Biology Genetics

Heredity and Environment

**Quiz #1:**

1. Humans share \_\_\_\_\_\_\_\_ with apes and monkeys.

a. the same order

b. the same genus

c. the same species

d. all of these

2. The theory of preformation states that

a. a sufficient number of sperm cells had to enter the female sex cell to trigger normal development.

b. future generations were nested inside one another.

c. traits were transmitted in units, now called genes.

d. during the creation of male and female reproductive cells, gene pairs separate randomly.

3. An organism’s actual physical characteristics is referred to as its

a. genotype.

b. heritability.

c. phenotype.

d. polygenic inheritance.

4. Lee has one normal allele and one allele for phenylketonuria. Lee will

a. have phenylketonuria because it only takes one allele for this condition to be expressed.

b. not have phenylketonuria because it takes two alleles for this condition to be expressed.

c. not have phenylketonuria because he is a male and this is a condition that only affects females.

d. have a one in three chance of having the condition.

5. \_\_\_\_\_\_\_\_\_\_ is a progressive neurological disorder that is caused by a dominant gene and usually produces symptoms between 30 and 40 years of age, resulting in dementia, personality change, and early death.

a. Marfan syndrome

b. Brachydactyly, Type C

c. Huntington disease

d. Hemophilia A

6. \_\_\_\_\_\_\_\_\_\_ are segments of DNA that determine when we should grow taller and at what ages our brains should “clean house” by eliminating unnecessary connections between neurons.

a. Structural genes

b. Genetic imprints

c. Autosomes / Genomes

d. Regulatory sequences / Genetic switches

7. A person with an XY for the 23rd pair of chromosomes

a. is a male.

b. is a female.

c. has Down syndrome.

d. has Turner’s syndrome.

8. \_\_\_\_\_\_\_\_\_\_ is a process of cell division that reduces the number of chromosomes from 46 to 23.

a. Mitosis

b. Meiosis

c. Canalization

d. Genetic imprinting

9. Your blood type is determined by

a. X-linked traits.

b. two alleles, either dominant or recessive alleles.

c. polygenic inheritance.

d. three alleles, combined in pairs of two.

10. Which of the following is FALSE regarding monozygotic twins?

a. They share 100 percent of their genes.

b. They are always of the same sex.

c. They are also referred to as fraternal twins.

d. They form from a single fertilized egg that splits early in development.

11. According to \_\_\_\_\_\_\_\_\_, genes determine the lowest level of intelligence an individual with Down syndrome will achieve as well as the highest level that is possible if the individual is raised in a stimulating environment.

a. genetic imprinting

b. genetic plasticity

c. one’s heritability

d. one’s reaction range

12. Eric has always been an active child that has enjoyed and excelled at athletic pursuits as well as helping others, so he decides he wants to pursue a career as a coach. Eric is illustrating

a. genomic imprinting.

b. niche-picking.

c. canalization.

d. genetic fit.

13. Although neurogenesis determines the number of brain cells a child will have, the organization of those cells is determined by a process called

a. neural migration.

b. myelination.

c. canalization.

d. neurulation.

14. \_\_\_\_\_\_\_\_\_\_\_\_ is the ability of one’s brain to change with experience.

a. Neural plasticity

b. Genetic imprinting

c. Synaptic canalization

d. Neurulation

15. Which of the following would be considered a feature of a culture?

a. the presence or absence of various diseases

b. art and technology

c. availability of food

d. all of these

16. Which of the following is FALSE regarding ethnicity?

a. The concept of ethnicity recognizes that biological and cultural differences distinguish populations.

b. Ethnic identities may change over time, reflecting how people think about themselves as well as external political forces.

c. An increasing number of individuals are identifying themselves in term of more than one ethnic tradition.

d. American Indian, Alaska Native, Asian, and white are examples of ethnic terms.

17. Hung Lee believes her infant should sleep with her, and she raises her older children to be responsible in working toward the goal of whichever group they are a part of whether it is their family or at school. Hung Lee is emphasizing \_\_\_\_\_\_\_\_\_\_ values.

a. individualist

b. unitarian

c. collectivist

d. creative

18. \_\_\_\_\_\_\_\_\_\_ refers to the belief that one’s ethnic group is superior to other groups.

a. Ethnic diversity

b. Racism

c. Cultural narcissism

d. Ethnocentrism

19. \_\_\_\_\_\_\_\_\_\_\_\_ is the field that studies how much nature and nurture contribute to individual differences in human behavior.

a. Behavioral genetics

b. Psychogenetics

c. Social genetics

d. Psychometrics

20. A heritability value of 1.0

a. means that all of the variability we observe is due to genetic factors.

b. means that all of the variability we observe is due to environmental factors.

c. means the variability we observe is due equally to genetic and environmental factors.

d. is impossible since heritability estimates range only from -1.0 to 0.

**Chapter 2: Heredity and Environment**

**Quiz #1: Answer Key**

1. **Answer: a**

**Page(s): 47**

**Rationale: Humans share the order primates with apes and monkeys and the same superfamily, but humans are the only living members of a genus called Homo, a genus that consists of one living species, Homo sapiens.**

2. **Answer: b**

**Page(s): 48**

**Rationale: Preinformation was the popular view of reproduction during the 17th century and stated that future generations were nested inside one another.**

3. **Answer: c**

**Page(s): 49**

**Rationale: Phenotype is the organism’s actual physical characteristics.**

4. **Answer: b**

**Page(s): 50, Table 2.1**

**Rationale: Since phenylketonuria is a recessive trait, it takes two alleles for it to be expressed.**

5. **Answer: c**

**Page(s): 50, Table 2.1**

**Rationale: Huntington disease is a progressive neurological disorder that usually produces symptoms between 30 and 40 years of age, resulting in dementia, personality change, and early death.**

6. **Answer: d**

**Page(s): 51**

**Rationale: Genetic switches, or regulatory sequences, are segments of DNA that influence when and where other genes are expressed, such as when we should grow taller or at what age our brains do some “pruning.”**

7. **Answer: a**

**Page(s): 51**

**Rationale: Males typically have an XY for their 23rd pair.**

8. **Answer: b**

**Page(s): 52**

**Rationale: The gametes are produced by a process of cell division known as meiosis in which the number of chromosomes is reduced from 46 to 23.**

9. **Answer: d**

**Page(s): 53**

**Rationale: Codominance occurs when each combination of alleles results in a distinctly different phenotype. For example, one’s blood type is determined by three alleles, which when combined in pairs of two, produce four distinct phenotypes: type A, B, AB, and O.**

10. **Answer: c**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: Monozygotic twins are also called identical twins. All of the other statements are true.**

11 **Answer: d**

**Page(s): 60**

**Section: How Genes and the Environment Interact**

**Rationale: Reaction range** **implies that genes set the lower and upper limit for a trait, while the quality of the environment determines where a person will fall within a range of functioning.**

12. **Answer: b**

**Page(s): 62**

**Section: How Genes and the Environment Interact**

**Rationale: Niche-picking is the tendency of individuals to choose activities and environments that match their personalities and interests.**

13. **Answer: a**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

**Rationale: Neural migration determines the organization of the brain cells and is the migration of neurons from the location where they are produced to their final location in the brain.**

14. **Answer: a**

**Page(s): 64**

**Section: How Genes and the Environment Interact**

**Rationale: Neural plasticity is the ability of one’s brain to change with experience.**

15. **Answer: b**

**Page(s): 68**

**Section: Genetic and Environmental Diversity**

**Rationale: Culture refers to the features of the environment that are socially-constructed and learned, including the technology, art, morals, laws, customs, and beliefs of individual societies.**

16. **Answer: d**

**Page(s): 69**

**Section: Genetic and Environmental Diversity**

**Rationale: American Indian, Alaska Native, Asian, and white are examples of racial terms used by the United States census to categorize people. However, Hispanic or Latino refers to ethnicity because people in this category can be of any race.**

17. **Answer: c**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: Collectivist parents believe that their infants should sleep with their parents and should focus on the welfare of a group, while individualist values emphasize independence, unique solutions to problems, and personal happiness.**

18. **Answer: d**

**Page(s): 72**

**Section: Genetic and Environmental Diversity**

**Rationale: Ethnocentrism is the belief that one’s ethnic group is superior to other groups.**

19. **Answer: a**

**Page(s): 74**

**Rationale: Behavioral genetics is the field that studies how much nature and nurture contribute to individual differences in human behavior.**

20. **Answer: a**

**Rationale: Heritability estimates range from 0 to 1.0 with a value of 1.0 meaning that all of the variability we observe is due to genetic factors.Chapter 2: Heredity and Environment**

**Quiz #2:**

1. Compared to other primates, human offspring

a. are small for the size of their mothers.

b. have physical functions that mature very rapidly.

c. are dependent on their parents longer.

d. are characterized by all of these.

2. Which of the following conducted the experiments with pea plants that led to a number of basic genetic principles?

a. Howard Gardner

b. Watson and Crick

c. Gregor Mendel

d. Sean Carroll

3. An organism’s genetic makeup is referred to as its

a. genotype.

b. phenotype.

c. heritability.

d. canalization.

4. Marie has cystic fibrosis, but neither of her parents have the condition. Thus, Marie must have \_\_\_\_ allele(s) for cystic fibrosis, and her parents must each have \_\_\_\_ allele(s) for cystic fibrosis.

a. 1; 0

b. 1; 1

c. 2; 0

d. 2:1

5. \_\_\_\_\_\_\_\_\_\_ is a recessive trait condition.

a. Marfan syndrome

b. Brachydactyly, Type C

c. Congenital stationary night blindness

d. Phenylketonuria

6. A person with an XX for the 23rd pair of chromosomes

a. is a male.

b. is a female.

c. has Down syndrome.

d. has Klinefelter’s syndrome.

7. Chromosomes within a cell can be photographed and arranged in order by pairs, creating a(n)

a. regulatory sequence.

b. karotype.

c. canalization.

d. heritability graph.

8. The spermatozoa and the ova are referred to as

a. glial cells.

b. sex chromosomes.

c. gametes.

d. oocytes.

9. Co-dominance and polygenic inheritance are examples of

a. genetic imprinting.

b. preformation.

c. non-Mendelian patterns.

d. Mendelian transmission.

10. The human genome refers to the

a. non-heritable influences on our species.

b. entire set of genes that defines our species.

c. extent to which a trait develops normally across a range of environments.

d. proportion of observed variability among individuals in a group.

11. Which of the following is FALSE regarding dizygotic twins?

a. They are no more genetically similar than siblings who were carried by their mother at different times.

b. They can be either the same sex or different sexes.

c. They are also referred to as fraternal twins.

d. They form from a single fertilized egg that splits early in development.

12. Sally is an attractive, easy-going child, who receives a great deal of positive feedback from other people. Because of this positive interaction with others, Sally grows up to be sociable and self-confident. This situation illustrates a(n) \_\_\_\_\_\_\_\_\_ correlation.

a. active gene-environment

b. reactive gene-environment

c. canalized gene-environment

d. passive gene-environment

13. Neurulation is the

a. process of developing interconnections between neurons.

b. process of forming the neural tube, which will become the brain and spinal cord.

c. production of a fatty substance around axons to insulate fibers and speed transmission within a neuron.

d. production of neurons in the brain.

14. Between early childhood and adolescence, children lose billions of synapses per day in a process called \_\_\_\_\_\_\_\_\_, which is the elimination of unnecessary synaptic connections.

a. synaptic pruning

b. neural migration

c. synaptic canalization

d. neurogenesis

15. Which of the following is FALSE regarding the development of the human brain?

a. We are born with all the neurons we will ever have.

b. New connections between neurons develop throughout our lives.

c. The brain’s flexibility follows a “use it or lose it” principle.

d. Environmental stimulation increases the functioning of the brain with deterioration occurring during times of extreme stress, illness, or when environments fail to stimulate us mentally.

16. Hispanic or Latino refers to one’s

a. race.

b. ethnicity.

c. heritability.

d. ethnocentrism.

17. \_\_\_\_\_\_\_\_\_\_ values emphasize unique solutions to problems and personal happiness, while \_\_\_\_\_\_\_\_\_\_ values focus on the welfare of the group.

a. Individualist; creative

b. Individualist; collectivist

c. Collectivist; individualistic

d. Creative; collectivist

18. The field of \_\_\_\_\_\_\_ can analyze how genetic and environmental influences affect individual differences among a group of people, using a concept called heritability.

a. biopsychology

b. psychogenics

c. social psychology

d. behavioral genetics

19. A heritability value of 0.0

a. means that none of the variability we observe is due to genetic factors.

b. means that none of the variability we observe is due to environmental factors.

c. means the variability we observe is due equally to genetic and environmental factors.

d. is impossible since heritability estimates range from 1.0 to 2.0.

20. Since siblings have different friends and experience different treatment by their parents, these influences are called \_\_\_\_\_\_\_\_\_ family environments.

a. genomic

b. shared

c. nonshared

d. emergenic

**Chapter 2: Heredity and Environment**

**Quiz #2: Answer Key**

1. **Answer: c**

**Page(s): 47**

**Rationale: Compared to other primates, human offspring are dependent on their parents longer. Human offspring are also large for the size of their mothers, have physical functions that mature very slowly, and are weaned earlier than other primates.**

2. **Answer: c**

**Page(s): 49**

**Rationale: Gregor Mendel did experiments with pea plants, studying the inheritance of seven pairs of traits. His work showed that information was inherited in discrete (individual) units that did not blend together.**

3. **Answer: a**

**Page(s): 49**

**Rationale: Genotype is the organism’s genetic makeup.**

4. **Answer: d**

**Page(s): 50, Table 2.1**

**Rationale: Since cystic fibrosis is a recessive condition, Marie received one allele from each of her parents in order to have the condition. Her parents do not have the condition, but each carry a recessive allele for cystic fibrosis and a dominant normal allele.**

5. **Answer: d**

**Page(s): 50, Table 2.1**

**Rationale: Phenylketonuria is a recessive trait condition, while the others are dominant.**

6. **Answer: b**

**Page(s): 51**

**Rationale: Females typically have an XX for their 23rd pair.**

7. **Answer: b**

**Page(s): 52**

**Rationale:**  **Chromosomes within a cell can be photographed and arranged in order by pairs, creating a karotype.**

8. **Answer: c**

**Page(s): 52-53**

**Rationale: The reproductive cells, the spermatozoa and ova, are referred to as gametes.**

9. **Answer: c**

**Page(s): 53**

**Rationale: Co-dominance and polygenic inheritance are example of non-Mendelian patterns.**

10. **Answer: b**

**Page(s): 54**

**Rationale: The entire set of genes that define our species is referred to as the human genome.**

11. **Answer: d**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: Dizygotic twins are also called fraternal twins and form from two fertilized eggs. They may be either the same sex or different sexes and are no more genetically similar than siblings who were carried by their mother at different times.**

12. **Answer: b**

**Page(s): 62**

**Section: How Genes and the Environment Interact**

**Rationale: Reactive gene-environment correlation describes** **how children with different genetic make-ups elicit different reactions from their environments.**

13. **Answer: b**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

**Rationale: Neurulation is the process of forming the neural tube, which will become the brain and spinal cord.**

14. **Answer: a**

**Page(s): 64**

**Section: How Genes and the Environment Interact**

**Rationale: Synaptic pruning is the elimination of synaptic connections.**

15. **Answer: a**

**Page(s): 65**

**Section: How Genes and the Environment Interact**

**Rationale: New neurons continue to be produced in some brain regions even during adulthood. All of the other statements are true.**

16. **Answer: b**

**Page(s): 69**

**Section: Genetic and Environmental Diversity**

**Rationale: Hispanic or Latino refers to ethnicity because people in this category can be of any race.**

17. **Answer: b**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: Individualist values emphasize independence, unique solutions to problems, and personal happiness, while collectivist values focus on the welfare of the group.**

18. **Answer: d**

**Page(s): 74**

**Rationale: The field of behavioral genetics can analyze how genetic and environmental influences affect individual differences among a group of people, using a concept called heritability.**

19. **Answer: a**

**Page(s): 75**

**Rationale: Heritability estimates range from 0 to 1.0 with a value of 0 meaning that none of the variability we observe is due to genetic factors.**

20. **Answer: c**

**Page(s): 78**

**Rationale: Since siblings have different friends and experience different treatment by their parents, these influences are called nonshared family environments.**

**Chapter 2: Heredity and Environment**

**Multiple Choice Questions**

1. In the story at the beginning of chapter two, the characteristics of the twins that appeared to be due to nature included

a. their talent for dance.

b. their facial expressions.

c. their gestures.

d. all of these.

**Answer: d**

**Page(s): 46**

**Section: Stories of Our Lives / Seeing Double**

**Rationale: The reunited twins in the story at the beginning of the chapter showed similarities, which appeared to be genetic, regarding their facial expressions, gestures, and their love of dance.**

2. In the story at the beginning of chapter two, the characteristics of the twins that appeared to be due to nurture included their

a. religion.

b. facial expressions.

c. gestures.

d. talents.

**Answer: a**

**Page(s): 46**

**Section: Stories of Our Lives / Seeing Double**

**Rationale: The reunited twins in the story at the beginning of the chapter showed a difference in religion due to the different environments in which they were raised with one being Catholic and the other Jewish. They appeared to be similar owing to nature in their facial expressions, gestures, and their talent for dance.**

3. In cases of identical twins where they were separated at birth and then reunited, researchers would be most interested in the effects of \_\_\_\_\_\_\_\_\_ on who they have become.

a. nature and nurture

b. stability and change

c. continuity and discontinuity

d. quantitative and qualitative changes

**Answer: a**

**Page(s): 46**

**Section: Stories of Our Lives / Seeing Double**

**Rationale: Researchers look at which aspects of the person tends to be due to nature, since identical twins have the same genetic make-up, and the effects of nurture, since they were raised in differing environments.**

4. Biologists classify living thing into groups, including

a. kingdom.

b. order.

c. genus.

d. all of these.

