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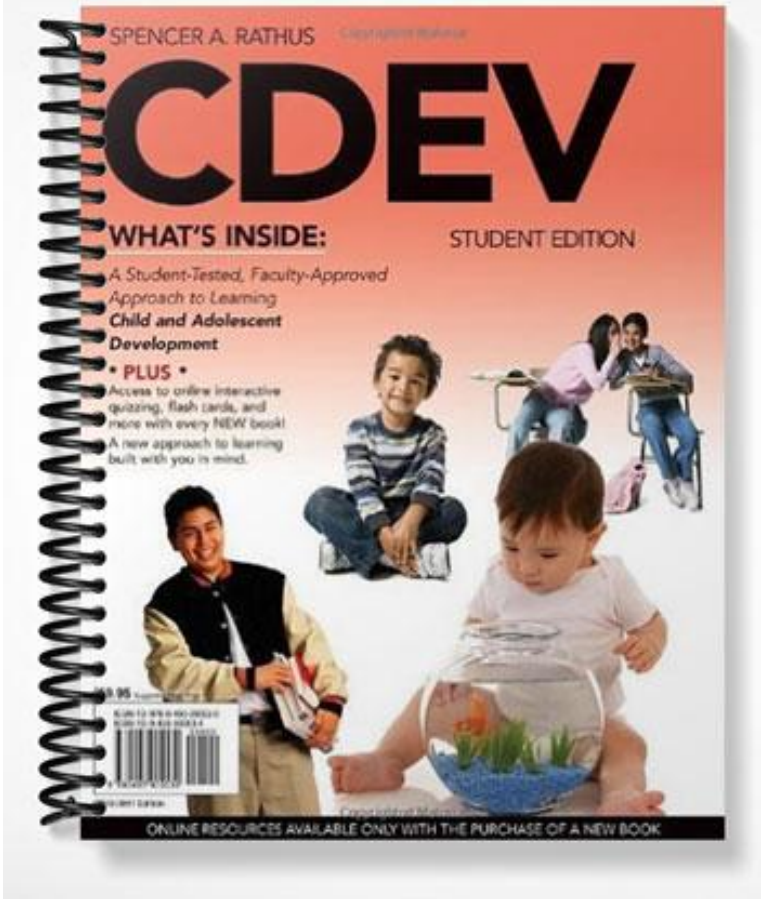
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Chapter 2--Heredity and Conception

Student: _____

1. Heredity is defined as:

   A. one's nature, and is based on biological transmission of traits and characteristics.
   B. the rod shaped structures found in cells.
   C. traits that are determined by pairs of genes.
   D. the cell division process by which growth occurs and tissues are replaced.

2. The study of heredity is called:

   A. etiology.
   B. genetics.
   C. biology.
   D. eugenics.

3. Genetics influence:

   A. physical traits.
   B. intelligence.
   C. psychological problems.
   D. all of these

4. "Heredity" means:

   A. biological transmission of traits and characteristics.
   B. how your traits manifest themselves in your characteristics.
   C. how cells divide to determine who we become.
   D. how genes combine to influence our phenotype.

5. Chromosomes contain thousands of segments called:

   A. nuclei.
   B. genes.
   C. phosphates.
   D. cytosines.

6. What shape best describes chromosomes?

   A. cone
   B. rod
   C. circle
   D. octagon

7. A normal human cell contains _____ chromosomes organized into _____ pairs.

   A. 20; 10
   B. 32; 16
   C. 46; 23
   D. 48; 24

8. Polygenic traits:

   A. are transmitted by a single pair of genes.
   B. are uncommon in humans.
   C. are transmitted by the mother.
   D. result in more complex characteristics.

9. According to the International Genome Sequencing Consortium (2006), we have _____ genes in every cell of our bodies.

   A. 1,000-1,500
   B. 10,000-20,000
   C. 20,000-25,000
   D. There has not been enough research to determine the number of genes in cells.

10. DNA takes the form of:

    A. a twisting ladder.
    B. a straight ladder.
    C. an octagon.
    D. interlocking circles.

11. In DNA, adenine is paired with:

    A. thymine.
    B. guanine.
    C. cytosine.
    D. polynine.

12. In DNA adenine is paired with _____ and cytosine with _____.

    A. thymine; simple sugar
    B. thymine; guanine
    C. guanine; simple sugar
    D. guanine; thymine

13. Of the 46 chromosomes in a normal human cell, how many are contributed by the mother?

    A. All
    B. It depends upon the gender of the child.
    C. 23
    D. None

14. Which of the following most accurately describes what genes do?

    A. regulate the development of traits
    B. determine the gender of the child
    C. work together with lutein to influence development
    D. hardwire people for certain levels of certain traits

15. DNA stands for:

    A. deoxyribonucleic acid.
    B. dionyotic acetate.
    C. diophosphate nucleic acetone.
    D. dionucleic acid.

16. During mitosis:

    A. sperm and ova cells are created.
    B. 23 chromosomes are created.
    C. new cells with identical DNA are created.
    D. mutations are impossible.

17. "Reduction division" is another term for:

    A. mitosis.
    B. cell death.
    C. meiosis.
    D. neural pruning.

18. Which method of cell reproduction allows for more genetic "variability?"

    A. cloning
    B. meiosis
    C. cross-fertilization
    D. mitosis

19. Of the twenty-three pairs of chromosomes, twenty-two pairs look alike and possess genetic information concerning the same traits. These are:

    A. sex chromosomes.
    B. identical chromosomes.
    C. autosomes.
    D. sperm cells.

20. How many chromosomes does a cell created during meiosis contain?

    A. 23
    B. 25
    C. 43
    D. 46

21. What factor determines the sex of a child?

A. the presence or absence of teratogens at the time of conception
B. It depends on what time in the ovulation cycle conception occurs.
C. the age of the mother
D. the sex chromosome received from the father

22. The typical sex chromosome pattern for males is _____.

A. XX
B. XY
C. XYY
D. XXY

23. The typical sex chromosome pattern for females is _____.

A. XX
B. XY
C. XYY
D. XXY

24. A zygote that divides into two cells that separate results in:

A. monozygotic twins.
B. dizygotic twins.
C. cross-fertilization.
D. mitosis.

25. A woman who gives birth to dizygotic twins:

A. is most likely an Asian-American.
B. has a decreased chance of subsequent pregnancies.
C. is likely to be a young mother.
D. has an increased chance of giving birth to twins in future pregnancies.

26. Each member of a pair of genes is referred to as a(n):

A. homozygous trait.
B. heterozygous trait.
C. autosome.
D. allele.

27. What is it called when someone has two alleles for the same trait?

A. heterozygous
B. dizygotic
C. monozygotic
D. homozygous

28. If a child receives a dominant allele for "tallness" from one parent and a recessive allele for "shortness" from the other, what do we know?

    A. The child will be average in height.
    B. We cannot predict the potential height of the child based upon this information.
    C. The child will tend to be tall.
    D. The child is likely to be born male.

29. If a child receives an allele for blue eyes and an allele for brown eyes, then the child is:

    A. going to have blue eyes.
    B. homozygous for that trait.
    C. heterozygous for that trait.
    D. exhibiting the law of dominance.

30. Someone with two alleles for brown eyes:

    A. is said to be homozygous for that trait.
    B. has eye color as a co-dominant trait.
    C. is referred to as "atypical."
    D. will have blue eyes.

31. Dominant alleles:

    A. will cause characteristics in individuals when paired with recessive alleles.
    B. come from the father of the developing child.
    C. determine physical characteristics.
    D. will determine physical characteristics in offspring of the same sex as the parent that contributed that trait.

32. Carriers of certain genetic characteristics can pass that characteristic on only if:

    A. the other parent has a recessive gene for the same characteristic.
    B. characteristics in the environment activate it.
    C. they are male.
    D. they also have a dominant gene for the same characteristic.

