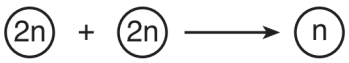
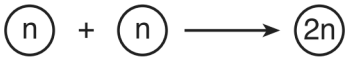
REPRODUCTION & DEVELOPMENT PRACTICE QUESTIONS-Student Copy

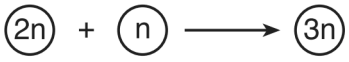
Name: _____ **Date:** _____

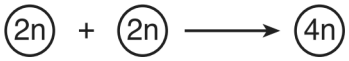
1. Which diagram correctly represents a step in the normal process of human reproduction?

Key	
(2n)	= total genetic material of a human cell
(n)	= one half of the total genetic material of a human cell

(1) 

(2) 

(3) 

(4) 

2. Which situation would be part of the normal reproductive cycle of a human?

(1) the presence of testosterone regulating gamete production in a male

(2) estrogen in concentrations that would produce sperm in a female

(3) a high progesterone level in a male

(4) a low insulin level in either a male or a female

3. Which statement describes a function of the human male reproductive system?

(1) It produces gametes in testes.

(2) It supplies a fluid that protects the fetus.

(3) It provides support for the development of the embryo.

(4) It provides nutrient materials through a placenta.

4. The data in the table below indicate the presence of specific reproductive hormones in blood samples taken from three individuals. An *X* in the hormone column indicates a positive lab test for the appropriate levels necessary for normal reproductive functioning in that individual.

Data Table

Individuals	Hormones Present		
	Testosterone	Progesterone	Estrogen
1		X	X
2			X
3	X		

Which processes could occur in individual 3?

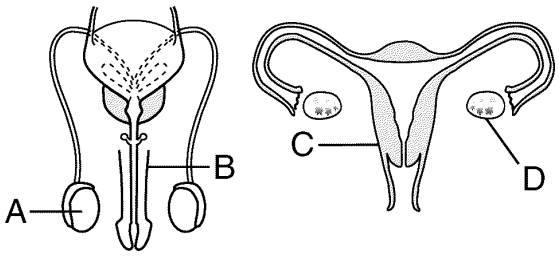
(1) production of sperm, only

(2) production of sperm and production of eggs

(3) production of eggs and embryonic development

(4) production of eggs, only

5. The diagram below represents human reproductive systems.



Which statement best describes part of the human reproductive process?

(1) Testosterone produced in *A* is transferred to *D*, where it influences embryonic development.

(2) Testosterone produced in *D* influences formation of sperm within *B*.

(3) Estrogen and progesterone influence the activity of *C*.

(4) Progesterone stimulates the division of the egg within *C*.

6. The reproductive cycle of a human is usually regulated by

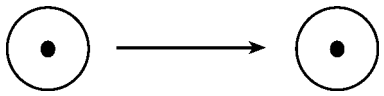
(1) gametes

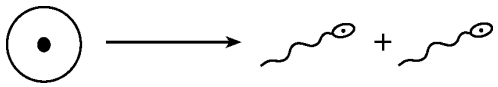
(2) hormones

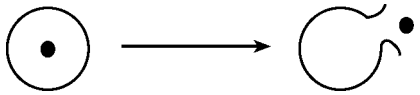
(3) natural selection

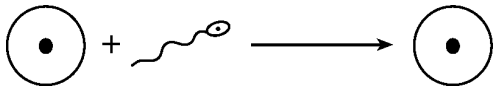
(4) immune responses

7. Which diagram best illustrates an event in sexual reproduction that would most directly lead to the formation of a human embryo?

(1) 

(2) 

(3) 

(4) 