**Answer: d**

**Page(s): 47**

**Rationale: Biologists classify living things into groups, including a kingdom, class, order, family, genus, and species.**

5. Humans share \_\_\_\_\_\_\_\_ with apes and monkeys.

a. the genus homo

b. the species sapiens

c. the order primates

d. none of these

**Answer: c**

**Page(s): 47**

**Rationale: Humans share the order primates with apes and monkeys and the same superfamily, but humans are the only living members of a genus called Homo, a genus that consists of one living species, Homo sapiens.**

6. The name of the human genus is

a. Mammalia.

b. Primates.

c. Animalia.

d. Homo.

**Answer: d**

**Page(s): 47**

**Rationale: Humans share the order primates with apes and monkeys and the same superfamily, but humans are the only living members of a genus called Homo, a genus that consists of one living species, Homo sapiens.**

7. Homo sapiens is Latin for

a. “walks upright.”

b. “wise human being.”

c. “like but evolved species.”

d. “uses language.”

**Answer: b**

**Page(s): 47**

**Rationale: Homo sapiens is Latin for “wise human being.”**

8. Compared to other primates, human offspring

a. are large for the size of their mothers.

b. have physical functions that mature very slowly.

c. are weaned earlier.

d. are characterized by all of these.

**Answer: d**

**Page(s): 47**

**Rationale: Compared to other primates, human offspring show all of the following characteristics: are large for the size of their mothers, have physical functions that mature very slowly, and are weaned earlier than other primates.**

9. Humans survive

a. because our bodies are adapted for particular environments.

b. because our flexible brains help us adapt in a wide variety of environments.

c. because humans were large animals that were less likely to be killed by predators.

d. due to none of these reasons.

**Answer: b**

**Page(s): 47**

**Rationale: Although most species survive because they are adapted for their particular environment, humans survive because our flexible brains help us adapt in a wide variety of environments.**

10. Which of the following statements is FALSE regarding the human brain?

a. It has specialized brain structures not found in other primate brains.

b. It is large compared to the rest of the human body.

c. It has greater volume in the areas responsible for complex thought than other animals.

d. It is flexible, which helps us adapt to a wide variety of environments.

**Answer: a**

**Page(s): 47**

**Rationale: Our brains contain no structures that are not found in other primate brains. The rest of the statements are true.**

11. Which of the following statements is FALSE regarding the lifespan of animals?

a. Small organisms tend to reach sexual maturity young, reproduce often, and die young.

b. Larger animals, who are less likely to be killed by predators, have a more leisurely existence.

c. Humans have a longer lifespan than would be expected for their size.

d. The maximum lifespan of a chimpanzee is the same as that of humans.

**Answer: d**

**Page(s): 47**

**Rationale: The maximum lifespan of a human is about 120 years, while the lifespan of an chimpanzee is 53 years. All of the other statements are true.**

12. During the 17th century, \_\_\_\_\_\_\_\_\_\_\_ was a popular view of reproduction and stated that future generations were nested inside one another.

a. preformation

b. tabula rasa

c. canalization

d. nature-nurture

**Answer: a**

**Page(s): 48**

**Rationale: Preinformation was the popular view of reproduction during the 17th century and stated that future generations were nested inside one another.**

13. After the discovery of sperm cells, preformationists claimed that

a. a sufficient number of sperm cells had to enter the female sex cell to trigger normal development.

b. immature organisms were housed in the head of the sperm.

c. traits were transmitted within the egg and the sperm in units, now called genes.

d. during the creation of male and female reproductive cells, gene pairs separate randomly.

**Answer: b**

**Page(s): 48**

**Rationale: After the discovery of sperm cells, some preformationists claimed that immature organisms were housed in the head of the sperm.**

14. In the late 19th century, some physicians believed that

a. a sufficient number of sperm cells had to enter the female sex cell to trigger normal development.

b. immature organisms were housed in the head of the sperm.

c. traits were transmitted within the egg and the sperm in units, now called genes.

d. future generations were nested inside one another.

**Answer: a**

**Page(s): 48**

**Rationale: In the late 19th century, some physicians believed that a sufficient number of sperm cells had to enter the female sex cell to trigger normal development.**

15. \_\_\_\_\_\_\_\_\_\_\_ is the genetic mechanism by which parents pass traits onto their children.

a. Gene plasticity

b. Canalization

c. Heredity

d. Heritability

**Answer: c**

**Page(s): 48**

**Rationale: Heredity is the genetic mechanism by which parents pass traits onto their children.**

16. Heredity is

a. the process of developing interconnections between genes.

b. the genetic mechanisms by which parents pass traits onto their children.

c. an organism’s actual physical and biochemical characteristics.

d. the extent to which a trait develops normally across a range of environments.

**Answer: b**

**Page(s): 48**

**Rationale: Heredity is the genetic mechanism by which parents pass traits onto their children.**

17. Gregor Mendel conducted experiments with \_\_\_\_\_\_\_\_, studying the inheritance of seven pairs of traits.

a. white rats

b. fruit flies

c. livestock

d. pea plants

**Answer: d**

**Page(s): 49**

**Rationale: Gregor Mendel did experiments with pea plants, studying the inheritance of seven pairs of traits. His work showed that information was inherited in discrete (individual) units that did not blend together.**

18. Gregor Mendel’s experiments were important because they demonstrated

a. that information was inherited in discrete (individual) units that do not blend together.

b. that during the creation of male and female reproductive cells, gene pairs segregate randomly.

c. dominance and recessiveness.

d. all of these.

**Answer: d**

**Page(s): 49**

**Rationale: Gregor Mendel did experiments with pea plants, studying the inheritance of seven pairs of traits. His work showed that information was inherited in discrete (individual) units that did not blend together, that gene pairs segregate randomly during the creation of male and female reproductive cells, and explained dominance and recessiveness.**

19. Mendel cross-bred pea plants that produced yellow seeds with pea plants that produced green seeds. If green is recessive, the resulting seeds of this first generation would be

a. yellowish-green.

b. in a ratio of three green seeds to one yellow seed.

c. yellow.

d. green.

**Answer: c**

**Page(s): 49**

**Rationale: If yellow is dominant and green is recessive, then a cross between these two plants would produce a phenotype of yellow seeds during the first generation.**

20. Mendel cross-bred pea plants that produced yellow seeds with pea plants that produced green seeds. This first generation-cross produced only yellow seeds. When the yellow seeds from this first generation were crossed, the next generation produced

a. yellowish-green seeds.

b. seeds in a ratio of three green to one yellow.

c. seeds in a ratio of three yellow to one green.

d. all yellow seeds again.

**Answer: c**

**Page(s): 49**

**Rationale: If yellow is dominant and green is recessive, then the first generation-cross would produce all yellow seeds with a cross of these resulting yellow seeds producing a ratio of three yellow seed to one green seed.**

21. Which of the following was NOT one of Gregor Mendel’s principles of heredity?

a. principle of discrete traits

b. principle of random segregation

c. principle of canalization

d. principle of dominance-recessiveness

**Answer: c**

**Page(s): 49**

**Rationale: Gregor Mendel’s experiments demonstrated the principles of discrete traits, random segregation and dominance-recessiveness. The concept of canalization was explained later in the 20th century.**

22. \_\_\_\_\_\_\_\_\_\_\_ are segments of DNA molecules that are the functional units of heredity and come in pairs.

a. Phenotypes

b. Genes

c. Chromosomes

d. Genotypes

**Answer: b**

**Page(s): 49**

**Rationale: Genes are segments of DNA molecules that are the functional units of heredity and come in pairs.**

23. Alternative forms of single genes are called

a. alleles.

b. polar bodies.

c. chromosomes.

d. gametes.

**Answer: a**

**Page(s): 49**

**Rationale: The alternate forms of single genes are called alleles.**

24. Albinism is a recessive condition in which people lack pigment that gives skin its color. If a child has albinism, then we know that

a. the child has one allele for albinism and one allele for normal skin color.

b. the child has two alleles for albinism.

c. the child is missing a skin color allele from its pair.

d. one parent had two alleles for albinism and the other parent had two alleles for normal skin color.

**Answer: b**

**Page(s): 49**

**Rationale: Albinism is a recessive condition, so a person with albinism must have two alleles for this condition.**

25. An organism’s genetic makeup is its \_\_\_\_\_\_\_, while its physical appearance is called its \_\_\_\_\_\_\_\_.

a. genotype; heritability

b. phenotype; genotype

c. heritability; phenotype

d. genotype; phenotype

**Answer: d**

**Page(s): 49**

**Rationale: Genotype is the organism’s genetic makeup, while phenotype is its physical characteristics.**

26. A\_\_\_\_\_\_\_\_\_ allele is one that masks the influence of other alleles and is therefore expressed.

a. genotypic

b. phenotypic

c. recessive

d. dominant

**Answer: d**

**Page(s): 49**

**Rationale: A dominant allele** **is one that masks the influence of other alleles and is therefore expressed.**

27. A\_\_\_\_\_\_\_\_\_ allele is one that is not expressed unless both alleles in a pair are present.

a. genotypic

b. phenotypic

c. recessive

d. dominant

**Answer: c**

**Page(s): 49-50**

**Rationale: A recessive allele** **is one that is not expressed unless both alleles in a pair are present.**

28. A\_\_\_\_\_\_\_\_\_ allele is one that masks the influence of other alleles and is therefore expressed, while a \_\_\_\_\_\_\_\_\_ allele is not expressed unless both alleles in a pair are present.

a. genotypic; phenotypic

b. phenotypic; genotypic

c. recessive; dominant

d. dominant; recessive

**Answer: d**

**Page(s): 49-50**

**Rationale: A dominant allele** **is one that masks the influence of other alleles and is therefore expressed, while the recessive allele is not expressed unless both alleles in a pair are present.**

29. If albinism is a recessive condition like Mendel’s green seeds, then if each parent has one normal pigment allele and one allele for albinism, the probability ratio of normal pigmentation to albinism would be

a. 1:1.

b. 2:1.

c. 3:1.

d. 4:1.

**Answer: c**

**Page(s): 50**

**Rationale: There is a 3:1 ratio of traits in the children of parents who carry two different alleles.**

30. Sara has phenylketonuria, but neither of her parents have the condition. Thus, Sara must have \_\_\_\_allele(s) for phenylketonuria, and her parents must each have \_\_\_\_ allele(s) for phenylketonuria.

a. 1; 0

b. 1; 1

c. 2; 0

d. 2:1

**Answer: d**

**Page(s): 50, Table 2.1**

**Rationale: Since phenylketonuria is a recessive condition, Sara received one allele from each of her parents in order to have the condition. Her parents do not have the condition, but each carry a recessive allele for phenylketonuria and a dominant normal allele.**

31. Lisa has one normal allele and one allele for Huntington disease. Lisa will

a. have Huntington disease because it only takes one allele for this condition to be expressed.

b. not have Huntington disease because it takes two alleles for this condition to be expressed.

c. not have Huntington disease because she is a female and this is a sex-linked trait.

d. have a one in four chance of having the condition.

**Answer: a**

**Page(s): 50, Table 2.1**

**Rationale: Since Huntington disease is a dominant trait, it only takes one allele for it to be expressed.**

32. Curtis has one normal allele and one allele for Marfan syndrome. Curtis will

a. have Marfan syndrome because it only takes one allele for this condition to be expressed.

b. not have Marfan syndrome because it takes two alleles for this condition to be expressed.

c. not have Marfan syndrome because he is a male and this is a condition that only affects females.

d. have a one in four chance of having the condition.

**Answer: a**

**Page(s): 50, Table 2.1**

**Rationale: Since Marfan syndrome is a dominant trait, it only takes one allele for it to be expressed.**

33. Eric has one normal allele and one allele for cystic fibrosis. Eric will

a. have cystic fibrosis because it only takes one allele for this condition to be expressed.

b. not have cystic fibrosis because it takes two alleles for this condition to be expressed.

c. not have cystic fibrosis because he is a male and this is a condition that only affects females.

d. have a one in three chance of having the condition.

**Answer: b**

**Page(s): 50, Table 2.1**

**Rationale: Since cystic fibrosis is a recessive trait, it takes two alleles for it to be expressed.**

34. Which of the following conditions is more common in males because it is X-linked?

a. green colorblindness

b. cystic fibrosis

c. brachydactyly, type c

d. phenylketonuria

**Answer: a**

**Page(s): 50, Table 2.1**

**Rationale: Green colorblindness is more common in males because it is X-linked.**

35. \_\_\_\_\_\_\_\_ is a blood coagulation problem in which affected individuals bruise easily, have prolonged bleeding after an injury, and often suffer from joint pain. It is more common in males because it is an X-linked disorder.

a. Hemophilia A

b. Cystic fibrosis

c. Brachydactyly, type c

d. Phenylketonuria

**Answer: a**

**Page(s): 50, Table 2.1**

**Rationale: Hemophilia A is a blood coagulation problem that is more common in males because it is X-linked.**

36. \_\_\_\_\_\_\_\_\_\_ is a dominant trait condition.

a. Albinism

b. Cystic fibrosis

c. Huntington disease

d. Phenylketonuria

**Answer: c**

**Page(s): 50, Table 2.1**

**Rationale: Huntington disease is a dominant trait condition, while the others are recessive.**

37. Through a blood test as a newborn, Gina was found to have an enzyme deficiency that will prevent her from being able to metabolize an amino acid found in high protein foods. She will be placed on a special diet to prevent mental retardation. Gina has which genetic condition?

a. Marfan syndrome

b. Huntington disease

c. cystic fibrosis

d. phenylketonuria

**Answer: d**

**Page(s): 50, Table 2.1**

**Rationale: Phenylketonuria is a recessive trait condition in which the child has an enzyme deficiency that will prevent victims from metabolizing the amino acid phenylalanine.**

38. Affected individuals with \_\_\_\_\_\_\_\_\_ produce an abnormal amount of mucus in the lungs and digestive system with recurrent infections and lung damage.

a. Marfan syndrome

b. Huntington disease

c. cystic fibrosis

d. phenylketonuria

**Answer: c**

**Page(s): 50, Table 2.1**

**Rationale: Affected individuals with cystic fibrosis produce an abnormal amount of mucus in the lungs and digestive system with recurrent infections and lung damage.**

39. Affected individuals with \_\_\_\_\_\_\_\_\_ have fingers and toes that are abnormally short with all other aspects of growth being normal.

a. Marfan syndrome

b. Brachydactyly, Type C

c. Huntington disease

d. phenylketonuria

**Answer: b**

**Page(s): 50, Table 2.1**

**Rationale: Affected individuals with brachydactyly, type c** **have fingers and toes that are abnormally short with all other aspects of growth being normal.**

40. Vic is the star of his high school basketball team with his tall stature and extremely long arms and legs. Throughout his life he has had to have various braces on his teeth because of his high arched palate and crowded teeth. The school nurse would like Vic’s heart examined because she suspects that he might have

a. Marfan syndrome.

b. Brachydactyly, Type C.

c. Huntington disease.

d. phenylketonuria.

**Answer: a**

**Page(s): 50, Table 2.1**

**Rationale: Marfan syndrome is a dominant trait condition that is characterized by tall stature and extremely long arms and legs, crowded teeth and a high arched palate, and heart abnormalities that could cause a premature death.**

41. \_\_\_\_\_\_\_\_\_\_ is a molecule that contains the genetic code.

a. A glial cell

b. A polar body

c. RST

d. DNA

**Answer: d**

**Page(s): 51**

**Rationale: DNA, deoxyribonucleic acid, is a molecule that contains the genetic code.**

42. Your genetic blueprint is made of molecules of

a. glial cells.

b. polar bodies.

c. chromosomes.

d. DNA.

**Answer: d**

**Page(s): 51**

**Rationale: Your genetic blueprint is made of molecules of DNA, deoxyribonucleic acid.**

43. Which of the following is FALSE regarding the genetic code?

a. The existence of DNA was discovered in the 1860s by a Swiss chemist.

b. In 1953, Watson and Crick described the structure of DNA.

c. Adenine always bonds with cytosine, and thymine always bonds with guanine.

d. Genes are specific segments of a DNA molecule that range from less than 1,000 bases to several million bases in length.

**Answer: c**

**Page(s): 51**

**Rationale: Adenine always bonds with thymine, and cytosine always bonds with guanine. All of the other statements are true.**

44. In 1953, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ describe the structure of DNA in a two-page paper that earned them a Nobel Prize.

a. Dollard and Miller

b. Darley and Latane

c. James and Lange

d. Watson and Crick

**Answer: d**

**Page(s): 51**

**Rationale: In 1953, James Watson and Francis Crick described the structure of DNA in a two-page paper that earned them a Nobel Prize.**

45. Each DNA molecule has four types of chemical units called

a. glial cells.

b. bases.

c. nucleic acids.

d. polar bodies.

**Answer: b**

**Page(s): 51**

**Rationale: Each DNA molecule has four types of chemical units called bases.**

46. The four bases that make up each DNA molecule are

a. adenine, thymine, guanine, and cytosine.

b. ribosine, melanine, gutamine, terosine.

c. phosphene, quinine, endorphin, choline

d. dopamine, enkephalin, serotonin, adrenaline.

**Answer: a**

**Page(s): 51**

**Rationale: Each DNA molecule has four types of chemical units called bases, which are A (adenine), T (thymine), G (guanine), and C (cytosine).**

47. The pairings of the bases is specific with adenine always bonding with

a. guanine.

b. thymine.

c. cytosine.

d. quinadine.

