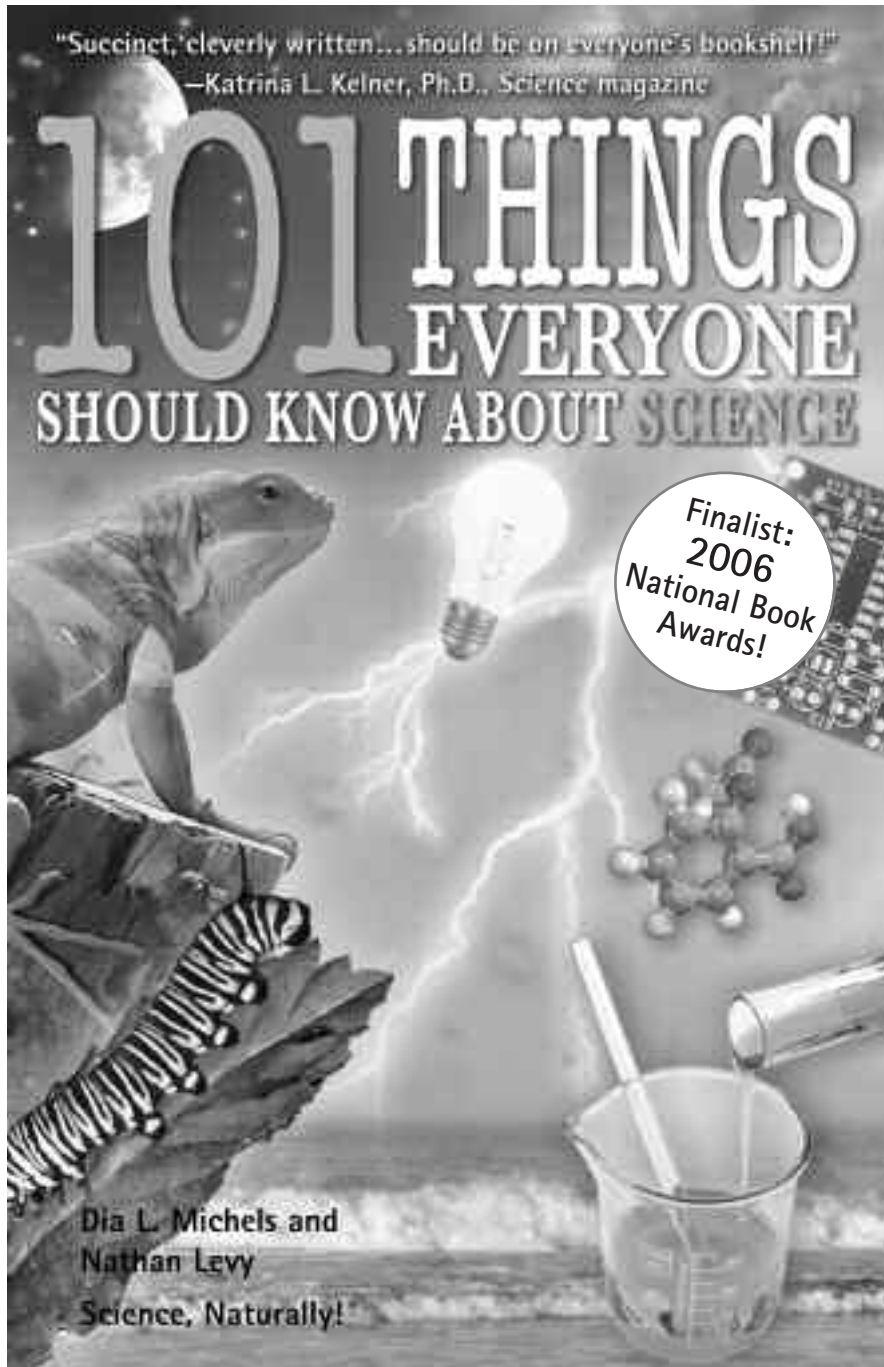


# TEST BOOKLET





TEST BOOKLET  
for  
**101**  
Things Everyone  
Should Know About  
Science

Dia L. Michels and Nathan Levy



Science, Naturally!, LLC  
Washington, DC

# Biology Questions



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**1. Scientists classify organisms into three major groups, sometimes called domains, based on fundamental similarities and common ancestry. Name the three domains.\***

- a)
- b)
- c)

**2. "Survival of the fittest" is a theory of evolution proposed by:**

- a) Albert Einstein. c) Sir Isaac Newton.
- b) Charles Darwin. d) Benjamin Banneker.