33. If an individual gets a recessive allele for eye color from both parents:

    A. the gender of the child will determine if that trait is shown.
    B. the recessive trait will develop in the child.
    C. the trait will develop 50 percent of the time.
    D. the trait will be turned off and the dominant trait will be expressed.

34. People who bear one dominant and one recessive gene for a trait are:

A. going to automatically pass that characteristic on to their offspring.
B. definitely going to develop that characteristic.
C. called "carriers" of the recessive gene.
D. not going to pass that characteristic on to their offspring.

35. "Carriers" of traits:

A. bear two dominant genes for a trait.
B. carry two recessive genes for a trait.
C. bear co-dominant genes for a trait.
D. carry one recessive and one dominant gene for a trait.

36. Someone suffering from cystic fibrosis:

A. carries it as a recessive gene.
B. did not have a dominant gene to cancel it out.
C. has more than 23 chromosomal pairs.
D. is likely to have a younger mother.

37. Which of the following is caused by a single pair of genes?

A. cystic fibrosis
B. Down syndrome
C. sex-linked chromosomal abnormalities
D. all of these

38. What do we know about Down syndrome?

A. It is caused by a defect on the sex chromosomes.
B. It is significantly more likely in boys than girls.
C. It is caused by a virus during pregnancy.
D. It is increasingly likely among individuals born to older parents.

39. Individuals with Down syndrome:

A. do not typically suffer adjustment problems.
B. have few, if any, physical problems.
C. have deficits in cognitive impairment and motor development.
D. have chromosomal damage on the 8^{th} chromosome.

40. Down syndrome is linked to:

A. alcohol abuse by the father.
B. abnormalities of the 21^{st} pair of chromosomes.
C. sex-linked chromosomal abnormalities.
D. alcohol abuse by the mother.

41. Which of the following describes the sex chromosomal structure of "supermales?"

A. XY
B. XXY
C. XYY
D. Y

42. Of every 2,000 males born, how many are statistically likely to have Klinefelter's syndrome?

A. Zero, because this disorder affects only females.
B. approximately 30
C. approximately 15
D. 2 to 4

43. In comparison to the average male population, individuals with Klinefelter's syndrome:

A. produce more estrogen than normal.
B. produce less estrogen than normal.
C. produce more testosterone than normal.
D. produce less testosterone than normal.

44. A man with enlarged breasts and mild mental retardation probably:

A. has XXY sex chromosomes.
B. has XY sex chromosomes.
C. produces more testosterone than normal.
D. will have more body hair than normal.

45. A girl who does not develop breasts or menstruate:

A. likely produces low levels of estrogen.
B. may have only one X sex chromosome.
C. may have Turner's syndrome.
D. all of these

46. Girls with Turner's syndrome:

A. have visible physical abnormalities.
B. produce little estrogen.
C. produce more testosterone than normal.
D. are more likely to give birth to twins.

47. Klinefelter’s Syndrome occurs when:

A. genetic females have an extra X chromosome.
B. genetic females have an extra Y chromosome.
C. genetic males have an extra X chromosome.
D. genetic males have an extra Y chromosome.

48. Compared to girls with "XX" sex chromosomes, girls with Turner's syndrome:

A. have an extra X chromosome.
B. have an extra Y chromosome.
C. perform better on verbal tests.
D. perform more poorly on motor performance tests.

49. Phenylketonuria is:

A. an enzyme disorder.
B. transmitted by a dominant gene.
C. a disorder that manifests itself in all children of carriers.
D. caused by alcohol consumption during pregnancy.

50. Children with PKU:

A. cannot eat fruits or vegetables.
B. have damage to the 21st pair of chromosomes.
C. should be placed on a special diet at soon as possible.
D. usually live for only a few weeks.

51. Children with PKU will develop normally if they are placed on a diet which:

A. excludes all fruits.
B. excludes all vegetables.
C. excludes all protein.
D. excludes meat and nuts.

52. The rarest among the following disorders is:

A. Huntington's disease.
B. Down syndrome.
C. Klinefelter's syndrome.
D. Turner's syndrome.

53. Huntington's disease is characterized by which of the following symptoms?

A. uncontrollable muscle movements
B. loss of intellectual functioning
C. personality change
D. all of these

54. Huntington’s disease is caused by a _____, which means that around half of their offspring will also get it.

A. recessive trait
B. personality disorder
C. dominant trait
D. diet problem

55. The individual who would be most likely to develop sickle-cell anemia is:

A. a Caucasian female under the age of 15.
B. an African-American.
C. a Caucasian male of any age.
D. someone of Asian heritage.

56. Sickle-cell anemia is caused by:

A. white blood cells that take on the shape of a sickle and clump together.
B. red blood cells that expand the blood vessels and increase the oxygen supply.
C. a recessive gene.
D. a slow destruction of the liver leading to jaundice and swollen joints.

57. Approximately _____ African-Americans are carriers of sickle-cell anemia.

A. one in 5
B. one in 10
C. one in 20
D. one in 100

58. Tay-Sachs disease:

A. affects the pancreas and the lungs.
B. is a fatal degenerative disease of the central nervous system.
C. is caused by a dominant gene.
D. is linked to the X chromosome.

59. Which of the following individuals are MOST likely to have Tay-Sachs disease?

A. a 4-year-old child of Jewish descent
B. a 10-year-old African-American
C. a 5-year-old European-American
D. a 20-year-old Hispanic male

60. Which of the following individuals are LEAST likely to have Tay-Sachs disease?

A. an 8-year-old
B. a 4-year-old
C. a 2-year-old
D. a 1-year-old

61. Tay-Sachs disease results in:

A. death by approximately the age of 5.
B. painful and swollen joints.
C. thick mucus that clogs the pancreas and lungs.
D. all of these

62. According to the Cystic Fibrosis Foundation,:

A. cystic fibrosis is the most common fatal, hereditary disease among European-Americans.
B. about 30,000 Americans have cystic fibrosis.
C. 1 in every 31 people are carriers of cystic fibrosis.
D. all of these are true about cystic fibrosis.

63. Cystic fibrosis is caused by:

A. incomplete mitosis.
B. an abnormality in the 21^{st} pair of chromosomes.
C. a recessive gene.
D. a dominant gene.

64. Hemophilia is:

A. a disease that only affects females.
B. carried on the X chromosome.
C. caused by damage to the 14^{th} chromosomal pair.
D. recessive with the father.

65. Hemophilia is:

A. more likely to afflict sons of female carriers than daughters.
B. a degenerative disorder that afflicts Caucasians more than African-Americans.
C. a disease that damages the frontal brain lobe.
D. None of these is accurate.

66. Color blindness is:

A. an enzyme disorder.
B. a protein-based disorder.
C. a sex-linked abnormality.
D. found only in females.

67. Sex-linked diseases are more likely to affect sons of female carriers because:

A. they are carried on the Y chromosome.
B. they are carried on dominant genes.
C. males only have one X chromosome, which they inherit from their mothers.
D. males only have one X chromosome, which they inherit from their fathers.

68. The primary purpose of genetic counseling is to:

A. advise couples to abort unborn children.
B. prove that a child will develop a certain illness.
C. assist would-be parents in making procreation decisions.
D. outline the genetic risks of unprotected sex.

69. Which of the following people is most likely to be given an amniocentesis?

A. an African-American female
B. an Asian-American female
C. a female younger than age 20
D. a female over the age of 35

70. During amniocentesis,:

A. a biopsy is taken from the pregnant mother's spine.
B. fluid is tested from the "sac" containing the fetus.
C. the father's sperm is tested for genetic abnormalities.
D. the mother's eggs are tested for genetic abnormalities.

71. The biggest drawback to amniocentesis is that it can cause:

A. miscarriages in 1 of every 100 women who undergo the procedure.
B. Cesarean deliveries.
C. mental retardation.
D. the unborn child to be sterile.

