Name:_____Date:_____

Reading Guide: Chapter 1.1, The Science of Biology 🐢🌴 (OpenStax Biology 2E)

1. What is the definition of biology? _____
2. What is the definition of science? _____
3. A suggested explanation for an event is called a(n): _____
4. A tested and confirmed explanation for observed phenomena is called a(n): _____

5. Science can be defined as fields of study that attempt to _____ the nature of the _____.

6. Fields of science related to the physical world are called _____ sciences.
7. What subjects would be part of this type of science? _____

Scientific Reasoning

8. _____ reasoning uses related observations to arrive at a general conclusion.
9. How are brain studies an example of inductive reasoning?

_____

10. Deductive reasoning is used in _____ - based science.
11. Deductive reasoning uses a _____ to forecast specific results.

12. What is the goal of descriptive science? _____

13. How was velcro invented? _____

The Scientific Method

14. What scientist first documented the scientific method? _____
15. The process starts with an _____ which leads to a _____
16. What is the typical format of a prediction? _____
17. A valid hypothesis must be testable and also be _____.

18. What distinguishes sciences from non-sciences? _____

19. Any part of the experiment that can vary or change is called the _____
20. What is the control group? _____

21. Rejecting one hypothesis means that the other hypothesis is accepted. True / False

22. Deduction proceeds from the _____ to the _____

23. What type of reasoning has occurred when scientists reach a general conclusion from a number of specific observations? _____

24. Figure 1.6 The scientific method is used to solve an everyday problem. Match the scientific method steps (numbered items) with the process of solving the everyday problem (lettered items). Based on the results of the experiment, is the hypothesis correct? If it is incorrect, propose some alternative hypotheses.

____ observation	a) there is something wrong with the electrical outlet
____ question	b) if something is wrong with the outlet, the coffeemaker also won't work when plugged into it
____ hypothesis	c) my toaster does not toast my bread
____ prediction	d) I plug my coffeemaker into the outlet
____ experiment	e) My coffeemaker works
____ result	f) Why doesn't the toaster work?

25. Figure 1.7 Decide if each of the following is an example of inductive (I) or deductive reasoning (D)

_____All flying birds and insects have wings. Birds and insects flap their wings as they move through the air. Therefore, wings enable flight.
_____Insects generally survive mild winters better than harsh ones. Therefore, insect pests will become more problematic if global temperatures increase.
_____Chromosomes, the carriers of DNA, separate into daughter cells during cell division. Therefore, each daughter cell will have the same chromosome set as the mother cell.
_____Animals as diverse as humans, insects, and wolves all exhibit social behavior. Therefore, social behavior must have an evolutionary advantage.

Two Types of Science: Basic Science and Applied Science

26. What is the goal of "basic science?" _____
27. What is the goal of "applied science?" _____

28. What is the Human Genome Project? _____

29. What is serendipity? _____

30. Where do scientists publish their works? _____

31. A summary at the beginning of the scientific paper is called the _____

32. What other sections are included in a scientific paper (IMRaD)?

_____