

SECTION | LIVING THINGS: INHERITANCE IN PATTERNS
4.1 Reading Study Guide A

BIG IDEA In sexual reproduction, genes are passed from parents to offspring in predictable patterns.

KEY CONCEPT Living things inherit traits in patterns.

Vocabulary Fill in the blanks

- a. fertilization when a cell from the mother and a cell from the father combine to become a new cell, which then becomes the offspring
- b. gene a unit of heredity found in a certain place on a chromosome and that codes for a certain product
- c. heredity the passing of genes from parents to offspring
- d. allele various forms of the same gene
- e. phenotype the actual characteristics an organism has
- f. heredity the genes an organism has
- g. dominant an allele that is expressed in the phenotype even if only one copy is in the genotype
- h. recessive an allele that is expressed in the phenotype when two copies of it are present in the genotype

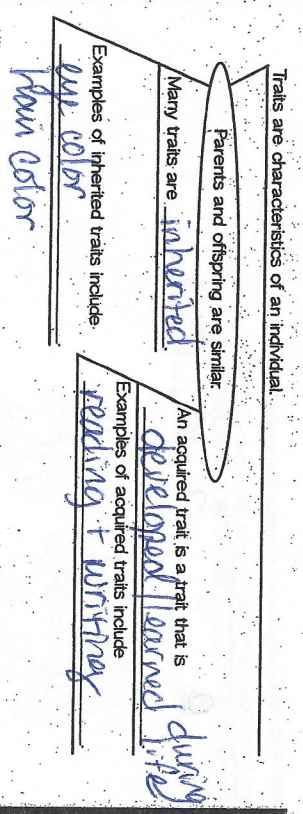
sexual reproduction

Review

- 1. If the sentence is true, write true. If the sentence is false, replace the underlined term to make the sentence true.
 Cells contain chromosomes. true
- Some organisms reproduce with asexual reproduction. true

Take Notes

- 1. Parents and offspring are similar. (p. 101)
- 2. Fill in the mind map for the main idea shown.



CHAPTER 4
Patterns of Heredity

3. In the table below, write yes if the trait is the result of heredity or no if it is not.

Trait	Result of Heredity?
Blonde hair	yes
Able to speak English	no - learned
Able to ride a bicycle	no - learned
Green eyes	yes

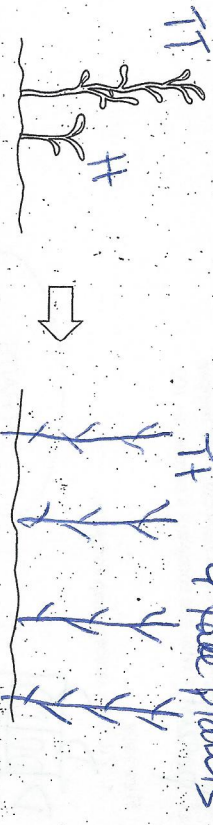
ii. Genes are on chromosome pairs. (p. 102)

4. What function do genes serve?
they code for traits that show up in the organism

5. What is one function of the X- and Y-chromosomes in humans?
determine gender / sex and carry certain genes

iii. Gregor Mendel made some important discoveries about heredity. (p. 104)

6. A science student crosses a purebred regular height pea plant with a dwarf height plant. Four new pea plants are grown. Draw the four pea plants in the space below. Be sure to make them the right height.



iv. Alleles interact to produce traits and Phenotype and Genotype and Dominant and Recessive Alleles (pp. 106-107).

7. In the table below, write one example for phenotype and one for genotype.

Name	Description	Example
Phenotype	Actual characteristics	<u>Hair color</u>
Genotype	Genes an organism has	<u>Bb or bb</u> <u>dominant or recessive gene</u>

SECTION 4.2 PATTERNS OF HEREDITY CAN BE PREDICTED
Reading Study Guide A

BIG IDEA In sexual reproduction, genes are passed from parents to offspring in predictable patterns.

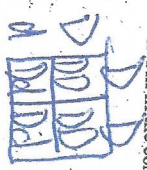
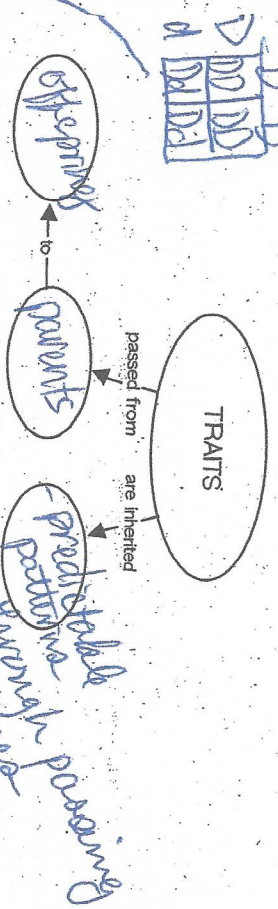
KEY CONCEPT Patterns of heredity can be predicted.