72. Amniocentesis is routine for:

A. women over the age of 45 years.
B. women carrying the children of aging fathers.
C. women over the age of 35 years.
D. all of these

73. The earliest detection of fetal abnormalities is possible with the use of:

A. amniocentesis.
B. ultrasound.
C. chorionic villus sampling.
D. fetoscopy.

74. CVS stands for:

A. cervical variability study.
B. chorionic villus sampling.
C. chorionic variability sampling.
D. cervical villus sampling.

75. Which of the following is true regarding amniocentesis and CVS?

A. The risks of each procedure are not equivalent.
B. Both amniocentesis and CVS are performed 14 to 16 weeks after conception.
C. Some practitioners are better at carrying out these procedures than others.
D. Neither amniocentesis nor CVS increase the risk of miscarriage.

76. An ultrasound:

A. uses x-ray photography to take a picture of the unborn child.
B. can be heard by the human ear.
C. yields a picture called a "cat-scan."
D. bounces sound waves off of the fetus.

77. A sonogram is produced by using:

A. ultrasound.
B. fetoscopy.
C. chorionic villus sampling.
D. amniocentesis.

78. Ultrasound can be used to detect:

A. Klinefelter syndrome.
B. Cystic fibrosis.
C. PKU.
D. the growth of the fetus.

79. ____ is used to detect neural tube defects such as spina bifida.

A. Genetic counseling
B. Alpha-fetoprotein (AFP) assay
C. Ultrasound
D. Rh disease test

80. The procedure that poses the LEAST risk to the fetus is:

A. amniocentesis.
B. ultrasound.
C. chorionic villus sampling.
D. alpha-fetoprotein assay.

81. Alpha-fetoprotein assay can be used to:

A. assess sex chromosome abnormalities.
B. detect neural tube defects.
C. assess the degree of mental retardation.
D. measure enzyme levels in the fetus.

82. Of the following, which is the most accurate statement?

A. There is no risk associated with fetal testing.
B. Although there is some risk with fetal testing, it is sometimes considered necessary.
C. Because of risk, fetal testing should not be done.
D. The risk in fetal testing is to the mother, not the fetus.

83. The traits we inherit from our parents are referred to as our:

A. phenotype.
B. temperament.
C. genotype.
D. personality.

84. Our actual characteristics or traits are referred to as our:

A. phenotype.
B. temperament.
C. genotype.
D. personality.

85. _____ is/are MOST influenced by our environment.

A. Our phenotype
B. Our genes
C. Our chromosomes
D. Our genotype

86. Which of the following is true regarding parents and their children and siblings?

A. They share about 50 percent of their genetic material.
B. They share recessive genes only.
C. They share dominant genes only.
D. They share about 25 percent of their genetic material.

87. Monozygotic twins:

A. share 50 percent of their genetic material.
B. are formed from two eggs but fertilized by the same sperm.
C. are as different as typical siblings.
D. will look very similar in physical appearance.

88. Which of the following twin pair would physically resemble each other the most?

A. dizygotic of either sex
B. monozygotic
C. dizygotic males
D. monozygotic, but only if female

89. Which of the following could influence behavioral similarity in monozygotic twins?

A. parents and others who treat them alike
B. the degree of genetic similarity they share
C. whether the twins are male or female
D. none of these would influence behavioral similarity

90. Dizygotic twins are more likely to inherit ____ than monozygotic twins.

A. schizophrenia
B. depression
C. autism
D. none of these

91. Who has the most similar genetic material?

A. dizygotic twins
B. non-twin siblings
C. cousins
D. monozygotic twins

92. Monozygotic twins reared in separate environments:

A. share the same degree of genetic similarity as twins reared together.
B. are less alike, genetically, than dizygotic twins reared together.
C. are identical in genetics, behaviors, and preferences.
D. are no more alike in genetics, behaviors, and preferences than regular siblings.

93. If an adopted child is more similar on a particular characteristic to his/her natural parents than to the adoptive parents, we can conclude that:

A. the adoptive parents have tried very hard to raise the child as their own.
B. heredity is solely responsible for who we become.
C. environment is solely responsible for who we become.
D. genetics play a role in the development of that particular characteristic.

94. At birth, the typical human female will contain:

A. enough ova to be fertile for 10 years.
B. no ova, they only develop during puberty.
C. around 400,000 ova.
D. millions of ova.

95. During menstruation,:

A. a female is more likely to get pregnant than at any other time.
B. the unfertilized egg is discharged.
C. the fertilized egg undergoes meiosis.
D. the fertilized egg undergoes mitosis.

96. Before meiosis, the sperm cell:

A. contains 46 chromosomes.
B. is significantly larger than the egg cell.
C. contains two X chromosomes.
D. is more likely to conceive a girl than a boy.

97. The sperm cell:

A. is significantly larger than the egg cell.
B. contains two Y chromosomes.
C. does not determine the gender of the developing child.
D. is one of the smallest types of cells in the body.

98. Which of the following can be said about male conception?

A. Fewer males are conceived, but more survive to birth.
B. More males are conceived and more survive to birth.
C. More males are conceived and more are spontaneously aborted.
D. About the same number of males and females are conceived.

99. Which of the following numbers correctly illustrates approximately how many sperm cells are contained in a single ejaculate?

A. around 1,000
B. 150 to 400 million
C. It depends on the size of the ejaculate.
D. It depends on the man's progesterone levels.

100. Only 1 in 1,000 sperm will ever arrive in the vicinity of an ovum. Which of the following factors prevent sperm cells from traveling the entire distance to the egg?

A. gravity
B. vaginal acidity
C. current of fluid from the cervix
D. all of these

101. The term “infertility” is typically applied after a couple has failed to conceive after:

A. four attempts to get pregnant.
B. one year of failed attempts.
C. four years of failed attempts.
D. two miscarriages in the fourth month of pregnancy.

102. In American couples, infertility occurs in approximately:

A. one in 6 or 7 couples.
B. one in 15 couples.
C. It depends upon ethnicity.
D. It depends upon socioeconomic status.

103._____ can cause infertility problems in men.

A. Excess protein in the diet.
B. Lack of exercise.
C. Use of drugs.
D. Excessive masturbation.

104.The sperm's ability to move is called:

A. the backstroke.
B. propulsion.
C. evolution.
D. motility.

105._____ can cause infertility in women:

A. Infection
B. Excessive physical exercise
C. Stress
D. all of these

106.The most common infertility problem in women is:

A. irregular ovulation or lack of ovulation.
B. endometriosis.
C. barriers to the passageways through which the ovum must pass.
D. PID.

107.Which of the following describes the process by which sperm is injected into the uterus at the time of ovulation?

A. IVF
B. artificial insemination
C. donor IVF
D. none of these

108.Surrogate mothers:

A. provide eggs to be implanted into another woman.
B. are allowed to keep the babies that they carry.
C. usually give birth to twins.
D. carry newly conceived babies to term for other women.

109. What is the term for the process by which ova are fertilized in vitro, tested for sex chromosomal structure, and then embryos of the desired sex are implanted into the mother-to-be?

A. PID
B. PGD
C. IVF
D. "Microsort"

110. Infertility:

A. is always the fault of the woman.
B. is always the fault of the man.
C. lies with the man about 40 percent of the time.
D. lies with the woman about 80 percent of the time.

