



AL NOOR INTERNATIONAL SCHOOL
Riyadh, Saudi Arabia

Life Science

Workbook

Name: _____

Grade 7 - _____

Academic Year: _____

Part 1: Scientific Thinking

Lesson 1: Science and the Natural World

Understanding Main Ideas

Answer the following questions in the space provided.

1. What are six skills scientists use to learn about the world?

2. What are inferences based on?

3. How do inferences and predictions differ?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|----------------------------------|--|
| 4. ___ observing | a. grouping items that are alike in some way |
| 5. ___ quantitative observations | b. making a statement or claim about what will happen in the future based on past experience or evidence |
| 6. ___ qualitative observations | c. creating representations of complex objects or processes |
| 7. ___ inferring | d. comparing observations and data to reach a conclusion |
| 8. ___ predicting | e. explaining or interpreting things you observe |
| 9. ___ making models | f. observations that deal with descriptions that cannot be expressed in numbers |
| 10. ___ classifying | g. a way of learning about the natural world |
| 11. ___ science | h. using one or more of your senses to gather information |
| 12. ___ evaluating | i. observations that deal with numbers or amounts |

Science and the Natural World

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

1. ___ Which skill involves creating representations of complex objects or processes?
A. classifying
B. predicting
C. making models
D. evaluating
2. ___ Which of the following do scientists use when observing?
A. only their senses
B. only tools
C. their senses and tools
D. their tools and observations
3. ___ What kind of observation deals with numbers?
A. qualitative
B. quantitative
C. sensory
D. descriptive
4. ___ Which of the following is an example of a model?
A. mathematical equation
B. tool
C. scientist
D. observation

II. Fill in the blank to complete each statement.

5. Grouping together all the things that are alike is called _____.
6. A person who does _____ learns about and explores the natural world.
7. When you state what you think will happen in the future, you are _____.
8. A(n) _____ observation deals with descriptions that cannot be expressed in numbers.
9. The skill of _____ involves comparing observations and data to reach a conclusion about them.
10. You make a(n) _____ when you interpret something you observe.

Part 1: Scientific Thinking

Lesson: 2 Thinking Like a Scientist

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. What important attitudes do successful scientists possess?

2. What is scientific reasoning?

3. How do the two kinds of scientific reasoning differ?

Building Vocabulary

Write a definition for each of these terms.

4. objective _____

5. subjective _____

6. ethics _____

7. skepticism _____

8. experimental bias _____

9. cultural bias _____

10. personal bias _____

Thinking like a Scientist

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

1. ___ What kind of bias is a mistake in the design of an experiment that makes a particular result more likely?
A. deductive
B. cultural
C. personal
D. experimental
2. ___ Which attitude makes a scientist capable of accepting new and different ideas?
A. open-mindedness
B. skepticism
C. curiosity
D. creativity
3. ___ What are you being when you let personal feelings enter into a decision or conclusion?
A. inductive
B. deductive
C. subjective
D. objective
4. ___ Which attitude helps scientists to come up with inventive ways to solve problems or produce new things?
A. curiosity
B. creativity
C. good ethics
D. open-mindedness

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

5. _____ Deductive reasoning uses specific observations to make generalizations.
6. _____ A scientist's open-mindedness should always be balanced by bias.
7. _____ Good scientists use honesty when reporting their observations and results.
8. _____ Scientists must be careful not to use inductive reasoning, because it can lead to faulty conclusions.
9. _____ Personal ethics comes from a person's likes and dislikes.
10. _____ Scientific reasoning requires a logical way of thinking.

Part 1: Scientific Thinking

Lesson 3: Scientific Inquiry

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. What is scientific inquiry?

2. What makes a hypothesis testable?

3. Why is it important to control variables in an experiment?

4. When you begin an experiment, why should you create a table to record your data?

5. How does a scientific law differ from a theory?

Building Vocabulary

Fill in the blank to complete each statement.

6. Facts, figures, and other evidence gathered through qualitative and quantitative observations are called _____.

7. A(n) _____ is a possible answer to a scientific question.

8. In an experiment, the _____ variable is the factor that may change in response to the manipulated variable.

9. A scientific _____ is a statement that describes what scientists expect to happen every time under a particular set of conditions.

10. When only one variable is manipulated at a time, a(n) _____ experiment is conducted

11. The scientific _____ process includes the diverse ways in which scientists study the natural world.

12. A factor that can change in an experiment is called a(n) _____.

Scientific Inquiry

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

1. ___ The statement, "All objects in the universe attract each other," is an example of which of the following?
 - A. scientific inquiry
 - B. scientific theory
 - C. scientific law
 - D. controlled experiment
2. ___ Which of these is purposely changed during an experiment?
 - A. hypothesis
 - B. dependent variable
 - C. responding variable
 - D. manipulated variable
3. ___ Which of these is NOT an example of a way scientists communicate their results?
 - A. taking out advertisements in the newspapers
 - B. publishing articles in scientific journals
 - C. giving talks at scientific meetings
 - D. exchanging information on the internet
4. ___ Which of these is a tool that can help you interpret data?
 - A. theory
 - B. variable
 - C. hypothesis
 - D. graph

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

5. _____ Many trials are not needed before a hypothesis can be accepted as true.
6. _____ A conclusion is a summary of what is learned from an experiment.
7. _____ A factor that can change in an experiment is called a variable.
8. _____ A hypothesis is not the same as a fact.
9. _____ Facts and figures are examples of variables.
10. _____ A well-tested explanation for a wide range of observations and experimental results is known as a scientific inquiry.

Chapter 4: Introduction to Cells

Lesson 1: Discovering Cells

Understanding Main Ideas

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

1. _____ Cells are the basic unit of structure and function in living things.
2. _____ Telescopes are instruments that can magnify very small objects.
3. _____ Cells were first observed by Robert Hooke.
4. _____ Light microscopes use beams of electrons to produce magnified images.
5. _____ Resolution is the condition when objects appear larger than they really are.
6. _____ Magnification is the ability to distinguish details on an object.
7. _____ If a compound microscope has a 10× lens in its eyepiece and a 20× lens in its nosepiece, its total magnification is 100×.

Building Vocabulary

Write the definition of each of these terms in the spaces provided.

8. cell

9. microscope

10. cell theory

Discovering Cells

Fill in the blank to complete each statement.

1. A cell's functions can include obtaining food and water and getting rid of _____.
2. Compound microscopes focus light through _____ to produce a magnified image.
3. A large organism is made up of many millions of _____.
4. A(n) _____ lens has a center that is thicker than its edge.
5. The _____ describes how cells are related to living things.
6. The ability to distinguish between two nearby objects is called _____.

