

Chapter 2—Heredity and Prenatal Development

MULTIPLE CHOICE

1. What is the definition of heredity?
- the molecular structure of the rod-shaped structures located in the cells
 - physical traits determined by the combining of various genes
 - the cell division process by which growth occurs and tissues are replaced
 - one's nature, which is based on biological transmission of traits and characteristics

ANS: D PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

2. Next year you will be pursuing an education in the field of heredity. If someone asked you what exactly you will be studying, which word would you most likely use?
- etiology
 - genetics
 - biology
 - eugenics

ANS: B PTS: 1 REF: p. 23 OBJ: LO1
KEY: WWW BLM: Remember

3. Which of the following is NOT influenced by genetics?
- physical traits
 - motivation
 - psychological problems
 - intelligence

ANS: B PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

4. What is the meaning of “heredity”?
- the manifestation of traits in a person's characteristics
 - the biological transmission of traits and characteristics
 - the combination of genes that influence our phenotype
 - the division of cells that determine the person we become

ANS: B PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

5. What is the name of the thousands of segments contained in chromosomes?
- nuclei
 - genes
 - cytosines
 - phosphates

ANS: B PTS: 1 REF: p. 23 OBJ: LO1
KEY: WWW BLM: Remember

6. If you were to paint a picture of a chromosome, what shape would you depict?
- a rod
 - a cone
 - a circle
 - an octagon

ANS: A PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

7. At the moment of conception, how many chromosomes does a healthy zygote contain?
- 20
 - 32
 - 46
 - 48

ANS: C PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

8. What characteristic distinguishes polygenic traits?
- They are uncommon in humans.
 - They are transmitted only by the female.
 - They result in more complex characteristics.
 - They are transmitted by a single pair of genes.

ANS: C PTS: 1 REF: p. 24 OBJ: LO1
BLM: Higher Order

9. You are a science teacher and one of your students asks: "How many genes ultimately govern our heredity?" What is your reply?
- We have 1,000 to 1,500 genes in our cells.
 - We have 10,000 to 20,000 genes in our cells.
 - We have 20,000 to 25,000 genes in our cells.
 - We have 25,000 to 35,000 genes in our cells.

ANS: C PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

10. DNA takes the form of what physical shape?
- a zipper
 - a straight ladder
 - a twisting ladder
 - interlocking circles

ANS: C PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

11. What branch of science includes the study of genetics?
- chemistry
 - physics
 - biology
 - psychology

ANS: C PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

12. What is the result when a fertilized egg does NOT separate on the 13th day of development?
- conjoined twins
 - monozygotic twins
 - meiosis
 - cell mutation

ANS: B PTS: 1 REF: p. 24 OBJ: LO1
BLM: Remember

13. Richard and Alice have just conceived. They joke, by stating “they are building a baby.” Precisely how many chromosomes will Alice contribute?
- 13
 - 23
 - 46
 - 92

ANS: B PTS: 1 REF: p. 25 OBJ: LO1
BLM: Higher Order

14. What is the function of genes?
- They regulate the development of traits.
 - They decide the gender of the child.
 - They hardwire people for certain levels of some traits.
 - They work together with lutein to influence development.

ANS: A PTS: 1 REF: p. 23 OBJ: LO1
KEY: WWW BLM: Higher Order

15. What does DNA stand for?
- dionucleic acid
 - dionyotic acetate
 - deoxyribonucleic acid
 - diophosphate nucleic acetone

ANS: C PTS: 1 REF: p. 24 OBJ: LO1
BLM: Remember

16. What is formed during mitosis?
- mutation
 - 23 chromosomes
 - sperm and ova cells
 - new cells with identical DNA

ANS: D PTS: 1 REF: p. 24 OBJ: LO1
KEY: WWW BLM: Remember

17. What is another term for "reduction division"?
- mitosis
 - meiosis
 - cell death
 - neural pruning

ANS: B PTS: 1 REF: p. 24 OBJ: LO1
BLM: Remember

18. What method of cell reproduction allows for more genetic "variability"?
- cloning
 - meiosis
 - mitosis
 - cross-fertilization

ANS: B PTS: 1 REF: p. 24 OBJ: LO1
KEY: WWW BLM: Higher Order

19. Of the 23 pairs of chromosomes, 22 pairs look alike and possess genetic information concerning the same traits. What term refers to these 22 pairs of chromosomes?
- autosomes
 - sperm cells
 - sex chromosomes
 - identical chromosomes

ANS: A PTS: 1 REF: p. 24 OBJ: LO1
BLM: Remember

20. How many chromosomes are contained in a cell created during meiosis?
- 23
 - 25
 - 43
 - 46

ANS: A PTS: 1 REF: p. 24 OBJ: LO1
KEY: WWW BLM: Remember

21. What factor determines the sex of a child?
- the presence of dihydroxyacetate in the uterus
 - the sex chromosome received from the father
 - the time in the ovulation cycle when conception occurs
 - the presence or absence of teratogens at the time of conception

ANS: B PTS: 1 REF: p. 24 OBJ: LO1
BLM: Higher Order

22. Baby A has two X chromosomes while Baby B has an X chromosome and a Y chromosome. What can you conclude about these two babies?
- The babies will have different hair colour.
 - Baby A is a girl and Baby B is a boy.
 - Baby A is a boy and Baby B is a girl.
 - Baby A suffers a genetic error and Baby B is healthy.

ANS: B PTS: 1 REF: p. 24 OBJ: LO1
KEY: WWW BLM: Higher Order

23. You are out with your friends and you want to dazzle them with your new child development knowledge. You decide to inform your friend Peter of his chromosome pattern. How pattern do you describe?
- XX
 - XY
 - XYY
 - XXY

ANS: B PTS: 1 REF: p. 24 OBJ: LO1
KEY: WWW BLM: Higher Order

24. What is the result of a zygote that divides into two cells that separate?
- mitosis
 - dizygotic twins
 - cross-fertilization
 - monozygotic twins

ANS: D PTS: 1 REF: p. 24 OBJ: LO1
BLM: Higher Order

25. A woman gives birth to dizygotic twins. Without having met this woman, what do you know about her?
- She is a young mother.
 - She is of Asian descent.
 - She has a decreased chance of subsequent pregnancies.
 - She has an increased chance of giving birth to twins in future pregnancies.

ANS: D PTS: 1 REF: p. 24 OBJ: LO1
BLM: Remember

26. What term describes each member of a pair of genes?
- an allele
 - an autosome
 - a homozygous trait
 - a heterozygous trait

ANS: A PTS: 1 REF: p. 25 OBJ: LO1
BLM: Remember

27. What term describes a person who has two alleles for the same trait?
- dizygotic
 - homozygous
 - monozygotic
 - heterozygous

ANS: B PTS: 1 REF: p. 25 OBJ: LO1
KEY: WWW BLM: Remember

28. A person who inherits a gene for blonde hair and a gene for brown hair will have brown hair. What can we conclude about the gene for brown hair?
- It is more common.
 - It is recessive.
 - It is dominant.
 - It is monozygy.

ANS: C PTS: 1 REF: p. 25 OBJ: LO1
BLM: Higher Order

29. What is a defining characteristic of a recessive gene?
- It is expressed when it is paired with another recessive gene.
 - It is expressed only when it is paired with a dominant gene.
 - It is expressed regardless of whether it is paired with a recessive or a dominant gene.
 - It is rarely passed on to offspring.

ANS: A PTS: 1 REF: p. 25 OBJ: LO1
KEY: WWW BLM: Higher Order

30. What can we conclude about a boy with two alleles for brown eyes?
- He has blue eyes.
 - He is referred to as "atypical."
 - He is homozygous for eye colour.
 - He has eye colour as a co-dominant trait.