8. The human reproductive system is regulated by

(1) restriction enzymes

(2) antigens

(3) complex carbohydrates

(4) hormones

9. Reproduction in humans usually requires

(1) the process of cloning

(2) mitotic cell division of gametes

(3) gametes with chromosomes that are not paired

(4) the external fertilization of sex cells

10. One function of the placenta in a human is to

(1) surround the embryo and protect it from shock

(2) allow for mixing of maternal blood with fetal blood

(3) act as the heart of the fetus, pumping blood until the fetus is born

(4) permit passage of nutrients and oxygen from the mother to the fetus

11. Human egg cells are most similar to human sperm cells in their

(1) degree of motility

(2) amount of stored food

(3) chromosome number

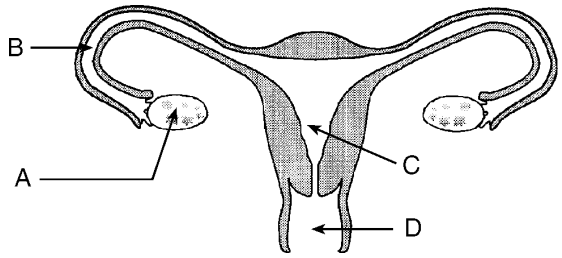
(4) shape and size

12. Within which structure in the human body does specialization of parts of the developing baby take place?

(1) ovary (2) uterus

(3) testis (4) pancreas

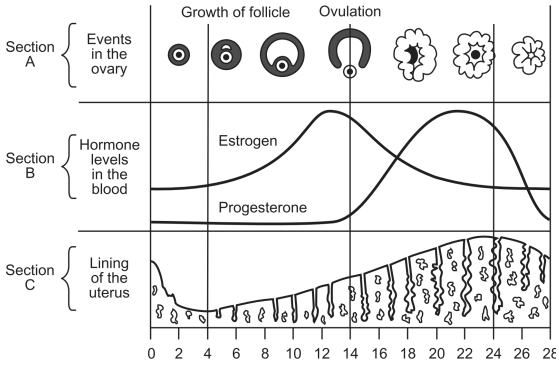
13. The accompanying diagram shows the human female reproductive system.



The fetus normally develops within structure

(1) *A* (2) *B* (3) *C* (4) *D*

14. Base your answer(s) to the following question(s) on the graph below and on your knowledge of biology. The graph shows some events associated with the reproductive cycle of human females.



Days of Menstrual Cycle

Which sections of the graph represent structures affected directly by the hormones shown?

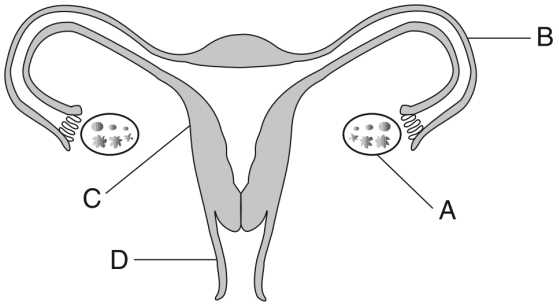
(1) section *A* and section *B*, only

(2) section *B* and section *C*, only

(3) section *A* and section *C*, only

(4) section *A*, section *B*, and section *C*

15. Base your answer(s) to the following question(s) on the diagram below and on your knowledge of biology. The diagram represents the human female reproductive system.



The placenta forms from the combination of fetal tissue and tissue from structure

(1) A (2) B (3) C (4) D

16. Structure A usually produces

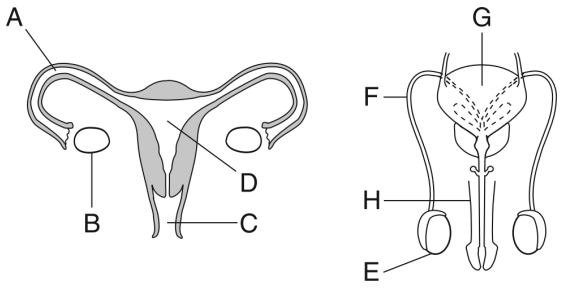
(1) sperm and eggs

(2) testosterone and eggs

(3) estrogen, progesterone, and eggs

(4) estrogen, progesterone, and testosterone

17. Base your answer(s) to the following question(s) on the diagram below and on your knowledge of biology. The diagram represents the reproductive systems of the human female and male.



In which structure do gametes usually unite to produce a zygote?

(1) A (2) G (3) C (4) F

18. Which reproductive structure is correctly paired with its function?

(1) uterus—usual site of fertilization

(2) testis—usual location for egg development

(3) ovary—delivers nutrients to the embryo

(4) sperm—transports genetic material

19. Estrogen has a direct effect on the

(1) formation of a zygote

(2) changes within the uterus

(3) movement of an egg toward the sperm

(4) development of a placenta within the ovary

20. Removal of one ovary from a human female would most likely

(1) affect the production of eggs

(2) make fertilization impossible

(3) make carrying a fetus impossible

(4) decrease her ability to provide essential nutrients to an embryo

21. Which substance usually passes in the greatest amount through the placenta from the blood of the fetus to the blood of the mother?

