



Interactive Classroom

**Glencoe
Science**

Focus On
**Life
Science**

Click the mouse button or press the space bar to continue.

Chapter Menu

Lesson 1: [Foundations of Genetics](#)

Lesson 2: [Understanding Inheritance](#)

Click on a hyperlink to view the corresponding lesson.

EXIT

Resources



Rubric Write at bottom!

- **Filled in with scores** /10
 - (dock 0.5 points for every one not filled in)
 - (Minus 5 if all written but no scores)
- **All assignments there and complete** /20
 - (minus one for any without a check)
- **In Order** /10
 - (minus 0.5 for any out of order)

TOTAL:

/40

CB: _____



Resources



4.1 Foundations of Genetics

LESSON Vocabulary

- ◀ heredity
- ◀ genetics
- ◀ dominant
- ◀ recessive
- ◀ gene
- ◀ law of segregation
- ◀ law of independent assortment
- ◀ allele
- ◀ phenotype
- ◀ genotype
- ◀ homozygous
- ◀ heterozygous



Welcome To 7th grade Life Science!

Mrs. Winters Hot Sync

Monday 11/3/14

Copy the following table and fill in the first two columns in **complete sentences** on a blank sheet of paper.

Draw a table to compare and contrast the similarities and differences in the looks of you and your table group. (find 10 traits to write down)

EX (here are 2 traits):

Mrs. Winters	Mrs. Lane	Mr. Randolf
Short	Tall	Tall
Brown Eyes	Blue Eyes	Green eyes?

Materials Needed

Today

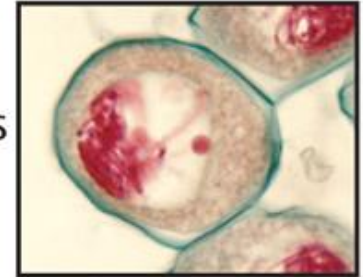
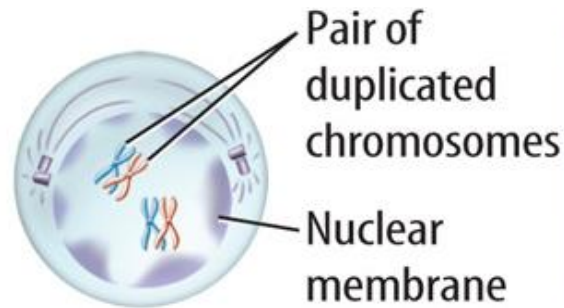
Please take these materials out of your backpack.

- Pencil
- Blank paper for notes
- Text books

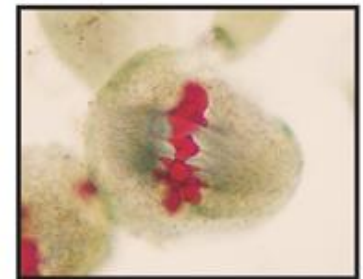
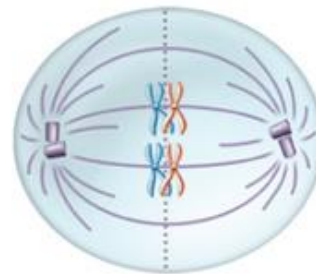
Phases of Meiosis I

Prophase I—

Nuclear membrane breaks apart and chromosomes condense.

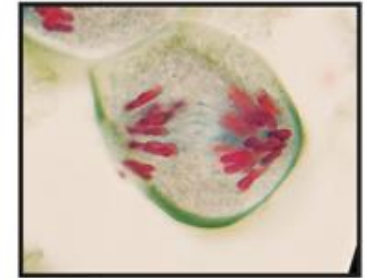
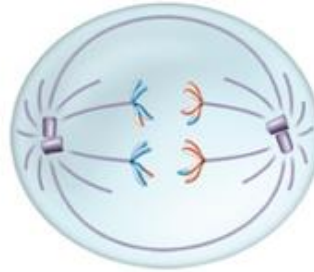


Metaphase I—Sister chromatids line up along the center of the cell. Cytoskeleton fibers attach to sister chromatids.

