alleles</p> | <p>10. ___ The pattern of inheritance in which both genes are expressed equally is</p> <p>A incomplete dominance</p> <p>B codominance</p> <p>C polygenic inheritance</p> <p>D multiple alleles</p> |

Assess Your Understanding

Chromosomes and Inheritance

How Are Chromosomes, Genes, and Inheritance Related?

1a. **DESCRIBE** When two grasshopper sex cells join, the chromosome number in the new cell is (half/double) the number in the sex cells.

b. **SUMMARIZE** Describe the arrangement of genes on a pair of chromosomes. _____

c. **RELATE EVIDENCE AND EXPLANATION** How do Sutton's observations support the chromosome theory of inheritance? _____

got it?

I get it! Now I know that genes are passed from parents to offspring _____

I need extra help with _____

What Happens During Meiosis?

got it?

I get it! Now I know that during meiosis, the number of chromosomes _____

I need extra help with _____

Lesson Quiz

Chromosomes and Inheritance

Fill in the blank to complete each statement.

1. Walter Sutton investigated the number of _____ in grasshoppers.
2. The process that produces sex cells is _____.
3. Each chromosome contains two identical _____.
4. In the _____ division of meiosis, chromosome pairs line up and then separate.
5. In the _____ division of meiosis, chromosomes split.

If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.

6. _____ Body cells of humans have 46 pairs of chromosomes.
7. _____ Sex cells have twice the number of chromosomes as body cells.
8. _____ Genes pass from parents to offspring on chromosomes.
9. _____ The two chromosomes in a pair have the same genes lined up in the same order.
10. _____ A fertilized egg has twice the number of chromosomes as the body cells of the parent.