(1) oxygen (2) carbon dioxide

(3) amino acids (4) glucose

22. The human female reproductive system is adapted for

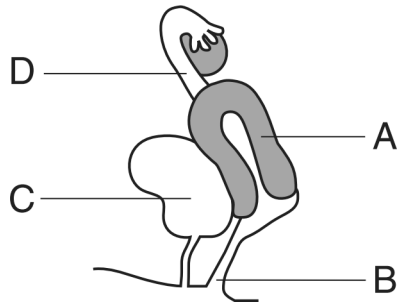
(1) production of zygotes in ovaries

(2) external fertilization of gametes

(3) production of milk for a developing embryo

(4) transport of oxygen through a placenta to a fetus

23. The letters in the diagram below represent structures in a human female.



Estrogen and progesterone increase the chance for successful fetal development by regulating activities within structure

(1) A (2) B (3) C (4) D

24. Which statement describes one function of the placenta in mammals?

(1) It allows blood of the mother to mix with the blood of the fetus.

(2) It contains fluid that protects the embryo from harm.

(3) It removes waste products that are produced in the cells of the fetus.

(4) It synthesizes food for the embryo.

25. As women age, their reproductive cycles stop due to decreased

(1) digestive enzyme production

(2) production of ATP

(3) levels of specific hormones

(4) heart rate

26. Which hormones most directly influence the uterus during pregnancy?

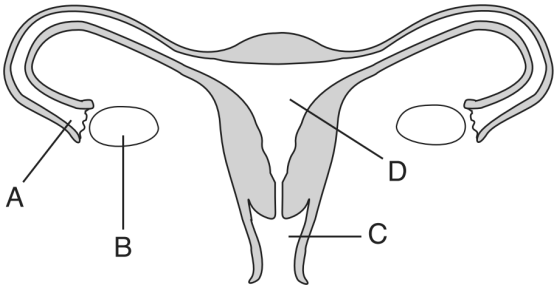
(1) testosterone and insulin

(2) progesterone and testosterone

(3) estrogen and insulin

(4) progesterone and estrogen

27. The diagram below represents the human female reproductive system.



Exposure to radiation or certain chemicals could alter the genetic information in the gametes that form in structure

(1) *A* (2) *B* (3) *C* (4) *D*

28. Testosterone directly affects the

(1) formation of a zygote

(2) changes within an ovary

(3) production of sperm cells

(4) development of a placenta

29. The reproductive system of a male mammal provides

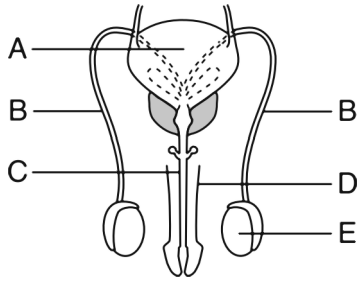
(1) support for the internal development of the embryo

(2) materials through the placenta

(3) a means for the delivery of gametes

(4) the ovaries for gamete production

30. Base your answer(s) to the following question(s) on the diagram below and on your knowledge of biology.The letters in the diagram indicate structures present in a human male.



What change would occur immediately if both structures labeled B were damaged or blocked?

(1) Structure A would decrease in size.

(2) The blood supply to structure E would decrease.

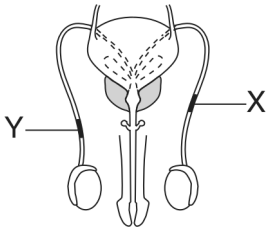
(3) Gametes would no longer be transported to structure C.

(4) Structure D would be able to deliver more gametes.

31. Which structure produces the male hormone responsible for characteristics such as muscle development, deep voice, and gamete production?

(1) A (2) B (3) E (4) D

32. The diagram below represents the human male reproductive system.



Which activity would be prevented by blockages at X and Y?

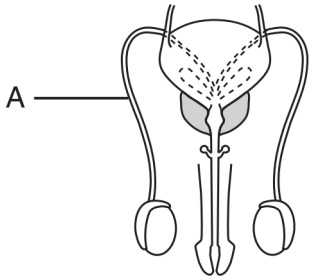
(1) transport of urine out of the body

(2) passage of testosterone to the female to stimulate egg production

(3) movement of sperm out of the body

(4) movement of testosterone to the testes to stimulate sperm production

33. A reproductive system is represented in the diagram below.



If an injury occurred to the structure labeled A, the most likely result would be a problem with

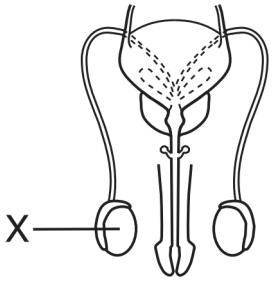
(1) delivery of sperm

(2) production of gametes

(3) production of hormones

(4) excretion of urine

34. The diagram below represents a system in the human body.



The primary function of structure *X* is to

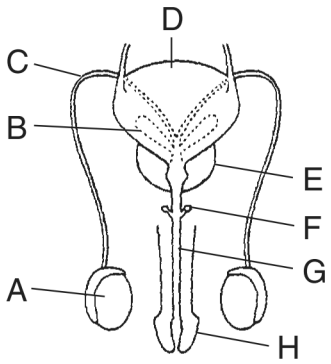
(1) produce energy needed for sperm to move

(2) provide food for the sperm to carry to the egg

(3) produce and store urine

(4) form gametes that may be involved in fertilization

35. Base your answer(s) to the following question(s) on the diagram below, which represents systems in a human male and on your knowledge of biology.