7-1 in Vocabulary
blow a punnett sq
 a graphic that shows how parents' alleles might combine in offspring

- b* **Ratio** two numbers that show the relationship between two amounts
- c* **Probability** the chance that something will happen
- d* **Percent** a ratio that compares a number to 100

Review

1. Fill in the concept map for traits.



Take Notes

1. Punnett squares show possible outcomes for inheritance. (p. 110)
2. Fill in the frame game for Punnett square.

prob *from* *both* *parents*
that *illustrates* *how* *parents'* *alleles* *might* *be* *combined* *in* *offspring*

A diagram that illustrates how parents' alleles might be combined in offspring.

PUNNETT SQUARE

Shows ex. parents alleles probability of offspring

helps to understand heredity

CHAPTER 4
 Patterns of Heredity

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 Patterns of Heredity

3. Fill in the combination notes for the main idea shown.

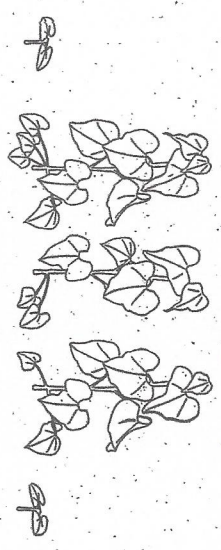
Notes	Sketch to Explain
Punnett squares show possible outcomes for inheritance. • Each parent has two alleles for a gene. • An offspring receives one allele from each parent.	<p>any punnett square</p>

4. The Punnett square below shows a parent with alleles Dd combining with a parent with alleles Dd. Fill in the remaining cells in the square.

	D	d
D	DD	Dd
d	Dd	dd

5. Ratios and percentages can express the probability of outcomes. (p. 112)

5. How many dwarf plants are there in the drawing below? How many total plants are there altogether? What is the ratio of dwarf plants to total plants?



2, 8, 2:8, 2:5

6. Fill in the word magnets for probability and percentage.

likelihood Probability

chance

total possible outcomes

probability

compares to 100 PERCENTAGE

ratio

offspring chances

Name _____ Period _____ Date _____

SECTION CHANGES IN DNA CAN PRODUCE VARIATION.
5.2 Reading Study Guide B

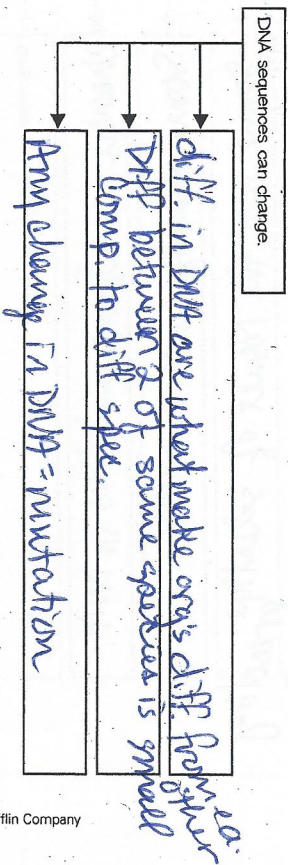
BIG IDEA DNA is a set of instructions for making cell parts.
KEY CONCEPT Changes in DNA can produce variation.

Review
DNA is transcribed into RNA, which is used to make proteins.

Take Notes

I. DNA sequences can change. (p. 144)

1. Fill in the main idea chart for the main idea shown.



- Give three examples of things that can damage DNA.
UV radiation, X-rays, toxins
- Fill in the four-square diagram for mutation.

Definition: <u>Any change in DNA</u>	Characteristics: <u>can sometimes be repaired</u>
Examples: <u>mutation that affects eye color</u>	Nonexamples: <u>an unchanged DNA strand</u>

MUTATION

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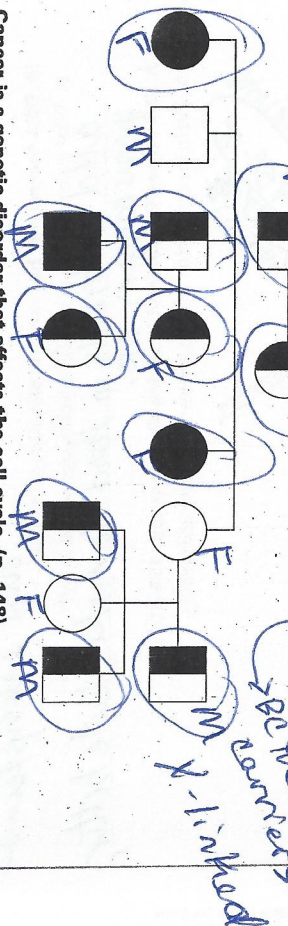
This pg. is a study guide

