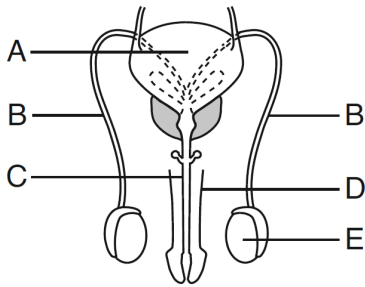


Regents Review: General Reproduction

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

- A) **the presence of testosterone regulating gamete production in a male**
- B) estrogen in concentrations that would produce sperm in a female
- C) a high progesterone level in a male
- D) a low insulin level in either a male or a female

Base your answers to questions 2 and 3 on the diagram below and on your knowledge of biology. The letters in the diagram indicate structures present in a human male.



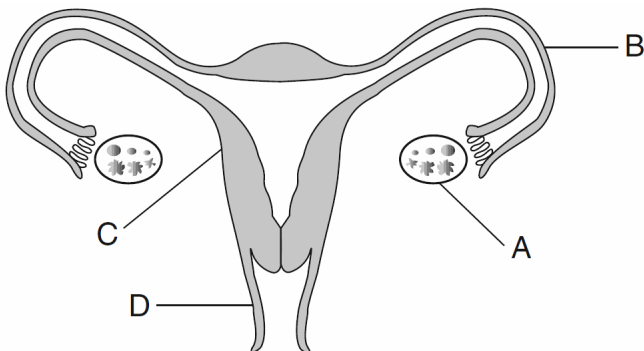
2. What change would occur immediately if both structures labeled *B* were damaged or blocked?

- A) Structure *A* would decrease in size.
- B) The blood supply to structure *E* would decrease.
- C) **Gametes would no longer be transported to structure *C*.**
- D) Structure *D* would be able to deliver more gametes.

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

- A) *A* B) *B* C) *E* D) *D*

Base your answers to questions 4 and 5 on the diagram below and on your knowledge of biology. The diagram represents the human female reproductive system.



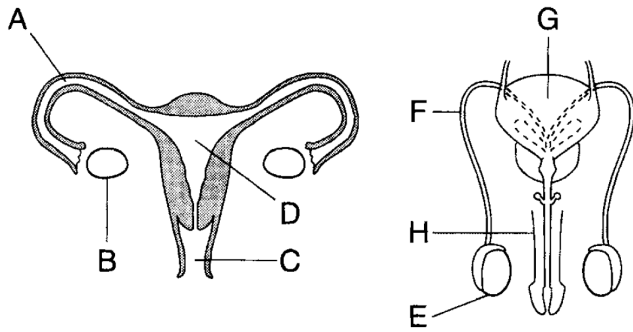
4. The placenta forms from the combination of fetal tissue and tissue from structure

- A) *A* B) *B* C) *C* D) *D*

5. Structure *A* usually produces

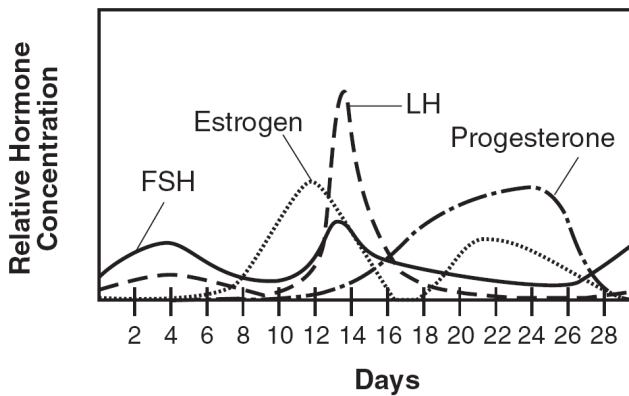
- A) sperm and eggs
- B) testosterone and eggs
- C) **estrogen, progesterone, and eggs**
- D) estrogen, progesterone, and testosterone

Base your answers to questions 6 and 7 on the diagram below and on your knowledge of biology. The diagram represents the reproductive systems of the human female and male.