Which structure has both reproductive and excretory functions?

(1) *A* (2) *G* (3) *C* (4) *D*

36. Which structures aid in the transport of sperm by secreting fluid?

(1) *A* and *H* (2) *B* and *E*

(3) *C* and *D* (4) *D* and *H*

37. Which sequence represents the path of sperm leaving the body?

(1) A → C → G (2) A → C → B

(3) E → F → H (4) D → F → G

38. When a pregnant woman ingests toxins such as alcohol and nicotine, the embryo is put at risk because these toxins can

(1) diffuse from the mother's blood into the embryo's blood within the placenta

(2) enter the embryo when it eats

(3) transfer to the embryo since the mother's blood normally mixes with the embryo's blood in the placenta

(4) enter the uterus through the mother's navel

39. During the last months of pregnancy, the brain of a human embryo undergoes an essential "growth spurt." Which action by the mother would most likely pose the greatest threat to the normal development of the nervous system of the embryo at this time?

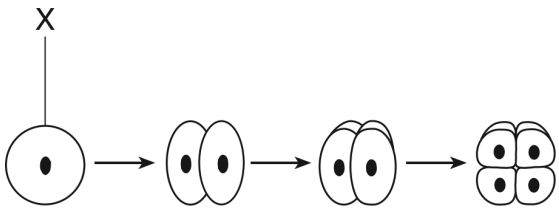
(1) spraying pesticides in the garden

(2) taking prescribed vitamins on a daily basis

(3) maintaining a diet high in fiber and low in fat

(4) not exercising

40. The diagram below represents some stages that occur in the formation of an embryo.



Which statement best describes stage X?

(1) Stage *X* is a zygote and contains half the number of chromosomes as the body cells of the parents.

(2) Stage *X* is formed by the process of meiosis and is known as a gamete.

(3) Stage *X* is a zygote and is formed as a result of the process of fertilization.

(4) Stage *X* is formed by mitosis and is known as an egg cell.

41. The major function of the placenta is to

(1) cushion the fetus so it won't be hurt when the mother moves

(2) exchange food, oxygen, and waste between mother and fetus

(3) store food for the fetus

(4) support the egg for the process of fertilization

42. Exposure to toxins during early stages of pregnancy is more likely to cause birth defects than exposure in late pregnancy because

(1) essential organs form during early development

(2) the uterus provides more protection in late pregnancy

(3) the placenta forms during late pregnancy

(4) meiosis occurs rapidly during early development

43. The drinking of alcoholic beverages by a pregnant woman is harmful to the development of her fetus. This is most damaging early in a pregnancy because during this time

(1) the lungs of the fetus become functional

(2) alcohol can easily enter the mouth of the fetus

(3) many of the essential organs of the fetus are forming

(4) the fetus cannot excrete wastes

44. Abnormalities present in the cells that line the uterus may prevent the production of offspring by directly interfering with the

(1) development of the embryo

(2) differentiation of gametes into zygotes

(3) secretion of estrogen by the ovary

(4) production and release of egg cells

45. In most mammals, the placenta is essential to the embryo for the processes of

(1) meiosis and excretion

(2) nutrition and excretion

(3) milk production and digestion

(4) blood exchange and digestion

46. Base your answer(s) to the following question(s) on the information and data tables below and on your knowledge of biology. Use one or more complete sentences to answer each question.

Drinking alcohol during pregnancy can cause the class of birth defect known as fetal alcohol syndrome (FAS). Scientists do not yet understand the process by which alcohol causes damage to the fetus. There is evidence, however, that the more a pregnant woman drinks, the greater the chances that the child will be affected and the birth defects will be serious. Some evidence indicated that even low levels of alcohol consumption can cause intellectual and behavioral problems.

Infant Characteristics

Characteristics (Average)	Alcohol Use During Pregnancy	
	Drinker	Nondrinker
Weeks of development before birth	36.9	38.7
Birth weight (g)	2,555	3,094
Birth length (cm)	46.8	50.1
Head circumference (cm)	32.1	34.5

Physical Abnormalities Detected in Infants at Birth

Physical Abnormalities	Alcohol Use During Pregnancy	
	Drinker (Percentage of 40 Infants)	Nondrinker (Percentage of 80 Infants)
Low birth weight	73	12
Small brain	33	0
Flattened nasal bridge	8	0
Abnormal facial features	15	0
Spinal defects	8	0
Heart defects	8	0

Explain why alcohol consumption by the mother is especially harmful during the early stages of pregnancy.