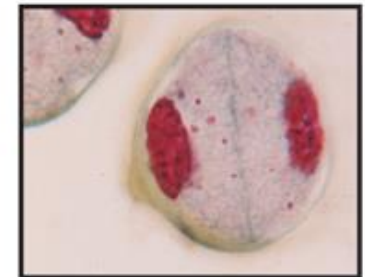
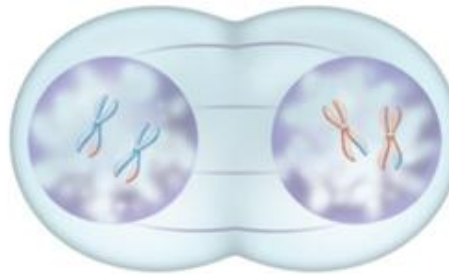


Phases of Meiosis I (cont.)

Anaphase I—Sister chromatids move to opposite ends of the cell.



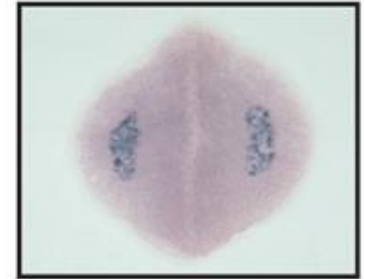
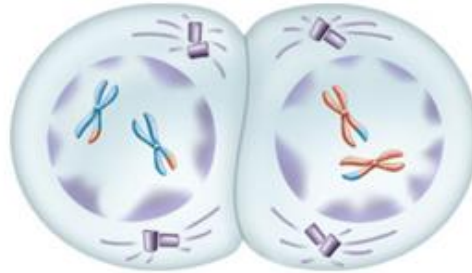
Telophase I—Nuclear membrane forms around each set of sister chromatids and the cytoplasm divides, forming two daughter cells.



Phases of Meiosis II

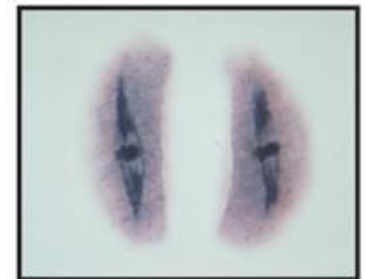
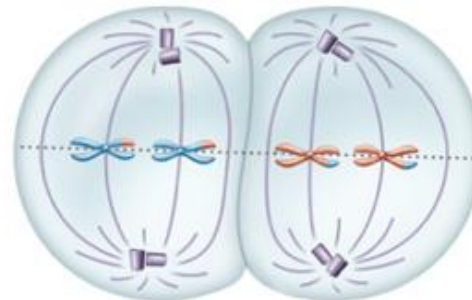
Prophase II—

Nuclear membrane breaks apart.



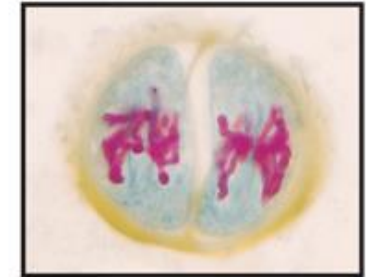
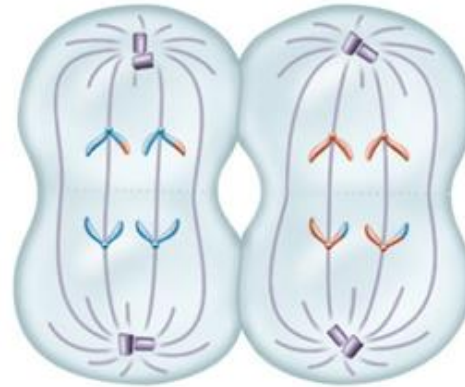
Metaphase II—

Chromosomes line up along the center of the cell.

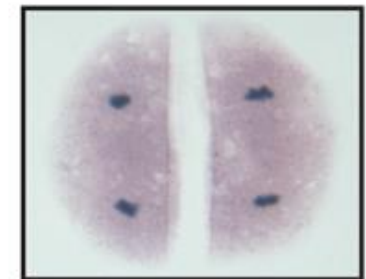
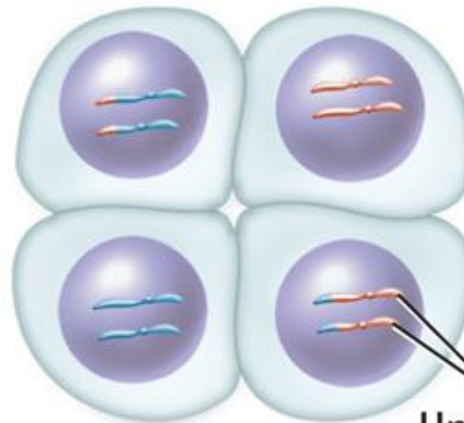


Phases of Meiosis II (cont.)

Anaphase II—Sister chromatids of each chromosome begin to separate and move to opposite ends of the cells.



Telophase II—A nuclear membrane forms around each set of chromatids, and the cytoplasm divides.



Unduplicated
chromosomes



Resources



Table 1 Comparison of Meiosis and Mitosis

Characteristic	Meiosis	Mitosis
Number of chromosomes in parent cell	diploid	diploid
Type of parent cell	only certain reproductive cells in eukaryotic organisms	nearly all eukaryotic cells
Number of divisions of nucleus	2	1
Number of daughter cells produced	4	2
Chromosome number in daughter cells	haploid	diploid
Functions in the organism	<ul style="list-style-type: none"> • produces sperm and egg cells • maintains chromosome number for the species 	<ul style="list-style-type: none"> • daughter cells genetically identical to each other and to the parent cell • growth, cell repair, some types of reproduction



Introduction to Genetics and Heredity!

- http://www.teachertube.com/viewVideo.php?video_id=256904
 - [Mendel](#)
 - <http://science.discovery.com/tv-shows/greatest-discoveries/videos/100-greatest-discoveries-shorts-genetics.htm>
- <http://www.wimp.com/understandgenetics/>



Early Ideas About Heredity

- Combined genetic material from a sperm and an egg determines the traits or features of an offspring.



- **Heredity** is the passing of traits from parents to offspring.



Dominant or Recessive Activity

- In your notes draw a table

Outcome	Tally	Who wins?
Bear Bear		
Bear bunny		
bunny Bear		
bunny bunny		



Dominant Factors



- A genetic factor that blocks another genetic factor is called **dominant**.
- A dominant trait is observed when offspring have one or two dominant factors.



Recessive Factors



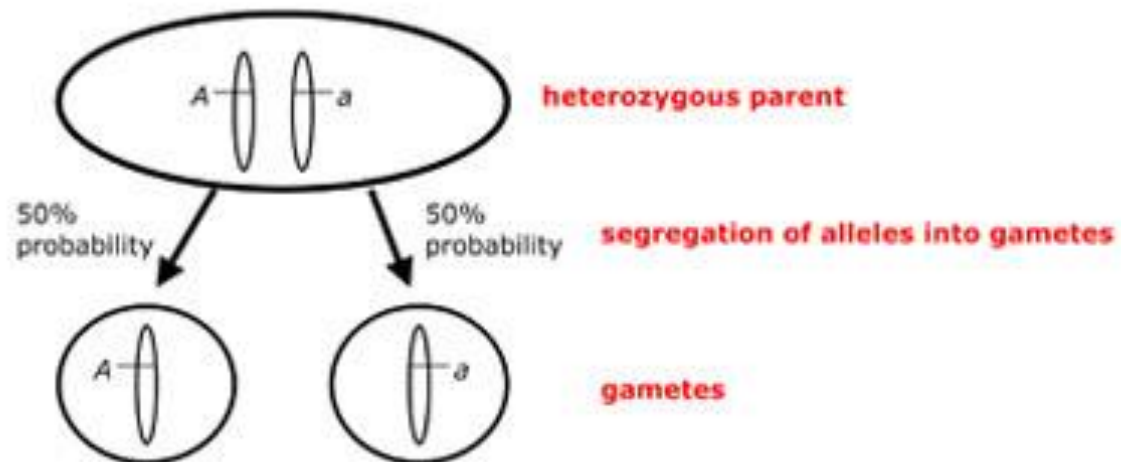
- A genetic factor that is hidden by the presence of a dominant factor is **recessive**.
- A recessive trait can be observed only when two recessive genetic factors are present in offspring.



Mendel's Laws of Heredity

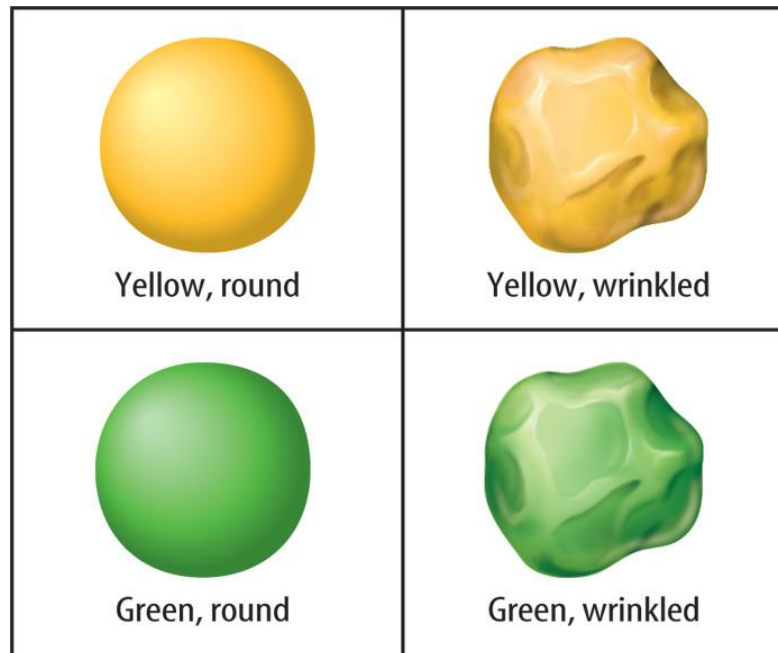


- **Law of segregation:** the two factors for each trait segregate—separate from each other—during meiosis when gametes form



Modern Definitions of Mendel's Ideas

- Mendel did not know about DNA or how cells reproduce, but his ideas about inheritance are still true today.



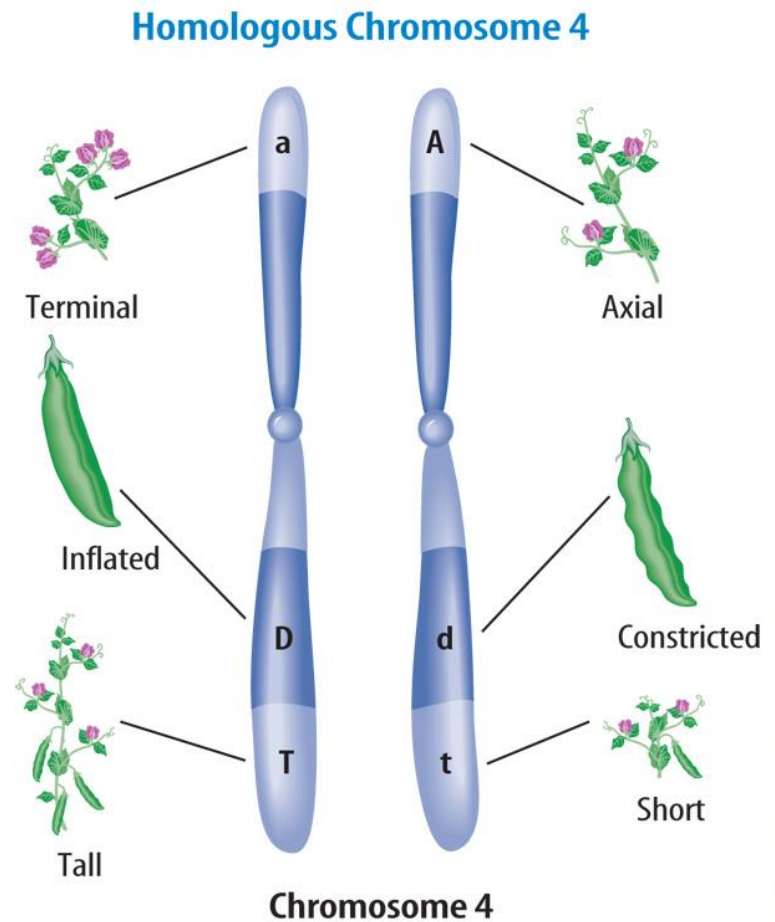
Genes and Alleles



- A **gene** is a section of DNA that has information about a trait in an organism.



- Each form of a gene with different information is called an **allele**.



Phenotype and Genotype

- The observable traits and all characteristics of an organism make up the organism's **phenotype**.
- The alleles that make up an organism is the organism's **genotype**.

Phenotype = Blue Eyes



Genotype = bb

Recessive = b

Phenotype = Brown Eyes



Genotype = Bb or BB

Dominant = B

- The alleles of a particular gene is that gene's genotype.



Inventory of My Phenotypes

- Introduce Activity
- Do Activity.



Resources



Welcome To 7th grade Life Science!

Mrs. Winters Hot Sync

Tuesday 11/4/14

Copy the following table and fill in the first two columns in **complete sentences** on a blank sheet of paper.

Materials Needed Today

Please take these materials out of your backpack.

- Pencil
- Notes (blank paper!)
- Text books
- What is your favorite part about yourself (who you are OR a physical trait)
- Open your books to PAGE 171 copy and answer agree or disagree with statements 1-4.

Homozygous and Heterozygous Genotypes

- Because eukaryotes have pairs of chromosomes, a genotype for a gene has two alleles.



- If the two alleles have the same information, the genotype is **homozygous**.



- If the two alleles have different information, the genotype is **heterozygous**.



Homozygous and Heterozygous Genotypes (cont.)

