Name _____

Chapter 2—Heredity and Environment—Quick Quiz 1

1. If you were to compare the DNA of any two unrelated people, about what percent of their DNA would be identical?
   a. 25%
   b. 50%
   c. 99.9%
   d. 100%

2. Suppose that a human female is accidentally exposed to a poison at one of four different points in development. If the effect of the poison is that it interferes with meiosis, at which point in the lifespan would we expect it to have the most disruptive effect?
   a. in the prenatal period, since this is when ova are forming
   b. in the first year after birth, since this is when brain growth is most rapid
   c. during early adulthood, since this is when conception of a child is most likely to happen
   d. in older adulthood, since body cells are most vulnerable at the end of the lifespan

3. Suppose that a disease is inherited. Your mother has the disease, your father does not, and you have a very minor case of the disease which lies somewhere in between your mother's and father's situation. In this case, we would know that the alleles that determine this trait:
   a. are recessive
   b. are dominant
   c. are codominant
   d. are heterozygous

4. Which of the following disorders occurs only when the gene involved is inherited from the mother and not the father?
   a. Prader-Willi syndrome
   b. Angelman syndrome
   c. Fragile X syndrome
   d. Down syndrome

5. Workers in Dr. Garcia's lab first obtain tumor cells from patients with cancer. They then remove the DNA from the tumor cell nuclei and use enzymes to segment the DNA strands into sections. Finally, they insert the DNA sections in which they are interested into "host" bacteria cells, where the DNA can be reproduced for later use. Dr. Garcia's lab is engaged in work involving:
   a. behavior genetics
   b. recombinant technology
   c. cryogenics
   d. autosomal transmission

6. Dr. Smith studies a group of 1,000 people who have schizophrenia and who also have identical twins. He finds that 47% of the identical twins also develop this disease. The type of statistical information Dr. Smith's study reveals is called:
   a. concordance
   b. an H-E (Heredity-Environment) Index
   c. a genetic-based percentage
   d. analysis of variance

7. Operant conditioning is especially likely to be involved in the development of:
    a. phobias
    b. excessive salivation
    c. habituation
    d. habits

8. If different members of the family experience quite different environments, this would be reflected in:
    a. a larger shared environment
    b. a larger non-shared environment
    c. a harsher developmental niche
    d. a challenge for self-concept development

9. Patty doesn't want to hang around with people from the other side of town because she says they are "weird." Patty's behavior best reflects the concept involved in:
    a. ethnocentrism
    b. self-efficacy
    c. normative age-graded influences
    d. normative history-graded influences

10. Which of the following is MOST likely to be experienced as a normative influence?
    a. retirement
    b. career change
    c. illness
    d. moving to a new community

Name _____

Chapter 2—Heredity and Environment—Quick Quiz 2

1. If a researcher wanted to extract the DNA from a cell, she should look for it in the cell's:
    a. nucleus
    b. mitochondria
    c. cytoplasm
    d. cell membrane

2. The term used to describe alternate versions of the same gene is:
    a. alleles
    b. chromosomes
    c. autosomes
    d. gametes

3. Anne mentions that her cousin has a congenital anomaly. You would know that this is sometimes also referred to as:
    a. a sex-linked trait
    b. a birth defect
    c. an autosomal disorder
    d. a heterozygous trait

4. Color blindness is a sex-linked trait. As such, if a child is color blind, we can be assured that the child's genotype includes:
    a. a recessive gene on the X chromosome inherited from his mother
    b. a dominant gene on the X chromosome inherited from his mother
    c. a recessive gene on the Y chromosome inherited from his father
    d. a dominant gene on the X chromosome inherited from his father

5. Which of the following syndromes occurs only in females?
    a. Down syndrome
    b. Turner's syndrome
    c. Klinefelter's syndrome
    d. Fragile X syndrome

6. The extent to which a trait is inherited versus acquired through interactions with the environment defines the concept of:
    a. heritability
    b. genetic predisposition
    c. genetic engineering
    d. concordance

7. The key to understanding how classical conditioning works is to recognize that it involves the _____ of what will come.
    a. reinforcement
    b. punishment
    c. prediction
    d. repression

8. While sitting in a quiet waiting room, Ronnie at first is quite distracted by the clicking sound made by an old clock ticking away the seconds. However, after a few minutes, he no longer notices the ticking. This example best highlights the concept involved in:

a. concordance
b. classical conditioning
c. habituation
d. social learning

9. The tendency to assume that one's own cultural beliefs are normal and those of others are abnormal is referred to as:

a. cohesion
b. socialization
c. ethnocentrism
d. indoctrination

10. Many individuals who grew up during the Great Depression were so devastated by the collapse of the economy that they became distrustful of depositing large sums of money in banks. The Great Depression would best be considered a:

a. normative, age-graded influence
b. normative, history-graded influence
c. non-normative influence
d. normative, economic-graded influence

Quick Quiz Answers

Quick Quiz 2.1

1. c; 2.1.2
2. a; 2.2.1
3. c; 2.2.2
4. a; 2.3.2
5. b; 2.3.5
6. a; 2.4.1
7. d; 2.4.3
8. a; 2.5.1
9. a; 2.5.2
10. a; 2.5.3

Quick Quiz 2.2

1. a; 2.1.1
2. a; 2.2.2
3. b; 2.3
4. a; 2.3.1
5. b; 2.3.2
6. a; 2.4.1
7. c; 2.4.3
8. c; 2.4.3
9. c; 2.5.2
10. b; 2.5.3

Chapter 2
Heredity and Environment

Learning Objectives:

2.1: Summarize the functions of human genetic structures

2.2: Describe how individuals are formed at the genetic level

2.3: Explain how genetic disorders affect human development

2.4: Compare the impact of genetics and environment on human development

2.5: Analyze the impact of sociocultural context on human development

Multiple Choice questions

Molecular Genetics
Learning Objective 2.1: Summarize the functions of human genetic structures

2.1. According to the text, the human body contains about how many different types of cells?
a. 16
b. 50
c. 200
d. several thousand

Answer: c
Module: 2.1.1: Human Cells
Learning Objective 2.1
Understand the Concept
Moderate

2.2. Which of the following parts of the cell provides most of its energy?
a. Golgi bodies
b. mitochondria
c. cytoplasm
d. the nucleus

Answer: b
Module: 2.1.1: Human Cells
Learning Objective 2.1
Understand the Concept
Easy

2.3. If a researcher wanted to extract the DNA from a cell, she should look for it in the cell's:
a. nucleus
b. mitochondria
c. cytoplasm
d. cell membrane

Answer: a
Module: 2.1.1: Human Cells
Learning Objective 2.1
Apply What You Know
Moderate
Rationale: The cell's nucleus, which also is surrounded by a porous membrane, contains most of the deoxyribonucleic acid (DNA), which contains the genetic instructions that direct growth and development.

2.4. In building a house, carpenters look for instructions on a blueprint, which includes all of the information needed to construct the house. Comparing a house to a human cell, the part of the cell that contains the "blueprint" would be:
a. the Golgi bodies
b. the cell membrane
c. the mitochondria
d. the nucleus

Answer: d
Module: 2.1.1: Human Cells
Learning Objective 2.1
Apply What You Know
Moderate
Rationale: The cell's nucleus, which also is surrounded by a porous membrane, contains most of the deoxyribonucleic acid (DNA), which contains the genetic instructions that direct growth and development.

2.5. DNA refers to:
a. di-nucleic antibody
b. duonucleic acid
c. deoxyribonucleic acid
d. dynonucleic antigen

Answer: c
Module: 2.1.1: Human Cells
Learning Objective 2.1
Understand the Concept
Easy

2.6. The structure of DNA consists of a long molecule that looks somewhat like a ladder that has been "twisted." The shape of the DNA molecule is referred to as:
a. the double rope
b. the twisted rope
c. the double helix
d. the Golgi apparatus

Answer: c
Module: 2.1.2: DNA
Learning Objective 2.1
Understand the Concept
Moderate
Rationale: DNA is a highly complex macromolecule: It is made up of many smaller molecules that are arranged in the shape of a twisted ladder called a double helix.

2.7. Which of the following statements about DNA is true?

a. The DNA molecule is circular, with the nucleotide bases located in the center of the circle.
b. The DNA molecule contains only four different types of bases, regardless of what species is involved.
c. The DNA molecule is identical for every known species, and species differences are coded on molecules that lay alongside the DNA.
d. The pairing of adenine, thymine, cytosine, and guanine follows a random sequence, with all four base pairs combining with each other an equal percentage of times.

Answer: b
Module: 2.1.2: DNA
Learning Objective 2.1
Analyze It
Difficult
Rationale: The DNA molecule is elegant in that, regardless of the species, it contains only four types of bases: adenine (A), thymine (T), cytosine (C), and guanine (G).

2.8. Which of the following is NOT contained in a nucleotide?

a. a base molecule
b. an enzyme
c. a phosphate molecule
d. a sugar molecule

Answer: b
Module: 2.1.2: DNA
Learning Objective 2.1
Understand the Concept
Moderate

2.9. Suppose you get into an argument about how similar humans and chimpanzees are. One point to consider is that these species share about ___ % of their genes.

a. 50
b. 65
c. 85
d. 98

Answer: d
Module: 2.1.2: DNA
Learning Objective 2.1
Apply What You Know
Moderate
Rationale: We share about 98% of our genes with chimpanzees; between two unrelated humans, there is only one tenth of 1% difference in the genes.