6. In which structure do gametes usually unite to produce a zygote?
 A) *A* B) *G* C) *C* D) *F*
7. In which structure would both mitosis and differentiation of an embryo occur?
 A) *G* B) *B* C) *E* D) *D*

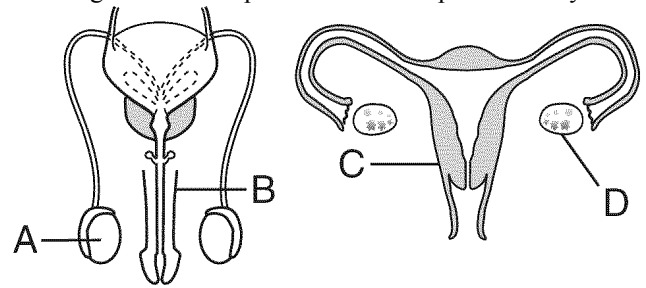
8. Some chemical interactions in a human are shown in the graph below.



This graph represents hormones and events in the

- A) process of fetal growth and development
 B) process of meiotic cell division during sperm development
 C) reproductive cycle of males
D) reproductive cycle of females
9. As women age, their reproductive cycles stop due to decreased
 A) digestive enzyme production
 B) production of ATP
C) levels of specific hormones
 D) heart rate

10. The diagram below represents human reproductive systems.



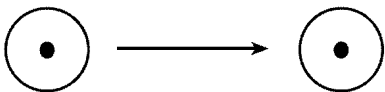
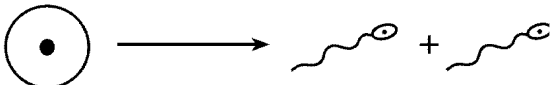
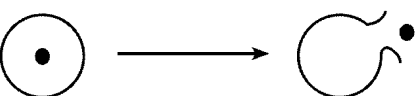
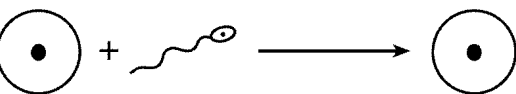
Which statement best describes part of the human reproductive process?

- A) Testosterone produced in *A* is transferred to *D*, where it influences embryonic development.
 B) Testosterone produced in *D* influences formation of sperm within *B*.
C) Estrogen and progesterone influence the activity of *C*.
 D) Progesterone stimulates the division of the egg within *C*.
11. Estrogen has a direct effect on the
 A) formation of a zygote
B) changes within the uterus
 C) movement of an egg toward the sperm
 D) development of a placenta within the ovary
12. The reproductive cycle of a human is usually regulated by
 A) sex cells **B) hormones**
 C) natural selection D) immune responses

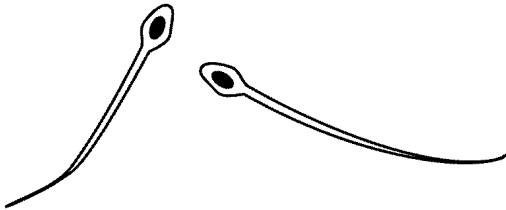
13. A large number of sperm cells are produced by males every day. This large number of sperm cells increases the chance that

- A) at least one sperm cell will be reached when the eggs swim toward the sperm cells in the ovary
- B) several sperm cells will unite with an egg so the fertilized egg will develop properly
- C) **some of the sperm cells will survive to reach the egg**
- D) enough sperm cells will be present to transport the egg from where it is produced to where it develops into a fetus

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

- A) 
- B) 
- C) 
- D) 