Phenotype

Smooth



SS

Homozygous dominant

Smooth



Ss

Heterozygous

Wrinkled



ss

Homozygous recessive

Genotype

S = Smooth

s = Wrinkled allele



Resources

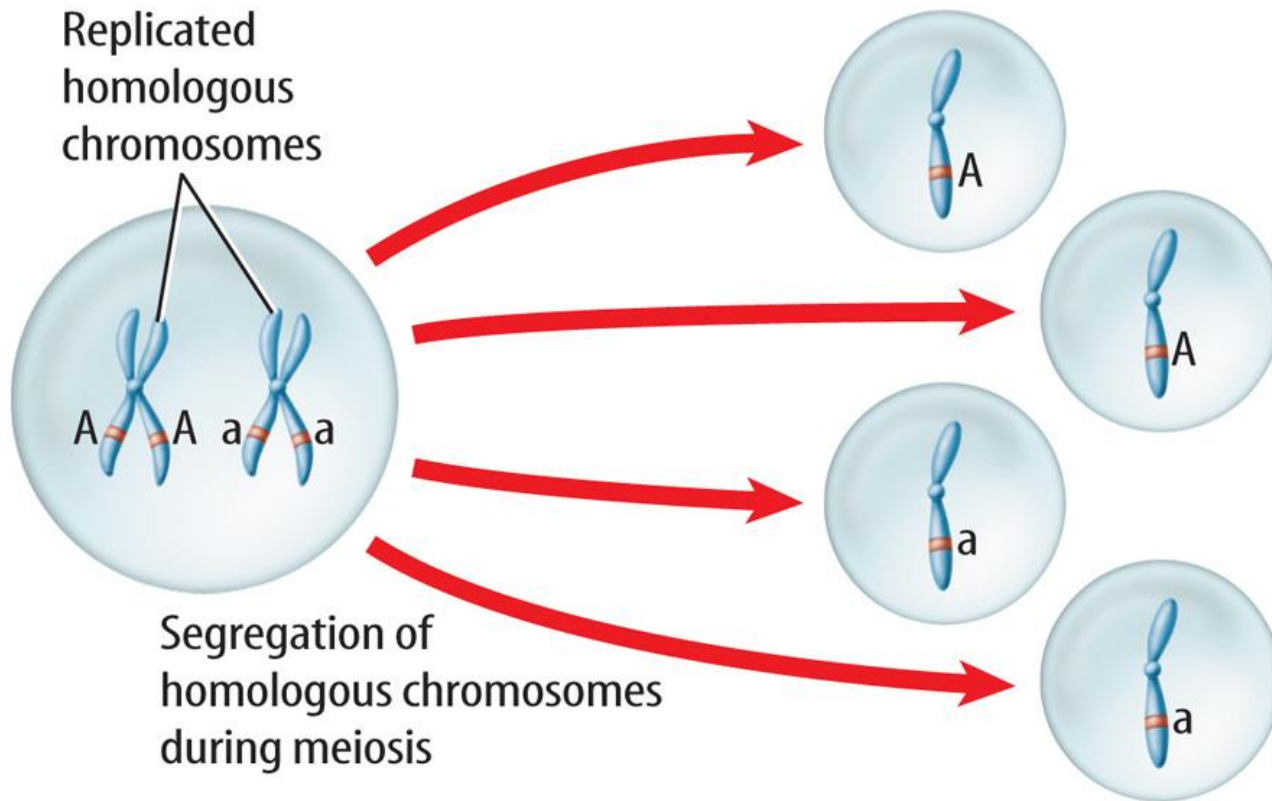


Law of Segregation Explained

- The movement of chromosomes during meiosis explains Mendel's law of segregation.
 - Each set of chromatids separates into different gametes during meiosis II.
 - Each gamete receives only one allele.



Law of Segregation Explained (cont.)