Name _____ Period _____ Date _____

- There are three possible outcomes when a mutation occurs in a gene.
 - No effect
 - The effect of a mutation is minor.
great
 - What is an example of a good effect from a mutation?
a plant having incr. resistance to a disease

II. Mutations can cause genetic disorders. (p. 146)

6. On the pedigree diagram below, write M on males and F on females. Circle all those who carry a mutation.



III. Cancer is a genetic disorder that affects the cell cycle. (p. 148)

- What are most cancers caused by?
mutations in DNA that happen in a person's life time.

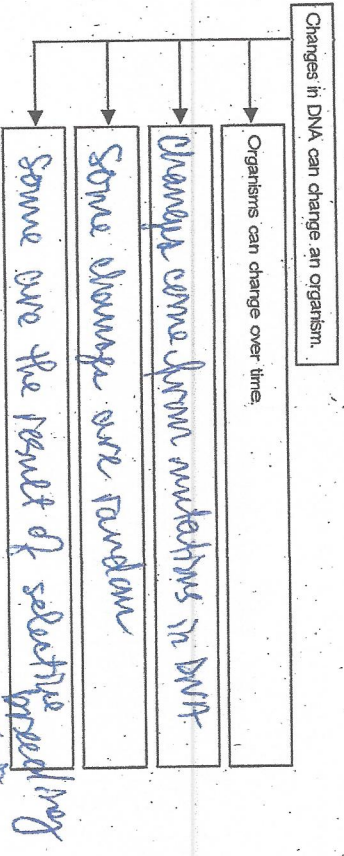
SECTION 5.3 MODERN GENETICS USES DNA TECHNOLOGY
Reading Study Guide B

BIG IDEA DNA is a set of instructions for making cell parts.
KEY CONCEPT Modern genetics uses DNA technology.

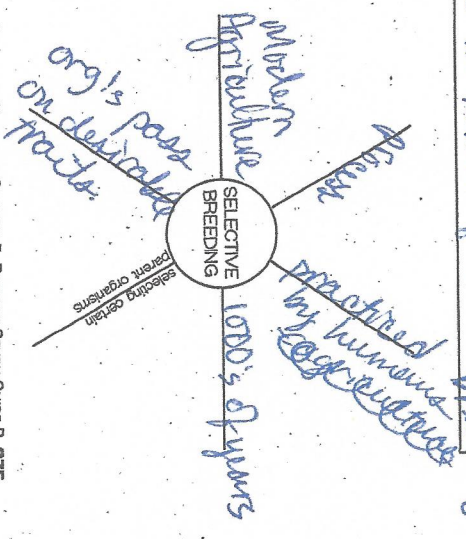
Review
 Mutations are changes to DNA.

Take Notes

- Changes in DNA can change an organism. (p. 150)
- Fill in the main idea chart for the main idea shown:



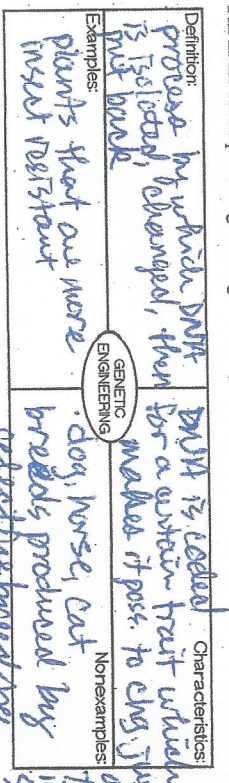
- Selective Breeding (p. 151)**
- Fill in the description wheel diagram for selective breeding.



CHAPTER 5
 DNA and Modern Genetics

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 DNA and Modern Genetics

- Genetic Engineering (p. 151)
- Fill in the four square diagram for genetic engineering.



- There are risks and benefits associated with genetic engineering. (p. 152)

- Genetic engineering increases
 Genetic engineering decreases
 Genetic engineering may have unknown effects on
- food production, pollution & exposure to humans and ecosystems

- DNA technology has many applications. (p. 153)

- What is one example of how DNA technology is used today?
 add nutrients to food to make taste better, grow bigger, etc.

- DNA Identification and Studying Genomes (pp. 153-154)
- Fill in the description wheel diagrams for genome and cloning.