**Answer: b**

**Page(s): 51**

**Rationale: Adenine always bonds with thymine, and cytosine always bonds with guanine.**

48. The pairings of the bases is specific with cytosine always bonding with

a. guanine.

b. thymine.

c. adenine.

d. quinadine.

**Answer: a**

**Page(s): 51**

**Rationale: Cytosine always bonds with guanine, and adenine always bonds with thymine.**

49. DNA molecules duplicate themselves

a. through a process known as meosis.

b. through a process known as mitosis.

c. by coming apart in the middle and picking up free-floating bases.

d. by replicating the end base on each rung of the “twisted ladder.”

**Answer: c**

**Page(s): 51**

**Rationale: DNA molecules duplicate themselves by unzipping, coming apart at the middle and picking up free-floating bases, thereby creating tow identical DNA molecules.**

50. \_\_\_\_\_\_\_\_ are specific segments of a DNA molecule that range from less than 1,000 bases to several million bases in length.

a. Genes

b. Glial cells

c. Chromosomes

d. Nucleic acids

**Answer: a**

**Page(s): 51**

**Rationale: Genes are specific segments of a DNA molecule that range from less than 1,000 bases to several million bases in length.**

51. \_\_\_\_\_\_\_\_\_\_ produce traits by directing the production of proteins with these segments of DNA determining your eye color and the texture of your hair.

a. Structural genes

b. Glial cells

c. Autosomes

d. Genetic switches

**Answer: a**

**Page(s): 51**

**Rationale: Structural genes produce traits by directing the production of proteins with these segments of DNA determining your eye color and the texture of your hair.**

52. \_\_\_\_\_\_\_\_\_\_ are segments of DNA that influence when and where other genes are expressed.

a. Structural genes

b. Glial cells

c. Autosomes / Genomes

d. Genetic switches / Regulatory sequences

**Answer: d**

**Page(s): 51**

**Rationale: Genetic switches, or regulatory sequences, are segments of DNA that influence when and where other genes are expressed.**

53. \_\_\_\_\_\_\_\_\_\_ are threadlike structures in the nuclei of cells that are constructed from DNA and contain the genetic code.

a. Structural genes

b. Glial cells

c. Chromosomes

d. Regulatory sequences

**Answer: c**

**Page(s): 51**

**Rationale: Chromosomes are threadlike structures in the nuclei of cells that are constructed from DNA and contain the genetic code.**

54. Humans have \_\_\_\_\_ pairs of chromosomes.

a. 11

b. 23

c. 48

d. 68

**Answer: b**

**Page(s): 51**

**Rationale: Humans have 23 pairs of chromosomes.**

55. Humans have \_\_\_\_\_ matching pairs of autosomes and \_\_\_\_ pair(s) of sex chromosomes.

a. 21; one

b. 22; one

c. 23; two

d. 46; two

**Answer: b**

**Page(s): 51**

**Rationale: Humans have 23 pairs of chromosomes: 22 matching pairs called autosomes and a 23rd pair called the sex chromosomes.**

56. Humans have 22 matching pairs of \_\_\_\_\_\_\_\_\_ and one pair of \_\_\_\_\_\_\_.

a. autosomes; sex chromosomes

b. structural genes; regulatory sequences

c. sex chromosomes; autosomes

d. structural genes; karotypes

**Answer: a**

**Page(s): 51**

**Rationale: Humans have 23 pairs of chromosomes: 22 matching pairs called autosomes and a 23rd pair called the sex chromosomes.**

57. Females typically have \_\_\_\_\_ for their 23rd pair of chromosomes, while males typically have \_\_\_\_\_ for their 23rd pair.

a. an XX; an XY

b. an XY; an XX

c. two autosomes; one autosome

d. one autosome; two autosomes

**Answer: a**

**Page(s): 51**

**Rationale: Females typically have an XX for their 23rd pair of chromosomes, while males typically have an XY for their 23rd pair.**

58. Virginia had amniocentesis to determine whether her unborn child had Down syndrome. From this amniotic fluid, the doctors took a cell and photographed the chromosomes within this cell and arranged them by pairs, creating a(n)

a. regulatory sequence.

b. karotype.

c. canalization.

d. heritability graph.

**Answer: b**

**Page(s): 52**

**Rationale:**  **Chromosomes within a cell can be photographed and arranged in order by pairs, creating a karotype.**

59. A child inherits \_\_\_\_ chromosomes from each parent.

a. 21

b. 23

c. 46

d. 48

**Answer: b**

**Page(s): 52**

**Rationale: A child inherits 23 chromosomes from each parent.**

60. The reproductive cells of the parents are called

a. autosomes.

b. sex chromosomes.

c. gametes.

d. glial cells.

**Answer: c**

**Page(s): 52**

**Rationale: The reproductive cells of the parents are called gametes.**

61. The gametes are produced by a process of cell division known as

a. mitosis.

b. meiosis.

c. canalization.

d. genetic imprinting.

**Answer: b**

**Page(s): 52**

**Rationale: The gametes are produced by a process of cell division known as meiosis.**

62. The female “eggs” that have the full number of chromosomes (before reduction division) are known as

a. ova.

b. oocytes.

c. glial cells.

d. blastulas.

**Answer: b**

**Page(s): 53**

**Rationale: The female “eggs” that have the full number of chromosomes are known as oocytes.**

63. The female “eggs” that have half the number of chromosomes (after reduction division) are known as

a. ova.

b. oocytes.

c. glial cells.

d. opocytes.

**Answer: a**

**Page(s): 53**

**Rationale: The female “eggs” that have half the number of chromosomes are known as ova.**

64. The male reproductive cells that have half the number of chromosomes (after reduction division) are known as

a. glial cells.

b. oocytes.

c. spermatozoa.

d. opocytes.

**Answer: c**

**Page(s): 53**

**Rationale: The male reproductive cells that have half the number of chromosomes are known as spermatozoa.**

65. Traits that are produced by dominant and recessive alleles are said to follow

a. genetic imprinting.

b. preformation.

c. non-Mendelian patterns.

d. Mendelian transmission.

**Answer: d**

**Page(s): 53**

**Rationale: Traits that are produced by dominant and recessive alleles are said to follow Mendelian transmission.**

66. Which of the following would be examples of Mendelian patterns of transmission?

a. genetic imprinting.

b. dominant and recessive.

c. codominance and polygenic inheritance.

d. X-linked traits.

**Answer: b**

**Page(s): 53**

**Rationale: Dominant and recessive transmissions are examples of Mendelian patterns, while the others listed would be non-Mendelian patterns.**

67. Which of the following would be examples of non-Mendelian patterns of transmission?

a. genetic imprinting

b. X-linked traits

c. partial dominance

d. all of these

**Answer: d**

**Page(s): 53**

**Rationale: Genetic imprinting, partial dominance, and X-linked traits are all examples of non-Mendelian patterns.**

68. \_\_\_\_\_\_\_\_\_ occurs when two alleles produce an intermediate trait, such as producing pink flowers by crossing red snapdragons with white snapdragons.

a. Genetic imprinting

b. Codominance

c. Partial dominance

d. Polygenic inheritance

**Answer: c**

**Page(s): 53**

**Rationale: Partial dominance occurs when two alleles produce an intermediate trait, such as producing pink flowers by crossing red snapdragons with white snapdragons.**

69. An example of incomplete, or partial, dominance in humans is \_\_\_\_\_\_\_\_\_, in which an adult with one abnormal allele does not suffer from the condition, but has only half of the enzyme activity.

a. Huntington disease

b. phenylketonuria

c. Marfan syndrome

d. Tay-Sachs disease

**Answer: d**

**Page(s): 53**

**Rationale: Tay-Sachs disease is an example of partial dominance with adults who carry one abnormal allele having half of the enzyme activity, but who do not have the condition.**

70. \_\_\_\_\_\_\_\_\_\_ is a partial dominance condition in which babies who inherit two recessive alleles do not metabolize fatty substances called lipids normally, causing gradual destruction of their central nervous systems followed by death during the first one to three years.

a. Huntington disease

b. Phenylketonuria

c. Marfan syndrome

d. Tay-Sachs disease

**Answer: d**

**Page(s): 53**

**Rationale: Tay-Sachs disease is a partial dominance condition in which babies who inherit two recessive alleles do not metabolize fatty substances called lipids normally, causing gradual destruction of their central nervous systems followed by death during the first one to three years.**

71. Tay-Sachs disease is an example of

a. genetic imprinting.

b. partial dominance.

c. codominance.

d. polygenic inheritance.

**Answer: b**

**Page(s): 53**

**Rationale: Tay-Sachs disease is an example of partial dominance with adults who carry one abnormal allele having half of the enzyme activity, but who do not have the condition.**

72. Your blood type is determined by transmission pattern known as \_\_\_\_\_\_\_\_\_\_ in which each combination of alleles results in a distinctly different phenotype.

a. genetic imprinting

b. partial dominance

c. codominance

d. polygenic inheritance

**Answer: c**

**Page(s): 53**

**Rationale: Codominance occurs when each combination of alleles results in a distinctly different phenotype. For example, one’s blood type is determined by three alleles, which when combined in pairs of two, produce four distinct phenotypes: type A, B, AB, and O.**

73. Traits that are determined by many genes are said to be transmitted by

a. partial dominance.

b. sex-influenced inheritance.

c. polygenic inheritance.

d. genetic imprinting.

**Answer: c**

**Page(s): 53**

**Rationale: Traits that are determined by many genes are said to be transmitted by polygenic inheritance.**

74. Agricultural aspects, such as milk production and the oil content of seeds, and eye color in humans are believed to be transmitted by

a. partial dominance.

b. Mendelian patterns.

c. polygenic inheritance.

d. genetic imprinting.

**Answer: c**

**Page(s): 53**

**Rationale: Traits that are determined by many genes are said to be transmitted by polygenic inheritance, such as milk production, the oil content of seeds, and eye color in humans.**

75. In \_\_\_\_\_\_\_\_\_, each individual allele either adds to the quantity of the trait or not with the total of these “additive” alleles determining what quantity of the trait is expressed.

a. partial dominance

b. Mendelian transmission

c. polygenic inheritance

d. genetic imprinting

**Answer: c**

**Page(s): 53**

**Rationale: Traits that are determined by many genes are said to be transmitted by polygenic inheritance with each individual allele either adding to the quantity of the trait or not. The total of these “additive” alleles determines what quantity of the trait is expressed.**

76. Pairs of genes provide people with a biological back-up system, so that if one copy of a gene is flawed, in most cases, the corresponding gene on the other chromosome is normal or dominant. This backup system is found within the autosomes for \_\_\_\_\_\_ and for \_\_\_\_\_\_ within the 23rd pair.

a. women; men

b. women; both men and women

c. both men and women; men

d. both men and women; women

**Answer: d**

**Page(s): 53-54**

**Rationale: Pairs of genes provide both men and women a biological back-up system within the first 22 pairs of chromosomes (autosomes). However, because females have two x chromosomes for the 23rd pair, they have the usual protection of a backup gene on their sex chromosomes. Males have one X and one Y chromosome. Although there are some corresponding regions between X and Y chromosomes, Y chromosomes are smaller and contain little genetic information.**

77. \_\_\_\_\_\_\_\_ are more likely to be expressed in males than in females because females often carry a dominant version of this trait on their other sex chromosome.

a. X-linked traits

b. Y-linked traits

c. Polygenic traits

d. Partial dominance traits

**Answer: a**

**Page(s): 54**

**Rationale: X-linked traits are more likely to be expressed in males than in females because females often carry a dominant version of this trait on their other sex chromosome.**

78. Muscular dystrophy, hemophilia, and some forms of color blindness are examples of

a. X-linked traits.

b. Y-linked traits.

c. polygenic traits.

d. partial dominance traits.

**Answer: a**

**Page(s): 54**

**Rationale: X-linked traits are more likely to be expressed in males than in females because females often carry a dominant version of this trait on their other sex chromosome. Examples of X-linked traits include some forms of color blindness, muscular dystrophy, and hemophilia.**

79. Barry has been diagnosed with \_\_\_\_\_\_\_\_\_\_, an X-linked disorder that causes muscle degeneration.

a. Huntington disease

b. Marfan syndrome

c. Muscular dystrophy

d. Tay-Sachs disease

**Answer: c**

**Page(s): 54**

**Rationale: Muscle dystrophy is an X-linked disorder that causes muscle degeneration.**

80. When the expression of a trait is influenced by individual hormone levels and is therefore expressed differently in males than in females, the transmission is a(n) \_\_\_\_\_\_\_\_\_ inheritance.

a. X-linked

b. sex-influenced

c. polygenic

d. codominance

**Answer: b**

**Page(s): 54**

**Rationale: A sex-influenced inheritance occurs when the expression of a trait is influenced by individual hormone levels and is, therefore, expressed differently in males than in females.**

81. Jack is experiencing hair loss on the top of his scalp. This pattern baldness is a(n)\_\_\_\_\_\_\_\_ type of inheritance.

a. X-linked

b. sex-influenced

c. polygenic

d. dominant

**Answer: b**

**Page(s): 54**

**Rationale: A sex-influenced inheritance occurs when the expression of a trait is influenced by individual hormone levels and is, therefore, expressed differently in males than in females. A well known example is pattern baldness.**

82. \_\_\_\_\_\_\_\_\_\_ occurs when the expression of a trait depends upon whether it was inherited from the mother or the father.

a. Genetic imprinting

b. Sex-influenced inheritance

c. Polygenic inheritance

d. Codominance

**Answer: a**

**Page(s): 54**

**Rationale: Genetic imprinting occurs** **when the expression of a trait depends upon whether it was inherited from the mother or the father.**

83. Prader-Willi syndrome and Angelman syndrome are examples of

a. genetic imprinting.

b. sex-influenced inheritance.

c. polygenic inheritance.

d. codominance.

**Answer: a**

**Page(s): 54**

**Rationale: Genetic imprinting occurs** **when the expression of a trait depends upon whether it was inherited from the mother or the father. Two examples are Prader-Willi and Angelman syndromes.**

84. \_\_\_\_\_\_\_\_\_\_ is one reason scientists cannot produce a human embryo using reproductive cells from two mothers or two fathers.

a. Genetic imprinting

b. X-linked inheritance

c. Polygenic inheritance

d. Codominance

**Answer: a**

**Page(s): 54**

**Rationale: Genetic imprinting occurs** **when the expression of a trait depends upon whether it was inherited from the mother or the father and is one reason scientists cannot produce a human embryo using reproductive cells from two mothers or two fathers.**

85. Terri inherited a normal chromosome at pair 15 from his mother, but the chromosome from his father showed a deletion of a chromosome region of the 15th chromosome. Because of this genetic imprint, Terri has a condition associated with mental retardation, obesity, and almond-shaped eyes. Terri has

a. Angelman syndrome.

b. Prader-Willi syndrome.

c. Marfan syndrome.

d. Down syndrome.

**Answer: b**

**Page(s): 54**

**Rationale: Genetic imprinting occurs** **when the expression of a trait depends upon whether it was inherited from the mother or the father. Two distinct disorders arise from the deletion of a chromosome region of the 15th pair. If only the maternal chromosome is normal, Prader-Willi syndrome results, while if the paternal chromosome is normal, then Angelman syndrome results.**

86. Paul inherited a normal chromosome at pair 15 from his father, but the chromosome from his mother showed a deletion of a chromosome region of the 15th chromosome. Because of this genetic imprint, Paul has a condition associated with mental retardation, very little speech, and inappropriate laughter. Paul has

a. Angelman syndrome.

b. Prader-Willi syndrome.

c. Marfan syndrome.

d. Down syndrome.

**Answer: a**

**Page(s): 54**

**Rationale: Genetic imprinting occurs** **when the expression of a trait depends upon whether it was inherited from the mother or the father. Two distinct disorders arise from the deletion of a chromosome region of the 15th pair. If only the maternal chromosome is normal, Prader-Willi syndrome results, while if the paternal chromosome is normal, then Angelman syndrome results.**

87. The entire set of genes that define our species is referred to as

a. the genetic imprint.

b. the humane genome.

c. heritability.

d. ethnicity.

**Answer: b**

**Page(s): 54**

**Rationale: The entire set of genes that define our species is referred to as the human genome.**

88. A \_\_\_\_\_\_\_\_\_\_ involves changes in a gene that occur due to spontaneous internal processes or environmental influences.

a. mutation

b. genetic switch.

c. genetic imprint

d. canalization

**Answer: a**

**Page(s): 54**

**Rationale: A mutation involves** **changes in a gene that occur due to spontaneous internal processes or environmental influences.**

89. Which of the following is/are TRUE regarding mutations?

a. Every species experiences mutations.

b. Mutations can be spontaneous or due to environmental factors.

c. Mutations can occur at the level of single genes or chromosomes.

d. All of these statements are true.

**Answer: d**

**Page(s): 54**

**Rationale: Every species experiences mutations, which can be spontaneous or caused by environmental factors and which can occur at the level of single genes or chromosomes.**

90. Mutations can involve changes

a. in the number of chromosomes.

b. in the arrangement of segments of chromosomes.

c. at the level of single genes.

d. in all of these.

**Answer: d**

**Page(s): 54**

**Rationale: Mutations can involve changes in the number of chromosomes, in the arrangement of segments of chromosomes, and at the level of single genes.**

91. Cells house some DNA in a structure outside the nucleus called the

a. mitochondria.

b. endoplasmic reticulum.

c. lysosomes.

d. ribosomes.

**Answer: a**

**Page(s): 54**

**Rationale: Cells house some DNA in a structure outside the nucleus called the mitochondria.**

92. Which of the following is only inherited from the mother and encodes several important gene processes with mutations within it possibly being the cause of aging?

a. X-linked trait

b. mitochondrial DNA

c. genetic imprint

d. partial dominant trait

**Answer: b**

**Page(s): 54**

**Rationale: Cells house some DNA in a structure outside the nucleus called the mitochondria. Mitochondrial DNA is only inherited from the mother and may be responsible for the process of aging.**

93. The \_\_\_\_\_\_\_\_\_\_ was an international undertaking to map the human genetic code.

a. International DNA Consortium

b. Eugenics International Project

c. Human Genome Project

d. Gene-Environment (G-E) Conclave

**Answer: c**

**Page(s): 55**

**Rationale: The Human Genome Project was an international undertaking to map the human genetic code.**

94. One of the most startling findings of the Human Genome Project was the size of the human genome, which is estimated to be \_\_\_\_\_\_\_\_ genes.

a. under 30, 000

b. around 75,000

c. around 100,000

d. over 500,000

**Answer: a**

**Page(s): 55**

**Rationale: One of the most startling findings of the Human Genome Project was the size of the human genome, which is estimated to be under 30,000 genes.**

95. During the 19th and early 20th centuries, it was widely accepted that our physical make-ups single-handedly determined our successes, failures, and status in society, which is called

a. preformation.

b. biological determinism.

c. genetic imprinting.

d. neurogenesis.

**Answer: b**

**Page(s): 56**

**Section: How Genes and the Environment Interact**

**Rationale: Biological determinism proposed that our physical make-ups single-handedly determined our successes, failures, and status in society and was widely accepted during the 19th and early 20th century.**

96. Which of the following is FALSE regarding identical twins reared together?

a. When a major physical defect occurs in one identical twin, the other twin is affected less than half of the time.

b. Identical twins make different lifestyle choices that influence how heavy each will be.

c. Identical twins make different lifestyle choices that influence how rapidly they appear to age.

d. Conjoined twins, who are attached for life, are more similar in their personalities and interests than unattached identical twins.

**Answer: d**

**Page(s): 57**

**Section: How Genes and the Environment Interact**

**Rationale: The similarity of conjoined twins would be the same as any set of identical twins, so they could have differences in personalities and interest, like the conjoined twins discussed on page 57.**

97. In order to determine how much of identical twins’ characteristics are due to the genes contributed by their parents and the environments created by their parents, investigators use a group of research designs called

a. adoption studies.

b. sequential studies.

c. genetic imprinting studies.

d. nature studies.

**Answer: a**

**Page(s): 57**

**Section: How Genes and the Environment Interact**

**Rationale: Adoption studies evaluate people reared by parents who are not biologically related to them, such as identical twins separated at birth and raised by different adoptive parents can determine how much of the twins’ similarities are due to genetics and how much are due to their differing environments.**

98. In the Minnesota Study of Twins reared apart, the Jim twins were alike on which characteristics?

a. intelligence

b. brain waves

c. heart rate

d. all of these

**Answer: d**

**Page(s): 57**

**Section: How Genes and the Environment Interact**

**Rationale: Despite decades of separation, the Jim twins were almost alike as the same person tested twice on intelligence, personality, heart rate, and brain waves.**

99. In the Minnesota Study of Twins reared apart, the Jim twins found that had both had a dog named Toy, married women that had the same first name, and smoked the same cigarettes. According to most psychologists, these similarities would be found

a. only between identical twins.

b. only between identical twins and between fraternal twins.

c. only among first-degree relatives.

d. between two unrelated people.

**Answer: d**

**Page(s): 57-58**

**Section: How Genes and the Environment Interact**

**Rationale: Two unrelated people who spent hours comparing the details of their lives would surely find numerous similarities.**

100. Twins produced from one fertilized egg that divides between the first and 14th post-fertilization day are

a. dizygotic twins.

b. fraternal twins.

c. monozygotic twins.

d. unilateral twins.

**Answer: c**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: Monozygotic twins are produced from one fertilized egg that divides between the first and 14th post-fertilization day.**

101. Twins produced from two fertilized eggs are

a. identical twins.

b. fraternal twins.

c. monozygotic twins.

d. cojoined twins.

**Answer: b**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: Fraternal (dizygotic) twins are produced from two fertilized eggs.**

102. Dizygotic twins

a. share 100 percent of their genes.

b. are always of the same sex.

c. are also referred to as fraternal twins.

d. form from a single fertilized egg that splits early in development.

**Answer: c**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: Dizygotic twins are also called fraternal twins and form from two fertilized eggs. They share may be either the same sex or different sexes and are no more genetically similar than siblings who were carried by their mother at different times.**

103. Thomas and Carolyn are twins. Which type of twins are they?

a. dizygotic twins

b. monozygotic twins

c. identical twins

d. One is unable to determine the type of twins from the information provided.

**Answer: a**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: Dizygotic twins form from two fertilized eggs. They share 50 percent of their genes, on average, and may be either the same sex or different sexes. Fraternal twins are no more genetically similar than siblings who were carried by their mother at different times.**

104. Maria and Juanita are twins. Which type of twins are they?

a. dizygotic twins

b. monozygotic twins

c. fraternal twins

d. One is unable to determine the type of twins from the information provided.

**Answer: d**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: Although monozygotic twins are always the same sex, dizygotic twins may be either the same sex or different sexes, so one is unable to tell which type of twins they are from the information provided.**

105. On average, same-sex dizygotic twins share \_\_\_\_\_\_ percent of their genes, while same-sex monozygotic twins share \_\_\_\_ percent of their genes.

a. 25; 50

b. 50; 50

c. 50; 100

d. 100; 100

**Answer: c**

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**Section: How Genes and the Environment Interact**

**Rationale: Same-sex dizygotic twins form from two fertilized eggs and are no more genetically similar than siblings carried by their mother at different times; while monozygotic twins form from a single fertilized egg and share 100 percent of their genes (ignoring mutations that occur after early cell division).**

106. By comparing identical twins to fraternal twins, scientists concluded that many behavioral characteristics are at least partly sculpted by genes, including which of the following?

a. forms of mental illness, such as schizophrenia and depression

b. the tendency to develop addictions to tobacco and other drugs

c. personality traits, such as the tendency to be outgoing and emotionally stable

d. all of these

**Answer: d**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: By comparing identical twins to fraternal twins, scientists concluded that many behavioral characteristics are at least partly sculpted by genes, including forms of mental illness, such as schizophrenia and depression; the tendency to develop addictions to tobacco and other drugs; and personality traits, such as the tendency to be outgoing and emotionally stable.**

107. The educational level of \_\_\_\_\_\_\_\_\_ is associated with scores on IQ tests.

a. the biological parents

b. the adoptive parents

c. both the biological and the adoptive parents

d. neither the biological nor the adoptive parents

**Answer: c**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: The educational level of both the biological and adoptive parents is associated with scores on IQ tests.**

108. According to research, the family that one grows up in influences

a. one’s values.

b. one’s religious orientation.

c. one’s political beliefs.

d. all of these.

**Answer: d**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: According to research, the family that one grows up in influences one’s values, religious orientation, and political beliefs.**

109. Results from countless studies have shown that

a. genes play a stronger role than environment in directing one’s development.

b. the environment plays a stronger role than genes in directing one’s development.

c. genes and environments work together to direct development.

d. genes plays a stronger role for some people, while environment is the main determining factor for others.

**Answer: c**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

**Rationale: The results form countless studies have shown that genes and environments work together to direct development.**

110. Environment refers to

a. non-genetic influences that are not biological ones.

b. non-genetic influences, including biological ones.

c. genetic and non-genetic contributions of one’s family.

d. any non-genetic influence not directly related to one’s family, such as educational opportunities.

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: Environment refers to a huge range of non-genetic influences, including biological ones, such as nutrition, poverty, exposure to disease, and being cuddled as a baby.**

111. Which of the following would be considered an environmental influence?

a. malnutrition

b. educational opportunity

c. being cuddled as a baby

d. all of these

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: Environment refers to a huge range of non-genetic influences, including biological ones, such as nutrition, poverty, exposure to disease, and being cuddled as a baby.**

112. Which of the following is/are TRUE regarding how environments and genes work together?

a. Temperature, humidity, and nutrition are environmental factors that influence phenotypes.

b. Biological flexibility is provided by regulatory sequences, which switch genes on or off.

c. The chromosomes of identical twins look increasingly different the longer they have lived in different environments.

d. All of these statements are true.

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: Temperature, humidity, and nutrition influence phenotypes, such as primroses being different color due to the temperature. Regulatory sequences provide biological flexibility with epigenomes mark genes for increased or decreased activity levels, so that the chromosomes of identical twins look increasingly different the longer they have lived in different environments.**

113. \_\_\_\_\_\_\_\_\_\_ help people change their physiology when they move to high elevations, adjust to climates of varying temperature, and reproduce more often when food is plentiful than when they are starving.

a. Regulatory sequences

b. Glial cells

c. Genetic imprinting

d. Karotyping

**Answer: a**

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**Section: How Genes and the Environment Interact**

**Rationale: Regulatory sequences switch genes on or off as needed to provide biological flexibility and help people change their physiology when they move to high elevations, adjust to climates of varying temperature, and reproduce more often when food is plentiful than when they are starving.**

114. \_\_\_\_\_\_\_ are chemicals that mark genes for increased or decreased activity levels.

a. Autosomes

b. Epigenomes

c. Gametes

d. Karotypes

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: Episomes are chemicals that mark genes for increased or decreased activity levels.**

115. Jamie is an infant that was diagnosed with phenylketonuria (PKU). Regarding the influence of the environment on the expression of this recessive condition, Jamie

a. can receive intense language, cognitive, and motor training and will achieve intelligence scores within the normal range.

b. can be put on a low phenylalanine diet at birth and achieve intelligence scores within the normal range.

c. can be put on a medication at birth to increase the phenylalanine levels in his blood and will achieve intelligence scores within the normal range.

d. will be severely mentally retarded regardless of a change in environmental conditions.

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: Since individuals with PKU cannot metabolize the amino acid phenylalanine, Jamie can be put on a low phenylalanine diet at birth to prevent mental retardation.**

116. Which of the following statements is FALSE regarding studies on height?

a. According to research, height appears to be transmitted by a number of genes in an additive manner.

b. Food shortages within a country does not appear to significantly affect overall height.

c. One study of second generation Japanese-American males found that they were over five inches taller than their predicted height had they been reared in Japan.

d. On average, children with two very short parents will be shorter than children with two tall parents.

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: The average height of Japanese children increased rapidly between 1945 and 1960, as the country recovered from a food shortage. Adequate food changes the way our genetic potential for height is expressed.**

117. Which of the following statements is FALSE regarding the development of schizophrenia?

a. A person’s risk of developing schizophrenia is three times higher if both parents have the diagnosis than if only one parent does.

b. The risk of developing schizophrenia is less than 50 percent even if the person’s identical twin has the disorder.

c. There are lower rates of schizophrenia among people born during the winter.

d. The symptoms of schizophrenia usually first appear in late adolescence or early adulthood.

**Answer: c**

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**Section: How Genes and the Environment Interact**

**Rationale: There are higher rates of schizophrenia among people born during the winter. All of the other statements are true.**

118. \_\_\_\_\_\_\_\_\_\_\_ is a class of conditions involving problems in perception, thinking, and moods; that usually appear in late adolescence or early adulthood; and appears to be produced when genetically vulnerable people confront environmental factors that interfere with normal brain development.

a. Schizophrenia

b. Down syndrome

c. Marfan syndrome

d. Huntington disease

**Answer: a**

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**Section: How Genes and the Environment Interact**

**Rationale: Schizophrenia is a** **class of conditions involving problems in perception, thinking, and moods; that usually appear in late adolescence or early adulthood; and occurs when genetically vulnerable people confront environmental factors that interfere with normal brain development.**

119. According to research, the most likely cause of schizophrenia is

a. a lack of oxygen during the birth process which prevents the normal development of the brain, especially during the first months after birth.

b. that both parents carry an abnormal allele for schizophrenia with the child having a one out of four chance of receiving both abnormal alleles.

c. ineffective, neglectful parenting that hinders normal perceptual and language development.

d. that genetically vulnerable people confront environmental factors resulting in abnormal brain development.

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: Schizophrenia appears to be produced when genetically vulnerable people confront environmental factors that interfere with normal brain development.**

120. According to research, schizophrenia results when a genetically vulnerable individual encounters an environmental triggering event. Possible trigger events include which of the following?

a. physical trauma during birth

b. an unidentified virus that affected the mother and unborn child

c. a maternal nutritional deficiency

d. all of these

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: Schizophrenia appears to be produced when genetically vulnerable people confront environmental factors that interfere with normal brain development. Some possible environmental factors include physical trauma during birth, an unidentified virus (which pregnant women are more likely to “catch” during the winter), and maternal nutritional deficiencies (which are also more common during the winter months).**

121. \_\_\_\_\_\_\_\_\_\_\_ occurs when a child either has an extra chromosome from the 21st pair or an extra portion of this chromosome, resulting in mental retardation and a distinctive appearance that includes a thick tongue, round face, and a fold of skin in the upper eyelid.

a. Schizophrenia

b. Down syndrome

c. Marfan syndrome

d. Huntington disease

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: Down syndrome occurs when a child either has an extra chromosome from the 21st pair or an extra portion of this chromosome, resulting in mental retardation and a distinctive appearance that includes a thick tongue, round face, and a fold of skin in the upper eyelid.**

122. Laura is an infant that has been diagnosed with Down syndrome. Regarding the influence of the environment on the expression of condition, Laura

a. should be put on a low protein diet to prevent the development of mental retardation.

b. should be put on medication to decrease hormone levels and minimize the development of mental retardation.

c. should have a stimulating environment to help increase mental functioning.

d. will be severely mentally retarded regardless of a change in environmental conditions.

**Answer: c**

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**Section: How Genes and the Environment Interact**

**Rationale: Stimulating environments produce better mental functioning so that most Down syndrome children test in the mild to moderately retarded range, and many learn to read, write, and provide basic care for themselves.**

123. \_\_\_\_\_\_\_\_\_ implies that genes set the lower and upper limit for a trait, while the quality of the environment determines where a person will fall within a range of functioning.

a. Genomic imprinting

b. Neural plasticity

c. Heritability

d. Reaction range

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: Reaction range** **implies that genes set the lower and upper limit for a trait, while the quality of the environment determines where a person will fall within a range of functioning.**

124. \_\_\_\_\_\_\_\_\_ is the idea that genetically-influenced traits develop differently in different environments.

a. Genetic imprinting

b. The genetic plasticity model

c. Norms of reaction

d. Heritability

**Answer: c**

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**Section: How Genes and the Environment Interact**

**Rationale: Norms of reaction is the idea** **that genetically-influenced traits develop differently in different environments.**

125. Jessie is a quiet child, who likes to read and paint, while her brother Jeff is spirited and athletic. Jeff tends to be happier in the home than his sister because his parents like to take the whole family to sporting events and like having Jeff’s noisy friends over. This specific home environment appears better for Jeff than for Jessie, which illustrates

a. parental imprinting.

b. the genetic plasticity model.

c. the norms of reaction.

d. heritability.

**Answer: c**

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**Section: How Genes and the Environment Interact**

**Rationale: Norms of reaction is the idea** **that genetically-influenced traits develop differently in different environments.**

126. \_\_\_\_\_\_\_\_\_ is the extent to which a trait develops normally across a range of environments.

a. Genomic imprinting

b. Genetic plasticity

c. Canalization

d. Heritability

**Answer: c**

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**Section: How Genes and the Environment Interact**

**Rationale: Canalization** **is the extent to which a trait develops normally across a range of environments.**

127. Which of the following would be a highly canalized trait?

a. When a child begins to walk.

b. A child’s musical talent.

c. Ability in a particular sport.

d. All of these are highly canalized traits.

**Answer: a**

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**Section: How Genes and the Environment Interact**

**Rationale: Highly canalized traits are difficult to deflect from their expected tracks. Generally, behaviors that are necessary for survival, such as walking or communicating, are more highly canalized than behaviors that are not related to survival, such as particular talents that develop more fully in enriched environments.**

128. Which of the following is FALSE regarding highly canalized traits?

a. They are traits that develop more fully in enriched environments.

b. They tend to develop normally across a broad range of environments.

c. They are generally behaviors that are necessary for survival.

d. They are difficult to deflect from their expected tracks.

**Answer: a**

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**Section: How Genes and the Environment Interact**

**Rationale: Highly canalized traits are difficult to deflect from their expected tracks, are behaviors that are necessary for survival, such as walking or communicating, and develop normally across a broad range of environment, unlike specific talents and skills that develop more fully in enriched environments.**

129. \_\_\_\_\_\_\_\_\_ proposed that genes influence environments, explaining that people select environments that are consistent with their genetic preferences.

a. Gregor Mendel

b. James Watson

c. Francis Crick

d. C. D. Darlington

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: C. D. Darlington** **proposed that genes influence environments, explaining that people select environments that are consistent with their genetic preferences.**

130. \_\_\_\_\_\_\_\_\_ are the ways in which genetic mechanisms influence individuals’ environments and experiences.

a. Parental imprinting

b. Genotype-environment (G-E) correlations.

c. Norms of reaction

d. Canalization

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: Genotype-environment (G-E) correlations are the ways in which genetic mechanisms influence individuals’ environments and experiences.**

131. \_\_\_\_\_\_\_\_\_ correlations refer to the fact that most children share both genes and environments with parents who encourage their own talents and avoid their own weaknesses.

a. Active gene-environment

b. Reactive gene-environment

c. Canalized gene-environment

d. Passive gene-environment

**Answer: d**

**Page(s): 61**

**Section: How Genes and the Environment Interact**

**Rationale: Passive gene-environment correlations refer to the fact that most children share both genes and environments with parents who encourage their own talents and avoid their own weaknesses.**

132. Aaron is a poor reader due an inherited perceptual problem. Since both of his parents are also poor readers, Aaron is not read to as often as other children, therefore, creating a correlation between genes and experiences that hinders the development of his reading. This situation illustrates a(n) \_\_\_\_\_\_\_\_\_ correlation.

a. active gene-environment

b. reactive gene-environment

c. canalized gene-environment

d. passive gene-environment

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: Passive gene-environment correlations refer to the fact that most children share both genes and environments with parents who encourage their characteristics.**

133. \_\_\_\_\_\_\_\_\_ correlation describes how children with different genetic make-ups elicit different reactions from their environments.

a. Active gene-environment

b. Reactive gene-environment

c. Canalized gene-environment

d. Passive gene-environment

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: Reactive gene-environment correlation describes** **how children with different genetic make-ups elicit different reactions from their environments.**

134. Tommy is a child that would be described as having an irritable temperament and is subsequently rejected by his peers. Thus, when Tommy grows up, he tends to have few friends and difficult interactions with others in his family and at work. This situation illustrates a(n) \_\_\_\_\_\_\_\_\_ correlation.

a. active gene-environment

b. reactive gene-environment

c. canalized gene-environment

d. passive gene-environment

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: Reactive gene-environment correlation describes** **how children with different genetic make-ups elicit different reactions from their environments.**

135. \_\_\_\_\_\_\_\_\_ correlation means that people select environments that are consistent with their genetic preference.

a. Active gene-environment

b. Reactive gene-environment

c. Canalized gene-environment

d. Passive gene-environment

**Answer: a**

**Page(s): 62**

**Section: How Genes and the Environment Interact**

**Rationale: Active gene-environment correlation** **means** **that people select environments that are consistent with their genetic preference.**

136. Samantha has always been a sociable, easy-going child. This love of people led her to choose activities as an adult where she could further develop her social skills, such as taking communication and drama classes. This situation illustrates a(n) \_\_\_\_\_\_\_\_\_\_\_ correlation.

a. active gene-environment

b. reactive gene-environment

c. canalized gene-environment

d. passive gene-environment

**Answer: a**

**Page(s): 62**

**Section: How Genes and the Environment Interact**

**Rationale: Active gene-environment correlation** **means** **that people select environments that are consistent with their genetic preference.**

137. \_\_\_\_\_\_\_\_\_ is the tendency of individuals to choose activities and environments that match their personalities and interests.

a. Genomic imprinting

b. Niche-picking

c. Canalization

d. Goodness-of-fit

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: Niche-picking is the tendency of individuals to choose activities and environments that match their personalities and interests.**

138. Niche-picking is associated with which genotype-environment correlation?

a. active gene-environment correlation

b. reactive gene-environment correlation

c. canalized gene-environment correlation

d. passive gene-environment correlation

**Answer: a**

**Page(s): 62**

**Section: How Genes and the Environment Interact**

**Rationale: Niche-picking is the tendency of individuals to choose activities and environments that match their personalities and interests and would be associated with the active gene-environment correlation.**

139. Since he was a young child, Grant has always been very inquisitive but also preferred solitary pursuits, working best in a quiet environment. Thus, after receiving his degree, Grant took a job in a research laboratory rather than at the university that would require teaching. Grant’s choice illustrates

a. genomic imprinting.

b. canalization.

c. niche-picking.

d. goodness-of-fit.

**Answer: c**

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**Section: How Genes and the Environment Interact**

**Rationale: Niche-picking is the tendency of individuals to choose activities and environments that match their personalities and interests.**

140. \_\_\_\_\_\_\_\_ are cells in the nervous system that insulate neurons, provide them with nutrients, and remove cellular waste.

a. Glial cells

b. Synaptic vesicles

c. Oocytes

d. Gametes

**Answer: a**

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**Section: How Genes and the Environment Interact**

**Rationale: Glial cells are** **cells in the nervous system that insulate neurons, provide them with nutrients, and remove cellular waste.**

141. Glial cells are cells in the nervous system that

a. insulate neurons.

b. provide the neurons with nutrients.

c. remove cellular waste.

d. serve all of these functions.

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: Glial cells are** **cells in the nervous system that insulate neurons, provide them with nutrients, and remove cellular waste.**

142. \_\_\_\_\_\_\_\_ are cells in the nervous system that are designed to receive and send information.

a. Glial cells

b. Neurons

c. Oocytes

d. Synapses

**Answer: b**

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**Section: How Genes and the Environment Interact**

**Rationale: Neurons are cells in the nervous system that are designed to receive and send information.**

143. Neurons are cells in the nervous system that

a. are designed to receive and send information.

b. provide nutrients.

c. remove cellular waste.

d. serve all of these functions.

**Answer: a**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

**Rationale: Neurons are cells in the nervous system that are designed to receive and send information.**

144. Which of the following is/are TRUE regarding neurons?

a. Neurons are designed to receive and send information.

b. Some neurons lack an axon and communicate only with adjacent neurons.

c. Neurons vary in size and shape depending on their function.

d. All of these statements are true.

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: Neurons are cells in the nervous system that are designed to receive and send information. They vary in size and shape depending on their function. Some neurons lack an axon and communicate only with adjacent neurons.**

145. Which of the following is NOT a part of a typical neuron?

a. axon

b. synapse

c. cell body

d. dendrite

**Answer: b**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

**Rationale: A typical neuron consists of dendrites, a cell body, and an axon. (Synapse is the tiny space between neurons.)**

146. The root-like fibers that receive messages from other neurons are the

a. axons.

b. somas.

c. cell bodies.

d. dendrites.

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: The dendrites are the root-like fibers that receive messages from other neurons.**

147. The \_\_\_\_\_\_\_\_ is the trunk-like part of a typical neuron that sends messages to other neurons or to muscle and gland cells.

a. axon

b. soma

c. cell body

d. dendrite

**Answer: a**

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**Section: How Genes and the Environment Interact**

**Rationale: The axon is the trunk-like part of a typical neuron that sends messages to other neurons or to muscle and gland cells.**

148. \_\_\_\_\_\_\_\_\_ is the process of forming the neural tube, which will become the brain and spinal cord.

a. Neural plasticity

b. Neurogenesis

c. Neurulation

d. Neural migration

**Answer: c**

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**Section: How Genes and the Environment Interact**

**Rationale: Neurulation is the process of forming the neural tube, which will become the brain and spinal cord.**

149. Neurulation is the process that forms the \_\_\_\_\_\_\_\_\_, which will become the brain and spinal cord.

a. myelin

b. neurilemma

c. neural tube

d. glial cells

**Answer: c**

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**Section: How Genes and the Environment Interact**

**Rationale: Neurulation is the process of forming the neural tube, which will become the brain and spinal cord.**

150. The forming of new neurons is referred to as

a. neurulation.

b. neurogenesis.

c. synaptogenesis.

d. myelination.

**Answer: b**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

**Rationale: The forming of new neurons is referred to as neurogenesis.**

151. Neurogenesis is the

a. process of developing interconnections between neurons.

b. process of forming the neural tube, which will become the brain and spinal cord.

c. production of a fatty substance around axons to insulate fibers and speed transmission within a neuron.

d. production of new neurons in the brain.

**Answer: d**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

**Rationale: The forming of new neurons is referred to as neurogenesis.**

152. \_\_\_\_\_\_\_\_\_\_ is the movement of neurons from the location where they are produced to their final location in the brain.

a. Neural migration

b. Myelination

c. Canalization

d. Neurulation

**Answer: a**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

**Rationale: Neural migration determines the organization of the brain cells and is the migration of neurons from the location where they are produced to their final location in the brain.**

153. Which of the following statements is FALSE regarding neurogenesis and neural migration?

a. The massive production of new neurons begins about the fifth week after fertilization.

b. Neurogenesis peaks about three to four months after fertilization.

c. In the cerebral cortex, the first cells to migrate occupy the closest position, with newcomers migrating to higher layers.

d. The organization of brain cells is determined by a process called neurulation.

**Answer: d**

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**Section: How Genes and the Environment Interact**

**Rationale: Neural migration determines the organization of the brain cells. All of the other statements are true.**

154. Drinking alcohol while pregnant tends to cause

a. abnormal neural migration in the developing brain.

b. abnormal neurogenesis in the developing brain.

c. both abnormal neurogenesis and abnormal neural migration in the developing brain.

d. the child to be born addicted to alcohol as well as unspecified brain damage.

**Answer: c**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

**Rationale: Drinking alcohol while pregnant tends to cause the number and organization of cells in the cerebral cortex to be abnormal.**

155. Synaptogenesis is the

a. process of developing interconnections between neurons.

b. process of forming the neural tube, which will become the brain and spinal cord.

c. production of a fatty substance around axons to insulate fibers and speed transmission within a neuron.

d. production of neurons in the brain.

**Answer: a**

**Page(s): 64**

**Section: How Genes and the Environment Interact**

**Rationale: Synaptogenesis is the process of developing interconnections between neurons.**

156. \_\_\_\_\_\_\_\_\_\_\_\_ is the process of developing interconnections between neurons.

a. Neurulation

b. Neurogenesis

c. Synaptogenesis

d. Myelination

**Answer: c**

**Page(s): 64**

**Section: How Genes and the Environment Interact**

**Rationale: Synaptogenesis is the process of developing interconnections between neurons.**

157. Which of the following is/are TRUE regarding synaptogenesis?

a. Synaptogenesis begins only weeks after neurogenesis starts and tapers off in different brain regions about one to three years after birth.

b. Early synaptogenesis is a genetically-controlled process producing many more synapses between one neuron and another than are needed.

c. Synapses that are activated by particular experiences undergo changes that make them more permanent.

d. All of these statements are true.

**Answer: d**

**Page(s): 64**

**Section: How Genes and the Environment Interact**

**Rationale: Synaptogenesis is the process of developing interconnections between neurons, which begins only weeks after neurogenesis and then tapers off in different brain regions about one to three years after birth. Early synaptogenesis is a genetically-controlled process producing many more synapses between one neuron and another than are needed. The synapses that are activated by particular experiences undergo changes that make them more permanent.**

158. \_\_\_\_\_\_\_\_\_\_\_\_ is sometimes referred to as neural Darwinism, a type of survival of the fittest in which activated interconnections beat out weaker neighbors for a place in the brain. This process that occurs throughout childhood is essential for intellectual growth.

a. Synaptic pruning

b. Neural migration

c. Synaptic canalization

d. Neurulation

**Answer: a**

**Page(s): 64**

**Section: How Genes and the Environment Interact**

**Rationale: Synaptic pruning is the elimination of the weaker synaptic connections and is essential for intellectual growth.**

159. Neural plasticity is the

a. process of developing interconnections between neurons.

b. process of forming the neural tube, which will become the brain and spinal cord.

c. production of a fatty substance around axons to insulate fibers and speed transmission within a neuron.

d. ability of one’s brain to change with experience.

**Answer: d**

**Page(s): 64**

**Section: How Genes and the Environment Interact**

**Rationale: Neural plasticity is the ability of one’s brain to change with experience.**

160. Myelination is the

a. process of developing interconnections between neurons.

b. process of forming the neural tube, which will become the brain and spinal cord.

c. production of a fatty substance around axons to insulate fibers and speed transmission within a neuron.

d. production of neurons in the brain.

**Answer: c**

**Page(s): 65**

**Section: How Genes and the Environment Interact**

**Rationale: Myelination is** **production of a fatty substance around axons to insulate fibers and speed transmission within a neuron.**

161. \_\_\_\_\_\_\_\_\_\_\_\_ is the production of a fatty substance around axons to insulate fibers and speed transmission within a neuron.

a. Neurogenesis

b. Myelination

c. Canalization

d. Neurulation

**Answer: b**

**Page(s): 65**

**Section: How Genes and the Environment Interact**

**Rationale: Myelination is** **production of a fatty substance around axons to insulate fibers and speed transmission within a neuron.**

162. Which of the following is FALSE regarding myelination?

a. Neurons begin to develop myelin sheaths about the third month after conception.

b. Myelin is still forming at age 20 and, in some brain areas, well into adulthood.

c. More primitive brain regions complete myelination before areas that support more advanced abilities do.

d. The fat content of a child’s diet affects myelination, so pediatricians recommend that children drink whole milk until age two.

**Answer: a**

**Page(s): 65**

**Section: How Genes and the Environment Interact**

**Rationale: Neurons begin to develop myelin sheaths between the sixth and ninth month after conception. All the other statements are true.**

163. Environmental stimulation increases the functioning of the brain with deterioration occurring

a. during times of extreme stress.

b. due to illness.

c. when environments fail to stimulate us mentally.

d. in all of these cases.

**Answer: d**

**Page(s): 65**

**Section: How Genes and the Environment Interact**

**Rationale: Deterioration of the brain occurs during times of extreme stress, illness, or when environments fail to stimulate us mentally.**

164. At one time, scientists used three races to categorize people in order to study differences. Which of the following was NOT one these races?

a. East Asian

b. white

c. black

d. Hispanic

**Answer: d**

**Page(s): 66**

**Section: Genetic and Environmental Diversity**

**Rationale: At one time, scientists used the following three races to categorize people in order to study differences: East Asian, white, and black.**

165. The concept of \_\_\_\_\_ assumes that people who look similar come from families who have spent many generations living and intermarrying in particular parts of the world, and therefore they will share more genes than people from unrelated groups.

a. race

b. ethnicity

c. culture

d. ethnocentricism

**Answer: a**

**Page(s): 66**

**Section: Genetic and Environmental Diversity**

**Rationale: The concept of race assumes that people who look similar come from families who have spent many generations living and intermarrying in particular parts of the world, and therefore they will share more genes than people from unrelated groups.**

166. According to the maps shown in Figure 2.9, which of the following physical features were once associated with being considered “black” in the United States?

a. skin color

b. hair texture

c. both skin color and hair texture

d. neither skin color nor hair texture

**Answer: c**

**Page(s): 67**

**Section: Genetic and Environmental Diversity**

**Rationale: According to the maps shown in Figure 2.9, skin color and hair texture were both physical features that were once associated with being considered “black” in the United States.**

167. \_\_\_\_\_\_\_\_ are changes in the frequency of a trait across a geographic area.

a. Canalization

b. Norms of reaction

c. Clines

d. Cultural migrations

**Answer: c**

**Page(s): 67**

**Section: Genetic and Environmental Diversity**

**Rationale: Clines are changes in the frequency of a trait across a geographic area.**

168. According to studies by scientists who believe that race categories are helpful in research, which of the following is FALSE?

a. African-Americans respond poorly to some drugs for heart disease, so doctors can make more beneficial decisions by prescribing different drugs based on race.

b. Most people can be accurately classified into a single race on the basis of a cluster of identifying traits.

c. One’s blood type can be identified with a high degree of certainty if one knows the person’s skin color.

d. Dark-skinned people are more likely to have curly hair and the trait of hemophilia than light skinned people.

**Answer: c**

**Page(s): 67**

**Section: Genetic and Environmental Diversity**

**Rationale: One cannot identify with certainty a person’s blood type by knowing their skin color. However, according to Edwards (2003), most people can be accurately classified into a single race on the basis of a cluster of identifying traits, such as those described in the other two true statements.**

169. Scientists who analyze blood tend to support the idea of \_\_\_\_\_\_\_\_\_, forensic specialists who identify decomposed bodies from skeletal features tend to support \_\_\_\_\_\_\_\_\_\_.

a. clines; racial categories

b. racial categories; clines

c. clines; clines

d. racial categories; racial categories

**Answer: a**

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**Section: Genetic and Environmental Diversity**

**Rationale: Scientists who analyze blood prefer to think of human variation as clinal (consisting of continuous change that cannot be captured by racial categories), whereas forensic specialists who identify decomposed bodies from skeletal features tend to support the race concept (because they can categorize people fairly accurately).**

170. People who are only 1/8 African descent may be called “black” in the United States, but they will be called one of many terms in Brazil. Racial groupings also correlate with economic status. These two examples illustrate that racial terms tend to

a. lack sufficient research data.

b. be related to the accuracy of the operational definitions used.

c. be arbitrary and unreliable.

d. be socially defined.

**Answer: d**

**Page(s): 68**

**Section: Genetic and Environmental Diversity**

**Rationale: Racial terms tend to socially defined by different cultures and correlate with important social circumstances.**

171. \_\_\_\_\_\_\_\_\_\_ refers to the features of the environment that are learned, including the technology, art, morals, laws, customs, and beliefs of individual societies.

a. Ethnicity

b. Socioeconomic status (SES)

c. Culture

d. Ethnocentrism

**Answer: c**

**Page(s): 68**

**Section: Genetic and Environmental Diversity**

**Rationale: Culture refers to the features of the environment that are learned, including the technology, art, morals, laws, customs, and beliefs of individual societies.**

172. Which of the following is NOT a feature of one’s culture?

a. laws and customs

b. the art and technology

c. climate

d. morals

**Answer: c**

**Page(s): 68**

**Section: Genetic and Environmental Diversity**

**Rationale: Culture refers to the features of the environment that are socially-constructed and learned, including the technology, art, morals, laws, customs, and beliefs of individual societies.**

173. Your reaction to a neighbor’s kiss is very different if you live where only lovers kiss than if you live where friends of both sexes peck each other’s cheeks. This illustrates that your actions are directed by

a. your temperament.

b. the frequency of the stimuli you encounter.

c. the meaning of the stimuli in your culture.

d. your overall emotional tone.

**Answer: c**

**Page(s): 68**

**Section: Genetic and Environmental Diversity**

**Rationale: Unlike other species, our actions are often directed not by stimuli themselves but by the meaning of those stimuli in our culture.**

174. You are asked to show a guest from another country around your American college. As you stop to tell him about the different aspects of the college, you notice that the visitor stands so close to you in these face-to-face encounters that you take a step back. This guest then takes a step closer toward you again. After this tour, you tell your supervisor that you were offended by his actions toward you, while your supervisor hears that the guest was also offended by your actions. Which of the following is the most likely cause of this situation?

a. Your reserved temperament and the guest’s overly friendly temperament clashed.

b. The guest was trying to intimidate you because his country tends to be very ethnocentric.

c. The guest was attracted to you and was upset because you spurned his attentions.

d. You both misunderstood each other actions due to cultural differences regarding personal space.

**Answer: d**

**Page(s): 68**

**Section: Genetic and Environmental Diversity**

**Rationale: No rule book can specify when privacy has been invaded because culture determines our rules for interpersonal space.**

175. \_\_\_\_\_\_\_\_\_\_ refers to the self-definition of groups based on a common history, nationality, or culture.

a. Ethnicity

b. Socioeconomic status (SES)

c. Culture

d. Ethnocentrism

**Answer: a**

**Page(s): 69**

**Section: Genetic and Environmental Diversity**

**Rationale: Ethnicity refers to the self-definition of groups based on a common history, nationality, or culture.**

176. Chen Lee loves to invite her friends over to introduce them to the foods and customs of her native Korea, and she loves to be introduced to foods and customs of their families as well. By showing pride in their native lands, Chen Lee and her friends are focusing on their

a. ethnicities.

b. sociologies.

c. heritabilities.

d. ethnocentrisms.

**Answer: a**

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**Section: Genetic and Environmental Diversity**

**Rationale: Ethnicity refers to the self-definition of groups based on a common history, nationality, or culture. Whenever families take pride in their heritage, they are focusing on their ethnic roots.**

177. Groups that feel that similarities bind their members together and separate them from other groups and who take pride in their heritage are focusing on their

a. ethnicities.

b. sociologies.

c. heritabilities.

d. ethnocentrisms.

**Answer: a**

**Page(s): 69**

**Section: Genetic and Environmental Diversity**

**Rationale: Ethnicity refers to the self-definition of groups based on a common history, nationality, or culture. Whenever families take pride in their heritage, they are focusing on their ethnic roots.**

178. In a comparison of ethnic groups, it was found that poor Hispanic families had infant mortality rates less than half the rate of poor African-American families because the Hispanic families had

a. better prenatal care.

b. a lower poverty rate.

c. diets higher in calcium, folate, protein, vitamin A, and ascorbic acid.

d. all of these.

**Answer: c**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: Studies indicate that Hispanic women and their babies had diets higher in calcium, folate, protein, vitamin A, and ascorbic acid.**

179. When studying various topics, researchers define \_\_\_\_\_\_\_\_\_\_\_ by sometimes focusing on education, other times on income, and other times taking direct measures of factors they believe are important for development.

a. culture

b. ethnicity

c. socioeconomic status

d. race

**Answer: c**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: Researchers define socioeconomic status by sometimes focusing on education, other times on income, and other times taking direct measures of factors they believe are important for development.**

180. When studying children, one alternative to socioeconomic status (SES) is to use one of the \_\_\_\_\_\_\_\_\_\_ inventories, which are checklists that describe the types of learning materials in a child’s home, the degree of parental involvement, and other direct family influences.

a. cognitive

b. personality

c. adaptive behavior

d. HOME

**Answer: d**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: When studying children, one alternative to socioeconomic status (SES) is to use one of the HOME inventories, which are checklists that describe the types of learning materials in a child’s home, the degree of parental involvement, and other direct family influences.**

181. The HOME inventories are checklists that describe

a. the types of learning materials in a child’s home.

b. the degree of parental involvement.

c. both of these.

d. neither of these.

**Answer: c**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: The HOME inventories are checklists that describe the types of learning materials in a child’s home, the degree of parental involvement, and other direct family influences.**

182. American parents tend to emphasize \_\_\_\_\_\_\_\_\_ values; Japanese parents tend to emphasize \_\_\_\_\_\_\_ values.

a. individualist; individualist

b. individualist; collectivist

c. collectivist; individualistic

d. collectivist; collectivist

**Answer: b**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: American parents tend to emphasize individualist values of independence, while Japanese parents tend to emphasize collectivist values that focus on the welfare of the group.**

183. \_\_\_\_\_\_\_\_\_\_\_\_ parents see their infants as born helpless with the goal of child rearing to foster independence; \_\_\_\_\_\_\_\_\_\_\_\_ parents think of their infants as separate, strong-willed organisms who need to be drawn into interdependent relations with others.

a. European-American; Japanese

b. Japanese; European-American

c. Both European-American and Japanese; neither the European-American nor Japanese

d. Neither the European-American nor Japanese; both the European-American and Japanese

**Answer: a**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: European-American parents tend to emphasize individualist values of independence, while Japanese parents tend to emphasize collectivist values that focus on the welfare of the group.**

184. \_\_\_\_\_\_\_\_\_\_\_\_ mothers set up nurseries for their babies and encourage them to sleep through the night by themselves; \_\_\_\_\_\_\_\_\_\_\_mothers prefer sleeping with their babies.

a. European-American and Japanese**;** Appalachian

b. Japanese**;** European-American and Appalachian

c. European-American**;** Appalachian and Japanese

d. European-American and Appalachian**;** Japanese

**Answer: c**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: European-American parents tend to emphasize independence and would set up nurseries and encourage their babies to sleep through the night be themselves, while Japanese parents and mothers of the Appalachian culture in America prefer sleeping with their babies.**

185. Tina believes that her infant should sleep in his own room, and she is raising her older children to be self-sufficient and independent problem-solvers. Tina is emphasizing \_\_\_\_\_\_\_\_\_\_ values.

a. individualist

b. unitarian

c. collectivist

d. creative

**Answer: a**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

**Rationale: Parents who demonstrate individualist values emphasize independence and being self-sufficient and would set up a separate nursery in which their infants would sleep, while parents with collectivist values would sleep with their children.**

186. The parents of Jayce and Morgan believe that each daughter was born with different talents with Jayce being athletic and Morgan, artistic. Although they encourage and support each daughter, they believe that each daughter must eventually choose for herself whether to continue to pursue these talents in college or choose different majors entirely. Jayce’s and Morgan’s parents are emphasizing \_\_\_\_\_\_\_\_\_\_ values.

a. individualist

b. unitarian

c. collectivist

d. creative

**Answer: a**

**Page(s): 71, Table 2.2**

**Section: Genetic and Environmental Diversity**

**Rationale: Individualist values see differences in achievement as largely due to individual differences in talent with an individual’s attitudes and feelings being important determinants of one’s behavior.**

187. Jason’s parents encourage their son to major in marketing and accounting in college in order to better serve the family’s interests in their motel business. They send him to the best business school since they view differences in achievement as resulting from differences in one’s training and effort. Jason’s parents are emphasizing \_\_\_\_\_\_\_\_\_\_ values.

a. individualist

b. unitarian

c. collectivist

d. omnibus

**Answer: c**

**Page(s): 71, Table 2.2**

**Section: Genetic and Environmental Diversity**

**Rationale: Collectivist parents believe that differences in achievement result from differences in training and effort and that the well-being of the group and group norms are important determinants of behavior.**

188. Regarding on differing views on childrearing and preschools, the Japanese would

a. put 30 preschoolers to one teacher in a single classroom.

b. believe that children misbehave because they are smart and bored in class.

c. ask preschoolers about their feelings to promote better problem-solving.

d. advocate all of these.

**Answer: a**

**Page(s): 71**

**Section: Genetic and Environmental Diversity**

**Rationale: Regarding the study, the Japanese have 30 preschoolers to one teacher in a single classroom because it promotes becoming a member of a group. Americans would believe a child misbehaves because they are smart and bored, whereas the Japanese view the misbehavior as the child not having learned to be dependent on others. The Japanese also disapprove of how American teachers promote individualism and regard the practice of asking children about their feelings as inappropriate because it is too adult-like for children.**

189. Regarding on differing views on childrearing and preschools, American would

a. advocate small preschool classes.

b. believe that children misbehave because they are smart and bored in class.

c. ask preschoolers about their feelings and promote individualism.

d. advocate all of these.

**Answer: d**

**Page(s): 71**

**Section: Genetic and Environmental Diversity**

**Rationale: Regarding the study, Americans advocate having small preschool classes, while the Japanese have 30 preschoolers to one teacher in a single classroom because it promotes becoming a member of a group. Americans would believe a child misbehaves because they are smart and bored, whereas the Japanese view the misbehavior as the child not having learned to be dependent on others. The Japanese also disapprove of how American teachers promote individualism and regard the practice of asking children about their feelings as inappropriate because it is too adult-like for children.**

190. \_\_\_\_\_\_\_\_\_ adults tend to emphasize individual responsibility and success, while \_\_\_\_\_\_\_\_\_ adults tend to emphasize group responsibility and group success.

a. American**;** Japanese and Chinese

b. Japanese and Chinese**;**  American

c. American and Chinese**;** Japanese

d. American and Japanese**;** Chinese

**Answer: c**

**Page(s): 72**

**Section: Genetic and Environmental Diversity**

**Rationale: American and Chinese adults tend to emphasize individual responsibility and success, while Japanese adults tend to emphasize group responsibility and group success.**

191. Which of the following is/are TRUE regarding individualist and collectivist values around the world?

a. All societies have collectivist and individualist features.

b. Ethics guidelines now state that professionals have an obligation to learn about cultural differences that might affect their work.

c. The Chinese, like the Americans, tend to emphasize individual responsibility and success.

d. All of these statements are true.

**Answer: d**

**Page(s): 72**

**Section: Genetic and Environmental Diversity**

**Rationale: All societies have collectivist and individualist features because everyone must develop a sense of self that involves relationships with others and a sense of uniqueness. To avoid misunderstandings, ethics guidelines now state that professionals have an obligation to learn about cultural differences that might affect their work. American and Chinese adults tend to emphasize individual responsibility and success, while Japanese adults tend to emphasize group success and group norms.**

192. Ethical guidelines regarding cultural differences require professionals to

a. accept all cultural practices regardless of their effects on people.

b. consider folk medical cures as evidence of abuse.

c. learn about cultural differences that would affect their work.

d. do all of these.

**Answer: c**

**Page(s): 72**

**Section: Genetic and Environmental Diversity**

**Rationale: To avoid misinterpretations, such as viewing folk medicine cures as abuse, ethical guidelines require professionals to learn about cultural differences that would affect their work. However, being tolerant of different cultural practices does not mean that professionals must accept all cultural practices regardless of their effects on people.**

193. Jarmon’s children wish to attend a festival that celebrates the ethnic group of some of their friends. Jarmon tells his children that they cannot go to this festival since there was no sense in learning about an ethnic group that was inferior to their own. Jarmon is exhibiting

a. ethnicity.

b. racism.

c. cultural narcissism.

d. ethnocentrism.

**Answer: d**

**Page(s): 72**

**Section: Genetic and Environmental Diversity**

**Rationale: Ethnocentrism is the belief that one’s ethnic group is superior to other groups.**

194. In traditional China, males were valued more highly than females

a. because males helped with farming.

b. because males cared for aging parents.

c. because females joined their husbands’ families.

d. for all of these reasons.

**Answer: d**

**Page(s): 73**

**Rationale: In traditional China, males were valued more highly because they helped with farming and cared for aging parents. Females were barred from many agricultural activities and joined their husbands’ families after marriage, which meant they were no longer around to assist as their parents grew old.**

195. Regarding gender preferences by parents around the world, which of the following groups/countries tended to prefer having male infants?

a. Inuit (before 1930)

b. India

c. China (1982-1989)

d. all of these

**Answer: d**

**Page(s): 74**

**Section: Genetic and Environmental Diversity**

**Rationale: After the one-child policy in 1979, the number of infant boys per 100 girls in China rose to 114 between 1982 and 1989. Prior to 1930, the Inuit (Canadian and North Alaskan Eskimos) may have killed 21 percent of their female infants with 10,000 female fetuses aborted every year in India as a consequence of prenatal tests to determine sex.**

196. Regarding gender preferences by parents around the world, which of the following groups/countries tended to prefer having female infants?

a. Inuit (before 1930)

b. India

c. Mukogodo of Kenya

d. China (1982-1989)

**Answer: c**

**Page(s): 74**

**Rationale: Favoritism toward daughters occurs among the Mukogodo, a sheep and goat herding people of central Kenya where Mukogodo males have difficulty finding wives because they have neither wealth nor power compared to neighboring groups.**

197. Regarding gender preferences by parents around the world, which of the following statements is FALSE?

a. The Mukogodo of central Kenya practice a selective neglect of their female infants in which they are offered less healthy food and receive less medical care.

b. Between 1982 and 1989, over 1.2 billion female fetuses/infants in China were eliminated.

c. Prior to 1930, the Inuit may have killed 21 percent of their female infants.

d. In 1998, it was estimated that 10,000 female fetuses were aborted in India as a consequence of prenatal tests that determine sex.

**Answer: a**

**Page(s): 74**

**Rationale: The Mukogodo, who prefer female infants, practice a selective neglect of their male infants.**

198. \_\_\_\_\_\_\_\_\_\_\_\_ is the killing of newborns, while \_\_\_\_\_\_\_\_ is a pattern of behavior in which infants of one gender are given less medical attention and less healthy food than the other.

a. Selective abortion; infanticide

b. Infanticide; “selective neglect”

c. Infanticide; “partial abandonment”

d. Selective abortion; “selective neglect”

**Answer: b**

**Page(s): 74**

**Rationale: Infanticide** **is the killing of newborns, while “selective neglect” is a pattern of behavior in which infants of one gender are given less medical attention and less healthy food than the other.**

199. \_\_\_\_\_\_\_ in the Mukogodo society tend to suffer from \_\_\_\_\_\_\_\_\_\_, a pattern of behavior in which theyare nursed for shorter periods of time, taken to medical clinics less often, and offered less healthy food.

a. Female children; infanticide

b. Female children; “selective neglect”

c. Male children; “infanticide

d. Male children; “selective neglect”

**Answer: d**

**Page(s): 74**

**Rationale: Males in the Mukogodo society suffer from “selective neglect,” a pattern of behavior in which they are nursed for shorter periods of time, taken to medical clinics less often, and offered less healthy food.**

200. The Mukogodo of central Kenya prefer female infants with the male infants

a. being selectively aborted.

b. experiencing infanticide.

c. experiencing “selective neglect.”

d. experiencing all of these.

**Answer: c**

**Page(s): 74**

**Rationale: Although there is no evidence that the Mukogodo practice infanticide, males suffer from “selective neglect,” a pattern of behavior in which they are nursed for shorter periods of time than girls, taken to medical clinics less often, and offered less healthy food.**

201. Regarding gender preferences by parents around the world, which of the following statements is/are TRUE?

a. Parental investment favoring girls is shown by the Kanjar of Pakistan where women dominate public affairs.

b. As women gained rights in the People’s Republic of China, more young people began expressing a desire for a daughter to provide comfort during their elderly years.

c. Selectively killing or abandoning children who are an economic burden is a frequent practice in many societies.

d. All of these statements are true.

**Answer: d**

**Page(s): 74**

**Rationale: Parental investment favoring girls is shown by the Kanjar of Pakistan where women dominate public affairs. As women gained rights in the People’s Republic of China, more young people began expressing a desire for a daughter to provide comfort during their elderly years. Selectively killing or abandoning children who are an economic burden is a frequent practice in many societies.**

202. Dr. Johnson wants to find out whether identical twins Justin and Jay have their musical talent because of their genes or because their parents exposed them to music and gave them opportunities to take lessons and attend music camps. Dr. Johnson is most likely a

a. behavioral geneticist.

b. biogeneticist.

c. social geneticist.

d. psychometrician.

**Answer: a**

**Page(s): 74**

**Rationale: Behavioral genetics is the field that studies how much nature and nurture contribute to individual differences in human behavior.**

203. The field of behavioral genetics can analyze how genetic and environmental influences affect individual differences among a group of people, using a concept called

a. heritability.

b. psychogenics.

c. canalization.

d. regulatory sequencing.

**Answer: a**

**Page(s): 75**

**Rationale: The field of behavioral genetics can analyze how genetic and environmental influences affect individual differences among a group of people, using a concept called heritability.**

204. \_\_\_\_\_\_\_\_\_\_ refers to the degree of individual differences.

a. Variability

b. Norm of reaction

c. Regulatory sequence

d. Emergenic phenotype

**Answer: a**

**Page(s): 75**

**Rationale: Variability refers to the degree of individual differences.**

205. Which of the following strategies can be used to estimate the relative contribution of genes and the environment?

a. compare the similarity between identical and fraternal twins

b. consider whether adopted children most resemble the parents who raised them or their biological parents

c. compare the degree of similarity between children and their biological siblings versus their adoptive siblings

d. all of these

**Answer: d**

**Page(s): 75**

**Rationale: To estimate the relative contribution of genes and the environment, the following three strategies can be used: compare the similarity between identical and fraternal twins, consider whether adopted children most resemble the parents who raised them or their biological parents, and compare the degree of similarity between children and their biological siblings versus their adoptive siblings.**

206. For a particular trait, \_\_\_\_\_\_\_\_\_\_ is the proportion of observed variability among individuals in a group that is attributed to genetic variability.

a. a genotype-environment (GE) correlation

b. a norm of reaction

c. heritability

d. regulatory sequencing

**Answer: c**

**Page(s): 75**

**Rationale: For a particular trait, heritability is the proportion of observed variability among individuals in a group that is attributed to genetic variability.**

207. Heritability estimates range from

a. -1.0 to 1.0.

b. 0.0 to 1.0.

c. 0.0 to 2.0.

d. 0.0 to 3.0.

**Answer: b**

**Page(s): 75**

**Rationale: Heritability estimates range from 0 to 1.0.**

208. If the heritability of height is .93, this result

a. means that almost all of the variability we observe is due to genetic factors.

b. means that almost all of the variability we observe is due to environmental factors.

c. means the variability we observe is due almost equally to genetic and environmental factors.

d. is impossible since heritability estimates range only from -1.0 to 0.

**Answer: a**

**Page(s): 76**

**Rationale: Heritability estimates range from 0 to 1.0 with a value close to 1.0 meaning that almost all of the variability we observe is due to genetic factors.**

209. If the heritability of trait is .found to be .20, this result

a. means that almost all of the variability we observe is due to genetic factors.

b. means that almost none of the variability we observe is due to genetic factors.

c. means the reliability of this estimate is in question.

d. is impossible since heritability estimates range only from 1.0 to 2.0.

**Answer: b**

**Page(s): 76**

**Rationale: Heritability estimates range from 0 to 1.0 with a value close to 0 meaning that almost none of the variability we observe is due to genetic factors.**

210. The size of the heritability statistic depends on \_\_\_\_\_\_\_\_\_\_ in the population.

a. the amount of genetic variability

b. the amount of environmental variability

c. either of these variabilities

d. neither of these variabilities

**Answer: c**

**Page(s): 76**

**Rationale: The size of the heritability statistic depends on the amount of genetic and environmental variability in the population.**

211. A group of college students who were all raised in an affluent neighborhood by very similar parents has experienced little environmental variability. In this case, the proportion of variability in intelligence that is due to genetic factors should be

a. large.

b. moderate.

c. small.

d. non-existent.

**Answer: a**

**Page(s): 76**

**Rationale: The proportion of variability in intelligence that is due to genetic factors should be large because there is so little variability due to environment.**

212. A group of college students come from low SES families who differ widely in their environments; thus, the size of the heritability statistic in this case should be

a. very large.

b. large.

c. small.

d. almost 1.0.

**Answer: c**

**Page(s): 76**

**Rationale: The proportion of variability in intelligence that is due to genetic factors should be small because there is so much variability due to environment.**

213. A heritability of .65 for intelligence means that 65 percent of

a. the variability in a population is due to genetic factors.

b. the variability in a population is due to environmental factors.

c. an individual’s intelligence is due to genetic factors.

d. an individual’s intelligence is due to environmental factors.

**Answer: a**

**Page(s): 76**

**Rationale: Heritability does not apply to individuals, so the heritability indicates the variability in a population that is due to genetic factors.**

214. Heritability can

a. be applied to individuals.

b. explain why two populations differ.

c. explain how much a behavior might change in a new environment.

d. do none of these.

**Answer: d**

**Page(s): 76**

**Rationale: Heritability does not apply to individuals, cannot tell us why two populations differ, and does not tell us how much behavior might change in a new environment.**

215. Which of the following is FALSE regarding heritability?

a. Heritability cannot be applied to individuals.

b. Heritability is useful in explaining why two populations differ.

c. Heritability does not tell us how much a behavior might change in a new environment.

d. Heritability must range between 0.0 and 1.0.

**Answer: b**

**Page(s): 76**

**Rationale: Heritability does not apply to individuals, cannot tell us why two populations differ, does not tell us how much behavior might change in a new environment, and ranges from 0.0 to 1.0.**

216. Arthur Jensen as well as *The Bell Curve*’s authors Herrnstein and Murray used heritability studies involving

a. race and IQ.

b. gender and IQ.

c. parenting skills and IQ.

d. teacher-pupil ratio and academic achievement.

**Answer: a**

**Page(s): 76**

**Rationale: Arthur Jensen as well as *The Bell Curve*’s authors Herrnstein and Murray used heritability studies involving race and IQ.**

217. Critics of the heritability study by *The Bell Curve*’s authors Herrnstein and Murray state that heritability results were irrelevant to the issue of race and IQ because

a. the heritability difference found was not statistically significant.

b. the heritability study could not be replicated.

c. heritability tells us nothing about why there are differences between groups.

d. there was too much genetic variability.

**Answer: c**

**Page(s): 76**

**Rationale: Critics of the heritability study by *The Bell Curve*’s authors Herrnstein and Murray state that heritability results were irrelevant to the issue of race and IQ because heritability tells us nothing about why there are differences between groups.**

218. For a majority of the psychological traits, including those listed in Table 2.3, the heritability is around \_\_\_\_\_.

a. .10

b. .30

c. .50

d. .85

**Answer: c**

**Page(s): 77, Table 2.3**

**Rationale: For a majority of the psychological traits, including those listed in Table 2.3, the heritability is around .50.**

219. The heritability is around .50 for a wide variety of psychological traits, which means that

a. the reliability of the heritability results is a moderate correlation.

b. the validity of the heritability results is a moderate correlation.

c. about half of an individual’s psychological make-up is due to genetics.

d. about half of the variability in many behaviors is to the environment.

**Answer: d**

**Page(s): 77, Table 2.3**

**Rationale: The heritability is around .50 for a wide variety of psychological traits, which means that about half of the variability in many behaviors is to the environment.**

220. According to Table 2.3, which of the following traits has the highest heritability?

a. schizophrenia

b. major depression

c. blood pressure

d. memory scores

**Answer: a**

**Page(s): 77, Table 2.3**

**Rationale: Heritability for each trait is as follows: schizophrenia, .80; major depression, .37; blood pressure, .50; and memory scores, .43.**

221. According to Table 2.3, which of the following traits has the lowest heritability?

a. schizophrenia

b. major depression

c. body weight

d. spatial abilities

**Answer: b**

**Page(s): 77, Table 2.3**

**Rationale: Heritability for each trait is as follows: schizophrenia, .80; major depression, .37; body weight, .70; and spatial abilities, .71.**

222. Which of the following is/are TRUE regarding heritability studies?

a. Heritability studies help us to avoid problems that arise when we assume that behavior stems only from the environment.

b. Heritability is around .50 for a wide variety of psychological traits.

c. Heritability does not reveal the origins of behaviors or what might be done to alter the behavior.

d. All of these statements are true.

**Answer: d**

**Page(s): 77**

**Rationale: Heritability studies help us to avoid problems that arise when we assume that behavior stems only from the environment. Heritability is around .50 for a wide variety of psychological traits. Heritability does not reveal the origins of behaviors or what might be done to alter the behavior.**

223. Which of the following is/are TRUE regarding the inheritance of traits by siblings?

a. Same sex siblings share only 50 percent of their genes, on average.

b. Beauty and leadership arise when particular combinations of genes occur together.

c. Some traits, though genetic, do not tend to run in families.

d. All of these statements are true.

**Answer: d**

**Page(s): 78**

**Rationale: Same sex siblings share only 50 percent of their genes, on average. Beauty and leadership arise when particular combinations of genes occur together. Some traits, though genetic, do not tend to run in families.**

224. \_\_\_\_\_\_\_\_\_\_ traits, such as beauty, are traits that arise when particular combinations of genes occur together, so these traits emerge from the whole rather than the sum of the parts.

a. Idiosyncratic

b. Phenotypic

c. Emergenic

d. Genomic

**Answer: c**

**Page(s): 78**

**Rationale: Emergenic traits, such as beauty, are traits that arise when particular combinations of genes occur together, so these traits emerge from the whole rather than the sum of the parts.**

225. Emergenic traits include which of the following?

a. leadership

b. beauty

c. artistic ability

d. all of these

**Answer: d**

**Page(s): 78**

**Rationale: Emergenic traits are traits that arise when particular combinations of genes occur together, so these traits emerge from the whole rather than the sum of the parts. A wide variety of traits may be emergenic, including beauty, leadership, artistic ability, and even genius.**

226. When children are reared together in the same house, spend time with the same parents, and go to the same schools, these influences are called \_\_\_\_\_\_\_\_\_ family environments.

a. genomic

b. shared

c. nonshared

d. emergenic

**Answer: b**

**Page(s): 78**

**Rationale: When children are reared together in the same house, spend time with the same parents, and go to the same schools, these influences are called shared family environments.**

227. Many studies regarding the influence of nonshared family environments on children’s development have shown these influences to be

a. more influential than shared family environments.

b. less influential than that of shared family environments.

c. non-existent.

d. to be inseparable from the shared family environment’s influence.

**Answer: a**

**Page(s): 78-79**

**Rationale: Much of the research has found that the environmental influences that affect development the most are not shared by siblings, such as peers.**

228. \_\_\_\_\_\_\_\_\_ refers to the idea that one can improve human populations by breeding “superior” individuals.

a. Ethnocentrism

b. Genomic imprinting

c. Eugenics

d. Biogenics

**Answer: c**

**Page(s): 80**

**Rationale: Eugenics refers to the idea that one can improve human populations by breeding “superior” individuals.**

229. Which of the following is/are TRUE regarding how traits are passed down from generation to generation?

a. Poor health can be passed down from generation to generation without being genetically transmitted.

b. Mental slowness can be passed down from generation to generation without being genetically transmitted.

c. The eugenics movement of the early 20th century believed that poverty was due to unfavorable genes.

d. All of these statements are true.

**Answer: d**

**Page(s): 80**

**Rationale: Poor health can be passed down from generation to generation without being genetically transmitted. Mental slowness can be passed down from generation to generation without being genetically transmitted. The eugenics movement of the early 20th century believed that poverty was due to unfavorable genes.**

230. During the eugenics movement, pellagra was once thought to be a hereditary disease. What was the real cause of pellagra?

a. poor sanitation

b. a nutritional deficiency

c. an infectious disease

d. spoiled corn

**Answer: b**

**Page(s): 81**

**Rationale: A niacin deficiency due to malnutrition caused pellagra.**

231. Which of the following conducted studies on pellagra and proved that it was caused by poor nutrition, not unfavorable genes?

a. Joseph Goldberger

b. Gregor Mendel

c. John B. Watson

d. Arthur Jensen

**Answer: a**

**Page(s): 81**

**Rationale: Joseph Goldberger conducted studies on pellagra and proved that it was caused by poor nutrition, not unfavorable genes.**

**Short Answer Questions**

232. In Latin, Homo sapiens means what?

**Answer: Homo sapiens is Latin for “wise human**

**Page(s): 47**

233. Describe how the development of the human offspring differs from that of other primates.

**Answer: Compared to other primates, human offspring are dependent on their parents longer. Human offspring are also large for the size of their mothers, have physical functions that mature very slowly, and are weaned earlier than other primates.**

**Page(s): 47-48**

234. If the human brain contains no structures that are not found in other primate brains, what causes human intelligence to be superior?

**Answer: The human brain has a greater volume, especially in areas responsible for complex thought, and humans have an extended period in which to develop their cognitive abilities.**

**Page(s): 47**

235. What is heredity?

**Answer: Heredity is the genetic mechanism by which parents pass traits onto their children.**

**Page(s): 48**

236. Differentiate between genotype and phenotype.

**Answer: Genotype is one’s genetic makeup, while phenotype is one’s actual physical appearance.**

**Page(s): 49**

237. List the names of three of Mendel’s principles of heredity.

**Answer: Principles of discrete traits, random segregation, and dominance/recessiveness**

**Page(s): 50**

238. For each condition, list whether the condition is dominant or recessive.

a. cystic fibrosis b. Huntington disease c. Marfan syndrome d. Brachydactyly, Type C

**Answer: Cystic fibrosis is a recessive trait, while Huntington disease, Marfan syndrome, and Brachydactyly, Type C are dominant traits.**

**Page(s): 50, Table 2.1**

239. Name the four types of bases of DNA and their specific pairings.

**Answer: The four bases are A (adenine), T (thymine), G (guanine), and C (Cytosine). Adenine always bonds with thymine, and cytosine always bonds with guanine.**

**Page(s): 51**

240. Define the term “chromosome,” and name and give the number of pairs of chromosomes in each of the two types of chromosomes.

**Answer: Chromosomes are threadlike structures in the nuclei of cell that are constructed from DNA and are arranged in 22 matching pairs of autosomes and one pair of sex chromosomes.**

**Page(s): 51**

241. What is meosis?

**Answer: Meiosis is a process of cell division that produces the gametes. Meosis reduces the number of chromosomes from 46 to 23.**

**Page(s): 52**

242. Crossing red snapdragons with white snapdragons results in some plants with pink flowers. This illustrates which type of non-Mendelian pattern of transmission?

**Answer: Partial or incomplete dominance**

**Page(s): 53**

243. What is polygenic inheritance?

**Answer: Traits that are determined by many genes are said to be transmitted by polygenic inheritance.**

**Page(s): 53**

244. List three examples of X-linked traits.

**Answer: muscular dystrophy, hemophilia, and some forms of color blindness**

**Page(s): 54**

245. Describe the trait of pattern baldness, explain how it is transmitted, and which gender(s) develop it.

**Answer: Pattern baldness is a type of baldness that causes hair loss on the top of the scalp for both men and women. (Women show it to a lesser extent than men do. It is transmitted through sex-influenced inheritance, in which expression of a trait is influenced by individual hormone levels.**

**Page(s): 54**

246. What is extranuclear inheritance and what makes it different from typical patterns of inheritance?

**Answer: Cells house some DNA in a structure outside the nucleus called the mitochondria. Mitochondrial DNA (mtDNA) is only inherited from the mother.**

**Page(s): 54**

247. Justin and Maria are twins. Which type of twins are they and how do you know from the information provided?

**Answer: They are dizygotic twins (fraternal twins) because they are male and female. Identical twins are always of the same sex.**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

248. Regarding the influence of genes and the environment, define “environment” and give two examples of aspects of a person’s life that would be considered environmental influences.

**Answer: Environment refers to a huge range of nongenetic influences, including biological ones, such as nutrition, poverty, exposure to disease, and being cuddled as a baby.**

**Page(s): 59**

**Section: How Genes and the Environment Interact**

249. Explain how the environment can influence the condition of Down syndrome syndrome.

**Answer: Stimulating environments produce better mental functioning so that most Down syndrome children test in the mild to moderately retarded range, and many learn to read, write, and provide basic care for themselves.**

**Page(s): 60**

**Section: How Genes and the Environment Interact**

250. What is meant by “reaction range”?

**Answer: Reaction range** **implies that genes set the lower and upper limit for a trait, while the quality of the environment determines where a person will fall within a range of functioning.**

**Page(s): 60**

**Section: How Genes and the Environment Interact**

251. Define canalization and give an example.

**Answer: Canalization** **is the extent to which a trait develops normally across a range of environments.**

**Highly canalized traits are difficult to deflect from their expected tracks and include behaviors that are necessary for survival, such as walking or communicating.**

**Page(s): 61**

**Section: How Genes and the Environment Interact**

252. What is niche-picking and with which genotype-environment correlation is it associated?

**Answer: Niche-picking is the tendency of individuals to choose activities and environments that match their personalities and interests and would be associated with the active gene-environment correlation.**

**Page(s): 62**

**Section: How Genes and the Environment Interact**

253. What are glial cells?

**Answer: Glial cells are** **cells in the nervous system that insulate neurons, provide them with nutrients, and remove cellular waste.**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

254. List the parts of a typical neuron.

**Answer: A typical neuron consists of dendrites, a cell body, and an axon.**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

255. What is neurulation?

**Answer: Neurulation is the process of forming the neural tube, which will become the brain and spinal cord.**

**Page(s): 63**

**Section: How Genes and the Environment Interact**

256. What is synaptogenesis?

**Answer: Synaptogenesis is the process of developing interconnections between neurons.**

**Page(s): 64**

**Section: How Genes and the Environment Interact**

257. Explain how a child’s diet would affect myelination.

**Answer:** The fat content of a child’s diet affects myelination, so pediatricians recommend that children drink whole milk until age two. Then, parents can switch to a low fat or skim milk.

**Page(s): 65**

**Section: How Genes and the Environment Interact**

258. List two of the three ways that deterioration of the brain can occur.

**Answer: Deterioration of the brain occurs during times of extreme stress, illness, or when environments fail to stimulate us mentally.**

**Page(s): 65**

**Section: How Genes and the Environment Interact**

259. What are clines?

**Answer: Clines are changes in the frequency of a trait across a geographic area.**

**Page(s): 67**

**Section: Genetic and Environmental Diversity**

260. Describe how scientists who analyze blood and how forensic specialists who identify decomposed bodies from skeletal features view the use of racial categories in their work?

**Answer: Scientists who analyze blood prefer to think of human variation as cline (cannot be captured by racial categories), while forensic specialists tend to support the race concept (because they can categorize people fairly accurately).**

**Page(s): 67**

**Section: Genetic and Environmental Diversity**

261. Define culture and list three features of any culture.

**Answer: Culture refers to the features of the environment that are learned, including the technology, art, morals, laws, customs, and beliefs of individual societies.**

**Page(s): 68**

**Section: Genetic and Environmental Diversity**

262. Do the terms Hispanic and Latino refer to race or ethnicity and why?

**Answer: Hispanic and Latino refer to ethnicity because people in these categories can be of any race.**

**Page(s): 69**

**Section: Genetic and Environmental Diversity**

263. What are HOME inventories and what do they measure?

**Answer: The HOME inventories are checklists that describe the types of learning materials in a child’s home, the degree of parental involvement, and other direct family influences.**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

264. Regarding values, American tend to emphasize independence, unique solutions to problems, and personal happiness, while the Japanese focus on the welfare of the group. What type of values does the American typically demonstrate and which type do the Japanese typically demonstrate?

**Answer: Americans typical demonstrate individualist values, while the Japanese demonstrate collectivist values.**

**Page(s): 70**

**Section: Genetic and Environmental Diversity**

265. What is ethnocentrism?

**Answer: Ethnocentrism is the belief that one’s ethnic group is superior to other groups.**

**Page(s): 72**

**Section: Genetic and Environmental Diversity**

266. Briefly describe the “selective neglect” practiced by the Mukogodo in central Kenya.

**Answer: Because the Mukogodo prefer female children, male children suffer from “selective neglect,” a pattern of behavior in which they are nursed for shorter periods of time, taken to medical clinics less often, and offered less healthy food.**

**Page(s): 74**

267. List three strategies can be used to estimate the relative contribution of genes and the environment

**Answer: Compare the similarity between identical and fraternal twins, consider whether adopted children most resemble the parents who raised them or their biological parents, and compare the degree of similarity between children and their biological siblings versus their adoptive siblings.**

**Page(s): 75**

268. Define heritability.

**Answer: For a particular trait, heritability is the proportion of observed variability among individuals in a group that is attributed to genetic variability.**

**Page(s): 75**

269. Define emergenic traits and list two examples of these traits.

**Answer: Emergenic traits are traits that arise when particular combinations of genes occur together, so these traits emerge from the whole rather than the sum of the parts. A wide variety of traits may be emergenic, including beauty, leadership, artistic ability, and even genius.**

**Page(s): 78**

270. Explain the difference between shared and nonshared family environments.

**Answer: When children are reared together in the same house, spend time with the same parents, and go to the same schools, these influences are called shared family environments. Since siblings have different friends and experience different treatment by their parents, these influences are called nonshared family environments.**

**Page(s): 78**

271. What was the Eugenics movement of the early 20th century and what did they believe?

**Answer: Eugenics refers to the idea that one can improve human populations by breeding “superior” individuals. They believed that poverty and its consequences, including low IQ, lack of energy, and criminality, were largely due to unfavorable genes.**

**Page(s): 80**

**Essay Questions**

272. Describe how human beings differ from other primates, regarding their development as offspring, their dependence on others, their adaptation, their minds, and their lifespan.

**Answer: Compared to other primates, human offspring are dependent on their parents longer. Human offspring are also large for the size of their mothers, have physical functions that mature very slowly, and are weaned earlier than other primates. No other primate takes more than a decade to mature, but humans reach maturity only after 18-25 years. No creature spends more time dependent on others for its very existence than a human baby, and no creature takes on the burden of that dependence so long and so readily as a human adult. Most species survive because they are adapted for particular environments. However, humans survive because our flexible brains help us adapt to a wide variety of environments. The cost of this flexibility is a long childhood. Although the human brain contains no structures that are not found in other primate brains, human uniqueness lies in the greater volume of the human brain (especially in areas responsible for complex thought) and our extended period of rapid cognitive development. Thus, humans are highly intelligence, highly social animals with large brains that allow us to reflect on the meaning of our own existence. Although small organisms tend to reach sexual maturity young, reproduce often, and die young, the maximum human lifespan of 120 years is longer than we would expect for the size.**

**Page(s): 47-48**

273. Describe the three theories of reproduction that were popular from the 17th century through the 19th century.

**Answer: Preinformation was the popular view of reproduction during the 17th century and stated that future generations were nested inside one another. After the discovery of sperm cells, some preformationists claimed that immature organisms were housed in the head of the sperm. In the late 19th century, some physicians believed that a sufficient number of sperm cells had to enter the female sex cell to trigger normal development.**

**Page(s): 48**

274. Differentiate between dominant and recessive alleles by using the condition of albinism as an example?

**Answer: Albinism is a recessive condition in which people lack the pigment that gives skin its color. It occurs when a person inherits two recessive alleles, one from each parent. Dominance means that one allele masks the influence of another allele, so that a person with one dominant allele for normal skin pigmentation and one recessive allele for albinism would have normal skin pigmentation. Two recessive alleles must be present for a recessive trait, such as albinism, to be expressed.**

**Page(s): 49-50**

275. Describe the condition Marfan syndrome and how it is transmitted.

**Answer: Marfan syndrome is a condition characterized by tall stature and extremely long arms and legs with many associated features, such as crowded teeth and a high arched palate and heart abnormalities that could lead to a premature death. Marfan syndrome is transmitted by a dominant allele.**

**Page(s): 50, Table 1.2**

276. Describe Tay-Sachs disease, its type of non-Mendelian transmission, and the effect, if any, of a person having only one abnormal allele for Tay-Sachs.

**Answer: Tay-Sachs is condition that affects mostly Jews of Eastern European ancestry and is caused by incomplete or partial dominance. Babies who inherit two recessive alleles do not metabolize fatty substances called lipids normally, causing gradual destruction of their central nervous systems followed by death during the first one to three years. If a person has both dominant normal genes, they will not have the condition, while if they have both recessive genes, they will have Tay-Sachs. However, inheriting one dominant and one recessive gene results in individuals who have an intermediate trait, that is, they do not suffer from the disease but actually have only about half of the enzyme activity (the process that removes excess lipids form the body) that normal adults have.**

**Page(s): 53**

277. Explain genetic imprinting using the Prader-Willi syndrome and the Angelman syndrome as examples. Include a description of each of these conditions.

**Answer: Genetic imprinting occurs** **when the expression of a trait depends upon whether it was inherited from the mother or the father. Two distinct disorders arise from the deletion of a chromosome region of the 15th pair. If only the maternal chromosome is normal, Prader-Willi syndrome results, while if the paternal chromosome is normal, then Angelman syndrome results. Characteristics of Prader-Willi syndrome include mental retardation, obesity, and almond-shaped eyes. Angelman syndrome also causes mental retardation and a collection of other abnormalities, including inappropriate laughter and little or no speech.**

**Page(s): 54**

278. What is a mutation, what causes mutations, and in what ways can they affect the genetic code?

**Answer: Every species experiences mutations, which are changes in the genetic code due to spontaneous internal processes or environmental influences, such as radiation or exposure to certain chemicals. Mutations can occur at the level of single genes or chromosomes. Chromosomal mutations involve changes either in the number of chromosomes or the arrangement of segments of chromosomes.**

**Page(s): 54**

279. What was the Human Genome Project, when did it begin and end, what were its three goals, and what are the possible benefits and disadvantages of this knowledge?

**Answer: The Human Genome Project was an international effort to map the human genetic code. It began in 1990 and was officially completed in 2003. The goals of the project were to sequence the three billion bases that make up human DNA, make the data available to the public, and address the ethical, legal, and social issues that arose form the project. Possible benefits include new gene therapies and drug treatments, procedures to detect vulnerabilities to diseases, and improved technologies for solving crimes form DNA evidence. Disadvantages may be that people with genetic predispositions to disease might be denied health insurance or people more susceptible to workplace toxins might be fired, or parents might abort fetuses who do not meet their biological standards.**

**Page(s): 55**

280. According to research on identical twins separated at birth and raised in different families, how similar and how different are these genetically identical people?

**Answer: They would be of the same sex, have similar intelligences, heart rates, and brain waves. They would most likely have some similar personality traits, mannerisms, and gestures as well as similar susceptibilities to certain mental illnesses and addictions. If a major physical defect occurred in one identical twin, the other twin is affected less than half of the time. They may suffer from different diseases and make different lifestyle choices that may influence how heavy they are and how rapidly they appear to age.**

**Page(s): 57-58**

**Section: How Genes and the Environment Interact**

281. Explain the differences in monozygotic and dizygotic twins.

**Answer: Monozygotic (identical) twins form from a single fertilized egg and share 100 percent of their genes, so they are always of the same sex. Dizygotic (fraternal) twins form from two fertilized eggs and can be either the same sex or different sexes, and they are no more genetically similar than siblings who were carried by their mother at different times. Same-sex pairs of fraternal twins share 50 percent of their genes, on average.**

**Page(s): 58**

**Section: How Genes and the Environment Interact**

282. Your newborn nephew has just been diagnosed with phenylketonuria (PKU). Describe this condition and explain how diet affects how this condition will be expressed.

**Answer: PKU is a recessive condition in which individuals cannot metabolize the amino acid phenylalanine, which is abundant in high-protein foods. If children with PKU eat a normal diet, phenylalanine levels rise in their blood, causing permanent mental retardation before their first birthdays. But newborns with PKU who are kept on a low phenylalanine diet achieved intelligence test scores that are within normal range. In this way, the food children eat determines how their potential for intelligence is expressed.**

**Page(s): 59**

**Section: How Genes and the Environment Interact**

283. Briefly describe the condition of schizophrenia and explain how scientists know that both genes and the environment play a role in its development.

**Answer: Schizophrenia is a** **class of conditions involving problems in perception, thinking, and moods; that usually appears in late adolescence or early adulthood; and occurs when genetically vulnerable people confront environmental factors that interfere with normal brain development. Genes certainly play a role since an individual is three times more likely to develop schizophrenia if both parents also have the diagnosis than just one parent. A person is also more likely to have the diagnosis if his/her identical twin has schizophrenia than his/her fraternal twin, although the risk of developing schizophrenia is less than 50 percent even if the identical twin has the disorder. Regarding the environment, there are higher rates of schizophrenia among people born in the winter. Some possible environmental factors include physical trauma during birth, an unidentified virus (which pregnant women are more likely to “catch” during the winter), and maternal nutritional deficiencies (which are also more common during the winter months).**

**Page(s): 60**

**Section: How Genes and the Environment Interact**

284. Define genotype-environment correlation, describe the three types, and give an example of each type.

**Answer: Genotype-environment (G-E) correlations are the ways in which genetic mechanisms influence individuals’ environments and experiences. Passive gene-environment correlations refer to the fact that most children share both genes and environments with parents who encourage their own talents and avoid their own weaknesses. For example, a person may inherit their parents outgoing, sociable genes, but also are in an environment in which they observe their parents being sociable and are given opportunities to socialize a great deal. Reactive gene-environment correlation describes** **how children with different genetic make-ups elicit different reactions from their environments. For example, an attractive child elicits more positive feedback from others and becomes more self-confident because of the feedback. Active gene-environment correlation** **means** **that people select environments that are consistent with their genetic preference. If you are shy and quiet, one selects environments that are not crowded and noisy.**

**Page(s): 61-62**

**Section: How Genes and the Environment Interact**

285. Describe the consequences to the unborn child’s developing brain if the mother drinks alcohol heavily while she is pregnant.

**Answer: Drinking alcohol while pregnant tends to cause the number (neurogenesis) and organization of cells (neural migration) in the cerebral cortex to be abnormal. In severe cases, babies born to alcoholic mothers have large gaps in their brains because there are so few neurons to fill in, and the neurons in some brain regions are disorganized, as if they did not know where to stop when they were migrating.**

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**Section: How Genes and the Environment Interact**

286. Describe the processes of early synaptogenesis in the developing brain and the synaptic pruning that occurs between early childhood and adolescence.

**Answer: Synaptogenesis is the process of developing interconnections between neurons, which begins only weeks after neurogenesis and then tapers off in different brain regions about one to three years after birth. Early synaptogenesis is a genetically-controlled process producing many more synapses between one neuron and another than are needed. The brain is not very selective in producing these connections producing an infant with limited cognitive ability, but one with remarkable flexibility. Then, the synapses that are activated by particular experiences undergo changes that make them more permanent. Between early childhood and adolescence, these children will lose billions of synapses per day in a process called synaptic pruning, which is the elimination of unnecessary synaptic connections. This process has been called neural Darwinism, a type of survival of the fittest in which activate interconnections beat out weaker neighbors for a place in the brain. In the process, they will gradually trade some neural plasticity, the ability of their brain to change with experience, for a less flexible brain that processes information more quickly and efficiently.**

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**Section: How Genes and the Environment Interact**

287. Scientists who criticize the race concept have concluded that “there are no races, there are only clines.” What do they mean by this statement?

**Answer: These scientists see individual traits as adaptations to particular environmental pressures that do not share geographic boundaries. Thus, these scientists believe it is misleading to classify people into racial groups based on facial characteristics or blood type, since clines exist, which are changes in the frequency of traits across geographic areas**

**Page(s): 67**

**Section: Genetic and Environmental Diversity**

288. Mark has been diagnosed with heart disease. Why would knowing his race aid the doctor in treating his condition?

**Answer: Many African-American inherit a gene associated with a poor drug response to certain drugs used to treat heart disease, although a few African-Americans do not inherit this gene. However, in a vast majority of the cases, it is more beneficial for patients for doctors to take this difference into consideration when prescribing the most effective drug.**

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**Section: Genetic and Environmental Diversity**

289. You are asked to show a new employee from another country around your American company. Although you set the tour for 9:00 a.m., the employee does not arrive until 9:10 a.m. and does not apologize for his actions. During the tour, this new employee always stands uncomfortably close, especially in face-to-face conversations; and he also touches items on people’s desks without asking. What is the most likely cause of this employee’s behaviors and what would you tell this employee?

**Answer: The cause of the behavior is most likely cultural differences regarding how you and the new employee think about time and appointments, about personal space, and the use of objects that are lying around. You would probably express to the employee that you are aware of these cultural differences and what is perfectly appropriate in a company within his country would be considered inappropriate in an American company. To keep others from misinterpreting his actions, you could offer to help him to assimilate to the expectations of this company in order to make a smoother transition.**

**Page(s): 68-69**

**Section: Genetic and Environmental Diversity**

290. Describe the differences shown by groups who emphasize individualist values and those who emphasize collectivist values regarding how they view the self, parental responsibility, the goal of socialization, differences in achievement, and social decision-making.

**Answer: Those with individualist values would define the self as independent and separate from the group, while the collectivists define the self in terms of one’s relationship to the group. Parents with individualist values would view their newborns born helpless and would encourage skills of autonomy in their children by having them sleep alone in separate nurseries. Parents with collectivist values would view their infants as separate and strong-willed organisms who need to learn interdependence, so they prefer to encourage this connection by sleeping with their infants. Those with individualist values see the primary goal of socialization as developing children’s unique talents and their individuality though their interactions with peers and adults, while those with collectivist values believe that interactions with adults and peers teach children to fit harmoniously into a group and to promote the goals of the group. According to the individualists, differences in achievement are largely due to individual differences in talent, while the collectivist see these differences as due to training and effort. Regarding social decision-making, individuals’ attitudes and feelings are important determinants of behavior, according to the individualists with the well-being of the group and group norms determining behavior, according to the collectivists.**

**Page(s): 70-71, Table 2.2**

**Section: Genetic and Environmental Diversity**

291. In the study on preschools presented in this chapter, how did the American and Japanese differ in their views regarding the size of classes, the reasons for misbehavior within the classroom, and the values promoted by the teacher.

**Answer: Regarding the study, Americans advocate having small preschool classes, while the Japanese have 30 preschoolers to one teacher in a single classroom because it promotes becoming a member of a group. Americans would believe a child misbehaves because they are smart and bored, whereas the Japanese view the misbehavior as the child not having learned to be dependent on others. The Japanese also disapprove of how American teachers promote individualism and regard the practice of asking children about their feelings as inappropriate because it is too adult-like for children.**

**Page(s): 71-72**

**Section: Genetic and Environmental Diversity**

292. Discuss the reasons for various gender preferences by parents around the world and the consequences of these preferences.

**Answer: In traditional China, males were valued more highly because they helped with farming and cared for aging parents. Females were barred from many agricultural activities and joined their husbands’ families after marriage, which meant they were no longer around to assist as their parents grew old. After the one-child policy in 1979, the number of infant boys per 100 girls in China rose to 114 between 1982 and 1989. Prior to 1930, the Inuit (Canadian and North Alaskan Eskimos) may have killed 21 percent of their female infants with 10,000 female fetuses aborted every year in India as a consequence of prenatal tests to determine sex. Favoritism toward daughters occurs among the Mukogodo, a sheep and goat herding people of central Kenya, where Mukogodo males have difficulty finding wives because they have neither wealth nor power compared to neighboring groups. Prosperous males in Kenya can have more than one wife. Although there is no evidence that the Mukogodo practice infanticide, males suffer from “selective neglect,” a pattern of behavior in which they are nursed for shorter periods of time than girls, taken to medical clinics less often, and offered less healthy food. Parental investment favoring girls is shown by the Kanjar of Pakistan where women dominate public affairs. As women gained rights in the People’s Republic of China, more young people began expressing a desire for a daughter to provide comfort during their elderly years. However, selectively killing or abandoning children who are an economic burden is still a frequent practice in many societies.**

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293. List and briefly explain the five characteristics of heritability.

**Answer: Heritability must range between 0.0 and 1.0 with a value of 0 meaning that none of the variability we observe is due to genetic factors, whereas 1.0 means that all of the variability is due to genetic factors. Unless a trait is caused only by genes or only by the environment, the size of the heritability statistic is not fixed. If there is little variability due to environment, then the proportion of variability due to genetic factors should be large. If there is a great variability due to environment, then the proportion of variability due to genetic factors should be small. Heritability does not apply to individuals, but indicates the variability in a population due to genetic factors. Heritability cannot tell us why two populations differ; and it does not tell us how much a behavior might change in a new environment.**

294. Use the pellagra epidemic to explain how the eugenics movement prevented a cure from being found.

**Answer: Pellagra was a widespread disease that swept across the southern part of the country when corn was the major source of food. Some scientists thought it was caused by spoiled corn or an unknown microbe but the director of the Eugenics Record office believed it was a genetic disease among people of inferior breeding stock. Although Joseph Goldberger was able to prove it was caused by poor nutrition through his studies, Goldberg’s findings were minimized by the eugenics movement, and pellagra killed an estimated 600,000 people. Eventually, a niacin deficiency was identified as the specific cause, and bakers began voluntarily enriching white bread with high-vitamin yeast and the disease was largely eliminated.**