**3. Match each animal with the correct group:**

Monkey	Amphibian
Octopus	Bird
Pigeon	Mammal
Spider	Insect
Crab	Cephalopod
Frog	Crustacean
Ladybug	Arachnid

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4. Name some characteristics of all mammals.

- a)
- b)
- c)
- d)

5. What is the first food for all newborn mammals?

6. What is it called when animals sleep or remain inactive during the winter?

7. What is the largest animal alive today?

8. What is the only mammal that really flies?

9. The process of an organism changing form, such as a caterpillar into a butterfly, is called \_\_\_\_\_.

10. In the carbon cycle, which of the following removes carbon dioxide from the air—plants or animals?

11. Name two ways seeds and pollen are dispersed.

- a)
- b)

12. What is the liquid called that comes from maple trees and is used to make maple syrup?

13. How many legs do all insects have?

14. Name some parasites that you or your pets could host.

- a)
- b)
- c)

15. Name three of the bodily fluids.

- a)
- b)
- c)

16. The heart pushes blood into your \_\_\_\_\_ and \_\_\_\_\_.

17. What is normal body temperature for humans?

18. If someone's body temperature falls abnormally low, he may be suffering from:

- a) hypothermia.
- b) hyperthermia.
- c) dysthermia.
- d) hydraulics.

19. Which one of the following describes the process by which substances are heated in order to kill harmful microbes?

- a) pasteurization
- b) homogenization
- c) syndication
- d) hydraulics

20. Chicken pox, AIDS, and the common cold are caused by:

- a) bacteria.
- b) fungi.
- c) viruses.
- d) venom.

21. Scientists report that the number of species on our planet is declining dramatically. What is the primary cause of this?

22. Name four ways public health officials work to prevent disease and promote health.

- a)
- b)
- c)
- d)

# Chemistry Questions

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23. What are the three states of water?

- a)
- b)
- c)

24. What are the two elements that make up water?

- a)
- b)

25. Does it take longer to boil water at low altitudes or at high altitudes?

26. When you stir two cups of sugar into one cup of hot water, you end up with less than three cups of syrup. Why?

27. What mineral is found in a saline solution?

28. To make a dilute solution of salt and water more concentrated, one could:

- a) cool the solution.
- b) add more salt.
- c) add more water.
- d) pour some of the solution out.

29. Why do we put salt on roads and sidewalks when they are icy?

30. What is the primary mineral responsible for keeping bones strong?

31. What scale do we use to measure the acidity or alkalinity of a solution?

32. What do we use calories to measure?

33. What is the name of the chart that lists all the known elements?

34. Diamonds come from:

- a) carbon.
- b) water.
- c) iron.
- d) oxalates.

35. At room temperature, some elements are gas, some are liquid, but most are \_\_\_\_\_.

36. When heated, how does the volume of a gas change?

37. An atom is made up of protons, neutrons, and \_\_\_\_\_.

38. Where are most metals naturally found?

- a) in decaying trees
- b) in the ground
- c) in the stratosphere
- d) in flowing rivers

39. Which one of the following elements is not a metal?

- a) mercury
- b) sodium
- c) copper
- d) sulfur

40. Every element has an atomic mass. What does this number represent?

41. The way we express the time it takes for atoms in a radioactive substance to disintegrate is called:

- a) entropy.
- b) decomposition.
- c) inertia.
- d) half-life.