15. Which statement about the gametes represented in the diagram below is correct?

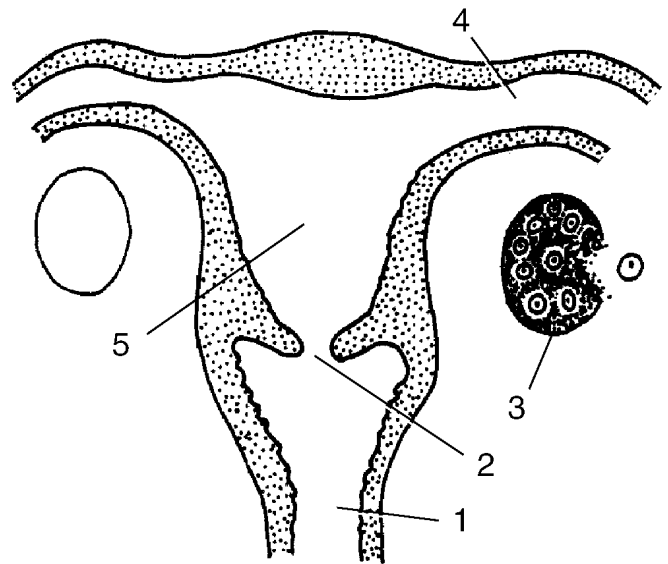


- A) They are produced by females.
- B) They are fertilized in an ovary.
- C) **They transport genetic material.**
- D) They are produced by mitosis.

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

- A) method of movement
- B) amount of stored food
- C) **chromosome number**
- D) shape and size

17. The diagram below represents part of the human female reproductive system.



Fertilization and development normally occur in structures

- A) 1 and 5
- B) 2 and 4
- C) 3 and 1
- D) **4 and 5**

18. Identical twins develop from

- A) **one egg, fertilized by one sperm cell**
- B) one egg, fertilized by two separate sperm cells
- C) two eggs, both fertilized by the same sperm cell
- D) two eggs, each fertilized by a separate sperm cell

19. Which event would most probably result in the production of fraternal twins?

- A) One egg is fertilized by two sperm cells.
- B) Two egg cells are fertilized by one sperm cell.
- C) **Two egg cells are each fertilized by separate sperm cells.**
- D) Two eggs develop without fertilization.

20. In humans, the number of sperm cells required to produce a pair of identical twins is

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

21. Identical twins develop from

- A) two zygotes that fuse during cleavage
- B) two eggs fertilized by one sperm cell
- C) one egg fertilized by two sperm cells
- D) **one zygote that divides into two parts**

22. The major function of the placenta is to

- A) cushion the fetus so it won't be hurt when the mother moves
- B) **exchange food, oxygen, and waste between mother and fetus**
- C) store food for the fetus
- D) support the egg for the process of fertilization

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

- A) **essential organs form during early development**
- B) the uterus provides more protection in late pregnancy
- C) the placenta forms during late pregnancy
- D) meiosis occurs rapidly during early development

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

- A) **development of the embryo**
- B) differentiation of gametes into zygotes
- C) secretion of estrogen by the ovary
- D) production and release of egg cells

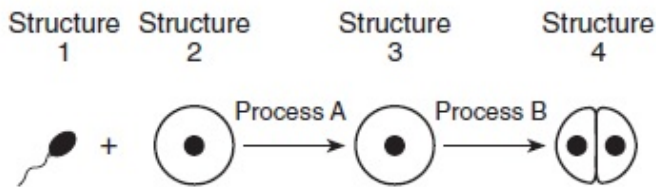
25. The drinking of alcoholic beverages by a pregnant woman is harmful to the development of her fetus. This is most damaging early in a pregnancy because during this time

- A) the lungs of the fetus become functional
- B) alcohol can easily enter the mouth of the fetus
- C) **many of the essential organs of the fetus are forming**
- D) the fetus cannot excrete wastes

26. All the information necessary for growth, development, and eventual reproduction of sexually reproducing organisms is present in

- A) sperm cells, only
- B) egg cells, only
- C) **zygotes**
- D) either sperm cells or egg cells

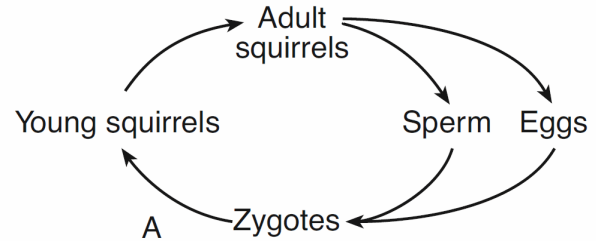
27. The diagram below represents some processes in the early development of a multicellular organism.