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

7. ____ The scientist who determined that all animals are made out of cells was
A. Hooke
B. Schleiden
C. Schwann
D. Virchow
8. ____ A compound microscope with a 10× eyepiece and a 40× objective has a magnification of
A. 10×
B. 40×
C. 50×
D. 400×
9. ____ Which of the following statements is **NOT** part of the cell theory?
A. All cells are produced from other cells.
B. Cells can absorb food and oxygen.
C. All living things are composed of cells.
D. Cells are the basic units of structure and function in living things.
10. ____ The visible field of a microscope is 10 mm wide. How large is an object that takes up $\frac{1}{4}$ of the field?
A. 1 mm
B. 2.5 mm
C. 4 mm
D. 5 mm

Chapter 4: Introduction to Cells

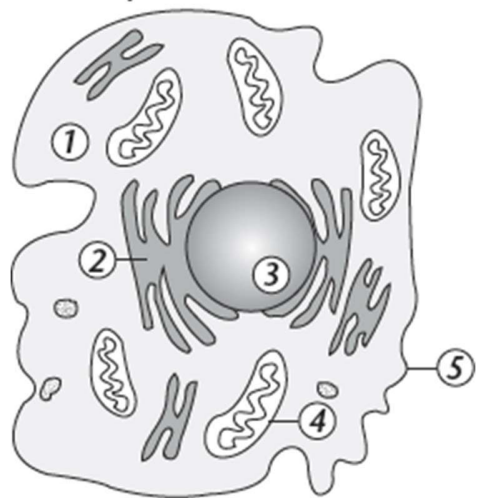
Lesson 2: Looking Inside Cells

Understanding Main Ideas

Identify each of the cell structures in the figure.

1. _____
2. _____
3. _____
4. _____
5. _____

Simplified Animal Cell



Building Vocabulary

Write a definition for each of these terms.

6. tissue _____
7. chloroplast _____
8. ribosome _____
9. nucleus _____
10. mitochondria _____
11. organ _____
12. multicellular _____

Looking Inside Cells

Fill in the blank to complete each statement.

1. The _____ controls the materials that enter and leave the cell.
2. Ribosomes make _____.
3. The _____ is a large structure that directs the cell's activities.
4. The storage area of a cell is called a(n) _____.
5. A group of organs that work together to perform a major function is called a(n) _____.
6. _____ are tiny cell structures that carry out specific functions in the cell.

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

7. _____ Plant cells have chloroplasts, but animal cells do not.
8. _____ The cell's nucleus is filled with a substance called protein.
9. _____ The specialized cells in a unicellular organism perform specialized jobs.
10. _____ Ribosomes are made in a special region of the nucleus called the nucleolus.

Chapter 4: Introduction to Cells

Lesson 3: Chemical Compounds in Cells

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. Describe one way that cells use water.

2. Explain why living things store energy in lipids instead of in carbohydrates.

3. Name two ways that living things use proteins.

Name the elements found in each of these compounds.

4. nucleic acid _____

5. lipid _____

6. protein _____

7. carbohydrate _____

Building Vocabulary

Write a definition for each of these terms.

8. element _____

9. compound _____

10. enzyme _____

Chemical Compounds in Cells

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|---------------------|---|
| 1. ___ carbohydrate | a. inorganic compound |
| 2. ___ carbon | b. element found in water |
| 3. ___ water | c. energy-rich organic compound |
| 4. ___ oxygen | d. element that is part of most organic compounds |

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

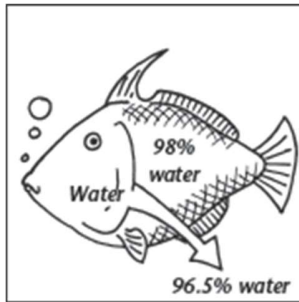
- _____ Sugars and starches are examples of lipids.
- _____ Proteins are part of cell membranes and store energy.
- _____ A(n) enzyme helps speed a chemical reaction.
- _____ Carbohydrates direct cell functions.
- _____ Water makes up one-third of the human body.
- _____ Meat, dairy products, fish, nuts, and beans are all foods that are high in protein.

Chapter 4: Introduction to Cells

Lesson 4: The Cell in Its Environment

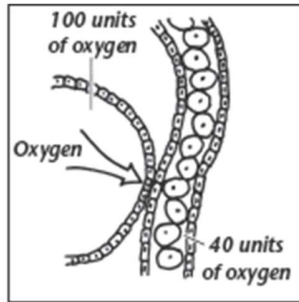
Understanding Main Ideas

Fill in the blank to identify the process illustrated in each of the following figures.



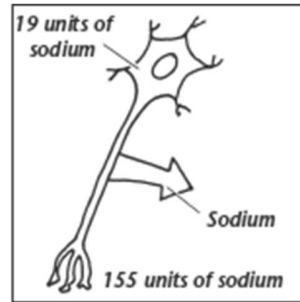
Water moves out of the cells of a saltwater fish and into the ocean.

1. _____



Oxygen moves from the lungs into the bloodstream.

2. _____



Sodium is pumped out of a nerve cell.

3. _____

Answer the following questions.

1. How does active transport differ from passive transport?

2. What makes the cell membrane selectively permeable?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

6. ___ osmosis

7. ___ exocytosis

8. ___ diffusion

9. ___ endocytosis

a. the process by which large molecules are engulfed by a cell

b. the process by which molecules tend to move from an area of higher concentration to an area of lower concentration

c. the process by which large molecules are expelled from a cell

d. the process by which water moves across a selectively permeable membrane

The Cell in Its Environment

Fill in the blank to complete each statement.

1. Water diffusing through a semipermeable membrane is called _____.
2. _____ occurs when a cell engulfs large food particles.
3. The cell membrane is built of a double layer of _____.
4. Facilitated diffusion moves large molecules through _____.
5. The _____ controls the materials that move into and out of a cell.
6. The _____ use energy to pick up specific molecules and carry them across the cell membrane.

Write the letter that best describes the type of transport on the line at the left.

- | | |
|---|--|
| <p>7. ____ Glucose enters a liver cell through a protein channel.</p> <p>A diffusion
B facilitated diffusion
C osmosis
D active transport</p> | <p>8. ____ Oxygen moves into a contracting heart muscle cell.</p> <p>A diffusion
B facilitated diffusion
C osmosis
D active transport</p> |
| <p>9. ____ A nerve cell uses energy to pump sodium out of its cytoplasm into a sodium-rich environment.</p> <p>A diffusion
B facilitated diffusion
C osmosis
D active transport</p> | <p>10. ____ Water moves out of the skin cells of a person swimming in a freshwater pond.</p> <p>A diffusion
B facilitated diffusion
C osmosis
D active transport</p> |

Chapter 5: Cell processes and energy

Lesson 1: Photosynthesis

Understanding Main Ideas

Fill in the blanks in the photosynthesis equation below with the names of the missing elements or compounds. Then answer the questions .

1. _____ + 2. _____ + light energy →

3. _____ + 4. _____

5. What are the raw materials of photosynthesis?

6. What are the products of photosynthesis?

7. Why is *light energy* written on the left side of the equation?

8. Where does photosynthesis generally occur?

Building Vocabulary

Fill in the blank to complete each statement.