2.10. If you were to compare the DNA of any two unrelated people, about what percent of their DNA would be identical?

a. 25%
b. 50%
c. 99.9%
d. 100%

Answer: c
Module: 2.1.2: DNA
Learning Objective 2.1
Understand the Concept
Moderate

2.11. Which of the following is NOT one of the ways by which nucleotide bases determine the specific traits contained in the genetic code?

a. which side of the ladder the base is on
b. the order in which the base pairs are arranged on the ladder
c. the total number of base pairs on the ladder
d. whether adenine combines with thymine, cytosine, or guanine in the particular DNA strand

Answer: d
Module: 2.1.2: DNA
Learning Objective 2.1
Understand the Concept
Moderate

2.12. According to research presented in the text, the genetic locations that are responsible for determining a person's race:

a. are located on chromosome number 18
b. are located on the X chromosome
c. are located on many genes, including those in chromosomes 18, 19, and 20
d. are probably unique to each individual, and therefore "race" is not a meaningful concept in a genetic sense

Answer: d
Module: 2.1.2: DNA
Learning Objective 2.1
Understand the Concept
Moderate

2.13. The text suggests that, from a genetic point of view, the concept of race is:

a. very important, since there are many genes in the human genome that determine specific race-related traits (such as hair color and eyelid shape)
b. largely meaningless, and a better way of thinking about race differences is to consider them as cultural or ethnic differences
c. very important, since in humans there are only a handful of genes that code for "race" in our DNA (each corresponding to a difference racial group)
d. of some importance, since genes that code for racial characteristics also code for intelligence

Answer: b
Module: 2.1.2: DNA
Learning Objective 2.1
Evaluate It
Difficult
Rationale: The concept of race is often used to categorize people into groups but this categorization becomes largely meaningless when considered from a genetic reference point. Although genes do control the development of characteristics frequently associated with race (e.g., skin color, eye shape, hair color and texture), these traits do not occur as "either–or" features; rather, they are distributed continuously throughout the human population.

2.14. Dr. Johnson corrects a student who talks about "genetic racial differences" and suggests that a better term to use when talking about genetic differences among defined groups of people would be:

a. ethnicity
b. genetic physical differences
c. nucleotide disparities among individuals
d. shared genes

Answer: a
Module: 2.1.2: DNA
Learning Objective 2.1
Apply What You Know
Difficult
Rationale: The usage of the term *race* should be questioned if it suggests that an individual belongs to a genetically defined group. A more appropriate term in a context such as this is ethnicity, which avoids the genetic connotation that race often mistakenly implies and focuses instead on the shared cultural experiences of groups that define their members as similar.

2.15. A gene is best defined as:

a. a nucleotide
b. a nucleotide base pair
c. a specific segment of DNA
d. all of the DNA contained on a specific chromosome

Answer: c
Module: 2.1.3: Genes
Learning Objective 2.1
Understand the Concept
Moderate

2.16. Current estimates note that the human genome contains about how many genes?

a. about 5,000
b. about 25,000
c. about 85,000
d. over a million

Answer: b
Module: 2.1.3: Genes
Learning Objective 2.1
Understand the Concept
Easy

2.17. Compared to earlier estimates about the total number of genes in the human genome, it now appears that there are:

a. about 10 times more genes than previously thought
b. about twice as many genes as previously thought
c. about the same number of genes as was predicted by Watson and Crick in 1954
d. somewhat fewer genes than previously thought

Answer: d
Module: 2.1.3: Genes
Learning Objective 2.1
Understand the Concept
Moderate

2.18. A single human gene is composed of about how many base pairs?
a. anywhere from one to several dozen
b. anywhere from several dozen to 100
c. anywhere from 100 to 1,000
d. anywhere from several hundred to several million

Answer: d
Module: 2.1.3: Genes
Learning Objective 2.1
Understand the Concept
Moderate

2.19. According to the text, the most significant thing that genes do is:
a. determine how the brain will be constructed
b. build proteins
c. keep the organism alive by regulating physiological processes
d. produce sperm and ova so organisms can reproduce

Answer: b
Module: 2.1.4: Protein Synthesis
Learning Objective 2.1
Understand the Concept
Moderate

2.20. About how many different proteins have been identified in the human body?
a. 200
b. 2,000
c. 20,000
d. 200,000
2.1.4: Protein Synthesis
Answer: d
Module: 2.1.4: Protein Synthesis
Learning Objective 2.1
Understand the Concept
Moderate

2.21. Protecting the body from disease is the primary function of this type of protein:
a. collagen
b. antibody
c. enzyme
d. insulin

Answer: b
Module: 2.1.4: Protein Synthesis
Learning Objective 2.1
Understand the Concept
Moderate

Chromosomes, Genes, and Cell Division
Learning Objective 2.2: Describe how individuals are formed at the genetic level

2.22. How many PAIRS of chromosomes are in a normal human liver cell?
a. 12
b. 23
c. 46
d. 92

Answer: b
Module: 2.2: Chromosomes, Genes, and Cell Division
Learning Objective 2.2
Apply What You Know
Moderate
Rationale: In normal humans, all cells except sperm and eggs contain exactly 46 chromosomes arranged in 23 pairs.

2.23. The chromosomes of a cell, excluding those that determine sex, are called:
a. gametes
b. alleles
c. autosomes
d. enzymes

Answer: c
Module: 2.2: Chromosomes, Genes, and Cell Division
Learning Objective 2.2
Understand the Concept
Easy

2.24. Sarah states, "All normal human skin cells contain 46 genes." To make Sarah's statement correct, you would need to:
a. change the word "genes" to "chromosomes"
b. change the word "skin" to "blood"
c. change the number "46" to "23"
d. make all of the changes noted in the other three answer choices

Answer: a
Module: 2.2: Chromosomes, Genes, and Cell Division
Learning Objective 2.2
Apply What You Know
Moderate
Rationale: In normal humans, all cells except sperm and eggs contain exactly 46 chromosomes arranged in 23 pairs.

2.25. Julie and David are excited because Julie has undergone some prenatal testing and today they will see a picture of their unborn baby's chromosomes. Such a picture is called:
a. a genetic blueprint
b. a karyotype
c. a nucleotide
d. an autosomal map

Answer: b
Module: 2.2: Chromosomes, Genes, and Cell Division
Learning Objective 2.2
Apply What You Know
Moderate
Rationale: A karyotype is a photograph of a cell's chromosomes arranged in pairs according to size.

2.26. A photograph of a cell's chromosomes arranged in pairs according to size is referred to as a:
a. phenotype
b. karyotype
c. chromotype
d. genotype

Answer: b
Module: 2.2: Chromosomes, Genes, and Cell Division
Learning Objective 2.2
Understand the Concept
Moderate

2.27. Which chromosomal pair determines the sex of an individual?
a. 19th
b. 20th
c. 22nd
d. 23rd

Answer: d
Module: 2.2: Chromosomes, Genes, and Cell Division
Learning Objective 2.2
Analyze It
Moderate
Rationale: The 23rd chromosome pair is composed of sex chromosomes, which are labeled XX in females and XY in males.

2.28. The two ways in which cells can divide are called:
a. meiosis and mitosis
b. autosomes and gametes
c. gametes and polarization
d. genotype and phenotype

Answer: a
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Understand the Concept
Easy

2.29. The type of cell division that occurs in autosomes is called:
a. mutation
b. codominant reproduction
c. meiosis
d. mitosis

Answer: d
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Understand the Concept
Easy

2.30. If you were to examine a variety of human body cells under the microscope and look at the number of chromosomes contained in each, you would expect to see 46 chromosomes in all of the following cells EXCEPT:

a. a sperm cell
b. a liver cell
c. a neuron
d. a white blood cell

Answer: a
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Apply What You Know
Moderate
Rationale: In normal humans, all cells except sperm and eggs contain exactly 46 chromosomes arranged in 23 pairs.

2.31. Sperm and egg cells are called:

a. autosomes
b. genosomes
c. gametes
d. Golgi bodies

Answer: c
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Understand the Concept
Easy

2.32. Thomas (a man) knows that in his body, meiosis occurs in:

a. only his brain
b. only his white blood cells
c. only his testes
d. every cell in his body

Answer: c
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Apply What You Know
Moderate
Rationale: Meiosis is the process of cell division that yields sperm and ova, each including one half of a full set of chromosomes. In males, meiosis occurs in the texts.

2.33. Suppose that a human female is accidentally exposed to a poison at one of four different points in development. If the effect of the poison is that it interferes with meiosis, at which point in the lifespan would we expect it to have the most disruptive effect?

a. in the prenatal period, since this is when ova are forming
b. in the first year after birth, since this is when brain growth is most rapid
c. during early adulthood, since this is when conception of a child is most likely to happen
d. in older adulthood, since body cells are most vulnerable at the end of the lifespan

Answer: a
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Evaluate It
Difficult

Rationale: Meiosis in females begins in the ovaries well before birth, where all of the roughly 400,000 ova a woman will ever have begin their development. The final cell division that produces the ovum does not occur until the female enters puberty. The most disruptive effect would be in the prenatal period, since interference at this stage would inhibit ova from even beginning to form.

2.34. In women, ova are formed:
a. about one every day after reaching puberty
b. about one or two a month, every month after reaching puberty
c. about 100 every day after reaching puberty
d. during the prenatal period

Answer: d
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Understand the Concept
Moderate

2.35. Which of the following results from the process of meiosis?
a. fertilized ovum
b. alleles
c. gametes
d. proteins

Answer: c
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Understand the Concept
Moderate

2.36. Another term used to refer to either ova or sperm is:
a. alleles
b. gametes
c. phenotypes
d. proteins

Answer: b
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Understand the Concept
Easy

2.37. The cell division process that results in the formation of gametes is called:
a. meiosis
b. gene imprinting
c. transcription
d. mitosis

Answer: a
Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Understand the Concept
Moderate

2.38. The term used to describe alternate versions of the same gene is:

a. alleles
b. chromosomes
c. autosomes
d. gametes

Answer: a
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Understand the Concept
Easy

2.39. The term that refers to an individual's genetic makeup is _____; the term that refers to the physical characteristics that result from that genetic makeup is _____:

a. autosomes; gametes
b. gametes; autosomes
c. phenotype; genotype
d. genotype; phenotype

Answer: d
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Understand the Concept
Moderate

2.40. Suppose that the gene that determines how many fingers a person has is coded such that having 5 fingers is dominant and having 6 fingers is recessive. If a person's mother has 5 fingers and his father has 6 fingers, what is the probability that he will be born with 6 fingers?

a. 0 %
b. 50 %
c. 100 %
d. the percent cannot be determined because we do not know if his mother is homozygous or heterozygous for this trait

Answer: d
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Apply What You Know
Difficult
Rationale: Normally, recessive traits are only expressed when a person has inherited two recessive genes. In this example, if the person's mother is heterozygous for the trait, then the person would have a 50% chance of being born with 6 fingers. In this case, the father would contribute the recessive gene and there would be a 50% chance that the mother would contribute the recessive gene. As a result, there would be an overall 50% chance that the person would inherit both recessive genes and be born with 6 fingers. However, if the mother is homozygous for the trait, she will contribute the dominant gene which, even when combined with the recessive gene from the father, would never result in the presentation of the recessive trait of having 6 fingers. Thus, determining a precise probability would require that we know whether the mother is heterozygous or homozygous for the trait.