Which statement describing this diagram is correct?

- A) The cell represented by structure 3 has the same genetic content as structure 2.
- B) Process *A* represents the process of meiosis.
- C) **Each cell in structure 4 has the same genetic content as that in structure 3.**
- D) Processes *A* and *B* both occur in the placenta.

28. Base your answer to the following question on the diagram below and on your knowledge of biology. The diagram represents the reproductive cycle of a squirrel species with 40 chromosomes in each zygote.



A liver cell in this species of squirrel would have

- A) 20 chromosomes
- B) **40 chromosomes**
- C) 60 chromosomes
- D) 80 chromosomes

29. A cell resulting from the fertilization of an egg begins to divide. Two cells are formed that normally remain attached and could develop into a new individual. If the two cells become separated, which statement describes what would most likely occur?

- A) **The cells would each have all of the needed genetic information, and both could survive.**
- B) The cells would each have only one-half of the needed genetic information, so both would die.
- C) One cell would have all of the needed genetic information and would survive, but the other would have none of the needed genetic information and would die.
- D) Each cell would have some of the needed genetic information, but would be unable to share it, so both would die.

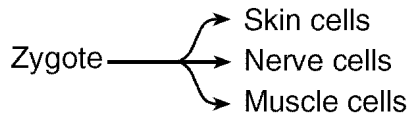
30. Cells that develop from a single zygote all contain identical DNA molecules. However, some of these cells will develop differently because

- A) **different groups of cells containing the DNA may be exposed to different environmental conditions**
- B) only the DNA in certain cells will replicate
- C) some of the DNA in some of the cells will be removed by chemical reactions
- D) DNA is functional in only 10% of the cells of the body

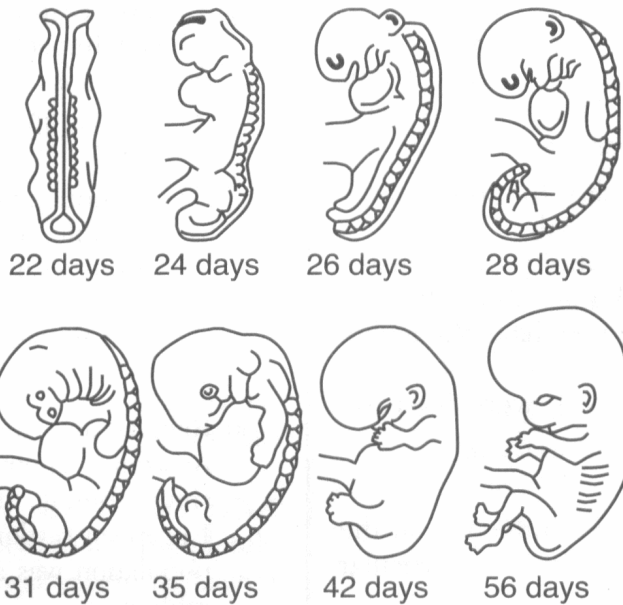
31. Although all of the cells of a human develop from one fertilized egg, the human is born with many different types of cells. Which statement best explains this observation?

- A) **Developing cells may express different parts of their identical genetic instructions.**
- B) Mutations occur during development as a result of environmental conditions.
- C) All cells have different genetic material.
- D) Some cells develop before other cells.

32. Which developmental process is represented by the diagram below?



- A) fertilization **B) differentiation**
 C) evolution D) mutation
33. Which expression correctly represents a reproductive process that usually occurs in humans where $2n$ is equal to the number of chromosomes in each body cell?
- A) $n + n \rightarrow n$ **B) $n + n \rightarrow 2n$**
 C) $n + 2n \rightarrow 2n$ D) $2n + 2n \rightarrow 4n$
34. The development of an embryo is represented in the diagram below.