47. Base your answer to the following question(s) on the information below and on your knowledge of biology.

The Critical Role of the Placenta

The proper functioning of the placenta is critical to the growth and development of a healthy fetus. For example, the placenta appears to act as a nutrient sensor. It regulates the amounts and types of nutrients that are transported from the mother to the fetus.

Improper functioning of the placenta can alter the structure and function of specific cells and organ systems in the developing fetus, putting it at risk for health problems as an adult. For example, in some pregnancies, the placenta develops a resistance to blood flow. This resistance appears to force the heart of the fetus to work harder. This could result in an increased chance of the individual developing heart disease as an adult. A group of hormones known as glucocorticoids affects the development of all the tissues and organ systems. One of the things this group of hormones does is to alter cell function by changing the structure of cell membrane receptors.

Discuss the importance of the placenta in the development of a healthy fetus. In your answer, be sure to:

- identify *two* factors that could influence the nutrients that can pass from the mother to the fetus
- identify the group of hormones that alter cell membrane receptors and explain how this alteration can affect cell function
- state the role of the uterus in the development of the fetus and the placenta

48. Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

> Smokers are passing down problems to future generations. Men who smoke and drink alcohol could be endangering the health of their future children and grandchildren. Toxic chemicals in cigarettes and alcohol are thought to cause changes in the DNA, which are passed down via the sperm to future generations.
>
> Source: *Associate Newspapers Ltd., Mail Online Health*, Fiona Macrae, February 9, 2008

Explain how smoking and drinking alcohol by males can affect the development of an embryo. In your answer, be sure to:

- identify the term used to describe a change in DNA
- state why changes that take place in a sperm cell can affect an embryo
- identify *one* factor, other than smoking and drinking alcohol, that may *negatively* affect a developing embryo

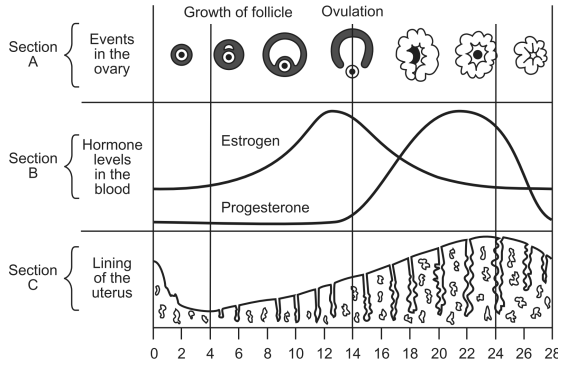
49. The tranquilizer thalidomide was once prescribed for pregnant women. When this drug was used between the third and sixth week after fertilization, serious deformities in the fetus occurred as the fetus developed. State why thalidomide would have a greater effect on development when used between weeks 3 and 6 than when used in late pregnancy.

50. Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

Human reproduction is influenced by many different factors.

Identify one reproductive hormone and state the role it plays in reproduction.

51. Base your answer(s) to the following question(s) on the graph below and on your knowledge of biology. The graph shows some events associated with the reproductive cycle of human females.



Days of Menstrual Cycle

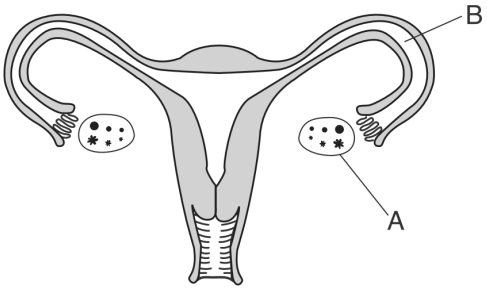
Identify another human reproductive hormone that is *not* shown on this graph.

52. Which section of the graph shows the location where the zygote would most likely become implanted and develop?

53. According to the graph, on which day is the egg released from the ovary?

54. Base your answer(s) to the following question(s) on the information and diagram below and on your knowledge of biology.

Endometriosis is a condition that occurs in some women, causing multiple cells or layers of cells to grow outside of the uterus. In some cases, these growths can actually cover the entire ovary or cause the tube leading from the ovary to the uterus to be blocked. The diagram below represents the female reproductive system. Two structures, A and B, are labeled.



Select structure *A* or *B* and indicate your selection on the line below. Describe specifically how the growths that are characteristic of endometriosis at the location you selected could affect the ability of a female to become pregnant.

Structure: