15. In cloning, the number of chromosomes in both the parent and offspring are the same.

16. 3  17. 4  18. 2

19. The placenta secretes two substances that control and regulate events of pregnancy. The placenta (and the hypothalamus) secrete CRH, which will eventually begin the process of labor. The placenta also secretes the hormone progesterone that inhibits uterine contractions.

**Part C**

20. It is during the early months of pregnancy when the major organs and organ systems of the fetus are formed. During this time drugs could interfere with the way the organs form, leading to birth defects.

21. The placenta is the organ where food and oxygen move from the mother’s blood into the bloodstream of the fetus. At the same time, wastes from the fetus move from the fetal blood into the mother’s blood. The blood of the two do not mix during this process; it is the process of diffusion across membranes in the placenta that allows the materials to be exchanged.

22. Three things a woman can do to avoid exposing the developing embryo to environmental risks: 1. Don’t smoke. 2. Don’t drink alcohol. 3. Do not take drugs or medication unless your doctor tells you to.

23. The offspring plants produced with tissue culture have the same genetic makeup (genes and chromosomes) as the parent plant.

24. When certain body cells containing 24 chromosomes undergo meiotic division, sex cells are formed that contain only one half of the number of chromosomes found in the body cells (12 in this case). When one of these sex cells unites with another sex cell during fertilization, the chromosomes of both cells combine to produce a zygote with 24 chromosomes. The zygote then divides by mitotic division to form the offspring that will have the species chromosome number (24) in each cell.

25. A baby produced as a result of artificial insemination will receive one half of its DNA from the mother and one half from the sperm donor, and thus it will have no DNA from the woman’s husband.

26. The three girls may have similar characteristics, but they would not look alike. This is because each time egg and sperm cells are formed by meiosis, the chromosomes are randomly arranged and sorted out to produce many possible combinations. Therefore, no two sperm or eggs are exactly alike. When a sperm and egg combine at fertilization, each contributes a unique combination of genes to the offspring.

27. All the participants in the study should have two things in common: they have children over the age of 12, and they have taken OTC drugs during their pregnancy with those children.

28. You should ask them what specific OTC drugs they took and how often they took them. You should also ask them if their children have any developmental or health problems.

29. You would have to expand the survey to get information from many more people before drawing any conclusions. Twenty-five people are not enough to form a valid conclusion in this kind of study.