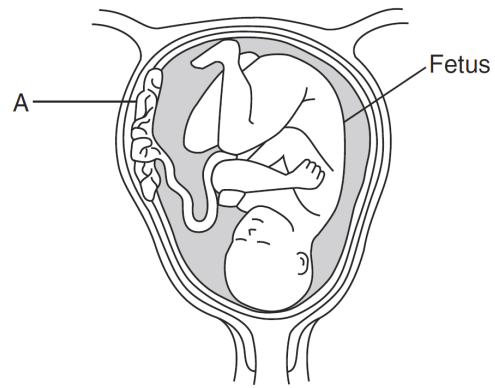
(Not drawn to scale)

- These changes in the form of the embryo are a direct result of
- A) uncontrolled cell division and mutations
B) differentiation and growth
 C) antibodies and antigens inherited from the father
 D) meiosis and fertilization
35. Some stages in the development of an individual are listed below.
- (A) differentiation of cells into tissues
 (B) fertilization of egg by sperm
 (C) organ development
 (D) mitotic cell division of zygote

Which sequence represents the correct order of these stages?

- A) $A-B-C-D$ B) $B-C-A-D$
 C) $D-B-C-A$ **D) $B-D-A-C$**

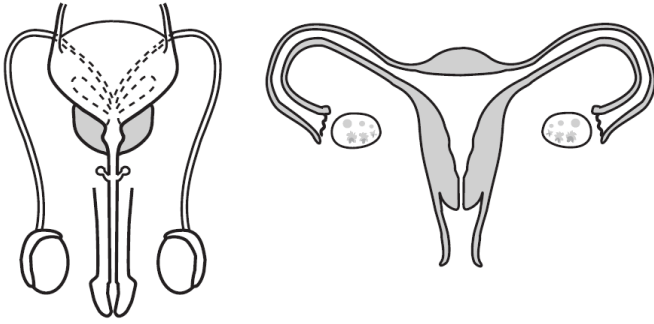
36. The diagram below represents one stage during the human reproductive process.



A function of structure A is to

- A) remove nutrients from the fetus
 B) provide the fetus with metabolic wastes
 C) remove all toxins from the blood of the mother
D) provide for the exchange of oxygen and carbon dioxide
37. Kangaroos are mammals that lack a placenta. Therefore, they must have an alternate way of supplying the developing embryo with
- A) **nutrients** B) carbon dioxide
 C) enzymes D) genetic information
38. The structure that makes nutrients most directly available to a human embryo is the
- A) gamete B) ovary
 C) stomach **D) placenta**
39. The primary function of the human male reproductive system is to
- A) provide a site for fertilization
B) produce and transport gametes
 C) protect and nourish the embryo
 D) prevent urine from leaving the body
40. One function of the male reproductive system in mammals is to
- A) produce insulin necessary for sexual reproduction
 B) transport eggs necessary for fertilization
C) allow for delivery of gametes needed for reproduction
 D) provide protection for the developing zygote

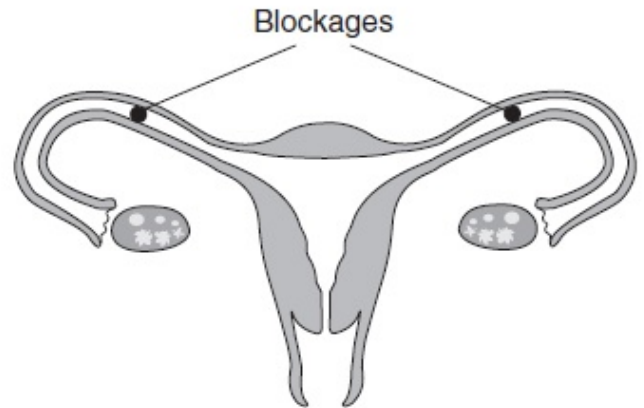
41. The diagrams below represent a human organ system.