ANS: C PTS: 1 REF: p. 25 OBJ: LO1
BLM: Higher Order

31. Which of the following is a characteristic of dominant alleles?
- They cause traits in individuals when paired with recessive alleles.
 - They come from the father of the developing child.
 - They are determined during mitosis.
 - They are determined by the parents during the germinal period.

ANS: A PTS: 1 REF: p. 25 OBJ: LO1
BLM: Higher Order

32. Which of the following results from a dominant trait?
- type O blood
 - straight hair
 - myopia
 - farsightedness

ANS: D PTS: 1 REF: p. 25-26 OBJ: LO1
KEY: WWW BLM: Higher Order

33. Cathy and Doug both have brown eyes. If their child has blue eyes, what can we conclude about Cathy's and Doug's genes for blue eyes?
- Both Cathy and Doug must be carrying a recessive gene for blue eyes.
 - Either Cathy or Doug must be carrying a recessive gene for blue eyes.
 - Both Cathy and Doug must be carrying a dominant gene for blue eyes.
 - Either Cathy or Doug must be carrying a dominant gene for blue eyes.

ANS: A PTS: 1 REF: p. 25-26 OBJ: LO1
BLM: Higher Order

34. Jill carries two genes for brown eyes, and Jack carries two genes for blue eyes. What can we predict about their child's eye colour?
- Their child will have a 50% chance of having brown eyes.
 - Their child will have a 75% chance of having brown eyes.
 - Their child will have a 100% chance of having blue eyes.
 - Their child will have a 100% chance of having brown eyes.

ANS: D PTS: 1 REF: p. 25-26 OBJ: LO1
BLM: Higher Order

35. Maria and Eric are told they are "carriers" of a particular trait? What does that mean?
- They bear co-dominant genes for a trait.
 - They bear two dominant genes for a trait.
 - They carry two recessive genes for a trait.
 - They carry one recessive and one dominant gene for a trait.

ANS: D PTS: 1 REF: p. 25 OBJ: LO1
BLM: Higher Order

36. A girl who has cystic fibrosis has moved into your neighbourhood. Without having met her, what do you know about her?
- She has a younger mother.
 - She has more than 23 chromosomal pairs.
 - She carries cystic fibrosis as a recessive gene.
 - She did NOT have a dominant gene to cancel out the cystic fibrosis.

ANS: D PTS: 1 REF: p. 25 OBJ: LO1
KEY: WWW BLM: Higher Order

37. Which of the following conditions is NOT caused by a single pair of genes?
- cystic fibrosis
 - Down syndrome
 - sex-linked chromosomal abnormalities
 - myopia

ANS: D PTS: 1 REF: p. 25 OBJ: LO1
BLM: Higher Order

38. Which of the following is an essential attribute of Down syndrome?
- It is caused by a virus during pregnancy.
 - It is significantly more likely in boys than girls.
 - It is caused by a defect on the sex chromosomes.
 - It is increasingly likely among children born to older parents.

ANS: D PTS: 1 REF: p. 26 OBJ: LO1

KEY: WWW BLM: Higher Order

39. What is the diagnosis of an infant born with 47 chromosomes instead of 46?
- phenylketonuria
 - sickle-cell anemia
 - Down syndrome
 - Tay-Sachs disease

ANS: C PTS: 1 REF: p. 26 OBJ: LO1

BLM: Higher Order

40. What is the cause of Down syndrome?
- alcohol abuse by the father
 - alcohol abuse by the mother
 - sex-linked chromosomal abnormalities
 - abnormalities of the 21st pair of chromosomes

ANS: D PTS: 1 REF: p. 26 OBJ: LO1

BLM: Remember

41. What symptom describes Huntington disease (HD)?
- infertility
 - an inability to metabolize an amino acid
 - uncontrollable muscle movements
 - complications such as blindness

ANS: C PTS: 1 REF: p. 27 OBJ: LO1

BLM: Higher Order

42. According to the Huntington Society of Canada, what is the prevalence of Huntington disease (HD) in Canada?
- HD affects only females.
 - One in every 10,000 Canadians has HD.
 - Ten in every 10,000 Canadians has HD.
 - HD affects only males.

ANS: B PTS: 1 REF: p. 27 OBJ: LO1

BLM: Remember

43. Which person has a recessive trait?
- Jack who has dimples
 - Martha who has red hair
 - Janice who has been diagnosed as being farsighted
 - David who has very curly hair

ANS: B PTS: 1 REF: p. 26 OBJ: LO1

KEY: WWW BLM: Higher Order

44. Which person has a dominant trait?
- Andrea who has myopia
 - Richard who has red-green colour blindness
 - Lynne who has Type O blood
 - Wayne who has Type B blood

ANS: D PTS: 1 REF: p. 26 OBJ: LO1

BLM: Higher Order

45. What is a common characteristic of most individuals who have an abnormal number of sex chromosomes?
- They have flat faces.
 - They are infertile.
 - They have more body hair than normal.
 - They have round faces.

ANS: B PTS: 1 REF: p. 27 OBJ: LO1

BLM: Higher Order

46. In 2012, what organization proudly declared March 21, to be World Down Syndrome Day?
- United Nations
 - UNICEF
 - Canadian Psychological Association
 - Canadian Medical Association

ANS: A PTS: 1 REF: p. 26 OBJ: LO1

BLM: Remember

47. John thinks his neighbour's child has Down syndrome. His wife looks closely at the child's face and shakes her head. What facial characteristic did Mary notice that suggests the child does NOT have Down syndrome?
- a protruding tongue
 - a pointy nose
 - a sloping fold of skin over the inner corners of the eyes
 - a rounded face

ANS: B PTS: 1 REF: p. 26-27 OBJ: LO1

BLM: Remember

48. Queen Victoria was a carrier of which of the following?
- myopia
 - red-green colour blindness
 - phenylketonuria
 - hemophilia

ANS: D PTS: 1 REF: p. 28 OBJ: LO1
KEY: WWW BLM: Remember

49. What type of disorder is phenylketonuria?
- an enzyme disorder
 - a disorder transmitted by a dominant gene
 - a disorder that manifests itself in all children of carriers
 - a disorder caused by alcohol consumption during pregnancy

ANS: A PTS: 1 REF: p. 27 OBJ: LO1
BLM: Remember

50. Joshua was born with an inherited disease that blocked the development of an enzyme critical for development. Over time, Joshua has developed profound intellectual challenges. What disorder does Joshua have?
- Tay-Sachs disease
 - sickle-cell anemia
 - phenylketonuria
 - Down syndrome

ANS: C PTS: 1 REF: p. 27 OBJ: LO1
KEY: WWW BLM: Higher Order

51. Children with PKU will develop normally if they are placed on a special diet. What does their special diet exclude?
- all fruits
 - all proteins
 - all vegetables
 - all meat and nuts

ANS: D PTS: 1 REF: p. 27 OBJ: LO1
BLM: Higher Order

52. Which of the following disorders is the rarest?
- Down's syndrome
 - Turner's syndrome
 - Huntington disease
 - Klinefelter syndrome

ANS: C PTS: 1 REF: p. 27 OBJ: LO1
KEY: WWW BLM: Remember

53. You are a pregnant woman who has just consulted a genetic counsellor. You asked about your risk for having a child with Huntington disease. What prevalence rate will the genetic counsellor suggest?
- 1 in every 5,000 births
 - 1 in every 10,000 births
 - 1 in every 50,000 births
 - 1 in every 75,000 births

ANS: B PTS: 1 REF: p. 27 OBJ: LO1
BLM: Higher Order

54. Janet has Huntington disease and knows that approximately half of her children will also have Huntington disease. What will cause this disease to occur in her children?
- a blood disorder
 - a recessive trait
 - a dominant trait
 - a personality disorder

ANS: C PTS: 1 REF: p. 27 OBJ: LO1
KEY: WWW BLM: Higher Order

55. Which person is most likely to develop sickle-cell anemia?
- a person of Asian descent
 - a person of African descent
 - a person of Irish descent
 - a person of Jewish descent

ANS: B PTS: 1 REF: p. 28-29 OBJ: LO1
BLM: Higher Order

56. What is the cause of sickle-cell anemia?
- a recessive gene
 - a slow destruction of the liver leading to jaundice and swollen joints
 - white blood cells that take on the shape of a sickle and clump together
 - red blood cells that expand the blood vessels and increase the oxygen supply

ANS: A PTS: 1 REF: p. 28-29 OBJ: LO1
BLM: Remember

57. Trevor is an African-Canadian child who was born with a disease that altered the shape of his blood cells. He typically does NOT eat very much, his eyes have a yellow colour, and he shows signs of cognitive difficulties. What disorder does Trevor have?
- phenylketonuria
 - sickle-cell anemia.
 - Down syndrome
 - Tay-Sachs disease.