111. *Match the following:*

1. Homozygous	genetically male	____
2. Intelligence	twins produced from a single egg	____
3. Sickle-cell anemia	caused by a recessive gene	____
4. Phenotype	cell division that results in non-identical cells	____
5. Genotype	how genetic material manifests itself in characteristics	____
6. Down syndrome	both alleles for a trait are the same	____
7. Gender of child	sex-linked genetic abnormality	____
8. Heterozygous	associated with the 21st pair of chromosomes	____
9. XY sex chromosomes	caused by a dominant gene	____
10. Mitosis	polygenically determined	____
11. Dizygotic	twins produced from two eggs	____
12. Meiosis	cell division that results in identical cells	____
13. Hemophilia	the genetic material received from parents	____
14. Estrogen	both alleles for a trait differ	____
15. Testosterone	male hormone	____
16. Monozygotic	determined by father	____
17. Huntington's disease	genetically female	____
18. XX sex chromosomes	female hormone	____
19. Conception	union of an ovum and a sperm cell	____
20. Klinefelter's syndrome	XXY sex chromosomal pattern	____

112. The science of heredity is called "Eugenics."

True False

113. Each cell in our body contains 26 chromosomes.

True False

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

True False

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

True False

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

True False

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

True False

118. Sex chromosomes utilize meiosis to divide.

True False

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

True False

120. Monozygotic twins are conceived from separate egg cells.

True False

121. Klinefelter syndrome affects females and males equally.

True False

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

True False

123. Turner syndrome affects females only.

True False

124. PKU is transmitted by a dominant gene.

True False

125. Genetic counseling is only used prior to a woman getting pregnant.

True False

126. Our phenotype is influenced by the environment.

True False

127. Parents and children have 25 percent overlap in genes.

True False

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

True False

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

True False

130. If someone has a dominant trait for brown eyes and a recessive trait for blue eyes, that person is most likely going to be brown eyed.

True False

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

True False

132. Down syndrome is associated with an extra chromosome on the 21^{st} pair.

True False

133. Sickle-cell anemia is more common among Caucasian Americans than minority groups in the US.

True False

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

True False

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

True False

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

True False

137. Amniocentesis and CVS have no known risks to the unborn embryo.

True False

138. Monozygotic twins share more personality traits and physical traits than dizygotic twins.

True False

139. Women create viable ova throughout their lives, from their first period through menopause.

True False

140. Sperm are responsible for determining the gender of the offspring.

True False

141. Infertility is always the woman's fault.

True False

142. Artificial insemination involves implanting a viable embryo into the uterus of a woman.

True False

143. Surrogate mothers may be artificially inseminated or implanted with a fertilized ovum.

True False

144. It is impossible to select the sex of one's child currently.

True False

145. The set of traits that we inherit from our parents are referred to as our phenotype.

True False

146. The set of traits that we exhibit are called our genotype.

True False

147. A child who does not get enough to eat may not reach the height that he could have had he had sufficient nutrition.

True False

148. The alpha-fetoprotein (AFP) essay is used to detect autism.

True False

149. Sickle-cell anemia is caused by a dominant gene.

True False

150. Down syndromes is caused by a chromosomal abnormality.

True False

151. Gina has a twin sister and her mother has a twin brother. These facts increase Gina's chances that she will have twins herself.

True False

152. Martina is 55-years old and pregnant. She is not any more likely to have twins than if she were 25.

True False

153. Karen produced two ova in November. Each ova was fertilized by different sperm cells from her partner. Karen will have identical twins.

True False

154. Malia has just conceived. Her zygote divided into two cells that separated. Malia will have identical twins.

True False

155. Leyla is unable to have a child herself, but she and her partner are fertile. She could ask to have the fertilized ova implanted in her friend, Susan, and Susan could bear the child for her.

True False

156. Chorionic villus sampling (CVS) does not increase the risk of miscarriage.

True False

157. Jared and Jenny each are afraid that they may be carriers for Tay-Sacks disease. They might be good candidates for genetic counseling.

True False

158. A child with cystic fibrosis can expect to live until about the age of 40 years.

True False

159. Being male, Barrack has only one X chromosome. There is some evidence that night blindness runs in his family. Barrack may be more likely to have night blindness because he has only one X chromosome.

True False

160. Two-month old Jasmine has phenylketonuria (PKU). If she is put on a special diet low in phenylalanine, she will develop normally.

True False

161. Kurt has suffered from depression all of his adult life. There is no evidence to support the idea that Kurt's depression has a genetic basis.

True False

162. The field of biology that studies heredity is called _____.

_____

163. Typical human cells contain 46 _____, organized into 23 pairs.

_____

164. _____ takes the form of a double spiral, or helix, similar to a twisting ladder.

_____

165. _____ is the process of duplicating identical cells.

_____

166. _____ produces ova ('egg') and sperm cells.

_____

167. Twins created from one egg are called _____.

_____

168. Each member of a pair of genes is termed a(n) _____.

_____

169. When someone has both alleles for the same trait, the person is considered _____ for that trait.

_____

170. Brown eyes are considered to be a _____ trait.

_____

171. Diabetes mellitus, epilepsy, and peptic ulcers are _____ problems.

_____

172._____ is usually caused by an extra chromosome on the 21st pair.

_____

173.Males who have an extra X chromosome have _____ syndrome.

_____

174.Approximately 1 girl in 2,500 has a single X chromosome and as a result develops _____ syndrome.

_____

175.Children with _____ cannot metabolize an amino acid called phenylalanine, so it builds up in their bodies and impairs the functioning of the central nervous system.

_____

176._____ is caused by a dominant trait and is often not identified until middle adulthood.

_____

177.Some of the physical problems caused by _____ include painful and swollen joints, jaundice, and potentially fatal conditions such as pneumonia, stroke, and heart and kidney failure.

_____

178._____ causes the central nervous system to degenerate and is most commonly found among children in Jewish families of Eastern European background.

_____

179.Hemophilia is an example of a _____ disorder.

_____

180.Amniocentesis is usually performed between _____ weeks after conception.

_____

181.Health professionals can use _____, sound waves that are too high in frequency to be heard by the human ear, to detect physical abnormalities during pregnancy.

_____

182.The _____ is used to detect neural tube defects such as spina bifida and certain chromosomal abnormalities.

_____

183. The actual set of traits we exhibit is called our _____.

_____

184. Parents and children have a _____ percent overlap of genetic endowments.

_____

185. _____ twins more closely resemble each other than do dizygotic twins.

_____

186. _____ is the union of an egg and sperm cells.

_____

187. _____ occurs when fertilization of an egg has not occurred.

_____

188. More _____ are conceived than _____, although more _____ survive infancy.

_____

189. _____ is the most common cause of infertility for men.

_____

190. For women, the most common cause of infertility is _____.

_____

191. The sperm are injected into the woman's uterus at the time of ovulation in the process of _____.

_____

192. _____ means resulting from many genes.

_____

193. _____ is the process for selecting the sex of a child.

_____

194. _____ bring babies to term for other woman who are infertile.

_____

195._____ usually results in the formation of loving families.

_____

196."Test-tube babies" are conceived through a process known as _____.

_____

197.If a woman cannot produce ova and she uses the ovum of another woman, this process is known as _____.

_____

198._____ are infections that may scar the fallopian tubes and impede the passage of sperm or ova.

_____

199._____, a sloughing off of the lining of the uterus, is fairly common among women who delay childbearing.

_____

200.An infertile man may have a(n) _____, in which his body attacks his own sperm as foreign agents.

_____

201.Infertility turns out to be the problem of the man in _____ percent of cases.

_____

202.Of all the sperm swimming around the egg, only _____ enters.

_____

203.Approximately _____ are conceived for every 100 girls.

_____

204.Sperm reach the fallopian tubes _____ minutes after ejaculation.

_____

205.A(n) _____ exists when a child's genotype is connected with behaviors that evoke, or elicit, certain kinds of responses from others.

_____

206. Parents' intentional and unintentionally placement of their children into certain environments is known as a(n) _____.

_____

207. An intelligent, highly motivated child seeking out activities that interest her, is an example of _____.

_____

208. Self-selecting activities that allow us to develop inherited preferences is termed _____.

_____

209. Infant motor development is _____, to the extent that its sequence from one child to the next is unchanging.

_____

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

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

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

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

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

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

216. Describe two examples of recessive genetic disorders.

217. How does studying monozygotic and dizygotic twins help one understand the genetic basis for a trait or behavior?

218.Describe two different methods of helping infertile couples.

219.Describe the process by which one could select the sex of a child.

Chapter 2--Heredity and Conception Key

1. Heredity is defined as:

A. one's nature, and is based on biological transmission of traits and characteristics.
B. the rod shaped structures found in cells.
C. traits that are determined by pairs of genes.
D. the cell division process by which growth occurs and tissues are replaced.