The major function of the system is to

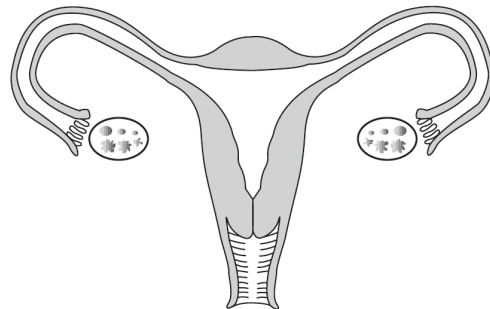
- A) provide immunity essential for the survival of each individual in a population
 - B) provide cells that are necessary for the survival of the species**
 - C) produce chemical messages that are necessary for nerve cell development
 - D) control the passage of nutrients into and out of a developing fetus
42. The inability of sperm cells to move normally could prevent the production of offspring by interfering with
- A) meiosis
 - B) mitosis
 - C) fertilization**
 - D) differentiation
43. Which structure is correctly paired with its function?
- A) ovary – provides milk for newborns
 - B) testis – development of sperm**
 - C) placenta – storage of released eggs
 - D) uterus – produces estrogen
44. Testosterone directly affects the
- A) formation of a zygote
 - B) changes within an ovary
 - C) production of sperm cells**
 - D) development of a placenta

45. Blockages caused by a condition known as Pelvic Inflammatory Disease (PID) are represented in the diagram of the female reproductive system below.



If blockages of this type occur, the most likely result would be that

- A) the egg would remain in the uterus and not travel upward
 - B) the female gamete would not be able to unite with the male gamete**
 - C) hormones could not be produced by the ovaries
 - D) the process of asexual reproduction would be prevented or interrupted
46. The reproductive cycle in females is regulated primarily by
- A) estrogen and testosterone
 - B) estrogen and progesterone**
 - C) progesterone and insulin
 - D) progesterone and testosterone
47. The diagram below represents part of a human reproductive system.



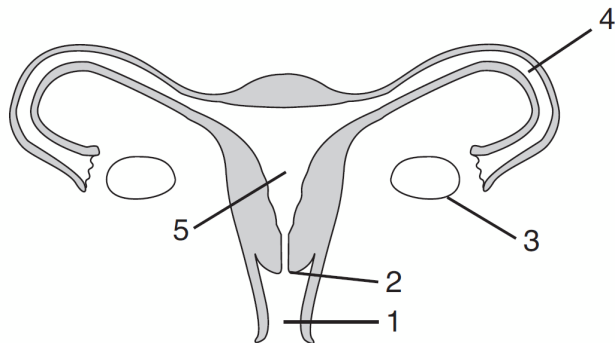
One of the functions of this part of the system is to

- A) supply essential nutrients to the offspring in the form of milk
- B) provide nutritional support for the embryo**
- C) provide a structure that allows the mixing of maternal and fetal blood
- D) produce specialized proteins used in the production and release of sperm

48. Essential materials needed for development are transported to a human fetus through the

- A) reproductive hormones B) egg cell
C) **placenta** D) ovaries

49. The human female reproductive system is represented in the diagram below.



Production of gametes and support of the fetus normally occur in structures

- A) 1 and 2 B) 2 and 4 C) **3 and 5** D) 4 and 5

50. Which structure is correctly paired with its function?

- A) testis — produces nutrients for the offspring
B) **placenta — allows nutrients to diffuse from the mother to the embryo**
C) uterus — produces testosterone used in egg production
D) ovary — provides a place for the internal development of the embryo

Base your answers to questions 51 through 53 on the stage of the human menstrual cycle, *chosen from the list below*, that is most closely associated with that statement.

Stages of the Human Menstrual Cycle

- (1) Follicle
(2) Ovulation
(3) Corpus luteum
(4) Menstruation

51. It usually will *not* occur if a zygote is formed during the cycle.

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

52. A mature egg is released.

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

53. It is characterized by a yellow-bodied structure that secretes the hormone progesterone.

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

54. The human menstrual cycle is controlled by hormones produced and secreted by the

- A) ovaries, only
B) uterus, only
C) **pituitary gland and ovaries**
D) pituitary gland and uterus

55. In a human female, what is the most direct result of the presence of the hormone FSH?

- A) production of the corpus luteum
B) **development of the ovarian follicle**
C) breakdown of the uterine lining
D) disintegration of the ovum

56. The material that flows from the human female reproductive tract during menstruation is produced by the breakdown of the lining of the