9. The process by which a cell captures the energy of sunlight and uses it to make food is called ___.

10. _____ are colored chemical compounds that absorb light.

11. The main pigment found in the chloroplasts of plants is _____.

12. An organism that makes its own food is a(n) _____.

13. A(n) _____ is an organism that cannot make its own food.

14. One sugar produced by photosynthesis is _____.

Photosynthesis

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

1. ____ Another name for a heterotroph is a
 - A. producer
 - B. raw material
 - C. consumer
 - D. plant
2. ____ Which of the following is not true about the products of photosynthesis?
 - A. Some of the sugar is made into other compounds, such as cellulose.
 - B. Some of the sugar is stored in the plant's cells for later use.
 - C. The waste product carbon dioxide is given off through tiny openings on the underside of the leaves.
 - D. The products are used by both plants and animals for energy.
3. ____ Which of the following represents the raw materials of photosynthesis?
 - A. carbon dioxide and oxygen
 - B. carbon dioxide and water
 - C. glucose and oxygen
 - D. water and glucose
4. ____ The main characteristic of the first stage of photosynthesis is
 - A. the production of hydrogen and energy
 - B. the production of hydrogen and glucose
 - C. the release of oxygen and carbon dioxide
 - D. the storage of glucose in the plant's cells

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

5. _____ Autotrophs are also known as producers.
6. _____ The ultimate source of energy for all living things is the leaf.
7. _____ Plants are able to carry out photosynthesis because they contain the organelle known as a(n) mitochondrion.
8. _____ One important sugar that results from photosynthesis is cellulose.
9. _____ Light energy is changed to cell energy in Stage 1 of photosynthesis.
10. _____ The green pigment that absorbs light energy is chlorophyll.

Name _____ Date _____ Class _____

Chapter 5: Cell processes and energy

Lesson 2: Cellular Respiration

Understanding Main Ideas

Fill in the blanks in the table below.

Cellular Respiration

Raw Materials	Products
Glucose	1.
2.	Water
	3.

Answer the following questions in the spaces provided.

4. Where in the cell does the first stage of cellular respiration take place?

5. Where in the cell does the second stage of cellular respiration take place?

6. Which type of fermentation occurs in yeast?

7. Which type of fermentation sometimes occurs in human muscle cells?

Building Vocabulary

Answer the following questions.

9. Why are cellular respiration and photosynthesis opposite processes?

10. In what ways are cellular respiration and fermentation alike? In what ways are they different?

Cellular Respiration

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

1. _____ Fermentation is the opposite process of cellular respiration.
2. _____ Fermentation in yeast produces lactic acid.
3. _____ In the first stage of respiration, very little energy is released.
4. _____ Oxygen is a product of cellular respiration.
5. _____ Glucose is a product of photosynthesis.

Fill in the blank to complete each statement.

6. Pain and weakness in human muscles cells are often the result of the buildup of _____.
7. Plant and animal cells release energy from food as a result of the process of _____.
8. The energy-releasing process that does not require oxygen is _____.
9. _____ are the powerhouses of the cell because they are the organelles in which the second stage of cellular respiration takes place.
10. The products of photosynthesis are the _____ of cellular respiration.

Chapter 5: Cell processes and energy

Lesson 3: Cell Division

Understanding Main Ideas

Fill in the blanks in the table below.

Phases of Mitosis

Phase	Event
Prophase	1.
2.	Chromosomes attach to spindle fibers.
Anaphase	3.
4.	New nuclear envelope forms.

Answer the following questions.

4. Which stage of the cell cycle usually lasts the longest?

5. During which stage of the cell cycle does DNA replication occur?

6. During which stage of the cell cycle does the cell membrane pinch the cell into two?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|---------------------|--|
| 8. ___ interphase | a. regular sequence of growth and division that cells undergo |
| 9. ___ mitosis | b. first stage of the cell cycle |
| 10. ___ cell cycle | c. process in which DNA is copied |
| 11. ___ cytokinesis | d. stage of the cell cycle during which the cell's nucleus divides |
| 12. ___ replication | e. doubled rod of condensed chromatin |
| 13. ___ chromosome | f. final stage of the cell cycle |

Cell Division

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

1. ____ The total number of cells in an organism increases as a result of which process?
A. respiration
B. photosynthesis
C. cell division
D. fermentation
2. ____ The formation of a cell plate is a characteristic of
A. cytokinesis in plant cells
B. cytokinesis in animal cells
C. both A and B
D. neither A nor B
3. ____ Chromatids are held together by a
A. spindle fiber
B. centromere
C. cell plate
D. centriole
4. ____ The correct order for the parts of mitosis are
A. prophase, interphase, metaphase, anaphase
B. telophase, anaphase, metaphase, prophase
C. interphase, prophase, metaphase, telophase
D. prophase, metaphase, anaphase, telophase

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

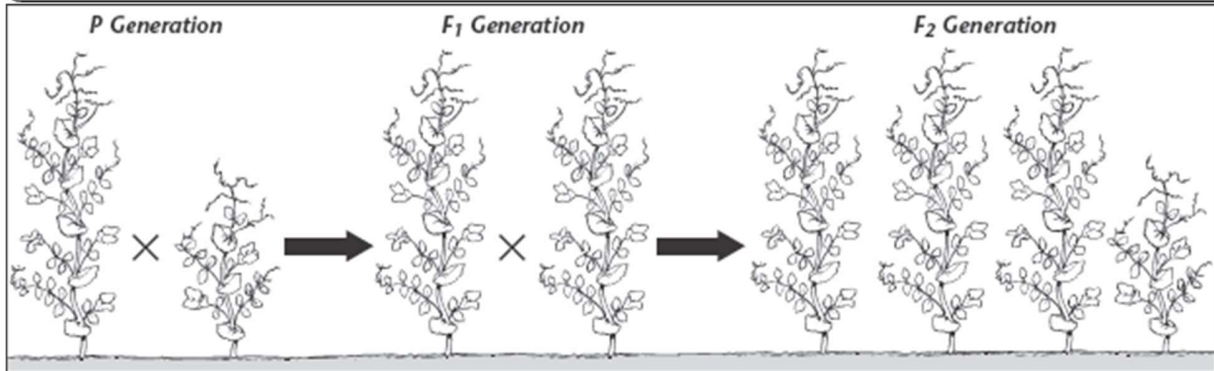
5. _____ Cell division allows organisms to grow, repair damaged structures, and produce energy.
6. _____ Mitosis results in the formation of two daughter cells.
7. _____ The process in which the cell makes an exact copy of the DNA in its nucleus is replication.
8. _____ Cell growth and production of new organelles and enzymes are characteristics of prophase.
9. _____ It would take five cell divisions for one original cell to produce 128 new cells.
10. _____ The two rod-like parts that make up a chromosome are called chromatids.

Chapter 6: Genetics: The Science of Heredity

Lesson 1: What is Heredity?

Understanding Main Ideas

Study the diagram below. Then answer the questions below the diagram.



1. What trait in pea plants is being studied in the cross shown above? _____
2. What are the two alleles for this trait? _____
3. Which allele is the dominant allele? _____
4. Which allele is the recessive allele? _____
5. What alleles do the F₁ offspring have? _____

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|--------------------------|---|
| 6. ___genetics | a. the passing of traits from parents to offspring |
| 7. ___ allele | b. an organism with two different alleles for a trait |
| 8. ___ trait | c. a factor that controls traits |
| 9. ___ dominant allele | d. a physical characteristics of organisms |
| 10. ___ gene | e. an allele whose trait always shows up in the organism |
| 11. ___ hybrid | f. each different form of a gene |
| 12. ___ heredity | g. the scientific study of heredity |
| 13. ___ recessive allele | h. an allele whose trait is hidden in the presence of a dominant allele |

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.

1. _____ The scientific study of heredity is called fertilization.
2. _____ A hybrid organism is the offspring of many generations that have the same form of a trait.
3. _____ Capital letters are used to represent recessive alleles.
4. _____ Mendel called an individual that has one dominant allele and one recessive allele for a trait a purebred.
5. _____ Mendel said that the factors that control a trait exist in pairs.
6. _____ 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.

7. ____ What Mendel called factors are now called
A. heredity
B. genes
C. purebreds
D. traits
8. ____ When parent plants are crossed, scientists refer to the first generation of offspring as
A. P
B. F₂
C. 1^F
D. F₁
9. ____ A seed can be round or wrinkled.
Seed shape is
A. a trait
B. an allele
C. a factor
D. a gene
10. ____ The alleles for a hybrid tall pea plant are represented as
A. *TT*
B. *Tt*
C. *TS*
D. *tt*

Chapter 6: Genetics: The Science of Heredity

Lesson 2: Probability and Heredity

Understanding Main Ideas

Complete the Punnett squares. Then answer the questions that follow.

	<i>B</i>	<i>b</i>	
<i>B</i>	_____	_____	_____
<i>b</i>	_____	_____	_____

	_____	_____	
<i>Bb</i>	_____	_____	_____
<i>Bb</i>	_____	_____	_____

3. Punnett Square A shows a cross between two black guinea pigs. What is the probability that an offspring will be black? White?

4. What color are the parents shown in Punnett Square B?

5. Which guinea pig parent(s) in Punnett Square B is homozygous? Which is heterozygous?

6. What is the probability that an offspring will be black in the cross shown in Punnett Square B? What is the probability that an offspring will be white?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|---|---|
| <p>7. ____ heterozygous</p> <p>8. ____ genotype</p> <p>9. ____ probability</p> <p>10. ____ homozygous</p> <p>11. ____ phenotype</p> | <p>a. a number describing how likely an event is</p> <p>b. an organism that has two identical alleles for a trait</p> <p>c. an organism's physical appearance</p> <p>d. an organism's genetic makeup, or allele combinations</p> <p>e. an organism that has two different alleles for a trait</p> |
|---|---|

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*
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
8. ____ Which of these is **NOT** a phenotype?
A. tall
B. short
C. homozygous
D. round
10. ____ Which of these is **NOT** a way to express probability?
A. 1 in 4
B. 50 percent
C. $\frac{3}{4}$
D. 25

Chapter 6: Genetics: The Science of Heredity

Lesson 3: Patterns of Inheritance

Understanding Main Ideas

Answer the following questions.

1. Andalusian chickens show incomplete dominance for feather color. A cross between a white bird and a black bird produces offspring that have blue feathers. A cross between two F1 blue chickens produces mostly blue chickens, but also some white chickens and some black chickens. Are the blue chickens purebred? Explain.

2. One pair of alleles controls eye color in fruit flies. More than ten different eye colors are possible, ranging from bright red to apricot to tan to white. What kind of inheritance is this? How do you know?

3. Give an example of how the environment can influence the way genes are expressed in a plant.

Building Vocabulary

Write a definition for each of these terms on the lines below.

4. codominance

5. incomplete dominance

6. polygenic inheritance

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.

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

Ch: 6 L: 4 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.

Chromosomes and Inheritance

Understanding Main Ideas

Complete the table below by filling in the spaces with the correct stage of meiosis—*Beginning, First Division, Second Division, or End*. Then answer the question below the table in the space provided.

Event	Stage of Meiosis
1. The double-stranded chromosomes move to the center of the cell. The centromeres separate.	
2. Two cells form, each with half the number of chromosomes. Each chromosome still has two chromatids.	
3. Four sex cells form with half the number of chromosomes as the body cells.	
4. The chromosomes are copied.	

5. What is the chromosome theory of inheritance?

Building Vocabulary

Write a definition for the term shown below.

6. Meiosis

Ch:7 L: 1 The Genetic Code

Fill in the blank to complete each statement.

1. The sides of a DNA molecule are made up of sugar molecules alternating with _____ molecules.
2. Chromosomes are made up mostly of _____.
3. In DNA, adenine always pairs with _____.
4. Each _____ on a chromosome contains the information to code for one specific protein.
5. Each group of three DNA bases on a gene codes for a single_____.

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

6. _____ Each gene is located at a specific place on a(n) protein.
7. _____ DNA synthesis is the process by which DNA copies itself.
8. _____ The process of DNA copying itself begins when the two sides of the DNA molecule unwind and separate.
9. _____ The genetic code is determined by the sizes of the nitrogen bases.
10. _____ Nitrogen bases are molecules that contain nitrogen and other elements.

The Genetic Code

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. What is the full name of DNA?

2. What molecules make up the sides of a DNA molecule?

3. What are the pairs of nitrogen bases in DNA?

4. How are DNA, genes, and chromosomes related?

5. Why is DNA replication important?

Building Vocabulary

Write a definition for each of these terms on the lines below.

6. Nitrogen base

7. DNA replication

L:2 How Cells Make Proteins

Fill in the blank to complete each statement.

1. The process of making proteins is called protein _____.
2. Proteins are made of smaller molecules called _____.
3. In RNA, adenine pairs with _____.
4. The sides of RNA and DNA molecules are made up of different _____.
5. The genetic code in DNA is copied and carried to the ribosomes by _____.

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

6. _____ After an amino acid is added to a protein, the transfer RNA picks up another amino acid.
7. _____ RNA is a(n) double strand.
8. _____ Changes to the type or order of amino acids can result in a different protein.
9. _____ Amino acids are carried to a ribosome by messenger RNA.
10. _____ A transfer RNA with the bases CGA will line up with a section of messenger RNA with the bases CGU.

How Cells Make Proteins

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. Why are there so many different kinds of proteins when there are only 20 different amino acids?

2. How are DNA and RNA different?

Building Vocabulary

Write a definition for each of these terms on the lines below.

3. Messenger RNA

4. Transfer RNA

L: 3 Mutations

Fill in the blank to complete each statement.

1. The use of drugs to treat disease is called _____.
2. A mutation can be passed to offspring only if it takes place in a(n) _____ cell.
3. A mutation is any change in the _____ of a gene or chromosome.
4. Cancer is treated with surgery, _____, and drugs that destroy the cancer cells.
5. A mutation can occur if a base pair is _____, deleted, or substituted for another.

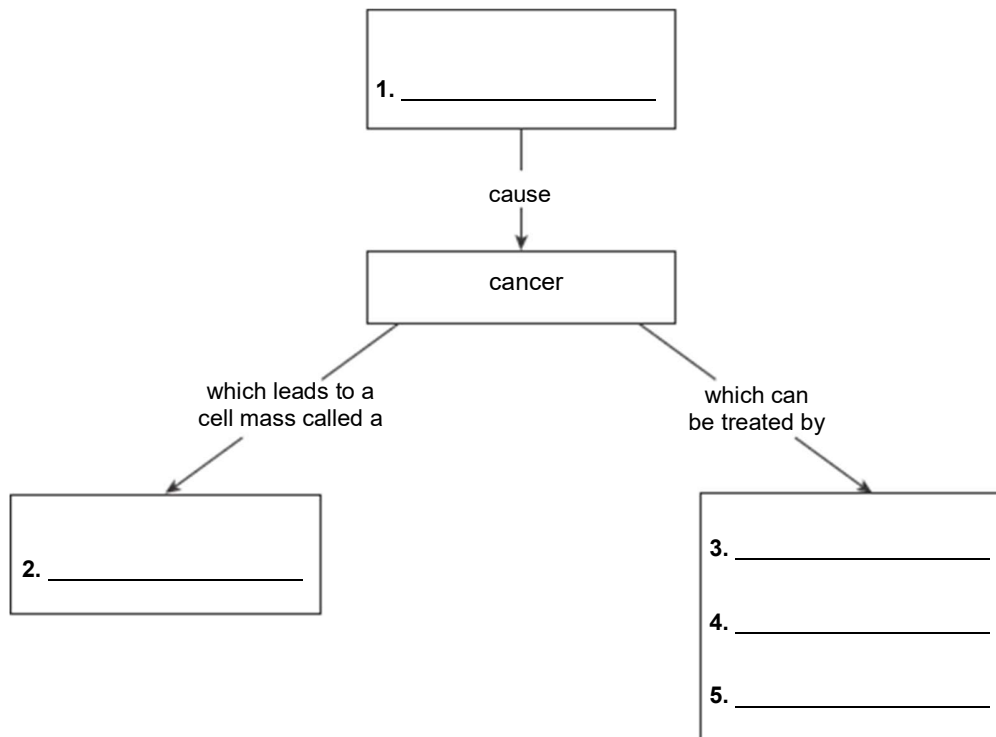
If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.

6. _____ Mutations are sometimes helpful to the organism.
7. _____ Cancer is a disease in which cells divide slowly.
8. _____ If chromosomes do not separate correctly during the formation of sex cells, the organism that forms can end up with too many or too few chromosomes.
9. _____ Cancer causes the growth of tumors.
10. _____ Scientists think that cancer begins when something damages a cell's proteins.

Mutations

Understanding Main Ideas

Fill in the blanks to complete the concept map below.



Answer the following questions.

6. How do mutations lead to cancer?

7. What are two ways the risk of some types of cancer can be reduced?

Building Vocabulary

Write a definition for each of these terms.

8. cancer _____

9. mutation _____

10. tumor _____

11. chemotherapy _____

L: 4 Human Inheritance

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

1. _____ The body cells of humans contain 46 pairs of chromosomes.
2. _____ A widow's peak is a trait controlled by many genes.
3. _____ In the case of sex-linked traits, only females can be carriers.
4. _____ In females, a recessive allele on the X chromosome often has no matching allele on the Y chromosome.
5. _____ The only thing determined by the genes carried on a sex chromosome is a person's gender.
6. _____ Colorblindness is a trait controlled by a dominant allele on the X chromosome.

Fill in the blank to complete each statement.

7. The sex chromosome carried by a human egg will always be a(n) _____ chromosome.
8. A person who has one recessive and one dominant allele for a trait is called a(n) _____.
9. The only pair of human chromosomes that do not always match are the _____.
10. Genes found on the X and Y chromosomes are often called _____ genes.

Human Inheritance

Understanding Main Ideas

Complete Punnett square **A** to show inheritance of dimples, a trait controlled by a dominant allele. Complete Punnett square **B** to show inheritance of colorblindness, a trait controlled by a recessive sex-linked allele. Then answer the questions that follow on a separate sheet of paper. (Note: the father's alleles are written across the top of each Punnett square. The mother's alleles are written on the left side.)

A: Dimples

	<i>D</i>	<i>d</i>
<i>d</i>		
<i>d</i>		

B: Colorblindness

	X^c	Y
X^c		
X^c		

1. Does either the mother or the father in **A** have dimples? _____
2. What percentage of children are likely to have dimples? _____
3. Is either the mother or father in **B** colorblind? _____
4. What percentage of female children is likely to be colorblind? _____
5. What percentage of male children is likely to be colorblind? _____

Building Vocabulary

Fill in the blank to complete each statement.

6. A person who has one recessive allele for a trait and one dominant allele is called a(n) _____.
7. One of the 23 pairs of chromosomes in each body cell that carry genes that determine a person's gender are called _____.
8. Genes found on the X and Y chromosomes are often called _____.

L: 5 Advances in Genetics

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

1. _____ In the process of cloning, breeders cross two genetically different individuals.
2. _____ Crossing two individuals that have similar desirable characteristics is called genetic engineering.
3. _____ In selective breeding, organisms with desired traits are chosen to be parents of the next generation.
4. _____ The process by which genes from one organism are transferred into the DNA of another organism is called inbreeding.
5. _____ Through gene therapy, a genetic disorder may be corrected by inserting copies of a gene directly into a person's cells.
6. _____ Hybridization results in an organism that has exactly the same genes as the organism from which it was produced.

Fill in the blank to complete each statement.

7. Small rings of DNA called _____ are found in some bacterial cells.
8. Some people are concerned that _____ of crops may cause harm to the environment or health problems in humans.
9. By using a stem cutting from an African violet, it is easy to produce a new plant, which is a(n) ____.
10. A hybrid organism has two different _____ for a trait.

Advances in Genetics

Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. What are two types of selective breeding?

2. What is cloning?

3. How are bacteria used in genetic engineering?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|------------------------------|--|
| 5. ____ inbreeding | a. the process of selecting organisms with desired traits to be parents of the next generation |
| 6. ____ clone | b. crossing two individuals that have similar desirable characteristics |
| 7. ____ gene therapy | c. crossing two genetically different individuals |
| 8. ____ selective breeding | d. organism that has exactly the same genes as the organism from which it was produced |
| 9. ____ hybridization | e. process by which genes from one organism are transferred into the DNA of another organism |
| 10. ____ genetic engineering | f. process of inserting copies of a gene directly into the cells of a person with a genetic disorder |

Ch: 8 L:1 Body Organization

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

1. ___ The control center of a cell is the
 - A. cytoplasm
 - B. cell membrane
 - C. nucleus
 - D. chromosome
3. ___ Which of the following is not true about connective tissue?
 - A. It provides support for the body.
 - B. It connects all of the body's parts.
 - C. Bone tissue and fat tissue are examples of connective tissue.
 - D. It makes parts of the body move.
2. ___ Skin, ears, and kidneys are examples of
 - A. organs
 - B. tissues
 - C. organ systems
 - D. cells
4. ___ A tissue that has the ability to contract is
 - A. nerve tissue
 - B. epithelial tissue
 - C. muscle tissue
 - D. connective tissue

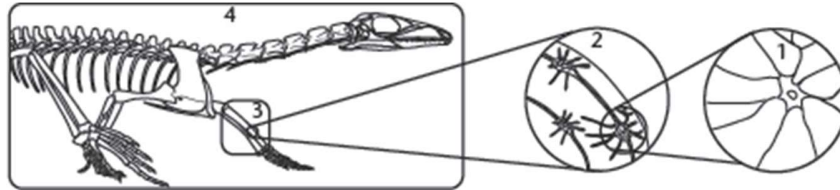
If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.

5. _____ The skin is made up of nervous tissue.
6. _____ The endocrine system removes waste products from the body.
7. _____ The least complex level of organization of the human body is a(n) cell.
8. _____ A group of similar cells performing the same function is a(n) organ.
9. _____ Each organ in the body is part of a(n) organ system performing a major function.
10. _____ As one moves from tissues to organs, the levels become less complex.

Body Organization

Understanding Main Ideas

The illustration below shows the levels of organization in a reptile. The levels are numbered 1–4, with 4 being the highest level and 1 being the lowest level. Match the items below the illustration with the number that represents the lowest appropriate level of organization in the illustration.



1. tissue ____
2. an object consisting of several different tissues ____
3. the smallest unit of the body ____
4. group of organs that operate as a system ____

Building Vocabulary

Fill in the blank to complete each statement.

5. The _____ is the structure in a cell that contains information that controls a cell's function.
6. _____ tissue makes up organs that are able to contract, or shorten.
7. The inside of the digestive system is lined with _____ tissue.
8. A(n) _____ is the basic unit of structure and function in a living thing.
9. _____ tissue makes up the organs that send messages to control the body.
10. _____ tissue provides support for the body and connects all its parts.

L: 2 System Interactions

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

1. ___ The two systems that control body functions are the
 - A. digestive and circulatory systems
 - B. excretory and nervous systems
 - C. nervous and endocrine systems
 - D. endocrine and respiratory systems
3. ___ The gas cells need in order to release energy from sugar molecules is
 - A. carbon dioxide
 - B. water vapor
 - C. nitrogen
 - D. oxygen
2. ___ Which of the following is not a stimulus?
 - A. hearing a loud noise
 - B. sneezing
 - C. touching a hot object
 - D. tasting a lemon
4. ___ The muscles attached to bones that provide the force to move the bones are
 - A. striated muscles
 - B. skeletal muscles
 - C. smooth muscles
 - D. connective muscles

Fill in the blank to complete each statement.

5. The circulatory system works with the _____ system to get nutrients to all body cells.
6. Chemical substances produced by glands that affect many body processes are called _____.
7. _____ is the process by which nutrients move from the digestive system into the bloodstream.
8. Chemical substances needed by body cells that result from the process of digestion are called _____.
9. Another name for the circulatory system is the _____ system.
10. The elbow and shoulder are examples of _____.

System Interactions

Understanding Main Ideas

Answer the following questions in the spaces provided. Use a separate sheet of paper if you need more room.

1. How do muscles move bones?

2. What is a joint? What are three examples of joints?

3. How do the respiratory, circulatory, digestive, and nervous systems work together to get essential materials to the cells of the body?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|-------------------|--|
| 4. ___ skeleton | a. the place where two bones meet |
| 5. ___ absorption | b. chemical produced by glands of the endocrine system |
| 6. ___ stimulus | c. the body's reaction to a signal in the environment |
| 7. ___ joint | d. all the bones in the body |
| 8. ___ gland | e. substance gotten from food that is needed by body cells |
| 9. ___ nutrient | f. signal in the environment that causes the body to react |
| 10. ___ hormone | g. endocrine system structure that produces chemicals that affect body processes |
| 11. ___ responds | h. process by which nutrients move into the blood stream |

L:3 Homeostasis

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

1. ___ The condition in which the body's internal environment is kept stable is called
 - A. homeopathy
 - B. homeostasis
 - C. metabolism
 - D. equilibrium

3. ___ What is the body's response to the stimulus of getting overheated?
 - A. sweating and thirst
 - B. shivering and hunger
 - C. sweating and shivering
 - D. shivering and thirst

2. ___ Which of the following is **NOT** a good way to manage stress?
 - A. Get enough sleep.
 - B. Eat a healthful diet.
 - C. Spend most of the time alone.
 - D. Get plenty of exercise.

4. ___ Which of the following statements about homeostasis is **NOT** true?
 - A. Maintaining homeostasis requires that all of the body systems work together.
 - B. Long periods of stress can disrupt homeostasis.
 - C. Body temperature is a factor of homeostasis.
 - D. Only the nervous and endocrine systems are involved in maintaining homeostasis.

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

5. _____ The nose helps the body keep its balance.

6. _____ The endocrine system includes specialized cells that help fight bacteria and viruses.

7. _____ High levels and long periods of stress can increase a person's risk for many diseases.

8. _____ Thirst is the body's response to the need for energy.

9. _____ Regardless of external conditions or activities, the body's internal temperature is almost exactly 37°C.

10. _____ The condensation of sweat from body surfaces cools the body.

Homeostasis

Answer the following questions on a separate sheet of paper.

1. Explain the following statement. "The cell membrane is the part of the cell that makes homeostasis possible."

2. Why is some stress normal and healthy?

4. What four conditions in the body are related to maintaining homeostasis?

Building Vocabulary

Write a definition for each of these terms on the lines below.

6. homeostasis

7. stress

L: 4 The Skeletal System

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

1. _____ Your skeleton enables you to move.
2. _____ Muscles give your body shape and support.
3. _____ Without joints, bones would not be able to move in different ways..
4. _____ Bones are made up of bone tissue, blood vessels, and nerves.
5. _____ Cartilage is responsible for producing most of your blood cells and for storing fat.

Fill in the blank to complete each statement.

6. One important function of bones is to produce _____.
7. Twenty-six small bones make up the _____.
8. A(n) _____ is a place where two bones come together.
9. The bones in movable joints are held together by strong connective tissue called _____.
10. _____ is a condition in which bones become weak and break easily because they have lost some minerals.

The Skeletal System

Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. Name the five functions of the skeleton.

2. What can people do to help keep their bones healthy and strong?

3. What do movable joints enable the body to do? What are the four types of movable joints?

4. What are three characteristics that show that bones are living structures?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|----------------------|---|
| 5. ___ skeleton | a. a thick layer of hard, dense material that contains minerals |
| 6. ___ vertebrae | b. a place where two bones come together |
| 7. ___ joint | c. a condition in which bones become weak and break easily |
| 8. ___ ligaments | d. the 26 bones that make up the backbone |
| 9. ___ compact bone | e. soft connective tissue that produces blood cells or stores fat |
| 10. spongy bone | f. the framework of all of the bones in the body |
| 11. ___ marrow | g. strong connective tissue that holds movable joints together |
| 12. ___ cartilage | h. a strong connective tissue that is more flexible than bone |
| 13. ___ osteoporosis | i. a layer of bone with small spaces within it |

L: 5 The Muscular System

Fill in the blank to complete each statement.

1. _____ muscles allow you to move parts of your body in different ways when you want to.
2. Your body has skeletal, _____, and cardiac muscle tissue.
3. A strong connective tissue called a(n) _____ attaches skeletal muscles to a bone.
4. A(n) _____ occurs when muscles are overworked or overstretched.
5. Regular _____ is important for maintaining the strength and flexibility of muscles.

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

6. _____ Voluntary muscles perform essential activities in your body, such as keeping your heart beating and moving food through your digestive system.
7. _____ Skeletal muscle and cardiac muscle are sometimes referred to as smooth muscle, because of their banded appearance.
8. _____ Skeletal muscles work in pairs.
9. _____ The tissue called cardiac muscle is found only in the heart.
10. _____ Both smooth muscle and cardiac muscle are voluntary.

The Muscular System

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. Which types of muscle tissue are voluntary, and which are involuntary?

2. Which muscles react quickly, and which tire quickly?

3. Why do skeletal muscles have to work in pairs?

4. How can you keep your muscles healthy?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|----------------------------|--|
| 5. ___ involuntary muscles | a. muscles that control movements inside your body |
| 6. ___ voluntary muscles | b. muscles that provide force to move your bones |
| 7. ___ skeletal muscles | c. tissue in the heart |
| 8. ___ tendon | d. strong connective tissue that attaches muscle to bone |
| 9. ___ smooth muscle | e. muscles that you cannot control |
| 10. ___ cardiac muscle | f. muscles that appear banded |
| 11. ___ striated muscle | g. muscles under your conscious control |

L:6 The Skin

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

1. _____ Skin helps eliminate wastes and produce vitamin D.
2. _____ The dermis is the outer layer of the skin, which helps protect your skin.
3. _____ Together an outer layer and an inner layer perform all the skin's functions.
4. _____ The epidermis is the inner layer of the skin, which includes nerves, blood vessels, sweat glands, hairs, and oil glands.
5. _____ Having healthy skin involves diet, cleanliness, and limiting time in the sun.

Fill in the blank to complete each statement.

6. Skin helps the body maintain a steady _____ through perspiration and the enlarging of blood vessels.
7. _____ in the skin gather information from the environment about pressure, temperature, and pain.
8. Some cells deep in the epidermis produce _____, a pigment that colors the skin.
9. Eating a balanced diet provides the energy and raw materials needed for the growth and replacement of _____.
10. _____ produced in glands around the follicles keeps the surface of the skin moist and the hairs flexible.

The Skin

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. List the functions of the skin.

2. How do the dead cells of the epidermis help the body?

3. What structures does the dermis contain?

4. How can you help to keep your skin healthy?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|------------------|---|
| 5. ___ epidermis | a. the inner layer of the skin |
| 6. ___ melanin | b. openings that allow sweat to reach the surface of the skin |
| 7. ___ dermis | c. a pigment that colors the skin |
| 8. ___ pores | d. a disease in which some cells divide uncontrollably |
| 9. ___ follicles | e. the outer layer of the skin |
| 10. ___ cancer | f. a structure out of which strands of hair grow |

Ch:9 L: 1 The Nervous System

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

1. _____ The nervous system receives information about what is happening both inside and outside your body.
2. _____ The nervous system helps maintain blood pressure.
3. _____ A(n) motor neuron picks up a stimulus and converts it into a nerve impulse.
4. _____ A(n) sensory neuron sends an impulse to a muscle or gland, enabling it to respond.
5. _____ At the axon tips, electrical signals change to a(n) chemical form, allowing the message to cross the gap in the synapse

Fill in the blank to complete each statement.

6. A(n) _____ is any change or signal in the environment that an organism can recognize and react to.
7. Cells that carry information through your nervous system are called nerve cells, or _____
8. An interneuron carries a nerve impulse to a motor neuron or to _____
9. A(n) _____ is the place where a neuron transfers an impulse to another structure.
10. The message that a neuron carries is called a(n) _____

The Nervous System

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. What are three main functions of the nervous system? Give an example of each.

2. What are the three kinds of neurons? How do they work together to produce a response to an environmental stimulus?

3. How does a message travel across the gap at a synapse?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|--------------------|--|
| 4 __stimulus | a. cells that carry information through your nervous system |
| 5.__ response | b. the message that a neuron carries |
| 6.__ neurons | c. a bundle of nerve fibers |
| 7.__ nerve impulse | d. a branchlike structure that picks up nerve impulses |
| 8 __ dendrite | e. any change or signal in the environment that an organism can recognize and react to |
| 9 __ axon | f. the long structure leading away from the cell body of a neuron |
| 10.__ nerve | g. the place where a neuron transfers an impulse to another structure |
| 11.__ synapse | h. a reaction to a stimulus |

L : 2 The Endocrine System

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

1. _____ The nervous system regulates short-term and long-term activities by sending chemicals throughout the body.
2. _____ Hormones turn on, turn off, speed up, or slow down the activities of organs and tissues.
3. _____ The chemical product of an endocrine gland is called a(n) gland.
4. _____ The nervous system and the endocrine system are linked by a part of the brain called the pituitary gland.
5. _____ When the amount of a hormone in the blood reaches a certain level, the endocrine system sends signals that stop the release of that hormone.

Fill in the blank to complete each statement.

6. The endocrine glands produce and release _____ directly into the bloodstream.
7. Long-term changes controlled by the endocrine system include _____ and development.
8. _____ cells are cells that are specialized in a way that enables them to recognize the hormone's chemical structure.
9. The _____ works with the hypothalamus to control many body activities.
10. _____ levels are controlled by a process called negative feedback.

The Endocrine System

Understanding Main Ideas

Answer the following questions.