2. The study of heredity is called:

A. etiology.
B. genetics.
C. biology.
D. eugenics.

3. Genetics influence:

A. physical traits.
B. intelligence.
C. psychological problems.
D. all of these

4. "Heredity" means:

A. biological transmission of traits and characteristics.
B. how your traits manifest themselves in your characteristics.
C. how cells divide to determine who we become.
D. how genes combine to influence our phenotype.

5. Chromosomes contain thousands of segments called:

A. nuclei.
B. genes.
C. phosphates.
D. cytosines.

6. What shape best describes chromosomes?

A. cone
B. rod
C. circle
D. octagon

7. A normal human cell contains _____ chromosomes organized into _____ pairs.

A. 20; 10
B. 32; 16
C. 46; 23
D. 48; 24

8. Polygenic traits:

A. are transmitted by a single pair of genes.
B. are uncommon in humans.
C. are transmitted by the mother.
D. result in more complex characteristics.

9. According to the International Genome Sequencing Consortium (2006), we have _____ genes in every cell of our bodies.

A. 1,000-1,500
B. 10,000-20,000
C. 20,000-25,000
D. There has not been enough research to determine the number of genes in cells.

10. DNA takes the form of:

A. a twisting ladder.
B. a straight ladder.
C. an octagon.
D. interlocking circles.

11. In DNA, adenine is paired with:

A. thymine.
B. guanine.
C. cytosine.
D. polynine.

12. In DNA adenine is paired with _____ and cytosine with _____.

A. thymine; simple sugar
B. thymine; guanine
C. guanine; simple sugar
D. guanine; thymine

13. Of the 46 chromosomes in a normal human cell, how many are contributed by the mother?

A. All
B. It depends upon the gender of the child.
C. 23
D. None

14. Which of the following most accurately describes what genes do?

A. regulate the development of traits
B. determine the gender of the child
C. work together with lutein to influence development
D. hardwire people for certain levels of certain traits

15. DNA stands for:

A. deoxyribonucleic acid.
B. dionyotic acetate.
C. diophosphate nucleic acetone.
D. dionucleic acid.

16. During mitosis:

A. sperm and ova cells are created.
B. 23 chromosomes are created.
C. new cells with identical DNA are created.
D. mutations are impossible.

17. "Reduction division" is another term for:

A. mitosis.
B. cell death.
C. meiosis.
D. neural pruning.

18. Which method of cell reproduction allows for more genetic "variability?"

A. cloning
B. meiosis
C. cross-fertilization
D. mitosis

19. Of the twenty-three pairs of chromosomes, twenty-two pairs look alike and possess genetic information concerning the same traits. These are:

A. sex chromosomes.
B. identical chromosomes.
C. autosomes.
D. sperm cells.

20. How many chromosomes does a cell created during meiosis contain?

A. 23
B. 25
C. 43
D. 46

21. What factor determines the sex of a child?

A. the presence or absence of teratogens at the time of conception
B. It depends on what time in the ovulation cycle conception occurs.
C. the age of the mother
D. the sex chromosome received from the father

22. The typical sex chromosome pattern for males is _____.

A. XX
B. XY
C. XYY
D. XXY

23. The typical sex chromosome pattern for females is _____.

A. XX
B. XY
C. XYY
D. XXY

24. A zygote that divides into two cells that separate results in:

A. monozygotic twins.
B. dizygotic twins.
C. cross-fertilization.
D. mitosis.

25. A woman who gives birth to dizygotic twins:

A. is most likely an Asian-American.
B. has a decreased chance of subsequent pregnancies.
C. is likely to be a young mother.
D. has an increased chance of giving birth to twins in future pregnancies.

26. Each member of a pair of genes is referred to as a(n):

A. homozygous trait.
B. heterozygous trait.
C. autosome.
D. allele.

27. What is it called when someone has two alleles for the same trait?

A. heterozygous
B. dizygotic
C. monozygotic
D. homozygous

28. If a child receives a dominant allele for "tallness" from one parent and a recessive allele for "shortness" from the other, what do we know?

A. The child will be average in height.
B. We cannot predict the potential height of the child based upon this information.
C. The child will tend to be tall.
D. The child is likely to be born male.

29. If a child receives an allele for blue eyes and an allele for brown eyes, then the child is:

A. going to have blue eyes.
B. homozygous for that trait.
C. heterozygous for that trait.
D. exhibiting the law of dominance.

30. Someone with two alleles for brown eyes:

A. is said to be homozygous for that trait.
B. has eye color as a co-dominant trait.
C. is referred to as "atypical."
D. will have blue eyes.

31. Dominant alleles:

A. will cause characteristics in individuals when paired with recessive alleles.
B. come from the father of the developing child.
C. determine physical characteristics.
D. will determine physical characteristics in offspring of the same sex as the parent that contributed that trait.

32. Carriers of certain genetic characteristics can pass that characteristic on only if:

A. the other parent has a recessive gene for the same characteristic.
B. characteristics in the environment activate it.
C. they are male.
D. they also have a dominant gene for the same characteristic.

33. If an individual gets a recessive allele for eye color from both parents:

A. the gender of the child will determine if that trait is shown.
B. the recessive trait will develop in the child.
C. the trait will develop 50 percent of the time.
D. the trait will be turned off and the dominant trait will be expressed.

34. People who bear one dominant and one recessive gene for a trait are:

A. going to automatically pass that characteristic on to their offspring.
B. definitely going to develop that characteristic.
C. called "carriers" of the recessive gene.
D. not going to pass that characteristic on to their offspring.

35. "Carriers" of traits:

A. bear two dominant genes for a trait.
B. carry two recessive genes for a trait.
C. bear co-dominant genes for a trait.
D. carry one recessive and one dominant gene for a trait.

36. Someone suffering from cystic fibrosis:

A. carries it as a recessive gene.
B. did not have a dominant gene to cancel it out.
C. has more than 23 chromosomal pairs.
D. is likely to have a younger mother.

37. Which of the following is caused by a single pair of genes?

A. cystic fibrosis
B. Down syndrome
C. sex-linked chromosomal abnormalities
D. all of these

38. What do we know about Down syndrome?

A. It is caused by a defect on the sex chromosomes.
B. It is significantly more likely in boys than girls.
C. It is caused by a virus during pregnancy.
D. It is increasingly likely among individuals born to older parents.

39. Individuals with Down syndrome:

A. do not typically suffer adjustment problems.
B. have few, if any, physical problems.
C. have deficits in cognitive impairment and motor development.
D. have chromosomal damage on the 8^{th} chromosome.

40. Down syndrome is linked to:

A. alcohol abuse by the father.
B. abnormalities of the 21^{st} pair of chromosomes.
C. sex-linked chromosomal abnormalities.
D. alcohol abuse by the mother.

41. Which of the following describes the sex chromosomal structure of "supermales?"

A. XY
B. XXY
C. XYY
D. Y

42. Of every 2,000 males born, how many are statistically likely to have Klinefelter's syndrome?

A. Zero, because this disorder affects only females.
B. approximately 30
C. approximately 15
D. 2 to 4

43. In comparison to the average male population, individuals with Klinefelter's syndrome:

A. produce more estrogen than normal.
B. produce less estrogen than normal.
C. produce more testosterone than normal.
D. produce less testosterone than normal.

44. A man with enlarged breasts and mild mental retardation probably:

A. has XXY sex chromosomes.
B. has XY sex chromosomes.
C. produces more testosterone than normal.
D. will have more body hair than normal.

45. A girl who does not develop breasts or menstruate:

A. likely produces low levels of estrogen.
B. may have only one X sex chromosome.
C. may have Turner's syndrome.
D. all of these

46. Girls with Turner's syndrome:

A. have visible physical abnormalities.
B. produce little estrogen.
C. produce more testosterone than normal.
D. are more likely to give birth to twins.

47. Klinefelter’s Syndrome occurs when:

A. genetic females have an extra X chromosome.
B. genetic females have an extra Y chromosome.
C. genetic males have an extra X chromosome.
D. genetic males have an extra Y chromosome.