- A) ovary B) oviduct C) vagina D) **uterus**

57. Which processes lead to the greatest variety of genetic combinations?

- A) asexual reproduction and cloning
B) **meiosis and fertilization**
C) meiosis and mitosis
D) cloning and mitosis

58. Meiosis and fertilization are important processes because they may most immediately result in

- A) many body cells B) immune responses
C) **genetic variation** D) natural selection

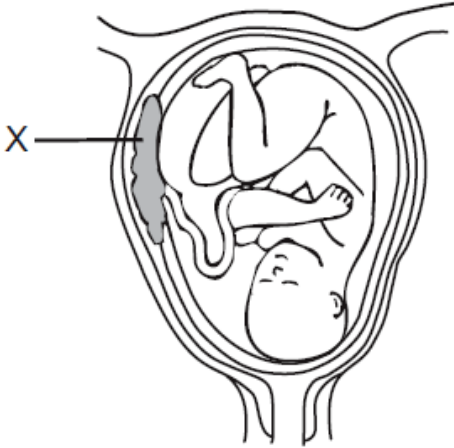
59. In humans, a sperm cell and an egg cell normally fuse in the upper portion of the

- A) cervix B) vagina
C) **oviduct** D) ovary

60. A woman gave birth to triplets, two identical girls and one boy. The number of egg cells involved would be

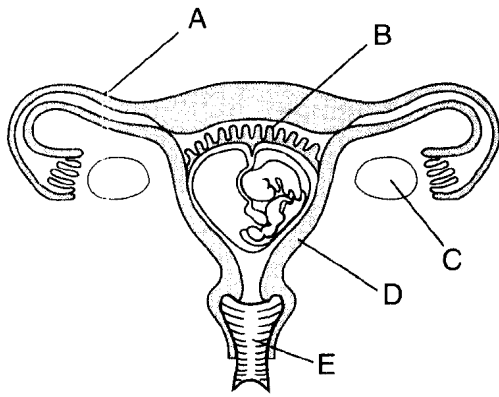
- A) 1 B) **2** C) 3 D) 4

61. The diagram below represents a stage in the development of a fetus.



- A major function of structure *X* is to
- A) produce gametes by meiosis
 - B) protect the fetus from physical injury
 - C) exchange materials between the mother and the fetus**
 - D) store food to provide the fetus with nutrients
62. In an embryo, the formation of many types of tissues and organs occurs as a result of the process of
- A) fertilization
 - B) genetic sorting
 - C) differentiation**
 - D) gene recombination
63. Occasionally, during pregnancy, the placenta can separate from the uterus. This causes a disruption in development and sometimes death of the fetus. Harm to the developing fetus might occur because the placenta
- A) transfers oxygen and nutrients to the fetal blood**
 - B) sends maternal blood into the fetus
 - C) supplies milk for the fetus
 - D) breaks down wastes of the fetus
64. Which situation involves a risk to a fetus due to the mother smoking during pregnancy?
- A) decreased digestive activity in the stomach of the fetus
 - B) a decrease in the amount of oxygen in the ovary of the mother
 - C) inhalation of secondhand smoke by the fetus
 - D) toxins in the bloodstream of the mother**

65. The human female reproductive system is represented in the diagram below.



Complete boxes 1 through 4 in the chart below using the information from the diagram.

Name of Structure	Letter on Diagram	Function of Structure
1 _____	2 _____	produces gametes
uterus	D	3 _____
4 _____	B	transports oxygen directly to the embryo

66. Identify *one* activity of a mother that can disrupt fetal development and explain how this activity might affect the development of her fetus.

Base your answers to questions 67 and 68 on the information below and on your knowledge of biology.