2.41. If the gene for blue eyes is recessive, and if John's mother and father both have blue eyes, we know that John:
a. will be homozygous on the eye color trait
b. will be heterozygous on the eye color trait
c. will have a 50% chance of having blue eyes
d. will have a 25% chance of having blue eyes

Answer: a
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Analyze It
Moderate
Rationale: Normally, recessive traits are only expressed when a person has inherited two recessive genes. In this example, one should assume that both the mother and father, having blue eyes, have two recessive genes. It follows that each would have had to contribute a recessive gene, resulting in John being homozygous on the eye color trait.

2.42. Suppose that Shelly's mother has brown eyes and her father has blue eyes. Shelly has brown eyes. In this example we would _____ Shelly's phenotype for eye color and would _____ Shelly's genotype for eye color.
a. know; not know
b. not know; know
c. know; know
d. not know; not know

Answer: c
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Analyze It
Difficult
Rationale: In genetics, the phenotype refers to those traits that are expressed in the individual. Thus, we know the phenotype: Shelly has brown eyes. The genotype refers to the genetic code of a given individual. Because the gene for brown eyes is dominant, Shelly would have brown eyes whether she inherited a recessive gene from her father and a dominant gene from her mother or whether she inherited dominant genes from both parents. Thus, we cannot determine Shelly's genotype from the information provided.

2.43. Suppose that hair color is a single-gene trait and that dark hair is dominant and blonde hair is recessive. Also, suppose that Terry's mother has dark hair and his father has blonde hair. If Terry has blonde hair, we would _____ Terry's phenotype for hair color and would _____ Terry's genotype for hair color.
a. know; not know
b. not know; know
c. know; know
d. not know; not know

Answer: c
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Analyze It
Difficult
Rationale: In genetics, the phenotype refers to those traits that are expressed in the individual. Thus, we know the phenotype: Terry has blonde hair. The genotype refers to the genetic code of a given individual. Because blonde hair is recessive, we can determine Terry's genotype: he would have to have inherited recessive genes from both his parents.

2.44. Suppose that eye color is a single gene trait and that brown eyes is a dominant allele and blue eyes is a recessive allele. If Mark has brown eyes, we would know:

a. that Mark is heterozygous for the eye color trait
b. that Mark is homozygous for the eye color trait
c. Mark's genotype
d. Mark's phenotype

Answer: d
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Analyze It
Moderate
Rationale: In genetics, the phenotype refers to those traits that are expressed in the individual. Thus, we know the phenotype: Mark has brown eyes.

2.45. Assume that eye color is a single gene trait and that brown eyes is a dominant allele and blue eyes is a recessive allele. If Harry's mother and father both have brown eyes and are both heterozygous on this trait, what is the probably that he will have brown eyes, too?

a. 100%
b. 75%
c. 50%
c. 25%

Answer: b
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Analyze It
Difficult
Rationale: Heterozygous refers to the arrangement in which the two alleles for a simple dominant–recessive trait differ. One possibility is that Harry could inherit a recessive allele from his father and a recessive allele from his mother, which would result in blue eyes. Alternatively, he could inherit a recessive allele from his father and a dominant allele from his mother, a dominant allele from his father and a recessive allele from his mother, or dominant alleles from both parents—all circumstances that would result in Harry having brown eyes.

2.46. A mother and a father have four children (biological not adopted). All four children have blue eyes. Assuming that brown eyes are a dominant trait and blue eyes is a recessive trait, which of the following statements must be true?

a. The parents may have brown or blue eyes, but both must have at least one allele for blue eyes.
b. The parents may have brown or blue eyes, but both must have at least one allele for brown eyes.
c. At least one of the parents must have blue eyes.
d. Both of the parents must have blue eyes.

Answer: a
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Analyze It
Difficult
Rationale: For a recessive trait to be expressed, a child must inherit two recessive alleles. Thus, for a child to have blue eyes, both parents must have at least one recessive allele (i.e., allele for blue eyes).

2.47. The term "polygenic inheritance" refers to which of the following?
a. a trait that is determined by a single gene pair
b. the idea that half of our genes come from each of our parents
c. a trait that is present in the individual's phenotype
d. a trait caused by an interaction of several genes or gene pairs

Answer: d
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Evaluate It
Moderate
Rationale: In polygenic inheritance, the inheritance of a trait is determined by multiple genes.

2.48. Dr. Ramley states that intelligence is determined by the action of hundreds of different genes. She has just defined intelligence as a _____ trait.
a. dominant
b. recessive
c. polygenic
d. heterozygous

Answer: c
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Apply What You Know
Moderate
Rationale: Polygenic inheritance is defined as the inheritance of a trait that is determined by multiple genes.

2.49. Color blindness is a sex-linked trait. As such, if a child is color blind, we can be assured that the child's genotype includes:
a. a recessive gene on the X chromosome inherited from his mother
b. a dominant gene on the X chromosome inherited from his mother
c. a recessive gene on the Y chromosome inherited from his father
d. a dominant gene on the X chromosome inherited from his father

Answer: a
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Analyze It
Difficult
Rationale: Sex-linked traits are those that are determined by genes on the 23rd chromosome pair. If a normally recessive allele appears on the male's X chromosome, there often is no allele on the Y chromosome to offset it, and the recessive trait will be expressed as the individual's phenotype. In contrast, in females, the recessive trait will be expressed only if it occurs on both X chromosomes. Regardless of whether the child is male or female, the mother must contribute a recessive gene on the X chromosome in order for the trait to be expressed.

2.50. Sickle-cell anemia is a genetic disorder that is best considered an example of:
a. dominance
b. incomplete dominance
c. recessive alleles
d. codominance

Answer: b
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Understand the Concept
Moderate

2.51. The AB blood type is an example of a condition that results from:
a. dominance
b. incomplete dominance
c. recessive alleles
d. codominance

Answer: d
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Understand the Concept
Moderate

2.52. Suppose that a disease is inherited. Your mother has the disease, your father does not, and you have a very minor case of the disease which lies somewhere in between your mother's and father's situation. In this case, we would know that the alleles that determine this trait:
a. are recessive
b. are dominant
c. are codominant
d. are heterozygous

Answer: c
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Analyze It
Difficult
Rationale: Codominance refers to a situation in which neither allele is dominant over the other. When codominant traits are inherited, the result is a phenotype that is a blend.

2.53. An example of a trait that results from incomplete dominance is _____; a trait that results from codominant alleles is _____:
a. sickle-cell anemia; blood type
b. leukemia; breast cancer
c. heart disease; liver cancer
d. multiple sclerosis; Lou Gehrig's disease

Answer: a
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Understand the Concept
Moderate

2.54. The blood clotting disease, hemophilia, occurs much more frequently in males because it is caused by a recessive gene carried on the sex chromosomes. As such, it would be referred to as:
a. a heterozygous trait
b. a homozygous trait
c. a sex-linked trait
d. a codominant trait

Answer: c
Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Evaluate It
Moderate

Rationale: Sex-linked traits are, by definition, those that are determined by genes on the 23rd chromosome pair (the sex chromosomes). Sex-linked traits are not, by definition, heterozygous or homozygous. If a normally recessive allele appears on the male's X chromosome, there often is no allele on the Y chromosome to offset it, and the recessive trait will be expressed as the individual's phenotype. In contrast, in females, the recessive trait will be expressed only if it occurs on both X chromosomes.

2.55. Sometimes in meiosis, genetic material from the mother and father is exchanged between chromosomes. This process is called _____and the alleles that carry the combination of both parents' genes are called _____ alleles.

a. phenotypic inheritance; phenotypic
b. polygenetic inheritance; independent
c. incomplete dominance; codominant
d. crossing over; recombinant

Answer: d
Module: 2.2.3: The Variation of Traits Among Individuals
Learning Objective 2.2
Understand the Concept
Moderate

2.56. The last stage of meiotic division, in which chance determines which half of each chromosome pair will go into which sperm or ovum, involves the process called:

a. mitosis
b. independent assortment
c. recombination
d. codominant configuration

Answer: b
Module: 2.2.3: The Variation of Traits Among Individuals
Learning Objective 2.2
Understand the Concept
Moderate

2.57. Mr. Martin is worried that, if he has a child, the child might be "unlucky" and get the "bad half" of his chromosome pairs. Mr. Martin's worry would technically be referred to as an issue involving:

a. recombinant alleles
b. independent assortment
c. codominance in allele pairs
c. mutation

Answer: b
Module: 2.2.3: The Variation of Traits Among Individuals
Learning Objective 2.2
Analyze It
Difficult
Rationale: Independent assortment refers to the final stage of meiotic division, in which chance determines which half of the chromosome pairs will go into which sperm or ovum.

2.58. If all cells in a person's body have a particular mutation present, we can conclude that the mutation most likely occurred:

a. during mitosis
b. during meiosis
c. shortly after birth
d. sometime after puberty

Answer: b
Module: 2.2.3: The Variation of Traits Among Individuals
Learning Objective 2.2
Evaluate It
Difficult
Rationale: At the molecular level, a mutation is an alteration in the DNA that typically occurs during mitosis or meiosis. A small number of mutations are viable—the mutated cell survives. In mitotic cell division, if a viable mutation occurs early in development, it will then be passed along to all the cells replicated in subsequent divisions of that cell. When mutation occurs during meiosis, on the other hand, it is incorporated into the genetic code passed along to offspring in the sperm or ova.

2.59. According to the text, genetic mutations are:

a. extremely rare, occurring only in about 0.1% of the population.
b. found only in individuals who are over the age of 4 since do not begin to occur until some development has taken place.
c. always negative, in that they always make it more difficult for the individual to survive.
d. quite common.

Answer: d
Module: 2.2.3: The Variation of Traits Among Individuals
Learning Objective 2.2
Understand the Concept
Moderate

2.60. Dr. Gage argues that hereditary and environmental forces can never be understood separately, since they are continually influencing each other. This statement is best considered to reflect the concept of:

a. independent assortment
b. gene-environment interactions
c. recombinant processes
d. polygenetic inheritance

Answer: b
Module: 2.2.4: Gene-Environment Interactions: The Study of Epigenetics
Learning Objective 2.2
Evaluate It
Moderate
Rationale: The central concept of gene-environment interactions is that genetic and environmental forces are in constant interaction with each other: genes influence the environments we select and environmental events can influence how genes are expressed.

2.61. About what percent of the DNA molecule is made up of protein-coding genes:
a. about 2%
b. about 25%
c. about 60%
d. nearly 100%

Answer: a
Module: 2.2.4: Gene-Environment Interactions: The Study of Epigenetics
Learning Objective 2.2
Understand the Concept
Moderate

2.62. The part of the DNA molecule that does not function as genes, but that can influence how genes work is referred to as ___
a. polygenetic forces
b. recombinant processes
c. epigenetic forces
d. meta-genetic forces

Answer: c
Module: 2.2.4: Gene-Environment Interactions: The Study of Epigenetics
Learning Objective 2.2
Understand the Concept
Moderate

2.63. Andre explains that early malnutrition—an environmental condition—actually may change the way that genes express themselves. In other words, starvation turns some genes "off" and others "on," thereby influencing genetic processes. The central argument that Andre is making emphasizes the basic idea of:
a. epigenetics
b. polygenic inheritance
c. incomplete dominance
d. recombinant processes

Answer: a
Module: 2.2.4: Gene-Environment Interactions: The Study of Epigenetics
Learning Objective 2.2
Analyze It
Moderate
Rationale: Epigenetics refers to the idea that non-genetic factors can change the way that genes are expressed. Here, malnutrition is an environmental condition that influences these epigenetic processes, which in turn influence how genes behave.

Genetic Disorders
Learning Objective 2.3: Explain how genetic disorders affect human development

2.64. What percent of babies born today in the United States are healthy and normal?
a. 60%
b. 73%
c. 87%
d. 97%

Answer: d
Module: 2.3: Genetic Disorders
Learning Objective 2.3
Understand the Concept
Moderate

2.65. Anne mentions that her cousin has a congenital anomaly. You would know that this is sometimes also referred to as:

a. a sex-linked trait
b. a birth defect
c. an autosomal disorder
d. a heterozygous trait

Answer: b
Module: 2.3: Genetic Disorders
Learning Objective 2.3
Apply What You Know
Moderate
Rationale: Congenital anomalies are abnormalities that result from genetic and chromosomal problems as well as from exposure to toxins, disease, and such during the prenatal period. These anomalies are still often referred to as birth defects.

2.66. Which of the following is NOT a sex-linked disorder?

a. Down syndrome
b. hemophilia
c. Fragile X syndrome
d. color blindness

Answer: a
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Understand the Concept
Easy

2.67. Which of the following sex-linked disorders occurs most frequently?

a. Klinefelter's syndrome
b. Turner's syndrome
c. hemophilia
d. color blindness

Answer: d
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Understand the Concept
Moderate

2.68. Which of the following inherited disorders results in problems with blood clotting?

a. Klinefelter's syndrome
b. Turner's syndrome
c. hemophilia
d. color blindness

Answer: c
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Understand the Concept
Easy

2.69. Which of the following syndromes occurs only in females?
a. Down syndrome
b. Turner's syndrome
c. Klinefelter's syndrome
d. Fragile X syndrome

Answer: b
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Analyze It
Moderate
Rationale: Both Down syndrome and Fragile X occur in both males and females. Klinefelter's syndrome appears in only males. Turner's syndrome appears in only females and occurs when one of the X chromosomes is missing or inactive.

2.70. Todd is mentally retarded, sterile, and has small external genitalia, undescended testicles, and breast enlargement. His chromosome pattern is XXY. Since puberty, he has received hormone replacement therapy in order to maintain his secondary-sex characteristics. What sex-linked abnormality does Todd most likely have?
a. Klinefelter's syndrome
b. Down syndrome
c. Turner's syndrome
d. Fragile X syndrome

Answer: a
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Evaluate It
Moderate
Rationale: Klinefelter's syndrome occurs in about 1 of 1,000 males and involves the characteristics described: sterility, small external genitalia, undescended testicles, and breast enlargement.

2.71. Olaf has been diagnosed with Klinefelter's syndrome. What is his chromosomal pattern?
a. XO
b. XY
c. XXY
d. XYY

Answer: c
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Analyze It
Moderate
Rationale: Klinefelter's syndrome can result from any of the following chromosomal patterns: XXY, XXXY, XXXX.

2.72. Which of the following conditions is a sex-linked abnormality that can occur in both males and females?
a. Fragile X syndrome
b. Klinefelter's syndrome
c. Turner's syndrome
d. Down syndrome

Answer: a
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Analyze It
Moderate

Rationale: Klinefelter's syndrome occurs only in males and Turner's syndrome occurs only in females. Down syndrome can occur in both males and females, but results from a variation on the 21st chromosome pair rather than on the 23rd chromosome pair (i.e., sex chromosomes).

2.73. Individuals with this syndrome have a functional X chromosome, but either a missing or inactive second X chromosome.

a. Klinefelter's syndrome
b. Fragile X syndrome
c. Down syndrome
d. Turner's syndrome

Answer: d
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Understand the Concept
Moderate

2.74. Melissa has a single X chromosome and no Y chromosome, an immature female appearance, and lacks internal reproductive organs. What is the most appropriate diagnosis of her condition?

a. Down syndrome
b. Turner's syndrome
c. Fragile X syndrome
d. Klinefelter's syndrome

Answer: b
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Evaluate It
Moderate
Rationale: Turner syndrome occurs in about 1 of 10,000 females. One of the X chromosomes is either missing or inactive. The characteristics of Turner syndrome match Melissa's: Individuals with Turner syndrome usually have an immature female appearance—they do not develop secondary sex characteristics. They also lack internal reproductive organs. These females may be abnormally short, and some are mentally retarded. The disorder is usually discovered at puberty, and hormone replacement therapy can help with a more normal appearance.

2.75. Andre is a hemophiliac, which means that he has problems with:

a. blood clotting
b. exocrine glands
c. amino acid metabolism
d. muscle control

Answer: a
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Apply What You Know
Moderate
Rationale: Hemophilia A and B are disorders that interfere with normal blood clotting and occur at different loci on the X chromosome. Hemophilia A is usually accompanied by color blindness.

2.76. If Margaret (a woman) is becoming bald as the result of a genetic trait called pattern baldness, we would know that she inherited a _____ allele for this trait from her mother and a _____ allele from her father:

a. dominant; recessive
b. recessive; dominant
c. dominant; dominant
d. recessive; recessive

Answer: d
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Analyze It
Moderate
Rationale: Pattern baldness, which can include a receding hairline, loss of hair on the top of the head, or overall hair thinning, is a common example of a sex-linked disorder. Many men inherit the recessive allele and some display pattern baldness as early as in their teens. Many women carry the recessive allele as well, but a dominant allele on the other X chromosome prevents pattern baldness from being displayed. Unless a woman inherits a recessive allele from both parents, she is unlikely to display this genetic trait.

2.77. The primary reason that sex-linked traits are observed more frequently in men than in women is that:

a. mutations are much more common in male offspring
b. male babies are weaker so are more likely to be spontaneously aborted if any developmental process is compromised
c. the Y chromosome is much smaller and has fewer genes than the X chromosome
d. women generally do not talk about sex-related behavior as much as do men

Answer: c
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Analyze It
Moderate
Rationale: Sex-linked traits are, by definition, those that are determined by genes on the 23rd chromosome pair (the sex chromosomes). If a normally recessive allele appears on the male's X chromosome, there often is no allele on the Y chromosome to offset it, and the recessive trait will be expressed as the individual's phenotype. In contrast, in females, the recessive trait will be expressed only if it occurs on both X chromosomes. Because a trait will be expressed in males when two recessive alleles are inherited or when a recessive allele is inherited from the mother and no allele appears on the Y chromosome to offset it, sex-linked traits are more frequently observed in men than in women.

2.78. If we know that a disease results from a sex-linked recessive trait, we would expect that it would:

a. be more common among men than women
b. be more common among women than men
c. develop earlier in life for boys than girls
d. develop earlier in life for girls than boys

Answer: a
Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Evaluate It
Difficult
Rationale: Traits that are controlled by the sex chromosomes (X and Y) are called sex-linked traits. Because the males' Y chromosome is smaller than the females' second X, men are more likely to display recessive sex-linked traits in their phenotype.

2.79. Having an African-American ancestry puts individuals at higher risk for developing which of the following genetic disorders?

a. sickle-cell trait and sickle-cell anemia
b. cystic fibrosis
c. Tay-Sachs disease
d. Down syndrome

Answer: a
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Analyze It
Moderate
Rationale: Sickle-cell trait occurs in about 1 of 12 U.S. African Americans; sickle-cell anemia occurs in about 1 of 500. Other groups whose ancestors lived in low-lying malarial wetlands show high rates as well.

2.80. Which recessive genetic disorder occurs primarily among people of European Ashkenazi Jewish ancestry, resulting in early death in those children afflicted with it?

a. cystic fibrosis
b. Tay-Sachs disease
c. phenylketonuria
d. sickle-cell anemia

Answer: b
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Understand the Concept
Easy

2.81. At birth, Debbie was given a mandatory screening test and tested positive for a genetic disorder that required her to be placed immediately on a restricted diet to control her symptoms. Which of the following is mostly likely the condition for which she is being treated?

a. sickle-cell anemia
b. Huntington's disease
c. cystic fibrosis
d. phenylketonuria

Answer: d
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Analyze It
Difficult
Rationale: Phenylketonuria is a genetic disorder in which a defect gene on chromosome 12 prevents the person from converting the amino acid phenylalanine into tyrosine. When phenylalanine builds up, this blocks other amino acids from entering cells, including neurons, with the outcome of intellectual disability. The standard treatment for phenylketonuria is to place the infant immediately on a diet that restricts the amount of phenylalanine in the food consumed.

2.82. Which of the following disorders occurs only when the gene involved is inherited from the mother and not the father?

a. Prader-Willi syndrome
b. Angelman syndrome
c. Fragile X syndrome
d. Down syndrome

Answer: a
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Understand the Concept
Moderate

2.83. If a child has mutated genes on chromosome 15 contributed by the mother, he or she will be at risk for developing _____; if the mutated genes are from the father, he or she will be at risk for developing _____.

a. Angelman syndrome; Prader-Willi syndrome
b. Prader-Willi syndrome; Angelman syndrome
c. Turner's syndrome; Klinefelter's syndrome
d. Klinefelter's syndrome; Turner's syndrome

Answer: b
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Understand the Concept
Moderate

2.84. Rene has Down syndrome, which means that she has an extra chromosome on which chromosome pair?

a. the 7th pair
b. the 18th pair
c. the 21st pair
d. the 23rd pair

Answer: c
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Analyze It
Moderate
Rationale: As noted in the textbook, the most frequent type of Down syndrome is trisomy-21, in which an extra chromosome is attached to the 21st pair.

2.85. Which of the following genetic disorders is the result from a problem associated with the autosomes?

a. Fragile X syndrome
b. Turner's syndrome
c. Klinefelter's syndrome
d. Down syndrome

Answer: d
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Evaluate It
Moderate
Rationale: Fragile X syndrome, Turner's syndrome, and Klinefelter's syndrome are all sex-linked disorders. Down syndrome is not a sex-linked disorder, rather it involves an extra chromosome being attached to the 21st pair.

2.86. Down syndrome has been shown to be related to which of the following?
a. father's age
b. mother's age
c. parents' ethnic background
d. mother's diet during pregnancy

Answer: b
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Apply What You Know
Moderate
Rationale: As noted in the textbook, Down syndrome occurs about once in every 1,000 live births for mothers under age 35, and the incidence steadily increases as the age of the mother increases.

2.87. George's younger brother is diagnosed at birth with "trisomy-21." Another term for this condition is:
a. Klinefelter's syndrome
b. Supermale syndrome
c. Fragile X syndrome
d. Down syndrome

Answer: d
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Apply What You Know
Moderate
Rationale: As noted in the textbook, The most frequent type of Down syndrome is trisomy-21, in which an extra chromosome is attached to the 21st pair.

2.88. Suppose researchers identify a genetic disorder that has negative consequences if the gene is inherited from the mother, but no consequences at all if it is inherited from the father. According to the text, this situation would be:
a. impossible
b. an example of gene imprinting
c. an example of a sex-linked trait
d. an example of an autosomal disorder

Answer: b
Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Analyze It
Difficult
Rationale: Gene imprinting refers to a phenomenon in which gene expression and phenotype depend on which parent the genes come from.

2.89. Although most of an individual's DNA is contained in the cell nucleus, some is also contained in the:
a. ribosomes
b. mitochondria
c. endoplasmic reticulum
d. cell membrane

Answer: b
Module: 2.3.3: Mitochondrial Disorders
Learning Objective 2.3
Understand the Concept
Easy

2.90. What percent of mitochondrial DNA is inherited from the mother:
a. it varies from individual to individual
b. 100% of the child is female; 50% is the child is male
c. 100% if the child is male; 50% if the child is female
d. 100% for both male and female children

Answer: d
Module: 2.3.3: Mitochondrial Disorders
Learning Objective 2.3
Understand the Concept
Moderate

2.91. According to the text, most individuals harbor about _____ potentially lethal recessive genes:
a. none or 1
b. 5 to 8
c. 50 to 75
d. hundreds

Answer: b
Module: 2.3.4: Genetic Counseling
Learning Objective 2.3
Understand the Concept
Moderate

2.92. In his professional career, Andy wants to study the risk factors associated with genetic disorders and to provide information and support to parents whose risk factors are high. Andy wants to enter the field called:
a. genetic counseling
b. pediatric social work
c. prenatology
d. bioethical statistics

Answer: a
Module: 2.3.4: Genetic Counseling
Learning Objective 2.3
Apply What You Know
Moderate
Rationale: Genetic counseling refers to a widely available resource that can help potential parents evaluate genetic risk factors in childbearing and enable them to make choices that reflect their values and circumstances.

2.93. Which of the following types of information would be of LEAST interest to a genetic counselor?
a. parents' ages
b. parents' illnesses
c. parents' ethnic background
d. parents' income

Answer: d
Module: 2.3.4: Genetic Counseling
Learning Objective 2.3
Evaluate It
Moderate
Rationale: Genetic counseling often includes the analysis of parental medical records and family histories to construct a genetic "pedigree," which identifies previous instances where congenital anomalies have occurred. Other techniques, such as parental blood analysis or prenatal screening, can detect many chromosomal or genetic anomalies. Parents' income does not provide information in helping the counselor construct a person's genetic "pedigree."

2.94. Workers in Dr. Garcia's lab first obtain tumor cells from patients with cancer. They then remove the DNA from the tumor cell nuclei and use enzymes to segment the DNA strands into sections. Finally, they insert the DNA sections in which they are interested into "host" bacteria cells, where the DNA can be reproduced for later use. Dr. Garcia's lab is engaged in work involving:

a. behavior genetics
b. recombinant technology
c. cryogenics
d. autosomal transmission

Answer: b
Module: 2.3.5: Advances in Genetic Research and Treatment
Learning Objective 2.3
Analyze It
Moderate
Rationale: As defined in the textbook, recombinant DNA technology refers to an assortment of highly sophisticated procedures in which DNA is extracted from cell nuclei and cut into segments; the resulting fragments are then joined to self-replicating elements, in essence forming functional gene clones. These are then placed in host bacterial cells to be maintained and cultured.

2.95. Which of the following is the best summary of the current state of gene therapies, such as the use of retroviruses?

a. The theoretical work about how such processes might work is still incomplete.
b. Gene therapies have been developed but ethical concerns have prevented their use in humans at the present time.
c. Gene therapies have been developed and tried, but with limited success so far.
d. Gene therapies are used routinely with very good success in treating a number of genetic diseases.

Answer: c
Module: 2.3.5: Advances in Genetic Research and Treatment
Learning Objective 2.3
Evaluate It
Moderate
Rationale: As noted in the textbook, a gene therapy approach that involves reinserting genetically altered cells into the person from whom they were harvested has been tried with various genetic disorders but with limited success thus far. Additionally, the retrovirus approach also has experienced only limited success; however, it holds great promise for the future if certain technical obstacles can be overcome.

2.96. Viruses used in gene therapy that are capable of penetrating cells and inserting modified DNA into them are called:

a. recombinant viruses
b. re-engineered viruses
c. retroviruses
d. macroviruses

Answer: c
Module: 2.3.5: Advances in Genetic Research and Treatment
Learning Objective 2.3
Understand the Concept
Moderate

Behavior and Environment
Learning Objective 2.4: Compare the impact of genetics and environment on human development

2.97. The field of behavior genetics relies most heavily on data gathered from:
a. chromosomes
b. diseased tissue
c. psychological tests and interviews
d. viruses

Answer: c
Module: 2.4.1: Behavior Genetics
Learning Objective 2.4
Understand the Concept
Moderate

2.98. If it were possible to know exactly what genetic information was contained in an individual's genes, would the field of behavioral genetics have any usefulness?
a. No
b. Yes, because some genes are recessive
c. Yes, because some traits are polygenic
d. Yes, because the way traits are expressed is often dependent on the environment

Answer: d
Module: 2.4.1: Behavior Genetics
Learning Objective 2.4
Evaluate It
Moderate
Rationale: Even if we had complete knowledge of an individual's genome, this would provide only a partial explanation for how that person's traits would be expressed within an interactive environmental context. Understanding how genetic characteristics operate within particular environmental settings is the focus of behavior genetics.

2.99. The extent to which biologically related people show similar characteristics is measured by a technique called:
a. genetic engineering
b. recombinant technology
c. concordance
d. behavioral genetics

Answer: c
Module: 2.4.1: Behavior Genetics
Learning Objective 2.4
Understand the Concept
Moderate

2.100. Dr. Smith studies a group of 1,000 people who have schizophrenia and who also have identical twins. He finds that 47% of the identical twins also develop this disease. The type of statistical information Dr. Smith's study reveals is called:

a. concordance
b. an H-E (Heredity-Environment) Index
c. a genetic-based percentage
d. analysis of variance

Answer: a
Module: 2.4.1: Behavior Genetics
Learning Objective 2.4
Analyze It
Moderate
Rationale: The primary tool of behavior genetics is the statistical technique of correlation, which measures concordance: the extent to which biologically related people show similar characteristics.

2.101. Doug believes that a person's intelligence is about half inherited and half dependent on how the person grows up. Doug's statement best reflects a concept that researchers would call:

a. codominance
b. a genetic predisposition
c. heritability
d. a heterozygous trait

Answer: c
Module: 2.4.1: Behavior Genetics
Learning Objective 2.4
Evaluate It
Moderate
Rationale: Heritability is the proportion of a trait, such as intelligence, that is thought to result from inherited, genetic factors.

2.102. The extent to which a trait is inherited versus acquired through interactions with the environment defines the concept of:

a. heritability
b. genetic predisposition
c. genetic engineering
d. concordance

Answer: a
Module: 2.4.1: Behavior Genetics
Learning Objective 2.4
Understand the Concept
Easy

2.103. If a particular trait is highly heritable, we would expect to see the highest concordance rates among:

a. identical twins
b. fraternal twins
c. parents and children
d. unrelated individuals of the same age

Answer: a
Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Evaluate It
Moderate

Rationale: Heritability refers to the extent to which a trait is inherited versus acquired, thus presuming a genetic basis. In this example, the trait is highly heritable, so we presume a strong genetic basis. Because identical twins are genetically identical (share 100% of their genetic makeup) we would expect them to show the most similar characteristics.

2.104. If the heritability of a trait was .50, we would expect to see the highest concordance rates among:
a. identical twins raised together in the same home
b. identical twins raised in different homes
c. fraternal twins raised in different homes
d. unrelated individuals

Answer: a
Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Evaluate It
Moderate
Rationale: Concordance refers to the extent to which biologically related people show similar characteristics. A heritability of .50 suggests that genetics and environment contribute relatively equally to the expression of the trait. Thus, the individuals who share both the highest genetic makeup and share an environment would be expected to show the most similar characteristics.

2.105. If the heritability of a trait is greater than 0 but less than 100%, this would mean that:
a. heredity was a larger influence on the trait than environment
b. environment was a larger influence on the trait than heredity
c. both heredity and environment influence the trait
d. heredity and environment do not interact in their influence on this trait

Answer: c
Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Analyze It
Moderate
Rationale: Heritability refers to the proportion of a trait, such as intelligence, that is thought to result from inherited, genetic factors. A proportion less than 100% but more than zero would indicate that there is some genetic basis to the trait, the remainder of which is explained by environmental factors.

2.106. Which of the following results is consistent with a trait that has a high heritability?
a. identical twins are less alike than fraternal twins
b. adopted children resemble their biological parents more than their adoptive parents
c. unrelated children are as much alike as are brothers and sisters
d. brothers are more alike than are sisters

Answer: b
Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Evaluate It
Difficult
Rationale: Heritability refers to the proportion of a trait, such as intelligence, that is thought to result from inherited, genetic factors. If a trait is highly heritable, we would expect persons who are more genetically similar to one another to show more similarity on a trait than persons who are less genetically similar to one another. In this example, adopted children share more genes with their biological parents than with their adoptive parents, so should resemble the biological parents more.

2.107. Based on the heritability studies cited in the text, the appropriate conclusion to draw is that:

a. genes are important in physical development, but not in cognitive and personality development
b. genes are important in physical and cognitive development but not in personality development
c. genes play only a minor role in human development, regardless of the domain in question
d. genes play a significant role in human development of a wide range of human traits and behaviors

Answer: d
Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Evaluate It
Moderate
Rationale: Overall the research presented in the book indicates that genes play a significant role across a variety of traits and behaviors. For example, the book mentions a recent meta-analytic study of over 400 individual studies of the heritability of traits—including intelligence, language ability, psychiatric disorders including anxiety and depression, personality traits, and antisocial problems—that suggests that 41% of human behavior is genetically influenced (Malouff, Rooke, & Schutte, 2008).

2.108. According to research presented in the text, you should conclude that, under normal circumstances, about what percent of a person's intelligence is the result of environmental, rather than genetic, factors?

a. nearly 100%
b. about half
c. a small but measurable percent
d. virtually zero percent

Answer: b
Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Apply What You Know
Moderate
Rationale: According to the text, looking across a variety of studies, a consistent estimate is that genetics contributes about 50% to intelligence.

2.109. Research suggests that a portion of intelligence is inherited. What percentage of an individual's intelligence is generally believed to be due to inherited factors?

a. 10% or less
b. around 50%
c. around 75%
d. over 90%

Answer: b
Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Understand the Concept
Moderate

2.110. According to research presented in the text, you should conclude that, under normal circumstances, about what percent of a person's personality is the result of genetic factors?

a. nearly 100%
b. about a third to a half
c. about 2 to 5%
d. virtually zero percent

Answer: b
Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Apply What You Know
Moderate
Rationale: Studies estimate a genetic contribution to personality of about 40% (Bouchard, 1999), perhaps ranging from 20 to 50% depending on the situation (Rushton, Bons, & Hur, 2008; Segal, 2000).

2.111. The technique that allows researchers to consider the results of several similar studies while weighing the quality of each is called:

a. analysis of variance
b. meta-analysis
c. epigenetic analysis
d. multiple regression analysis

Answer: b
Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Understand the Concept
Moderate

2.112. While sitting in a quiet waiting room, Ronnie at first is quite distracted by the clicking sound made by an old clock ticking away the seconds. However, after a few minutes, he no longer notices the ticking. This example best highlights the concept involved in:

a. concordance
b. classical conditioning
c. habituation
c. social learning

Answer: c
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Moderate
Rationale: In habituation, a person ceases to attend or respond to repetitive stimulation.

2.113. A researcher records the number of "sucks" a baby takes on her pacifier as she is shown pictures of adult faces. The researcher notes that when her mother's face is shown, the baby stops sucking entirely. This experimental method relies most directly on an understanding of which of the following learning processes?

a. habituation
b. operant conditioning
c. reinforcement
d. self-efficacy

Answer: a
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Difficult

Rationale: In habituation, a person ceases to attend or respond to repetitive stimulation. In this case, the researcher knows that the baby demonstrates habituation to the mother's face because the face is familiar (in other words, it is an example of repetitive stimulation).

2.114. While taking a test, suppose you are distracted by the student next to you who is smacking her gum as she chews it. However, after a few minutes, you no longer attend to the smacking, even though your neighbor keeps doing this. Your response in this situation is best considered to be the result of:

a. reinforcement
b. punishment
c. classical conditioning
d. habituation

Answer: d
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Moderate
Rationale: In habituation, a person ceases to attend or respond to repetitive stimulation.

2.115. When a person repeatedly experiences the same stimulus, he or she typically will tend to respond to it less and less with each repetition. This process is referred to as:

a. classical conditioning
b. punishment
c. operant conditioning
d. habituation

Answer: d
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Moderate
Rationale: In habituation, a person ceases to attend or respond to repetitive stimulation.

2.116. The key to understanding how classical conditioning works is to recognize that it involves the _____ of what will come.

a. reinforcement
b. punishment
c. prediction
d. repression

Answer: c
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Evaluate It
Difficult
Rationale: In classical conditioning, learning occurs when, through repeated trials, we learn to associate one stimulus with another naturally occurring stimulus–response sequence. In other words, we learn that a stimulus predict that a sequence of events will occur.

2.117. Three-year-old Kayla has been seeing her pediatrician for checkups every six months and fears the shots she receives each time. Now, even though he does not administer the shots, Kayla cries when the pediatrician enters the room because she associates him with receiving shots. The pediatrician has become a(n):

a. conditioned stimulus
b. conditioned response
c. unconditioned stimulus
d. unconditioned response

Answer: a
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Moderate
Rationale: In classical conditioning, a naturally occurring reflex becomes associated with an environmental cue. In this case, the fear that accompanies an impending shot has become associated with the pediatrician who has administered these shots in the past. The pediatrician is the environmental cue.

2.118. An unreasonable fear of an object or a situation is referred to as a:

a. phobia
b. conditioning trial
c. habituation
d. reinforcer

Answer: a
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Understand the Concept
Easy

2.119. Classical conditioning is most likely to be involved in which of the involving situations?

a. Brian won't work unless he gets paid.
b. Alex trains his dog to "roll over" by offering food rewards.
c. Rick feels nervous and sick to his stomach when he sees a black cat, but doesn't know why.
d. John loses weight by buying tickets to see his favorite team play whenever he drops five more pounds.

Answer: c
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Evaluate It
Moderate
Rationale: As noted in the textbook, emotional responses, in particular, are often established through classical conditioning. The other examples are directly tied to operant conditioning procedures.

2.120. If Wesley is afraid to enter tall buildings because he worries that they will be attacked by terrorists, psychologists would say his fear is most likely the result of:

a. habituation
b. a phobia
c. heritability
d. poor self-efficacy

Answer: b
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Moderate

Rationale: As noted in the textbook, unreasonable fears of objects or situations are called phobias; phobias—such as fear of the dark, fear of being in a closely confined space, and so forth—often are established through classical conditioning.

2.121. For as long as Brian can remember, he has been fearful of being in high places. Just the idea of climbing stairs or riding in an elevator causes him to be overcome with uncontrollable fear. Brian likely suffers from:

a. a phobia
b. negative conditioning
c. habituation
d. reinforcement failure

Answer: a
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Moderate
Rationale: As noted in the textbook, unreasonable fears of objects or situations are called phobias.

2.122. Operant conditioning is especially likely to be involved in the development of:

a. phobias
b. excessive salivation
c. habituation
d. habits

Answer: d
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Understand the Concept
Moderate

2.123. Operant conditioning is most closely associated with which of the following?

a. production of reflexive responses, such as salivation
b. production of emotional responses, such as fearfulness
c. the ability to screen meaningless repetitive stimuli out of consciousness
d. understanding the effect of consequences that follow a particular behavior

Answer: d
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Evaluate It
Moderate
Rationale: Operant conditioning involves the application or removal of rewards (called reinforcements) and punishments to encourage or discourage us from acting in certain ways. Both reinforcements and punishments constitute consequences that follow a particular behavior.

2.124. Which of the following is the best example of a partial schedule of reinforcement?

a. Every time he cries, Robert's mother picks him up.
b. Vickie has a tantrum every time her mother takes her to the grocery store because once or twice in the past her mother has given in and bought her candy to quiet her down.
c. Julie has come to expect that she will be paid for babysitting her little brother because this is what parents always do.
d. Jake has a terrible fear of spiders that his therapist has now diagnosed as a phobia.

Answer: b
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Difficult
Rationale: In a partial schedule of reinforcement, reinforcements occur only occasionally, not every time a behavior occurs.

2.125. A consequence that decreases the probability that a behavior will be repeated is a technical definition of the term:

a. punishment
b. threat
c. self-efficacy
d. partial schedule

Answer: a
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Moderate
Rationale: As noted in the textbook, punishments decrease the probability that a behavior will be repeated.

2.126. Systematically reinforcing successive approximations to a desired act defines:

a. shaping
b. counterconditioning
c. stimulus generalization
d. systematic desensitization

Answer: a
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Understand the Concept
Easy

2.127. Suppose Sandra has difficulty in concentrating while doing her homework. She decides to reward herself for reading 5 minutes without letting her mind wander. After a week of this, she decides to reward herself only when she reads for 10 minutes without distraction. Finally, she is able to concentrate for 15 minutes at a time without distraction. Sandra's ability to improve her study behavior is best considered an example of:

a. shaping
b. classical conditioning
c. habituation
d. punishment

Answer: a
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Moderate

Rationale: Shaping involves systematically reinforcing successive approximations to a desired behavior. In this case, Sandra reinforces her successive approximations (studying for 5 minutes) of the desired behavior (studying for 15 minutes without distraction).

2.128. Learning through the method of "successive approximation" is at the heart of the concept called:
a. self-efficacy
b. classical conditioning
c. partial schedules of reinforcement
d. shaping

Answer: d
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Understand the Concept
Easy

2.129. Rex decides that the only way he will ever be able to work hard enough to pass his chemistry class is to give himself a reward after every chapter he reads and every lab report he turns in on time. His approach to studying is best thought of as an example of:
a. classical conditioning
b. behavior modification
c. habituation
d. normative age-graded influences

Answer: b
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Analyze It
Moderate
Rationale: Behavior modification is a method that uses conditioning procedures—such as reinforcement, reward, and shaping—to change behavior.

2.130. The application of learning principles in order to change behavior is called:
a. EPS: Establishing Partial Schedules
b. CC-OC: Classical Conditioning-Operant Conditioning
c. ABA: Applied Behavioral Analysis
d. Meta-analysis

Answer: c
Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Understand the Concept
Easy

2.131. Whitney believes that she is a capable, confident person who can usually succeed in whatever she tries to do. Psychologists would be most likely to conclude that she has:
a. a phobia
b. a strong sense of self-efficacy
c. a comfortable developmental niche
d. established a codominant relationship with her parents

Answer: b
Module: 2.4.4: Social Learning and the Evolving Self-Concept
Learning Objective 2.4
Analyze It
Moderate

Rationale: Self-efficacy refers to what a person believes he or she is capable of doing in a given situation.

2.132. Our beliefs about our own capabilities is called:
a. our developmental niche
b. meta-analysis
c. non-shared environment
d. self-efficacy

Answer: d
Module: 2.4.4: Social Learning and the Evolving Self-Concept
Learning Objective 2.4
Understand the Concept
Easy

Environment in a Broader Context: Family and Culture
Learning Objective 2.5: Analyze the impact of sociocultural context on human development

2.133. The unique world experienced by each individual is called that person's:
a. developmental niche
b. personal space
c. family system
d. normative space

Answer: a
Module: 2.5: Environment in a Broader Context: Family and Culture
Learning Objective 2.5
Understand the Concept
Easy

2.134. If different members of the family experience quite different environments, this would be reflected in:
a. a larger shared environment
b. a larger non-shared environment
c. a harsher developmental niche
d. a challenge for self-concept development

Answer: b
Module: 2.5.1: Family Systems
Learning Objective 2.5
Evaluate It
Difficult
Rationale: Non-shared environment refers to those experiences and relationships that persons do not share.

2.135. The tendency to assume that one's own cultural beliefs are normal and those of others are abnormal is referred to as:
a. cohesion
b. socialization
c. ethnocentrism
d. indoctrination

Answer: c
Module: 2.5.2: The Family as Transmitter of Culture
Learning Objective 2.5
Understand the Concept
Easy

2.136. Patty doesn't want to hang around with people from the other side of town because she says they are "weird." Patty's behavior best reflects the concept involved in:

a. ethnocentrism
b. self-efficacy
c. normative age-graded influences
d. normative history-graded influences

Answer: a
Module: 2.5.2: The Family as Transmitter of Culture
Learning Objective 2.5
Analyze It
Moderate
Rationale: Ethnocentrism is the tendency to assume that our own beliefs, perceptions, customs, and values are correct or normal and that those of others are inferior or abnormal.

2.137. Little Timmy says, "Boys are cool and girls are stupid." Timmy's statement reflects the heart of what is meant by the term:

a. normative age-graded influences
b. non-normative influences
c. self-efficacy
d. ethnocentrism

Answer: d
Module: 2.5.2: The Family as Transmitter of Culture
Learning Objective 2.5
Analyze It
Moderate
Rationale: Ethnocentrism is the tendency to assume that our own beliefs, perceptions, customs, and values are correct or normal and that those of others are inferior or abnormal.

2.138. Which of the following is an example of a normative history-graded influence on development?

a. retirement
b. career change
c. economic depression
d. unemployment

Answer: c
Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Understand the Concept
Easy

2.139. At age 65, Reggie retired from high school teaching. This change most likely reflects a:

a. normative, age-graded influence
b. normative, history-graded influence
c. non-normative influence
d. normative, gender-graded influence

Answer: a
Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Evaluate It
Moderate
Rationale: Normative, age-graded influences refer to the biological and social changes that normally happen at predictable ages (e.g., puberty, menopause, entering school). Most people retire around age 65.

2.140. Many individuals who grew up during the Great Depression were so devastated by the collapse of the economy that they became distrustful of depositing large sums of money in banks. The Great Depression would best be considered a:

a. normative, age-graded influence
b. normative, history-graded influence
c. non-normative influence
d. normative, economic-graded influence

Answer: b
Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Evaluate It
Moderate
Rationale: Normative, history-graded influences refer to the historical events that affect large numbers of individuals at the same time (e.g., wars, depressions, epidemics). The Great Depression is one such example.

2.141. After Bill's parents' divorce, he and his mother were forced to move into an apartment and he had to switch schools. The losses Bill experienced following the divorce marked a turning point in his life, because from then on, he did poorly in school. His parents' divorce would be considered a:

a. normative, age-graded influence
b. normative, history-graded influence
c. non-normative influence
d. normative, gender-graded influence

Answer: c
Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Evaluate It
Difficult
Rationale: Non-normative influences refer to the individual environmental factors that do not occur at any predictable time in a person's life (e.g., divorce, unemployment, career changes). Experiencing one's parents' divorce is not an event that can be predicted to occur at a predictable time in a person's life, if at all.

2.142. Which of the following is NOT an example of a normative history-graded influence?

a. a worldwide disease epidemic
b. war
c. menopause
d. economic depression

Answer: c
Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Analyze It
Moderate
Rationale: Normative, history-graded influences refer to the historical events that affect large numbers of individuals at the same time (e.g., wars, depressions, epidemics). Menopause is an example of a normative, age-graded influence.

2.143. Which of the following is NOT an example of a normative age-graded influence?
a. having children
b. puberty
c. divorce
d. menopause

Answer: c
Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Analyze It
Moderate
Rationale: Normative, age-graded influences refer to the biological and social changes that normally happen at predictable ages (e.g., puberty, menopause, entering school). Divorce does not occur at a predictable age, if at all.

2.144. Which of the following is MOST likely to be experienced as a normative influence?
a. retirement
b. career change
c. illness
d. moving to a new community

Answer: a
Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Evaluate It
Moderate
Rationale: Normative influences occur at a predictable time or have a predictable effect on large numbers of people. Most people retire, predictably, around age 65.

2.145. In general, the impact of non-normative influences are greatest at which of the following periods of the lifespan:
a. in the prenatal period and in infancy
b. in early and middle childhood
c. in adolescence and early adulthood
d. in later adulthood and old age

Answer: d
Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Understand the Concept
Moderate

Changing Perspectives: Genetic Engineering and Cloning

2.146. If a scientist were to clone a rat, the genetic code in the new rat produced would share what percentage of its genetic code with its parent(s)?
a. it would share 50% of its genes with its mother and 50% with its father
b. it would share 50% with its mother, but 0% with its father
c. it would share 50% with its father, but 0% with its mother
d. it would have only one "parent" and would share 100% of its genetic code with it

Answer: d
Module: 2.3.5: Advances in Genetic Research and Treatment
Learning Objective 2.2, 2,5
Analyze It
Moderate

Rationale: To clone something means to duplicate it exactly. In the context of genetic engineering, cloning can refer to the replication of DNA segments used to produce drugs like insulin or to the exact duplication of an entire living organism. In the cloning of an animal, the new animal would be an exact duplication of a parent.

2.147. In agriculture, the traditional practice of genetic engineering is called:
a. green engineering
b. selective breeding
c. cloning
d. genetic replication

Answer: b
Module: 2.3.5: Advances in Genetic Research and Treatment
Learning Objective 2.2, 2.5
Understand the Concept
Moderate

2.148. Generalizing from the text, you should conclude that the primary problem with cloning human beings has to do with:
a. ethical issues
b. the much greater complexity of the human brain as compared to animal brains
c. the financial costs involved
d. the long prenatal period that humans experience compared to animals

Answer: a
Module: 2.3.5: Advances in Genetic Research and Treatment
Learning Objective 2.2, 2.5
Evaluate It
Moderate
Rationale: As an example of an ethical concern, some groups are concerned that even those cloning techniques that stop far short of human replication intrude into what they consider to be the sanctity of life.

Current Issues: The New Baby and the Extended Family System

2.149. Research presented in the text noted that, in comparison to young mothers with ill or premature infants who lived away from their extended family, those who lived with their extended family:
a. were less likely to complete their education
b. were less likely to keep the job they had before the baby was born
c. were less likely to have good parenting skills
d. had more self-confidence in their ability to be a good parent

Answer: c
Module: 2.5.1: Family Systems
Learning Objective 2.5
Understand the Concept
Moderate

2.150. Which of the following is the best example of what is usually meant by the term "nuclear family"?
a. a mother, father, and children
b. grandparents, parents, and children
c. any family whose primary breadwinner is the father
d. any family with three or more children

Answer: a
Module: 2.5.1: Family Systems
Learning Objective 2.5
Understand the Concept
Easy

Short Answer questions:

Molecular Genetics
Learning Objective 2.1: Summarize the functions of human genetic structures

2.151. What are the three different ways that nucleotides in the DNA molecule can determine the particular way that individuals differ from each other?

Module: 2.1.2: DNA
Learning Objective 2.1
Apply What You Know
Moderate

2.152. Why is the term "ethnicity" sometimes preferred over the term "race"? Discuss your answer from a genetic reference point.

Module: 2.1.2: DNA
Learning Objective 2.1
Evaluate It
Difficult

2.153. Suggest 3 different functions that bodily proteins perform.

Module: 2.1.4: Protein Synthesis
Learning Objective 2.1
Apply What You Know
Moderate

Chromosomes, Genes, and Cell Division
Learning Objective 2.2: Describe how individuals are formed at the genetic level

2.154. In your own words, explain the difference between a gene and a chromosome.

Module: 2.2: Chromosomes, Genes, and Cell Division
Learning Objective 2.2
Analyze It
Moderate

2.155. Identify two ways that the processes of mitosis and meiosis differ.

Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Understand the Concept
Moderate

2.156. Give an example of the three genotypes that could exist for a single-gene trait, such as eye color. What phenotype is associated with each of these three genotypes?

Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Evaluate It
Moderate

2.157. How does a trait governed by polygenic inheritance differ from one governed by a single gene? Give an example of a trait determined by each of these processes.

Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Evaluate It
Moderate

2.158. Define what is meant by "independent assortment" as this term is applied to how meiosis occurs.

Module: 2.2.3: The Variation of Traits Among Individuals
Learning Objective 2.2
Apply What You Know
Moderate

2.159. Describe what is meant by the term "gene-environment interaction," giving an example to demonstrate your answer.

Module: 2.2.4
Learning Objective 2.2
Apply What You Know
Moderate

2.160. Describe how non-genetic segments of DNA can influence the expression of genetic traits.

Module: 2.2.4
Learning Objective 2.2
Analyze It
Difficult

Genetic Disorders
Learning Objective 2.3: Explain how genetic disorders affect human development

2.161. Explain why sex-linked traits are more common among males than females.

Module: 2.3.1: Sex-Linked Disorders
Learning Objective 2.3
Evaluate It
Moderate

2.162. Describe why Angelman syndrome can be considered as an example of gene imprinting.

Module: 2.3.2: Autosomal Disorders
Learning Objective 2.3
Evaluate It
Difficult

2.163. Suggest two ways that mitochondrial disorders are different from other types of genetic disorders.

Module: 2.3.3
Learning Objective 2.3
Analyze It
Difficult

2.164. Suggest two ways in which genetics counselors can be of use to couples who are thinking about having a baby.

Module: 2.3.4: Genetic Counseling
Learning Objective 2.3
Evaluate It
Moderate

2.165. Describe how retroviruses are useful in gene therapy.

Module: 2.3.5: Advances in Genetic Research and Treatment
Learning Objective 2.3
Analyze It
Moderate

Behavior and Environment
Learning Objective 2.4: Compare the impact of genetics and environment on human development

2.166. Why will the field of behavioral genetics always be of use, even if the human genome is completely mapped?

Module: 2.4.1: Behavior Genetics
Learning Objective 2.4
Evaluate It
Difficult

2.167. Suppose that a particular trait results from the interaction of hereditary and environmental forces. Describe the expected results from a typical adoption study of the heritability of this trait.

Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Evaluate It
Difficult

2.168. Give an original example that portrays the kind of learning called habituation.

Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Evaluate It
Moderate

2.169. What is the primary difference between a reinforcer and a punishment, according to operant conditioning theory?

Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Evaluate It
Moderate

2.170. Give an example of a behavior that is learned or maintained according to a partial schedule of reinforcement.

Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Apply What You Know
Moderate

Environment in a Broader Context: Family and Culture
Learning Objective 2.5: Analyze the impact of sociocultural context on human development

2.171. Suggest 3 factors that are important as determinants of a child's developmental niche.

Module: 2.5: Environment in a Broader Context: Family and Culture
Learning Objective 2.5
Evaluate It
Moderate

2.172. Think of two siblings you know who were raised in the same family. Identify an aspect of their environmental that would be considered "shared" and one that would be "unshared." Explain clearly why you chose these examples to demonstrate the distinction between shared and unshared environmental factors.

Module: 2.5.1: Family Systems
Learning Objective 2.5
Evaluate It
Difficult

2.173. Give an example of a statement that reflects an ethnocentric viewpoint.

Module: 2.5.2: The Family as Transmitter of Culture
Learning Objective 2.5
Apply What You Know
Moderate

2.174. Give an example of a normative age-graded influence, an example of a normative history-graded influence, and an example of a non-normative influence in human development.

Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Apply What You Know
Moderate

Essay questions:

Molecular Genetics
Learning Objective 2.1: Summarize the functions of human genetic structures

2.175. Describe the structure of the DNA molecule and explain how the entire genetic code is constructed with only four different bases: adenine, thymine, cytosine, and guanine.

Module: 2.1.2: DNA
Learning Objective 2.1
Analyze It
Difficult

2.176. Discuss how the concept of "race" is typically considered from a genetic point of view. In your discussion, answer the questions: Are there "racial" differences that are coded in the genes?

Module: 2.1.2: DNA
Learning Objective 2.1
Analyze It
Difficult

Chromosomes, Genes, and Cell Division
Learning Objective 2.2: Describe how individuals are formed at the genetic level

2.177. Describe what a karyotype of the chromosomes of a typical person looks like. Include in your answer an explanation of the distinction between the autosomes and the sex chromosomes.

Module: 2.2: Chromosomes, Genes, and Cell Division
Learning Objective 2.2
Evaluate It
Moderate

2.178. What occurs during the process of mitosis and the process of meiosis? How do the processes of mitosis and meiosis differ?

Module: 2.2.1: Cell Division and Reproduction
Learning Objective 2.2
Analyze It
Difficult

2.179. Define the concept of "allele" and suggest the allele configuration of a homozygous versus a heterozygous trait.

Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Apply What You Know
Difficult

2.180. Give an example of a sex-linked trait and describe why such traits are more frequently observed in males than females.

Module: 2.2.2: From Genotype to Phenotype
Learning Objective 2.2
Analyze It
Difficult

2.181 Describe how genetic "crossing over" occurs and what impact this process has on how traits are expressed in individuals.

Module: 2.2.3: The Variation of Traits Among Individuals
Learning Objective 2.2
Evaluate It
Difficult

2.182. Explain how epigenetic processes provide an explanation for gene-environment interactions and give an example to demonstrate your answer.

Module: 2.2.4
Learning Objective 2.2
Analyze It
Difficult

Genetic Disorders
Learning Objective 2.3: Explain how genetic disorders affect human development

2.183. Give an example of a genetic disorder and of a chromosomal disorder. What is the difference between these two types of disorders?

Module 2.3
Learning Objective 2.3
Analyze It
Difficult

2.184. Describe what services are offered by genetics counselors and suggest why a couple might choose to seek out these services.

Module: 2.3.4: Genetic Counseling
Learning Objective 2.3
Analyze It
Moderate

2.185. Explain how recombinant technology can be used as part of a gene therapy program.

Module: 2.3.5: Advances in Genetic Research and Treatment
Learning Objective 2.3
Evaluate It
Difficult

Behavior and Environment
Learning Objective 2.4: Compare the impact of genetics and environment on human development

2.186. Define what is meant by "concordance" and describe how a concordance study would be conducted using twins.

Module: 2.4.1: Behavior Genetics
Learning Objective 2.4
Analyze It
Difficult

2.187. Explain the rationale for using adoption studies and twin studies in learning about genetic influences on behavior.

Module: 2.4.2: Twin and Adoption Studies
Learning Objective 2.4
Evaluate It
Moderate

2.188. Describe how a phobia would be explained, using a classical conditioning model.

Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Evaluate It
Moderate

2.189. Suppose you want to improve your study habits. Describe how an applied behavior analysis program based on shaping could be used to help you accomplish this goal.

Module: 2.4.3: Environmental Influences and Contexts
Learning Objective 2.4
Evaluate It
Moderate

2.190. Explain the difference between the terms self-concept and self-efficacy.

Module: 2.4.4: Applied Behavior Analysis
Learning Objective 2.4
Evaluate It
Moderate

Environment in a Broader Context: Family and Culture
Learning Objective 2.5: Analyze the impact of sociocultural context on human development

2.191. Give an example of ethnocentric thinking and explain why researchers in the area of human development must be especially aware of its influence as they formulate theories.

Module: 2.5.2: The Family as Transmitter of Culture
Learning Objective 2.5
Evaluate It
Moderate

2.192. Distinguish between normative age-graded influences and normative history-graded influences and give an example of each.

Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Apply What You Know
Moderate

2.193. Describe how normative age-graded influence, normative history-graded influences, and non-normative events change in their relative influence on development across the lifespan. Which are most important in early life? Which are most important in later life?

Module: 2.5.3: Sociocultural Influences on Development Across the Lifespan
Learning Objective 2.5
Evaluate It
Difficult