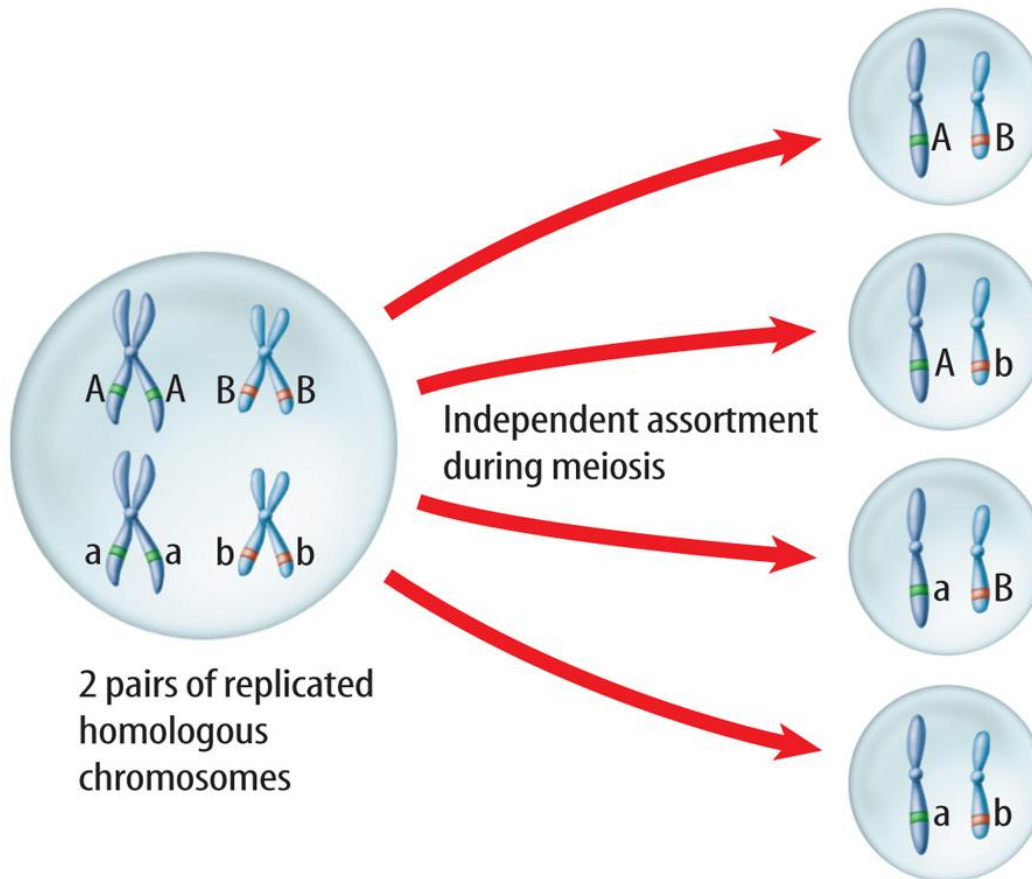


Law of Independent Assortment

- The daughter cells produced by meiosis receive only one chromosome from each pair of homologous chromosomes.
 - A daughter cell might receive the *A* or *a* chromosome from pair 1 and the *B* or *b* chromosome from pair 2.
 - This results in four possible allele combinations for two homologous pairs of chromosomes.



Law of Independent Assortment Explained (cont.)



Importance of Mendel's Genetic Studies

- In the 1860s, no one knew about chromosomes or meiosis so it was hard to understand Mendel's discoveries.
- All the research of modern genetics is based on Mendel's conclusions from his work with pea plants.



Some people just don't have the
"coordination" gene 😊

<http://blip.tv/paul1616/funniest-videos-of-people-falling-down-1-4054360>



Resources

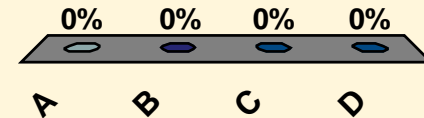


LESSON 1 Review



What is the passing of traits from parents to offspring called?

- A inheritance
- B genetics
- C** heredity
- D allele



Resources

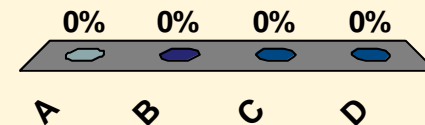


LESSON 1 Review



What are the alleles that make up an organism called?

- A genes
- B** genotype
- C phenotype
- D factors



Resources

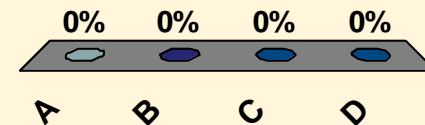


LESSON 1 Review



If two alleles for a gene have the same information, what kind of genotype does that gene have?

- A homologous
- B recessive
- C heterozygous
- D homozygous**





Resources



TO DO:

- CORRECT TEST
- Chapter 4 Lesson 1 Review Page 180 #'s 1-9 (answers found on pages 172-180)
- Go online to watch the Brain pop movie and Take the graded quiz! Play the game!
- <http://www.brainpop.com/health/geneticsgrowthanddevelopment/heredity/>



Welcome To 7th grade Life Science!

Mrs. Winters Hot Sync

Thursday 9/26/13

Copy the following table and fill in the first two columns in **complete sentences** on a blank sheet of paper.

- Answer the survey silently that you were given as you entered!

Materials Needed

Today

Please take these materials out of your backpack.

- Pencil
- Text books
- Notes