48. Compared to girls with "XX" sex chromosomes, girls with Turner's syndrome:

A. have an extra X chromosome.
B. have an extra Y chromosome.
C. perform better on verbal tests.
D. perform more poorly on motor performance tests.

49. Phenylketonuria is:

A. an enzyme disorder.
B. transmitted by a dominant gene.
C. a disorder that manifests itself in all children of carriers.
D. caused by alcohol consumption during pregnancy.

50. Children with PKU:

A. cannot eat fruits or vegetables.
B. have damage to the 21st pair of chromosomes.
C. should be placed on a special diet at soon as possible.
D. usually live for only a few weeks.

51. Children with PKU will develop normally if they are placed on a diet which:

A. excludes all fruits.
B. excludes all vegetables.
C. excludes all protein.
D. excludes meat and nuts.

52. The rarest among the following disorders is:

A. Huntington's disease.
B. Down syndrome.
C. Klinefelter's syndrome.
D. Turner's syndrome.

53. Huntington's disease is characterized by which of the following symptoms?

A. uncontrollable muscle movements
B. loss of intellectual functioning
C. personality change
D. all of these

54. Huntington's disease is caused by a _____, which means that around half of their offspring will also get it.

A. recessive trait
B. personality disorder
C. dominant trait
D. diet problem

55. The individual who would be most likely to develop sickle-cell anemia is:

A. a Caucasian female under the age of 15.
B. an African-American.
C. a Caucasian male of any age.
D. someone of Asian heritage.

56. Sickle-cell anemia is caused by:

A. white blood cells that take on the shape of a sickle and clump together.
B. red blood cells that expand the blood vessels and increase the oxygen supply.
C. a recessive gene.
D. a slow destruction of the liver leading to jaundice and swollen joints.

57. Approximately _____ African-Americans are carriers of sickle-cell anemia.

A. one in 5
B. one in 10
C. one in 20
D. one in 100

58. Tay-Sachs disease:

A. affects the pancreas and the lungs.
B. is a fatal degenerative disease of the central nervous system.
C. is caused by a dominant gene.
D. is linked to the X chromosome.

59. Which of the following individuals are MOST likely to have Tay-Sachs disease?

A. a 4-year-old child of Jewish descent
B. a 10-year-old African-American
C. a 5-year-old European-American
D. a 20-year-old Hispanic male

60. Which of the following individuals are LEAST likely to have Tay-Sachs disease?

A. an 8-year-old
B. a 4-year-old
C. a 2-year-old
D. a 1-year-old

61. Tay-Sachs disease results in:

A. death by approximately the age of 5.
B. painful and swollen joints.
C. thick mucus that clogs the pancreas and lungs.
D. all of these

62. According to the Cystic Fibrosis Foundation,:

A. cystic fibrosis is the most common fatal, hereditary disease among European-Americans.
B. about 30,000 Americans have cystic fibrosis.
C. 1 in every 31 people are carriers of cystic fibrosis.
D. all of these are true about cystic fibrosis.

63. Cystic fibrosis is caused by:

A. incomplete mitosis.
B. an abnormality in the 21st pair of chromosomes.
C. a recessive gene.
D. a dominant gene.

64. Hemophilia is:

A. a disease that only affects females.
B. carried on the X chromosome.
C. caused by damage to the 14th chromosomal pair.
D. recessive with the father.

65. Hemophilia is:

A. more likely to afflict sons of female carriers than daughters.
B. a degenerative disorder that afflicts Caucasians more than African-Americans.
C. a disease that damages the frontal brain lobe.
D. None of these is accurate.

66. Color blindness is:

A. an enzyme disorder.
B. a protein-based disorder.
C. a sex-linked abnormality.
D. found only in females.

67. Sex-linked diseases are more likely to affect sons of female carriers because:

A. they are carried on the Y chromosome.
B. they are carried on dominant genes.
C. males only have one X chromosome, which they inherit from their mothers.
D. males only have one X chromosome, which they inherit from their fathers.

68. The primary purpose of genetic counseling is to:

A. advise couples to abort unborn children.
B. prove that a child will develop a certain illness.
C. assist would-be parents in making procreation decisions.
D. outline the genetic risks of unprotected sex.

69. Which of the following people is most likely to be given an amniocentesis?

A. an African-American female
B. an Asian-American female
C. a female younger than age 20
D. a female over the age of 35

70. During amniocentesis,:

A. a biopsy is taken from the pregnant mother's spine.
B. fluid is tested from the "sac" containing the fetus.
C. the father's sperm is tested for genetic abnormalities.
D. the mother's eggs are tested for genetic abnormalities.

71. The biggest drawback to amniocentesis is that it can cause:

A. miscarriages in 1 of every 100 women who undergo the procedure.
B. Cesarean deliveries.
C. mental retardation.
D. the unborn child to be sterile.

72. Amniocentesis is routine for:

A. women over the age of 45 years.
B. women carrying the children of aging fathers.
C. women over the age of 35 years.
D. all of these

73. The earliest detection of fetal abnormalities is possible with the use of:

A. amniocentesis.
B. ultrasound.
C. chorionic villus sampling.
D. fetoscopy.

74. CVS stands for:

A. cervical variability study.
B. chorionic villus sampling.
C. chorionic variability sampling.
D. cervical villus sampling.

75. Which of the following is true regarding amniocentesis and CVS?

A. The risks of each procedure are not equivalent.
B. Both amniocentesis and CVS are performed 14 to 16 weeks after conception.
C. Some practitioners are better at carrying out these procedures than others.
D. Neither amniocentesis nor CVS increase the risk of miscarriage.

76. An ultrasound:

A. uses x-ray photography to take a picture of the unborn child.
B. can be heard by the human ear.
C. yields a picture called a "cat-scan."
D. bounces sound waves off of the fetus.

77. A sonogram is produced by using:

A. ultrasound.
B. fetoscopy.
C. chorionic villus sampling.
D. amniocentesis.

78. Ultrasound can be used to detect:

A. Klinefelter syndrome.
B. Cystic fibrosis.
C. PKU.
D. the growth of the fetus.

79. ____ is used to detect neural tube defects such as spina bifida.

A. Genetic counseling
B. Alpha-fetoprotein (AFP) assay
C. Ultrasound
D. Rh disease test

80. The procedure that poses the LEAST risk to the fetus is:

A. amniocentesis.
B. ultrasound.
C. chorionic villus sampling.
D. alpha-fetoprotein assay.

81. Alpha-fetoprotein assay can be used to:

A. assess sex chromosome abnormalities.
B. detect neural tube defects.
C. assess the degree of mental retardation.
D. measure enzyme levels in the fetus.

82. Of the following, which is the most accurate statement?

A. There is no risk associated with fetal testing.
B. Although there is some risk with fetal testing, it is sometimes considered necessary.
C. Because of risk, fetal testing should not be done.
D. The risk in fetal testing is to the mother, not the fetus.

83. The traits we inherit from our parents are referred to as our:

A. phenotype.
B. temperament.
C. genotype.
D. personality.

84. Our actual characteristics or traits are referred to as our:

A. phenotype.
B. temperament.
C. genotype.
D. personality.

85. _____ is/are MOST influenced by our environment.

A. Our phenotype
B. Our genes
C. Our chromosomes
D. Our genotype

86. Which of the following is true regarding parents and their children and siblings?

A. They share about 50 percent of their genetic material.
B. They share recessive genes only.
C. They share dominant genes only.
D. They share about 25 percent of their genetic material.

87. Monozygotic twins:

A. share 50 percent of their genetic material.
B. are formed from two eggs but fertilized by the same sperm.
C. are as different as typical siblings.
D. will look very similar in physical appearance.

88. Which of the following twin pair would physically resemble each other the most?

A. dizygotic of either sex
B. monozygotic
C. dizygotic males
D. monozygotic, but only if female

89. Which of the following could influence behavioral similarity in monozygotic twins?

A. parents and others who treat them alike
B. the degree of genetic similarity they share
C. whether the twins are male or female
D. none of these would influence behavioral similarity

90. Dizygotic twins are more likely to inherit ____ than monozygotic twins.

A. schizophrenia
B. depression
C. autism
D. none of these

91. Who has the most similar genetic material?

A. dizygotic twins
B. non-twin siblings
C. cousins
D. monozygotic twins

92. Monozygotic twins reared in separate environments:

A. share the same degree of genetic similarity as twins reared together.
B. are less alike, genetically, than dizygotic twins reared together.
C. are identical in genetics, behaviors, and preferences.
D. are no more alike in genetics, behaviors, and preferences than regular siblings.

93. If an adopted child is more similar on a particular characteristic to his/her natural parents than to the adoptive parents, we can conclude that:

A. the adoptive parents have tried very hard to raise the child as their own.
B. heredity is solely responsible for who we become.
C. environment is solely responsible for who we become.
D. genetics play a role in the development of that particular characteristic.

94. At birth, the typical human female will contain:

A. enough ova to be fertile for 10 years.
B. no ova, they only develop during puberty.
C. around 400,000 ova.
D. millions of ova.

95. During menstruation,:

A. a female is more likely to get pregnant than at any other time.
B. the unfertilized egg is discharged.
C. the fertilized egg undergoes meiosis.
D. the fertilized egg undergoes mitosis.

96. Before meiosis, the sperm cell:

A. contains 46 chromosomes.
B. is significantly larger than the egg cell.
C. contains two X chromosomes.
D. is more likely to conceive a girl than a boy.

97. The sperm cell:

A. is significantly larger than the egg cell.
B. contains two Y chromosomes.
C. does not determine the gender of the developing child.
D. is one of the smallest types of cells in the body.

98. Which of the following can be said about male conception?

A. Fewer males are conceived, but more survive to birth.
B. More males are conceived and more survive to birth.
C. More males are conceived and more are spontaneously aborted.
D. About the same number of males and females are conceived.

99. Which of the following numbers correctly illustrates approximately how many sperm cells are contained in a single ejaculate?

A. around 1,000
B. 150 to 400 million
C. It depends on the size of the ejaculate.
D. It depends on the man's progesterone levels.

100. Only 1 in 1,000 sperm will ever arrive in the vicinity of an ovum. Which of the following factors prevent sperm cells from traveling the entire distance to the egg?

A. gravity
B. vaginal acidity
C. current of fluid from the cervix
D. all of these

101. The term “infertility” is typically applied after a couple has failed to conceive after:

A. four attempts to get pregnant.
B. one year of failed attempts.
C. four years of failed attempts.
D. two miscarriages in the fourth month of pregnancy.

102. In American couples, infertility occurs in approximately:

A. one in 6 or 7 couples.
B. one in 15 couples.
C. It depends upon ethnicity.
D. It depends upon socioeconomic status.

103. _____ can cause infertility problems in men.

A. Excess protein in the diet.
B. Lack of exercise.
C. Use of drugs.
D. Excessive masturbation.

104. The sperm's ability to move is called:

A. the backstroke.
B. propulsion.
C. evolution.
D. motility.

105. _____ can cause infertility in women:

A. Infection
B. Excessive physical exercise
C. Stress
D. all of these

106. The most common infertility problem in women is:

A. irregular ovulation or lack of ovulation.
B. endometriosis.
C. barriers to the passageways through which the ovum must pass.
D. PID.

107. Which of the following describes the process by which sperm is injected into the uterus at the time of ovulation?

A. IVF
B. artificial insemination
C. donor IVF
D. none of these

108. Surrogate mothers:

A. provide eggs to be implanted into another woman.
B. are allowed to keep the babies that they carry.
C. usually give birth to twins.
D. carry newly conceived babies to term for other women.

109. What is the term for the process by which ova are fertilized in vitro, tested for sex chromosomal structure, and then embryos of the desired sex are implanted into the mother-to-be?

A. PID
B. PGD
C. IVF
D. "Microsort"

110. Infertility:

A. is always the fault of the woman.
B. is always the fault of the man.
C. lies with the man about 40 percent of the time.
D. lies with the woman about 80 percent of the time.

111. *Match the following:*

1. Homozygous	genetically male	**9**
2. Intelligence	twins produced from a single egg	**16**
3. Sickle-cell anemia	caused by a recessive gene	**3**
4. Phenotype	cell division that results in non-identical cells	**12**
5. Genotype	how genetic material manifests itself in characteristics	**4**
6. Down syndrome	both alleles for a trait are the same	**1**
7. Gender of child	sex-linked genetic abnormality	**13**
8. Heterozygous	associated with the 21st pair of chromosomes	**6**
9. XY sex chromosomes	caused by a dominant gene	**17**
10. Mitosis	polygenically determined	**2**
11. Dizygotic	twins produced from two eggs	**11**
12. Meiosis	cell division that results in identical cells	**10**
13. Hemophilia	the genetic material received from parents	**5**
14. Estrogen	both alleles for a trait differ	**8**
15. Testosterone	male hormone	**15**
16. Monozygotic	determined by father	**7**
17. Huntington's disease	genetically female	**18**
18. XX sex chromosomes	female hormone	**14**
19. Conception	union of an ovum and a sperm cell	**19**
20. Klinefelter's syndrome	XXY sex chromosomal pattern	**20**

112. The science of heredity is called "Eugenics."

FALSE

113. Each cell in our body contains 26 chromosomes.

FALSE

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

TRUE

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

TRUE

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

TRUE

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

FALSE

118. Sex chromosomes utilize meiosis to divide.

TRUE

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

FALSE

120. Monozygotic twins are conceived from separate egg cells.

FALSE

121. Klinefelter syndrome affects females and males equally.

FALSE

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

FALSE

123. Turner syndrome affects females only.

TRUE

124. PKU is transmitted by a dominant gene.

FALSE

125. Genetic counseling is only used prior to a woman getting pregnant.

FALSE

126. Our phenotype is influenced by the environment.

TRUE

127. Parents and children have 25 percent overlap in genes.

FALSE

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

TRUE

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

TRUE

130. If someone has a dominant trait for brown eyes and a recessive trait for blue eyes, that person is most likely going to be brown eyed.

TRUE

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

FALSE

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

TRUE

133. Sickle-cell anemia is more common among Caucasian Americans than minority groups in the US.

FALSE

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

FALSE

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

TRUE

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

TRUE

137. Amniocentesis and CVS have no known risks to the unborn embryo.

FALSE

138. Monozygotic twins share more personality traits and physical traits than dizygotic twins.

TRUE

139. Women create viable ova throughout their lives, from their first period through menopause.

FALSE

140. Sperm are responsible for determining the gender of the offspring.

TRUE

141. Infertility is always the woman's fault.

FALSE

142. Artificial insemination involves implanting a viable embryo into the uterus of a woman.

FALSE

143. Surrogate mothers may be artificially inseminated or implanted with a fertilized ovum.

TRUE

144. It is impossible to select the sex of one's child currently.

FALSE

145. The set of traits that we inherit from our parents are referred to as our phenotype.

FALSE

146. The set of traits that we exhibit are called our genotype.

FALSE

147. A child who does not get enough to eat may not reach the height that he could have had he had sufficient nutrition.

TRUE

148. The alpha-fetoprotein (AFP) essay is used to detect autism.

FALSE

149. Sickle-cell anemia is caused by a dominant gene.

FALSE

150. Down syndromes is caused by a chromosomal abnormality.

TRUE

151. Gina has a twin sister and her mother has a twin brother. These facts increase Gina's chances that she will have twins herself.

TRUE

152. Martina is 55-years old and pregnant. She is not any more likely to have twins than if she were 25.

FALSE

153. Karen produced two ova in November. Each ova was fertilized by different sperm cells from her partner. Karen will have identical twins.

FALSE

154. Malia has just conceived. Her zygote divided into two cells that separated. Malia will have identical twins.

TRUE

155. Leyla is unable to have a child herself, but she and her partner are fertile. She could ask to have the fertilized ova implanted in her friend, Susan, and Susan could bear the child for her.

TRUE

156. Chorionic villus sampling (CVS) does not increase the risk of miscarriage.

FALSE

157. Jared and Jenny each are afraid that they may be carriers for Tay-Sacks disease. They might be good candidates for genetic counseling.

TRUE

158. A child with cystic fibrosis can expect to live until about the age of 40 years.

FALSE

159. Being male, Barrack has only one X chromosome. There is some evidence that night blindness runs in his family. Barrack may be more likely to have night blindness because he has only one X chromosome.

TRUE

160. Two-month old Jasmine has phenylketonuria (PKU). If she is put on a special diet low in phenylalanine, she will develop normally.

TRUE

161. Kurt has suffered from depression all of his adult life. There is no evidence to support the idea that Kurt's depression has a genetic basis.

FALSE

162. The field of biology that studies heredity is called _____.

genetics

163. Typical human cells contain 46 _____, organized into 23 pairs.

chromosomes

164. _____ takes the form of a double spiral, or helix, similar to a twisting ladder.

DNA *or*
Deoxyribonucleic acid

165. _____ is the process of duplicating identical cells.

Mitosis

166. _____ produces ova ('egg') and sperm cells.

Meiosis

167. Twins created from one egg are called _____.

monozygotic

168. Each member of a pair of genes is termed a(n) _____.

allele

169. When someone has both alleles for the same trait, the person is considered _____ for that trait.

homozygous

170. Brown eyes are considered to be a _____ trait.

dominant

171. Diabetes mellitus, epilepsy, and peptic ulcers are _____ problems.

multifactorial

172. _____ is usually caused by an extra chromosome on the 21st pair.

Down syndrome

173. Males who have an extra X chromosome have _____ syndrome.

Klinefelter

174. Approximately 1 girl in 2,500 has a single X chromosome and as a result develops _____ syndrome.

Turner

175. Children with _____ cannot metabolize an amino acid called phenylalanine, so it builds up in their bodies and impairs the functioning of the central nervous system.

PKU

176. _____ is caused by a dominant trait and is often not identified until middle adulthood.

Huntington's disease

177. Some of the physical problems caused by _____ include painful and swollen joints, jaundice, and potentially fatal conditions such as pneumonia, stroke, and heart and kidney failure.

sickle-cell anemia

178. _____ causes the central nervous system to degenerate and is most commonly found among children in Jewish families of Eastern European background.

Tay-Sachs disease

179. Hemophilia is an example of a _____ disorder.

sex-linked genetic abnormality

180. Amniocentesis is usually performed between _____ weeks after conception.

14-16

181. Health professionals can use _____, sound waves that are too high in frequency to be heard by the human ear, to detect physical abnormalities during pregnancy.

ultrasound

182. The _____ is used to detect neural tube defects such as spina bifida and certain chromosomal abnormalities.

alpha-fetoprotein (AFP) assay *or*
AFP assay *or*
alpha-fetoprotein assay

183. The actual set of traits we exhibit is called our _____.

phenotype

184. Parents and children have a _____ percent overlap of genetic endowments.

50

185. _____ twins more closely resemble each other than do dizygotic twins.

Monozygotic

186. _____ is the union of an egg and sperm cells.

Conception

187. _____ occurs when fertilization of an egg has not occurred.

Menstruation

188. More _____ are conceived than _____, although more _____ survive infancy.

boys, girls, girls

189. _____ is the most common cause of infertility for men.

Low sperm count

190. For women, the most common cause of infertility is _____.

lack of ovulation

191. The sperm are injected into the woman's uterus at the time of ovulation in the process of _____.

artificial insemination

192. _____ means resulting from many genes.

Polygenic

193. _____ is the process for selecting the sex of a child.

Preimplantation genetic diagnosis (PGD) *or*
Preimplantation genetic diagnosis *or*
PGD

194. _____ bring babies to term for other woman who are infertile.

Surrogate mothers

195. _____ usually results in the formation of loving families.

Adoption

196. "Test-tube babies" are conceived through a process known as _____.

in vitro fertilization (IVF) *or*
in vitro fertilization *or*
IVF

197. If a woman cannot produce ova and she uses the ovum of another woman, this process is known as _____.

Donor IVF

198. _____ are infections that may scar the fallopian tubes and impede the passage of sperm or ova.

Pelvic inflammatory disease (PID) *or*
PID *or*
Pelvic inflammatory disease

199. _____, a sloughing off of the lining of the uterus, is fairly common among women who delay childbearing.

Endometriosis

200. An infertile man may have a(n) _____, in which his body attacks his own sperm as foreign agents.

autoimmune response

201. Infertility turns out to be the problem of the man in _____ percent of cases.

40

202. Of all the sperm swimming around the egg, only _____ enters.

one

203. Approximately _____ are conceived for every 100 girls.

120 to 150

204. Sperm reach the fallopian tubes _____ minutes after ejaculation.

60 to 90

205. A(n) _____ exists when a child's genotype is connected with behaviors that evoke, or elicit, certain kinds of responses from others.

evocative genetic-environmental correlation

206. Parents' intentional and unintentionally placement of their children into certain environments is known as a(n) _____.

passive genetic-environmental correlation

207. An intelligent, highly motivated child seeking out activities that interest her, is an example of _____.

active genetic-environmental correlation

208. Self-selecting activities that allow us to develop inherited preferences is termed _____.

niche-picking

209. Infant motor development is _____, to the extent that its sequence from one child to the next is unchanging.

canalized

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

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 things can be minimized and/or avoided. If the person is really worried, she may want to consider genetic counseling to see if there are serious disorders she might want to be aware of. Additionally, however, it should be acknowledged that genetic screening procedures do 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.

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

Meiosis is also referred to as "reduction division." This means that 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, 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, these cells, when they divide, are identical to the cells that divided to form them. Cloning results from mitosis. Because the newly formed cells are "replications" of the preceding cell, there is no genetic variability.

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

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

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

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 done in mothers over the age of 35 because of increased risk for disorders such as Down syndrome. Additionally, this procedure may be recommended in cases where there is a familial history for diseases such as Tay-Sachs, muscular dystrophy, or Rh incompatibility.

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

Genotype refers to the genetic material that is received from one's parents. Characteristics such as blood type and eye color, 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.

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

For males, the primary fertility problems include low sperm count, deformed and low sperm motility, and chronic diseases such as diabetes. For females, the primary fertility problems are irregular ovulation, declining hormones levels, endometriosis, and obstructions or malfunctions of the reproductive tract. The problems have genetic and environmental causes, such as overheating and pressure on the testes, aging, drug use, and bacterial or viral infections.

216. Describe two examples of recessive genetic disorders.

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

217. How does studying monozygotic and dizygotic twins help one understand the genetic basis for a trait or behavior?

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 behaviors, such as temperament, intelligence, personality, and so forth. When monozygotic twins have very different characteristics, there is a greater likelihood that genetics are not involved or at least are less involved in the development process. It is not always possible to determine whether something is genetically determined, however, since monozygotic twins often are treated in very similar ways since they appear to be so similar.

218. Describe two different methods of helping infertile couples.

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, the ova are actually from a donor, if the woman is unable to release her own viable eggs. Surrogate mothers are also used by some infertile couples. The surrogate mother may either use her own ova or those of another woman and the sperm of the biological father or another donor and then carry the resulting baby to term. Surrogate mothers are often compensated for their time and effort.

219. Describe the process by which one could select the sex of a child.

One could select the sex of a child prior through the process of preimplantation genetic diagnosis (PGD). In PGD, ova are fertilized in vitro. After a few days of cell division, a cell is extracted from each fertilized ova and its sex chromosomal structure examined microscopically to learn of its sex. Embryos of the desired sex are implanted in the woman's uterus, where one or more can grow to term. However, implantation cannot be guaranteed.