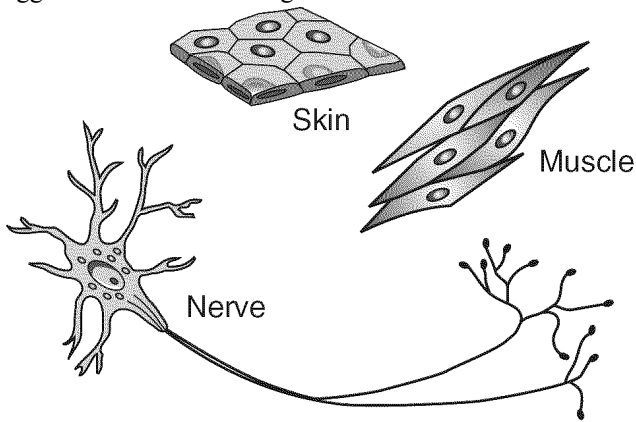
Human reproduction is influenced by many different factors.

67. Identify the structure in the uterus where the exchange of material between the mother and the developing fetus takes place.

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

69. Explain how harmful substances in the blood of a pregnant female can enter a fetus even though the blood vessels of the mother and fetus are *not* directly connected.

-
70. The types of human cells shown below are different from one another, even though they all originated from the same fertilized egg and contain the same genetic information.



Explain why these genetically identical cells can differ in structure and function.

71. Base your answer to the following question on the information below and on your knowledge of biology.

The reproductive cycle in a human female is not functioning properly. An imbalance of hormones is diagnosed as the cause.

Identify one hormone directly involved in the human female reproductive system that could cause this problem.

72. Identify *one* way in which the process of growth of a human embryo is similar to the process of reproduction in a single-celled organism.

Base your answers to questions 73 through 76 on the information below and on your knowledge of biology. All organisms need to reproduce for the continuation of their species. Discuss the process of reproduction in humans.

73. Identify *one* action by the mother that can influence the development of the embryo and state a result of that influence.
74. State how the normal chromosome number for humans is maintained from one generation to the next.
75. State *one* way the nucleus of a sex cell is different from the nucleus of a body cell.
76. Identify *one* hormone present in a female that is involved in regulating the reproductive cycle.

Answer Key

Regents Review - Reproduction

1. A
2. C
3. C
4. C
5. C
6. A
7. D
8. D
9. C
10. C
11. B
12. B
13. C
14. D
15. C
16. C
17. D
18. A
19. C
20. A
21. D
22. B
23. A
24. A
25. C
26. C
27. C
28. B
29. A
30. A
31. A
32. B
33. B
34. B
35. D
36. D
37. A
38. D
39. B

40. C
41. B
42. C
43. B
44. C
45. B
46. B
47. B
48. C
49. C
50. B
51. D
52. B
53. C
54. C
55. B
56. D
57. B
58. C
59. C
60. B
61. C
62. C
63. A
64. D
- 65.

Name of Structure	Letter on Diagram	Function of Structure
ovary	C	produces gametes
uterus	D	site of internal development
placenta	B	transfers oxygen directly to the embryo

66. — Having x rays can result in defects in the genes of the fetus.
— Smoking may cause low birth weight.
67. placenta

68. *Examples:* — Testosterone influences the formation of sperm cells. — Testosterone influences the formation of gametes.
69. *Examples:* - Materials can diffuse out of the mother's capillaries into the baby's capillaries. - Harmful substances can diffuse/pass through the walls of capillaries. - Molecules pass through the placenta.
70. Responses include, but are not limited to: Different parts of genetic information are used in different cells; Different cells are influenced by their environments in the body.
71. *Examples:* — estrogen — progesterone — FSH — LH
72. — They both involve mitosis. — Both processes produce cells containing identical genetic information. — The cells are produced asexually.
73. — Alcohol use can lead to Fetal Alcohol Syndrome. — Smoking can lead to low birth weight. — Poor nutrition can lead to underweight babies. — Drug use can lead to birth defects. — Good nutrition can lead to a healthy baby. — Drinking alcohol puts the embryo at risk. — Proper prenatal care might detect potential problems early so they can be treated.
74. — The egg and sperm each have half the normal chromosome number, and when they join, it restores the normal number for the species. — through the process of gamete production and fertilization, — Each parent contributes half of the chromosomes.
75. — It has half the normal chromosome number/half of the genes. — Sex cells are haploid/monoploid. — 23 chromosomes in sex cells, 46 in body cells.
76. — progesterone, — estrogen, — LH