ANS: B PTS: 1 REF: p. 28 OBJ: LO1
KEY: WWW BLM: Higher Order

58. Your sister tells you her friend's child has been diagnosed with Tay-Sachs disease. Your sister asks you what you know about this disease. What do you tell her?
- It is caused by a dominant gene.
 - It is linked to the X chromosome.
 - It affects the pancreas and the lungs.
 - It is a fatal degenerative disease of the central nervous system.

ANS: D PTS: 1 REF: p. 28 OBJ: LO1
BLM: Remember

59. Which individual is most likely to have Tay-Sachs disease?
- a 4-year-old child of Jewish descent
 - a 5-year-old child of European descent
 - a 10-year-old child of African descent
 - a 20-year-old male of Spanish descent

ANS: A PTS: 1 REF: p. 28 OBJ: LO1
BLM: Higher Order

60. Two-week-old Isaiah, a child of Jewish heritage, is most at risk of having which disease?
- sickle-cell anemia
 - hemophilia
 - Huntington disease
 - Tay-Sachs disease

ANS: D PTS: 1 REF: p. 28 OBJ: LO1
BLM: Higher Order

61. Debbie was born with a disease that leaves her body unable to break down fats. Her doctors predict that she will NOT live beyond the age of 4 years. What disorder does Debbie have?
- sickle-cell anemia
 - Down's syndrome.
 - Tay-Sachs disease
 - phenylketonuria

ANS: C PTS: 1 REF: p. 29 OBJ: LO1
KEY: WWW BLM: Higher Order

62. According to the Canadian Cystic Fibrosis Foundation, what is a published fact about cystic fibrosis?
- It is the least common fatal hereditary disease among Canadians.
 - It results from an abnormality on the 20th pair of chromosomes.
 - It is a blood disorder common to those with an Eastern European background.
 - It affects approximately 1 in every 3,500 Canadians.

ANS: D PTS: 1 REF: p. 28 OBJ: LO1
BLM: Remember

63. What is the cause of cystic fibrosis?
- a recessive gene
 - a dominant gene
 - incomplete mitosis
 - an abnormality in the 21st pair of chromosomes
- ANS: A PTS: 1 REF: p. 28 OBJ: LO1
BLM: Remember
64. Which of the following is a defining characteristic of hemophilia?
- It affects only females.
 - It is carried by the father's recessive gene.
 - It is carried on the X chromosome.
 - It is caused by damage to the 14th chromosomal pair.
- ANS: C PTS: 1 REF: p. 28 OBJ: LO1
BLM: Remember
65. What disorder is caused by a sex-linked genetic abnormality?
- hemophilia
 - Tay-Sachs disease
 - cystic fibrosis
 - Huntington disease
- ANS: A PTS: 1 REF: p. 28 OBJ: LO1
BLM: Higher Order
66. Which type of disorder is colour blindness?
- an enzyme disorder
 - a disorder found only in females
 - a protein-based disorder
 - a sex-linked disorder
- ANS: D PTS: 1 REF: p. 28 OBJ: LO1
BLM: Remember
67. Why are sex-linked diseases more likely to affect sons of female carriers?
- These diseases are carried on dominant genes.
 - These diseases are carried on the Y chromosome.
 - Females are at a diminished risk because they could inherit a XYY profile.
 - Males have only one X chromosome, which they inherit from their mothers.
- ANS: D PTS: 1 REF: p. 28 OBJ: LO1
KEY: WWW BLM: Higher Order
68. What is the primary purpose of genetic counselling?
- to outline the genetic risks of unprotected sex
 - to advise couples to abort their unborn children
 - to prove that a child will develop a certain illness
 - to assist would-be parents in making decisions about having children
- ANS: D PTS: 1 REF: p. 29 OBJ: LO1
KEY: WWW BLM: Higher Order

69. Dr. White specializes in prenatal medicine and performs numerous amniocenteses each year. Which woman is Dr White most likely to recommend for an amniocentesis?
- an Asian-Canadian woman
 - an African-Canadian woman
 - a woman older than age 35
 - a woman younger than age 20

ANS: C PTS: 1 REF: p. 29 OBJ: LO1
BLM: Higher Order

70. You are scheduled to have an amniocentesis. What will occur during this medical process?
- Fluid will be tested from the "sac" containing the fetus.
 - A biopsy will be taken from your spine.
 - Your sperm will be tested for genetic abnormalities.
 - Your eggs will be tested for genetic abnormalities.

ANS: A PTS: 1 REF: p. 29 OBJ: LO1
KEY: WWW BLM: Remember

71. What is the biggest risk of amniocentesis?
- mental retardation in 1 of every 100 births
 - cesarean delivery in 1 of every 100 births
 - sterility in 1 of every 100 births
 - fetal loss in one half of one percentage of all pregnancies

ANS: D PTS: 1 REF: p. 30 OBJ: LO1
BLM: Remember

72. Which women are generally NOT encouraged to have amniocentesis?
- women older than age 40
 - women carrying the children of aging fathers
 - women who have a family history of chromosomal or genetic disorders
 - women who are receiving fertility treatments

ANS: D PTS: 1 REF: p. 29 OBJ: LO1
BLM: Higher Order

73. You are 9 weeks pregnant and are concerned your baby may have a genetic defect. What medical procedure will most likely be recommended?
- fetoscopy
 - ultrasound
 - amniocentesis
 - chorionic villus sampling

ANS: D PTS: 1 REF: p. 30 OBJ: LO1
KEY: WWW BLM: Higher Order

74. What does CVS stand for?
- cervical villus sampling
 - cervical variability study
 - chorionic villus sampling
 - chorionic variability sampling

ANS: C PTS: 1 REF: p. 30 OBJ: LO1
BLM: Remember

75. Your pregnant niece is scheduled for an amniocentesis, but she is confused by all the prenatal tests she has read about. Which of the following do you tell her about the process of amniocentesis?
- It has NOT been used as frequently as CVS because amniocentesis carries a slightly greater risk of spontaneous abortion.
 - It is carried out much earlier in a pregnancy than a CVS.
 - It involves a procedure that inserts a small syringe through the vagina.
 - It involves the examination of villi from the membrane that envelops the amniotic sac and fetus.

ANS: B PTS: 1 REF: p. 29 OBJ: LO1
BLM: Higher Order

76. How does an ultrasound work?
- It allows the human ear to hear the fetus.
 - It yields a picture called a "cat-scan."
 - It bounces sound waves off the fetus.
 - It uses X-ray photography to take a picture of the unborn child.

ANS: C PTS: 1 REF: p. 30 OBJ: LO1
BLM: Remember

77. What technique generates a picture of the fetus?
- a fetoscopy
 - an ultrasound
 - an amniocentesis
 - a chorionic villus sampling

ANS: B PTS: 1 REF: p. 30 OBJ: LO1
KEY: WWW BLM: Remember

78. What can an ultrasound detect?
- PKU
 - cystic fibrosis
 - Klinefelter syndrome
 - the position of the fetus

ANS: D PTS: 1 REF: p. 30 OBJ: LO1
BLM: Higher Order

79. What is used to detect neural tube defects such as spina bifida?
- an ultrasound
 - an Rh disease test
 - genetic counselling
 - an alpha-fetoprotein (AFP) assay

ANS: D PTS: 1 REF: p. 30 OBJ: LO1
BLM: Remember

80. Which procedure poses the least risk to the fetus?
- an ultrasound
 - an amniocentesis
 - an alpha-fetoprotein assay
 - chorionic villus sampling

ANS: C PTS: 1 REF: p. 30-31 OBJ: LO1
KEY: WWW BLM: Higher Order

81. What is the purpose of the alpha-fetoprotein assay?
- to detect neural tube defects
 - to measure enzyme levels in the fetus
 - to assess sex chromosome abnormalities
 - to assess the degree of mental retardation

ANS: A PTS: 1 REF: p. 30 OBJ: LO1
BLM: Higher Order

82. What would you tell a woman who is concerned about the risks of fetal testing?
- No risk is associated with fetal testing.
 - Because of the risks, fetal testing should NOT be done.
 - The risk in fetal testing is to the mother, NOT the fetus.
 - Although fetal testing has some risk, it is sometimes considered necessary.

ANS: D PTS: 1 REF: p. 29-30 OBJ: LO1
KEY: WWW BLM: Higher Order

83. What term refers to the set of traits we inherit from our parents?
- genotype
 - personality
 - phenotype
 - temperament

ANS: A PTS: 1 REF: p. 30 OBJ: LO2
BLM: Remember

84. What term refers to our actual set of characteristics or traits?
- genotype
 - personality
 - phenotype
 - temperament

ANS: C PTS: 1 REF: p. 30 OBJ: LO2
BLM: Remember

85. Which of the following is most influenced by environment?
- genes
 - genotype
 - phenotype
 - chromosomes

ANS: C PTS: 1 REF: p. 30 OBJ: LO2

KEY: WWW BLM: Higher Order

86. Which genes do parents share with their children and their siblings?
- dominant genes only
 - recessive genes only
 - approximately 50% of their genetic material
 - approximately 25% of their genetic material

ANS: C PTS: 1 REF: p. 30 OBJ: LO2

BLM: Higher Order

87. Which of the following is a defining characteristic of monozygotic twins?
- They share 50% of their genetic material.
 - They are as different as non-twin siblings.
 - They will look very similar in physical appearance.
 - They are formed from two eggs but are fertilized by the same sperm.

ANS: C PTS: 1 REF: p. 31 OBJ: LO2

BLM: Higher Order

88. Some twin pairs look more like each other than other twin pairs. Which twin pairs resemble each other the most?
- monozygotic twin pairs
 - dizygotic twin pairs of either sex
 - dizygotic twin pairs who are males
 - monozygotic twin pairs who are female

ANS: A PTS: 1 REF: p. 31 OBJ: LO2

KEY: WWW BLM: Higher Order

89. Researchers have studied and compared the similarities between monozygotic and dizygotic twins. According to your textbook, which similarity was NOT noted for monozygotic twins?
- a strong connection to psychological disorders such as depression and schizophrenia
 - a similarity in weight
 - a preference for coffee or tea
 - vulnerability to alcoholism

ANS: B PTS: 1 REF: p. 31 OBJ: LO2

BLM: Higher Order

90. Monozygotic twins share more similarities than dizygotic twins share. Compared with dizygotic twins, which of the following are monozygotic twins UNLIKELY to inherit?
- schizophrenia
 - depression
 - autism
 - obesity

ANS: D PTS: 1 REF: p. 31 OBJ: LO2
BLM: Higher Order

91. Which group shares the most similar genetic material?
- dizygotic twins
 - grandmothers
 - cousins
 - monozygotic twins

ANS: D PTS: 1 REF: p. 31 OBJ: LO2
BLM: Higher Order

92. What is the general finding of studies on monozygotic twins reared in separate environments?
- They are identical in genetics, behaviours, and preferences.
 - They are less alike, genetically, than dizygotic twins reared together.
 - They are no more alike in genetics, behaviours, and preferences than non-twin siblings.
 - They share the same degree of genetic similarity as monozygotic twins reared together.

ANS: D PTS: 1 REF: p. 31 OBJ: LO2
BLM: Higher Order

93. Jeffrey, who is an adopted child, has some characteristics that are more similar to his natural parents than to his adoptive parents. What is the most appropriate conclusion?
- The adoptive parents have NOT included him in their family cultural activities.
 - Heredity plays a diminished role in the formation of personality.
 - Environment influences who we are and who we become.
 - Genetics play a role in the development of certain human characteristics.

ANS: D PTS: 1 REF: p. 31 OBJ: LO2
KEY: WWW BLM: Higher Order

94. How many ova does a human female have at birth?
- zero; ova develop during puberty
 - between 50,000 and 100,000 ova
 - approximately 400,000 ova
 - millions of ova

ANS: C PTS: 1 REF: p. 32 OBJ: LO3
BLM: Remember

95. What occurs during menstruation?
- An unfertilized egg is discharged.
 - The fertilized egg undergoes mitosis.
 - The fertilized egg undergoes meiosis.
 - The fertilized egg attaches to the uterus.

ANS: A PTS: 1 REF: p. 32 OBJ: LO3
BLM: Remember

96. Which statement describes the sperm cell before meiosis?
- It contains 46 chromosomes.
 - It contains two X chromosomes.
 - It is significantly larger than the egg cell.
 - It is more likely to conceive a girl than a boy.

ANS: A PTS: 1 REF: p. 32 OBJ: LO3
BLM: Remember

97. Which of the following is a defining characteristic of the sperm cell?
- It contains two Y chromosomes.
 - It is significantly larger than the egg cell.
 - It is one of the smallest types of cells in the body.
 - It does NOT determine the gender of the developing child.

ANS: C PTS: 1 REF: p. 32 OBJ: LO3
KEY: WWW BLM: Remember

98. Which of the following statements distinguishes the conception of males from the conception of females?
- More males are conceived and more survive to birth.
 - Fewer males are conceived, but more survive to birth.
 - Fewer males are conceived and more are spontaneously aborted.
 - More males are conceived and more are spontaneously aborted.

ANS: D PTS: 1 REF: p. 32 OBJ: LO3
BLM: Higher Order

99. Approximately how many sperm cells are contained in a single ejaculate?
- 50 million
 - 100 million
 - 150 million
 - 300 million

ANS: C PTS: 1 REF: p. 32 OBJ: LO3
BLM: Remember

100. Only 1 in 1,000 sperm will arrive in the vicinity of an ovum. Which of the following factors does NOT prevent sperm cells from travelling the entire distance to the egg?
- gravity
 - vaginal acidity
 - current of fluid from the cervix
 - length of time since ovulation

ANS: D PTS: 1 REF: p. 32 OBJ: LO3
KEY: WWW BLM: Higher Order

101. After ejaculation, how long does it take sperm to reach the fallopian tubes?
- 60 to 90 seconds
 - 5 to 15 minutes
 - 20 to 30 minutes
 - 60 to 90 minutes

ANS: D PTS: 1 REF: p. 33 OBJ: LO3
BLM: Remember

102. The term “infertile” refers to a couple who have been unsuccessful at conceiving. What criterion must be met before this term is used?
- one year of failed attempts
 - four years of failed attempts
 - four failed attempts to get pregnant
 - two miscarriages in the fourth month of pregnancy

ANS: A PTS: 1 REF: p. 33 OBJ: LO3
KEY: WWW BLM: Higher Order

103. In Canada what percentage of infertility cases can be traced to the man?
- 10%
 - 20%
 - 30%
 - 40%

ANS: D PTS: 1 REF: p. 33 OBJ: LO3
BLM: Remember

104. What can cause infertility problems in men?
- use of drugs
 - lack of exercise
 - excessive masturbation
 - excess protein in the diet

ANS: A PTS: 1 REF: p. 33 OBJ: LO3
BLM: Remember

105. What term refers to the sperm's ability to move?
- infection
 - propulsion
 - evolution
 - motility

ANS: D PTS: 1 REF: p. 33 OBJ: LO3
KEY: WWW BLM: Remember

106. Which of the following does NOT cause infertility in women?
- infection
 - excessive physical exercise
 - stress
 - motility

ANS: D PTS: 1 REF: p. 33 OBJ: LO3
BLM: Remember

107. What is the most common cause of infertility in women?
- PID
 - endometriosis
 - irregular ovulation or lack of ovulation
 - barriers to the passageways through which the ovum must pass

ANS: C PTS: 1 REF: p. 33 OBJ: LO3
BLM: Higher Order

108. In what process is sperm injected into the uterus at the time of ovulation?
- IVF
 - artificial insemination
 - donor IVF
 - pergonal

ANS: B PTS: 1 REF: p. 34 OBJ: LO3
BLM: Remember

109. A Canadian couple want to have a child as soon as possible. What are their chances of having difficulties conceiving?
- 1 in 6
 - 1 in 20
 - 1 in 50
 - 1 in 100

ANS: A PTS: 1 REF: p. 34 OBJ: LO3
KEY: WWW BLM: Remember

110. Ova are sometimes fertilized in vitro, tested for sex chromosomal structure, and then the embryos of the desired sex are implanted into the mother-to-be. What term refers to this process?
- PID
 - IVF
 - PGD
 - microsort

ANS: C PTS: 1 REF: p. 34 OBJ: LO3
BLM: Remember

111. Ben and Natalie are having difficulty conceiving, although both have children from previous relationships. What does the textbook tell us about the cause of infertility being a male or female problem?
- It is predominately a woman's problem.
 - It is predominately a man's problem.
 - The problem lies with the man about 40% of the time.
 - The problem lies with the woman about 80% of the time.

ANS: C PTS: 1 REF: p. 34 OBJ: LO3
BLM: Remember

112. What is the correct order of the three prenatal stages?
- embryonic, fetal, meiotic
 - meiotic, embryonic, fetal
 - germinal, fetal, embryonic
 - germinal, embryonic, fetal

ANS: D PTS: 1 REF: p. 35 OBJ: LO4
BLM: Remember

113. In one stage of prenatal development, conception occurs, the zygote divides, and then implantation in the uterine wall occurs. What term describes this stage?
- the fetal stage
 - the mitotic stage
 - the germinal stage
 - the embryonic stage

ANS: C PTS: 1 REF: p. 35 OBJ: LO4
BLM: Remember

114. What is the fluid-filled ball of cells that develops during the germinal stage of pregnancy?
- the fetus
 - the germin
 - the umbilicus
 - the blastocyst

ANS: D PTS: 1 REF: p. 35 OBJ: LO4
KEY: WWW BLM: Remember

115. Which of the following statements describes a miscarriage?
- It rarely occurs during the first trimester of pregnancy.
 - It occurs in approximately one-third of all pregnancies.
 - It occurs as a result of menstrual flow that occurs too late after ovulation.
 - It is common when women who are pregnant bleed during implantation of the blastocyst into the uterine wall.

ANS: B PTS: 1 REF: p. 36 OBJ: LO4
BLM: Higher Order

116. Mona is told during her prenatal medical appointment that the major organ systems have differentiated. What is this developmental stage called?
- the fetal stage
 - the germinal stage
 - the embryonic stage
 - the blastocystic stage

ANS: C PTS: 1 REF: p. 35-36 OBJ: LO4
KEY: WWW BLM: Higher Order

117. What develops from the neural tube during the prenatal period of development?
- the digestive system
 - the muscular system
 - the arm buds and leg buds
 - the central nervous system

ANS: D PTS: 1 REF: p. 36 OBJ: LO4
BLM: Higher Order

118. When does the onset of sexual differentiation occur?
- during the germinal period
 - during the embryonic period
 - when the X chromosome is present
 - when secondary sex characteristics are present

ANS: B PTS: 1 REF: p. 36 OBJ: LO4
BLM: Higher Order

119. What is the purpose of the amniotic sac?
- It develops into the umbilical cord.
 - It contains the developing organism and amniotic fluid.
 - It protects the developing organism from harmful toxins.
 - It permits the exchange of nutrients and waste with the mother.

ANS: B PTS: 1 REF: p. 37 OBJ: LO4
KEY: WWW BLM: Remember

120. Which of the following is a defining characteristic of the placenta?
- It develops from only the mother's tissue.
 - It is reused for each of a woman's pregnancies.
 - It acts as an impermeable barrier that protects the developing fetus from toxins.
 - It acts as a filter that permits oxygen and nutrients from the mother to reach the embryo.

ANS: D PTS: 1 REF: p. 37 OBJ: LO4
BLM: Remember

121. During which stage of prenatal development does the developing organism gain the most weight and length?
- the fetal stage
 - the germinal stage
 - the embryonic stage
 - the diaphragmatic stage

ANS: A PTS: 1 REF: p. 37 OBJ: LO4
BLM: Remember

122. What has research concluded after studying fetuses and their perception of sound during the third trimester?
- Fetuses are unresponsive to outside stimuli.
 - Fetuses respond to visual but NOT auditory stimuli.
 - Fetuses respond to changes in loudness but NOT to differences in pitch.
 - Fetuses can learn to recognize the sounds of books being read to them.

ANS: D PTS: 1 REF: p. 38 OBJ: LO4
BLM: Higher Order

123. Which of the following statements best describes the effects of nutrition during pregnancy?
- Fetal overnutrition is more of a problem than fetal malnutrition.
 - The effects of fetal malnutrition cannot be overcome after birth.
 - Pregnant women can eat and drink whatever they want because their fetuses are NOT affected by what their mothers consume.
 - Supplementing the diets of pregnant women with calories and protein has shown to have modest positive effects on the motor development of their infants.

ANS: D PTS: 1 REF: p. 39 OBJ: LO4
BLM: Higher Order

124. According to the textbook, what can pregnant women expect about their weight gain during pregnancy?
- All women should gain 4.5 kg or less during pregnancy.
 - All of the weight gain should be in the baby, NOT in the mother's body.
 - Women should gain the most weight during their first trimester of pregnancy.
 - Overweight women may gain less but slender women may gain more than 10 to 15 kg during pregnancy.

ANS: D PTS: 1 REF: p. 39 OBJ: LO4
BLM: Remember

125. A first-time expectant mother is confused about what teratogens are and the risks they pose during her pregnancy. Which of the following would you tell her?
- They are only those substances the mother's body produces.
 - They harm the fetus only when taken in extremely large doses.
 - They are most damaging during the fetal period of development.
 - They are environmental agents that can harm the embryo or fetus.

ANS: D PTS: 1 REF: p. 39 OBJ: LO4
BLM: Remember

126. A woman who thinks she may be pregnant is concerned that she may have syphilis. Which of the following would you tell her?
- It is harmful only for adults.
 - It is NOT treatable during pregnancy.
 - It CANNOT be detected in pregnant women.
 - It should be detected by routine blood tests early in pregnancy.

ANS: D PTS: 1 REF: p. 39 OBJ: LO4
BLM: Remember

127. How is HIV/AIDS transmitted in pregnant women?
- It is always transmitted from the pregnant woman to the unborn child.
 - It is usually transmitted during pregnancy from the mother to unborn child.
 - It is caused by casual contact between the pregnant woman and someone with the disease.
 - It is transmitted through breast milk or during a vaginal delivery more frequently than during pregnancy.

ANS: D PTS: 1 REF: p. 39 OBJ: LO4
BLM: Remember

128. Which of the following does NOT characterize the relationship between pregnancy and rubella?
- If a woman is infected within the first 20 weeks of pregnancy, she is more at risk than if she were infected later.
 - If a woman is infected within the first 20 weeks of pregnancy, the newborn will have only a mild rash.
 - A pregnant woman should be vaccinated against rubella during pregnancy.
 - Rubella during pregnancy can lead to birth defects such as deafness, mental retardation, heart disease, and eye problems.

ANS: B PTS: 1 REF: p. 40 OBJ: LO4
BLM: Higher Order

129. Which of the following is a characteristic of toxemia?
- It has clear causal factors.
 - It sometimes causes maternal death.
 - It is a problem for only the unborn child.
 - It usually causes babies to be born extremely overweight.

ANS: B PTS: 1 REF: p. 40 OBJ: LO4
BLM: Remember

130. Why is Rh incompatibility a concern for expectant couples?
- It is worse for a woman who is having her first pregnancy.
 - It is a disorder that can be treated through surgery when the fetus is in the uterus.
 - It is a problem that inflicts approximately 90% of Canadian couples.
 - It causes a mother's body to produce antibodies that attack the fetus and can lead to brain damage or death.

ANS: D PTS: 1 REF: p. 41 OBJ: LO4
BLM: Remember

131. What term refers to the environmental factors that contribute to birth defects?
- stressors
 - teratogens
 - genetic inhibitors
 - toxins

ANS: B PTS: 1 REF: p. 39 OBJ: LO4
BLM: Remember

132. What substance was once used to treat insomnia and nausea but caused major birth defects?
- DES
 - hormones
 - antibiotics
 - thalidomide

ANS: D PTS: 1 REF: p. 41 OBJ: LO4
BLM: Remember

133. What would you tell your girlfriend who is wondering about taking vitamins during her pregnancy?
- They rarely cause damage to a developing fetus.
 - They are as dangerous as heroin and methadone.
 - They should be taken in the dosage directed by a doctor.
 - They are most effective when taken in higher dosages than are used when one is NOT pregnant.

ANS: C PTS: 1 REF: p. 42 OBJ: LO4
BLM: Higher Order

134. What has research found regarding illicit drug use during pregnancy?
- Infants incur learning problems, but no physical problems.
 - Infants incur significant long-term effects from all such drugs.
 - Infants are born addicted to all illicit drugs they were exposed to prenatally.
 - Mixed results have been reported: significant cognitive and physical problems in some infants and few problems in others.

ANS: D PTS: 1 REF: p. 42 OBJ: LO4
BLM: Higher Order

135. What is the current thinking regarding alcohol consumption during pregnancy?
- It is safe after the end of the second trimester.
 - It should be encouraged because it relaxes the mother.
 - It may lead to cognitive deficits and physical malformations.
 - It is safe as long as fewer than two drinks are consumed per day.

ANS: C PTS: 1 REF: p. 42-43 OBJ: LO4

BLM: Higher Order

136. What does research state regarding the effects of caffeine consumption during pregnancy?
- It is unethical to conduct this research; it is sexist in nature.
 - It is inconclusive in terms of caffeine's neurological effects.
 - Caffeine has the same effect as cocaine on the developing fetus.
 - Such research is limited because many women abstain from caffeine use while pregnant.

ANS: B PTS: 1 REF: p. 43 OBJ: LO4

KEY: WWW BLM: Remember

137. What is the effect of cigarette smoking during pregnancy?
- It has no long-term adverse effects.
 - It is NOT toxic to the developing fetus because the placenta protects it from harm.
 - It is associated with low birth weight and increased risk of stillbirth and infant mortality.
 - It is only a problem if the woman smokes; second-hand smoke holds no risk for the developing fetus.

ANS: C PTS: 1 REF: p. 43 OBJ: LO4

BLM: Higher Order

138. What would you tell a woman who is worried about exposure to environmental hazards during her pregnancy?
- Environmental hazards include ultrasound and X-rays.
 - Environmental hazards include lead, mercury, PCBs, and radiation.
 - Environmental hazards lead to severe cognitive disabilities, but rarely physical deformations.
 - Environmental hazards are only a problem if the pregnant woman was exposed during the embryonic period of development.

ANS: B PTS: 1 REF: p. 43 OBJ: LO4

BLM: Higher Order

139. What is the relationship between parents' age and successful childbearing?
- Parents' age is unrelated to childbearing success.
 - The optimal time for childbearing is during the teenage years.
 - An optimal time for childbearing may exist for both mothers and fathers.
 - Women in their 20s are at greater risk for miscarriage and inadequate prenatal care than teenaged and older mothers.

ANS: C PTS: 1 REF: p. 44 OBJ: LO4

KEY: WWW BLM: Higher Order

MATCHING

- a. sex-linked genetic abnormality
 - b. both alleles for a trait are the same
 - c. cell division that results in identical cells
 - d. the genetic material received from parents
 - e. caused by a recessive gene
 - f. polygenically determined
 - g. male hormone
 - h. genetically male
 - i. twins produced from a single egg
 - j. cell division that results in non-identical cells
 - k. union of an ovum and a sperm cell
 - l. female hormone
 - m. associated with the 21st pair of chromosomes
 - n. how genetic material manifests itself in characteristics
 - o. twins produced from two eggs
 - p. XXY sex chromosomal pattern
 - q. determined by father
 - r. both alleles for a trait differ
 - s. caused by a dominant gene
 - t. genetically female
-
- 1. XY sex chromosomes
 - 2. Monozygotic
 - 3. Sickle-cell anemia
 - 4. Meiosis
 - 5. Phenotype
 - 6. Homozygous
 - 7. Hemophilia
 - 8. Down's syndrome
 - 9. Huntington disease
 - 10. Intelligence
 - 11. Dizygotic
 - 12. Mitosis
 - 13. Genotype
 - 14. Heterozygous
 - 15. Testosterone
 - 16. Gender of child
 - 17. XX sex chromosomes
 - 18. Estrogen
 - 19. Conception
 - 20. Klinefelter syndrome

1. ANS: H PTS: 1
2. ANS: I PTS: 1
3. ANS: E PTS: 1
4. ANS: J PTS: 1
5. ANS: N PTS: 1
6. ANS: B PTS: 1
7. ANS: A PTS: 1
8. ANS: M PTS: 1
9. ANS: S PTS: 1
10. ANS: F PTS: 1
11. ANS: O PTS: 1
12. ANS: C PTS: 1
13. ANS: D PTS: 1
14. ANS: R PTS: 1
15. ANS: G PTS: 1
16. ANS: Q PTS: 1
17. ANS: T PTS: 1
18. ANS: L PTS: 1
19. ANS: K PTS: 1
20. ANS: P PTS: 1

TRUE/FALSE

1. The science of heredity is called "eugenics."

ANS: F PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

2. Each cell in our body contains 26 chromosomes.

ANS: F PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

3. Genes are the biochemical materials that regulate the development of traits.

ANS: T PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

4. DNA takes the form of a double helix, or twisting ladder, is made up of base pairs, and determines how the organism will develop.

ANS: T PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

5. After mitosis, a cell has 23 pairs of chromosomes.

ANS: T PTS: 1 REF: p. 23 OBJ: LO1
BLM: Remember

6. Polygenic traits are transmitted by a single pair of genes.

ANS: F PTS: 1 REF: p. 24 OBJ: LO1
KEY: WWW BLM: Remember

7. Sex chromosomes utilize meiosis to divide.

ANS: T PTS: 1 REF: p. 24 OBJ: LO1
BLM: Remember

8. The typical sex chromosome pattern for females is XY.

ANS: F PTS: 1 REF: p. 24 OBJ: LO1
BLM: Remember

9. Monozygotic twins are conceived from separate egg cells.

ANS: F PTS: 1 REF: p. 24 OBJ: LO1
BLM: Remember

10. Huntington disease is a fatal, progressive degenerative disorder and a recessive trait.

ANS: F PTS: 1 REF: p. 27 OBJ: LO1
KEY: WWW BLM: Remember

11. "Carriers" for traits have two recessive genes for those traits.

ANS: F PTS: 1 REF: p. 25 OBJ: LO1
BLM: Remember

12. Type A blood is a recessive trait.

ANS: F PTS: 1 REF: p. 25 OBJ: LO1
BLM: Remember

13. PKU is transmitted by a dominant gene.

ANS: F PTS: 1 REF: p. 27 OBJ: LO1
BLM: Remember

14. Genetic counselling is used only prior to a woman getting pregnant.

ANS: F PTS: 1 REF: p. 29 OBJ: LO1
BLM: Higher Order

15. Our phenotype is influenced by the environment.

ANS: T PTS: 1 REF: p. 30 OBJ: LO2
BLM: Remember

16. Parents and children have 25% overlap in genes.

ANS: F PTS: 1 REF: p. 30 OBJ: LO2
BLM: Remember

17. Low sperm count is the most common infertility problem in men.

ANS: T PTS: 1 REF: p. 33 OBJ: LO3
BLM: Remember

18. A woman has a greater chance of bearing twins if she has already had a set of twins and if her mother had twins.

ANS: T PTS: 1 REF: p. 31 OBJ: LO1
BLM: Remember

19. A person who has a dominant trait for brown eyes and a recessive trait for blue eyes is most likely to be brown-eyed.

ANS: T PTS: 1 REF: p. 26 OBJ: LO1
KEY: WWW BLM: Remember

20. Diabetes mellitus, epilepsy, and peptic ulcers are caused by genetic factors alone.

ANS: F PTS: 1 REF: p. 26 OBJ: LO1
BLM: Remember

21. Down syndrome is associated with an extra chromosome on the 21st pair.

ANS: T PTS: 1 REF: p. 26 OBJ: LO1
BLM: Remember

22. Sickle-cell anemia is more common among Caucasian North Americans than minority groups in the North America.

ANS: F PTS: 1 REF: p. 27 OBJ: LO1
BLM: Remember

23. Most people with Tay-Sachs disease die in their mid- to late-forties.

ANS: F PTS: 1 REF: p. 28 OBJ: LO1
BLM: Remember

24. Hemophilia is a type of sex-linked genetic abnormality.

ANS: T PTS: 1 REF: p. 28 OBJ: LO1
BLM: Remember

25. Ultrasound uses harmless sound waves to examine the developing organism.

ANS: T PTS: 1 REF: p. 30 OBJ: LO1
BLM: Remember

26. Amniocentesis and CVS have no known risks to the unborn embryo.
- ANS: F PTS: 1 REF: p. 29-30 OBJ: LO1
BLM: Higher Order
27. Monozygotic twins share more personality traits and physical traits than dizygotic twins.
- ANS: T PTS: 1 REF: p. 31 OBJ: LO2
BLM: Remember
28. Women create viable ova throughout their lives, from their first period through menopause.
- ANS: F PTS: 1 REF: p. 32 OBJ: LO3
BLM: Remember
29. Sperm are responsible for determining the gender of the offspring.
- ANS: T PTS: 1 REF: p. 32 OBJ: LO3
BLM: Remember
30. Infertility is always the woman's problem.
- ANS: F PTS: 1 REF: p. 33 OBJ: LO3
BLM: Higher Order
31. Artificial insemination involves implanting a viable embryo into the uterus of a woman.
- ANS: F PTS: 1 REF: p. 34 OBJ: LO3
BLM: Remember
32. Physicians may treat endometriosis through surgery or with hormones that temporarily prevent menstruation.
- ANS: T PTS: 1 REF: p. 34 OBJ: LO3
BLM: Remember
33. It is currently impossible to select the sex of one's child.
- ANS: F PTS: 1 REF: p. 35 OBJ: LO3
BLM: Higher Order
34. During the germinal period of development, the ovum is fertilized, cells divide, and the blastocyst is implanted in the uterine wall.
- ANS: T PTS: 1 REF: p. 35 OBJ: LO4
KEY: WWW BLM: Remember
35. Nearly one-third of all pregnancies result in miscarriage.
- ANS: T PTS: 1 REF: p. 36 OBJ: LO4
BLM: Remember

36. The major organ systems differentiate during the embryonic period of development.
ANS: T PTS: 1 REF: p. 36 OBJ: LO4
BLM: Remember
37. Sexual differentiation of the embryo is determined by the presence of the X chromosome.
ANS: F PTS: 1 REF: p. 37 OBJ: LO4
BLM: Remember
38. The placenta protects the developing organism from all harmful substances.
ANS: F PTS: 1 REF: p. 37 OBJ: LO4
BLM: Higher Order
39. During the fetal period of prenatal development, the fetus responds to light and sounds.
ANS: T PTS: 1 REF: p. 38 OBJ: LO4
BLM: Remember
40. During the ninth month of pregnancy, the fetus becomes more active, getting ready for the birth process.
ANS: F PTS: 1 REF: p. 38 OBJ: LO4
BLM: Remember
41. Since fetuses take what they need from the mothers, few babies are born malnourished.
ANS: F PTS: 1 REF: p. 39 OBJ: LO4
KEY: WWW BLM: Remember
42. All women gain 7 kg or less during pregnancy.
ANS: F PTS: 1 REF: p. 39 OBJ: LO4
BLM: Remember
43. Teratogens include drugs, heavy metals, and disease-causing organisms.
ANS: T PTS: 1 REF: p. 39 OBJ: LO4
BLM: Remember
44. Teratogens have the same effect on the developing organism throughout pregnancy.
ANS: F PTS: 1 REF: p. 39 OBJ: LO4
BLM: Higher Order
45. Diseases such as syphilis and HIV/AIDS are rarely harmful to the fetus or newborn infant.
ANS: F PTS: 1 REF: p. 39 OBJ: LO4
BLM: Higher Order

46. Rubella causes deafness, mental retardation, and heart problems.

ANS: T PTS: 1 REF: p. 40 OBJ: LO4
BLM: Remember

47. Toxemia may cause maternal deaths.

ANS: T PTS: 1 REF: p. 40 OBJ: LO4
BLM: Remember

48. Rh incompatibility is primarily a problem after a first pregnancy.

ANS: T PTS: 1 REF: p. 41 OBJ: LO4
BLM: Remember

49. Commonly used drugs such as aspirin rarely cause problems for fetuses.

ANS: F PTS: 1 REF: p. 41 OBJ: LO4
BLM: Remember

50. Thalidomide causes major limb deformities during pregnancy.

ANS: T PTS: 1 REF: p. 41 OBJ: LO4
BLM: Remember

51. DES was used to prevent miscarriage in the 1940s and 1950s but caused cervical and testicular cancer in some offspring.

ANS: T PTS: 1 REF: p. 42 OBJ: LO4
BLM: Remember

52. Vitamins cause no harm in developing fetuses.

ANS: F PTS: 1 REF: p. 42 OBJ: LO4
BLM: Remember

53. Use of illicit drugs such as marijuana, heroin, and cocaine during pregnancy may cause offspring to have cognitive impairments later in life.

ANS: T PTS: 1 REF: p. 42 OBJ: LO4
BLM: Remember

54. Cigarette smoking during pregnancy has no long-term effects for the offspring.

ANS: F PTS: 1 REF: p. 43 OBJ: LO4
BLM: Remember

55. Environmental hazards such as lead and radiation may cause irreparable, long-term harm both physically and cognitively.

ANS: T PTS: 1 REF: p. 43-44 OBJ: LO4
BLM: Remember

56. Parents' ages have no bearing on the outcome of a pregnancy.

ANS: F PTS: 1 REF: p. 44 OBJ: LO4
BLM: Higher Order

SHORT ANSWER

1. Briefly describe the difference(s) between cell division as the result of "meiosis" and cell division as the result of "mitosis."

ANS:

Meiosis is also referred to as "reduction division." In other words, the 46 chromosomes within the cell nucleus line up into 23 pairs. These 23 pairs then split and one member from each pair goes to each newly formed cell. Because of this process, the newly formed cells have half the genetic material contained in the original cell. In this sense, the cells are NOT identical but share 50 percent genetic similarity. With mitosis, the identical genetic code is carried into each newly formed cell in the body. In other words, when these cells divide, the resulting cells will be identical to the cells that divided to form them. Cloning results from mitosis. Because the newly formed cells are "replications" of the preceding cell, the new cells show no genetic variability.

PTS: 1 REF: p. 23-24 OBJ: LO1 BLM: Higher Order

2. Briefly describe the difference(s) between "recessive" and "dominant" genes.

ANS:

Some genes are "dominant" and others are "recessive." Dominant genes are more likely to be expressed than recessive genes. Eye colour is a good example. With eye colour, brown eyes are dominant and blue eyes are recessive. If one parent carries the gene for brown eyes only and the other for blue eyes only, the offspring will have brown eyes (that colour will dominate). If, however, both parents carry recessive genes for blue eyes, those genes can combine and blue eyes will be expressed. In a sense, two recessive genes can overcome the dominance of a single gene.

PTS: 1 REF: p. 25-26 OBJ: LO1 BLM: Remember

3. Describe two examples of recessive genetic disorders.

ANS:

Recessive disorders: Sickle-cell anemia is a recessive disorder because both parents must contribute a recessive allele for the disorder for the offspring to display sickle-cell anemia. In this disorder, the red blood cells become sickle-shaped, which allows less oxygen to be carried in the body. This lack of oxygen may impair cognitive abilities. Tay-Sachs disease is another recessive disorder, again, a result of both parents contributing a recessive allele for the disease. Tay-Sachs causes the central nervous system to degenerate with a loss in sensory abilities, mental ability, and then death by approximately age 5.

PTS: 1 REF: p. 27-28 OBJ: LO1 BLM: Remember

4. What is "amniocentesis?" When is it likely to be performed and what can be determined by doing so?

ANS:

Amniocentesis is a procedure that is sometimes used to detect genetic abnormalities in unborn children. The procedure involves withdrawing fluid from the amniotic sac that contains the fetus. Fetal cells that are contained in the fluid can then be examined for genetic abnormalities. This procedure is more likely to be performed in mothers over the age of 35 because of their increased risk for disorders such as Down's syndrome. Additionally, this procedure may be recommended in cases where the parents have a familial history for Tay-Sachs, muscular dystrophy, or Rh incompatibility.

PTS: 1

REF: p. 29

OBJ: LO1

BLM: Higher Order

5. A friend has asked you to describe the difference between "genotype" and "phenotype." On the basis of the material in Chapter Two of the textbook, how would you describe the difference?

ANS:

Genotype refers to the genetic material that is received from one's parents. Characteristics such as blood type and eye colour, for example, are determined by our genotype. Genotype determines a range in which we might develop. It might, for example, determine how intelligent we could become. But genotype alone does NOT determine who or what we become. Our phenotype refers to how our characteristics are expressed. Someone might, for example, have the potential to grow quite tall, but the environment and other forces, such as nutrition, may influence how much of that genotype potential for height is realized. Phenotypes, then, are the product of both genetic and environmental influences.

PTS: 1

REF: p. 30

OBJ: LO2

BLM: Higher Order

6. How does studying monozygotic and dizygotic twins help in understanding the genetic basis for a trait or behaviour?

ANS:

Monozygotic twins are identical in their genetic endowment, whereas dizygotic twins share as much of their genetics as non-twin siblings do. This difference allows researchers to tease apart the relative contributions of genetics and environment for a variety of different traits and behaviours, such as temperament, intelligence, and personality. When monozygotic twins have very different characteristics, the likelihood is greater that genetics are NOT involved or at least are less involved in the development process. It is NOT always possible to determine whether a specific characteristic is genetically determined; however, monozygotic twins often are treated in very similar ways as a result of appearing to be so similar.

PTS: 1

REF: p. 31

OBJ: LO2

BLM: Higher Order

7. Describe two different methods of helping infertile couples.

ANS:

In vitro fertilization involves extracting ripened ova from a woman and introducing them to a man's sperm in a laboratory dish. Following fertilization, the fertilized ovum is then injected into the woman's uterus. In some cases, such as when the woman is unable to release her own viable eggs, the ova may be sourced from a donor. Some infertile couples use a surrogate mother. The surrogate mother may use either her own ova or those of another woman and the sperm of either the biological father or another donor; she then carries the resulting baby to term. Surrogate mothers are often compensated financially for their time and effort.

PTS: 1 REF: p. 33 OBJ: LO3 BLM: Remember

8. What are some of the major fertility problems for males and females? What are possible causes of these problems?

ANS:

For males, the primary fertility problems include low sperm count, deformed and low sperm motility, and chronic diseases such as diabetes. Men's fertility problems have a variety of causes: genetic factors, environmental poisons, diabetes, sexually transmitted infections (STIs), overheating of the testes (which is sometimes experienced by athletes, such as long-distance runners), pressure (as from using narrow bicycle seats), aging, and certain prescription and illicit drugs. Sometimes the sperm count is adequate, but the sperm may have been deformed or deprived of their motility by other factors, such as prostate or hormonal problems. Motility can also be impaired by the scar tissue from infections such as STIs.

For females, the primary fertility problems are irregular ovulation, declining hormones levels, endometriosis, and obstructions or malfunctions of the reproductive tract. Infections may scar the fallopian tubes and other organs, impeding the passage of sperm or ova. Such infections include pelvic inflammatory disease (PID). PID can result from bacterial or viral infections, including the STIs gonorrhea and chlamydia.

PTS: 1 REF: p. 33-34 OBJ: LO3 BLM: Higher Order

9. What is a teratogen? Describe two teratogens and their effects on the developing organism.

ANS:

Thalidomide was a drug used during the 1960s to control insomnia and nausea in pregnant women. This drug led to the birth of thousands of babies with severe limb malformations. Alcohol use during pregnancy may cause facial and other abnormalities, mental retardation, hyperactivity, and other cognitive deficits.

PTS: 1 REF: p. 39 OBJ: LO4 BLM: Higher Order

10. A friend of yours is pregnant. She has read about the potential problems that could occur with a pregnancy. On the basis of this chapter, what three pieces of advice would you offer to ease her concerns for her unborn child?

ANS:

The chances of problems during pregnancy are enhanced by external factors such as toxins (alcohol, smoking) and maternal characteristics (such as genetics and age at conception). Some of these factors can be minimized and/or avoided. If your friend is really worried, she may want to consider genetic counselling to learn whether she needs to be aware of any serious disorders. Additionally, however, genetic screening procedures bring some element of risk to the pregnancy. The best thing the mother can do is to make the fetal environment as healthy as possible. She can exercise, take prenatal vitamins, eat a balanced diet, and refrain from smoking or ingesting alcohol and other drugs. Lastly, her overall chances of delivering a healthy child are significantly higher than her chances of having a child with a disease or a disorder.

PTS: 1

REF: p. 38-44

OBJ: LO4

BLM: Higher Order