1. What is the function of the endocrine system?

2. What are the endocrine system's messengers and how are they carried through the body?

3. What are the two ways the hypothalamus sends messages to the pituitary gland?

4. What is the general function of the pituitary gland?

5. How does a negative feedback system work to regulate the amount of thyroxine in the blood?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|----------------------------|--|
| 6. ____ endocrine glands | a. the chemical product of an endocrine gland |
| 7. ____ hormone | b. an endocrine gland that works with the hypothalamus to control many body activities |
| 8. ____ target cells | c. a part of the brain that links the nervous system and the endocrine system |
| 9. ____ hypothalamus | d. organs that produce and release chemicals directly into the bloodstream |
| 10. ____ pituitary gland | e. cells that are specialized in a way that enables them to recognize the hormone's chemical structure |
| 11. ____ negative feedback | f. a process in which the endocrine system is turned off by the condition it produces |

L:3 The Male and Female Reproductive Systems

Fill in the blank to complete each statement.

1. The joining of an egg cell and a sperm cell is a process called _____.
2. The structures of the _____ include the testes, scrotum, and penis.
3. The mixture of sperm cells and fluids is called _____.
4. The female reproductive system is specialized to produce _____ and the hormone estrogen, as well as to nourish the developing baby until birth.
5. During the menstrual cycle, the lining of the uterus thickens in preparation for a(n) _____.

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

6. _____ The male reproductive system is specialized to produce sperm cells and the hormone estrogen.
7. _____ Sexual reproduction involves the production of eggs by the female and sperm by the male.
8. _____ The organs of the female reproductive system include the ovaries, Fallopian tubes, uterus, and vagina.
9. _____ During the menstrual cycle, an egg develops in the uterus.
10. _____ An egg develops and is released about once a month in a mature woman.

The Male and Female Reproductive Systems

Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. What is the function of the male reproductive system?

2. What is the function of the female reproductive system?

3. What happens during the menstrual cycle?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|------------------------|--|
| 4. ___ sperm | a. male sex cell |
| 5. ___ zygote | b. organs in which sperm are produced |
| 6. ___ testes | c. fertilized egg |
| 7. ___ scrotum | d. triggers development of female sex characteristics |
| 8. ___ penis | e. hollow muscular organ in which developing baby grows |
| 9. ___ estrogen | f. organ through which semen leaves the male body |
| 10. ___ Fallopian tube | g. a pouch of skin containing the testes |
| 11. ___ uterus | h. muscular passageway leading to the outside of the female body |
| 12. ___ vagina | i. a passageway for an egg from the ovary to the uterus |

Part 2: Using Mathematics in Science

Lesson 1: Measurement—A Common Language

Understanding Main Ideas

Answer the following questions in the space provided.

1. Why do scientists use a standard measurement system?

2. What are the basic SI units of measure for length, mass, volume, density, time, and temperature?

3. What are the common tools scientists use to measure length and mass?

4. Explain why the weight of an object is different on Earth and the moon even though the object's mass is the same in both places.

5. What formula do you use to determine the volume of a rectangular solid?

6. Why is an object's density expressed as a relationship between two units?

7. What are two scales scientists use to measure temperature, and what is the official SI unit for temperature?

Building Vocabulary

Fill in the blank to complete each statement.

8. Modern scientists use a system of measurement called the International System of Units, abbreviated as _____.
9. The measure of the force of gravity acting on an object is called _____.
10. The _____ system is a system of measurement based on the number 10 and developed by scientists in the 1790s.
11. The amount of space an object takes up is its _____.
12. _____ is the measure of how much mass is contained in a given volume.
13. When you measure liquid volume, you measure at the bottom of the _____, the curve along the top of the liquid's surface.
14. _____ is a measure of the amount of matter in an object.

Lesson 1: Measurement—A Common Language

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

1. _____ Weight is a measure of how much mass is contained in a given volume.
2. _____ On the Kelvin scale, water freezes at 0°C and boils at 100°C.
3. _____ An object will float if it is less dense than the surrounding liquid.
4. _____ The balance is the tool used to measure mass.
5. _____ The basic unit for measuring volume is the kilogram.
6. _____ An object's temperature is the amount of space it takes up.

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

7. ___ What would you be most likely to measure by immersing an object in water and seeing how much the water level rises?
 - A. the mass of a rectangular solid
 - B. the volume of a rectangular solid
 - C. the mass of an irregular solid
 - D. the volume of an irregular solid
9. ___ Which is a common unit of density?
 - A. g
 - B. g/mL
 - C. cm³
 - D. g/s
8. ___ Which of these is **NOT** an official SI unit of measure?
 - A. Kelvin
 - B. degree Celsius
 - C. second
 - D. liter
10. ___ On what number is the metric system based?
 - A. 0
 - B. 1
 - C. 10
 - D. 100

Part 2: Using Mathematics in Science

Lesson 2: Mathematics and Science

Understanding Main Ideas

Answer the following questions.

3. When do scientists rely on estimates?

4. Why are both accuracy and precision important in making a measurement?

5. What do the significant figures in a measurement include?

6. What is percent error calculation used to determine?

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|----------------------------|--|
| 5. ___ estimate | a. how close a group of measurements are to each other |
| 6. ___ accuracy | b. the number that appears most often in a list of numbers |
| 7. ___ precision | c. the digits in a measurement include all digits measured exactly, plus one estimated digit |
| 8. ___ significant figures | d. the numerical average of a set of data |
| 9. ___ percent error | e. how close a measurement is to the true or accepted value |
| 10. ___ mean | f. an approximation of a number based on reasonable assumptions |
| 11. ___ median | g. a calculation used to determine how accurate an experimental value is |
| 12. ___ mode | h. the middle number in a set of data |
| 13. ___ range | i. data that do not fit with the rest of a data set |
| 14. ___ anomalous data | j. the difference between the greatest value and the least value in a data set |

Mathematics and Science

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

1. ___ A low percent error indicates that the result you obtained is
 - A. accurate
 - B. inaccurate
 - C. an estimate
 - D. anomalous data
2. ___ Which of the following is the middle number in a set of data?
 - A. mean
 - B. median
 - C. mode
 - D. range
3. ___ Which term refers to how close a group of measurements are to each other?
 - A. estimate
 - B. percent error
 - C. accuracy
 - D. precision
4. ___ If you add up the values in a data set and then divide the sum by the total number of values, the result will be the
 - A. mean
 - B. median
 - C. mode
 - D. range

Fill in the blank to complete each statement.

5. Scientists often rely on a(n) _____ when they cannot obtain an exact number.
6. When you _____ measurements, the answer should only have the same number of significant figures as the measurement with the fewest significant figures.
7. A reliable measurement is _____ both and precise.
8. Calculating percent error and checking the reasonableness of data are two of the math tools scientists use to analyze _____.
9. _____ data are data that do not fit with the rest of a data set.
10. The significant figures in a measurement include all digits measured exactly, plus one _____ digit.