42. Fire needs \_\_\_\_\_ to continue burning.

- a) oil
- b) wind
- c) paper or wood
- d) oxygen

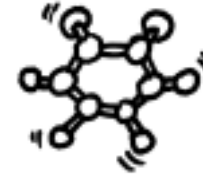
43. What happens over time when iron is exposed to oxygen?

44. What happens when you combine baking soda and vinegar?

45. What is the difference between a chemical change and a physical change?

# Physics Questions

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46. Sir Isaac Newton taught us that for every action (or force) there is an equal and opposite \_\_\_\_\_.

47. If an object is moving, it has energy. What do we call this energy?

48. Name a machine that operates without any external power source.

49. At the same pressure, which is more dense—hot air or cold air?

50. Who discovered the relationship between energy (E), mass (m), and the speed of light (c), as expressed in the equation  $E=mc^2$ ?

- a) Marie Curie
- b) Louis Pasteur
- c) Albert Einstein
- d) Sir Isaac Newton

51. Name two of the three forces that act on objects without touching them.

- a)
- b)

52. What keeps the planets orbiting around the sun, and makes things fall to the ground?

53. What color would you see if you were to shine a red, blue, and green light on the same place on a white piece of paper?\*

54. Name some imaging techniques that allow you to see something you wouldn't be able to see with just your eyes.

- a)
- b)
- c)

55. How would you make a sonic boom?

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56. Why is walking on ice or driving on wet roads so difficult?

57. We get energy to heat and cool our homes and run machines from many sources. Name as many sources of energy as you can.

58. When you flip on a light switch, the light turns on. Why?

59. How can you use a lemon to light a light bulb?

60. What is an efficient way to convert electrical current into light that generates almost no heat?

61. How does a semiconductor work?

62. Why is the sound of an approaching ambulance different from the sound of an ambulance going away from you?

63. If you were to build a bridge out of a pile of stones, the shape you would create is called \_\_\_\_\_.

64. If you had two crowns of equal mass, one made of pure gold and one made of gold mixed with silver, how could you tell them apart without destroying them?\*

65. The quickest way to cool a bottle of soda is to place it:

- a) in a bucket of ice.
- b) in a bucket of ice water.
- c) in a bucket of extremely cold water with no ice.
- d) outside on the porch when it is very cold.

66. Why does it hurt so much when you hit the water jumping into a swimming pool?

67. What was one of the things that helped Ludwig van Beethoven compose music even though he was deaf?

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# Earth Science Questions

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68. When astronauts look at Earth from outer space, the planet looks blue. Why?

69. Each year, Earth revolves once around what?

- (a) the sun
- (b) the moon
- (c) its axis
- (d) the Milky Way

70. Is a lunar year longer or shorter than a solar year?

71. The sun is a:

- (a) planet.
- (b) meteor.
- (c) star.
- (d) reflection.

72. How many planets are in our solar system? Which one is closest to the sun?

73. What is the name of the layer of the atmosphere that protects us from the sun's harmful rays?

74. Gravitational pull from the moon causes shifts in bodies of water. What are these shifts called?

75. What are the four measurements we need to determine the exact location of a place?\*

- a)
- b)
- c)
- d)

76. What are the four major directions? In which direction does the needle of a compass point?

- a)
- b)
- c)
- d)

The needle points \_\_\_\_\_.

77. What is the earth's circumference?

78. Which place has no land, only ice: the North Pole or the South Pole?

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79. The continental divide separates:

- a) which animals are nocturnal and which are diurnal.
- b) the Northern Hemisphere from the Southern Hemisphere.
- c) the direction water travels to the sea.
- d) where it rains from where it snows.

80. What covers the majority of the earth's surface?

- a) oceans    c) desert
- b) glaciers    d) grasslands

81. Most of the fresh water on this planet is stored in:

- a) the Great Lakes.
- b) the many rivers and streams on the earth.
- c) reservoirs built by humans using dams.
- d) polar ice caps.

82. The day with the most hours of sunlight occurs in what month in the Northern Hemisphere? In the Southern Hemisphere?

Northern Hemisphere:

Southern Hemisphere:

83. In the spring and fall, the hours of daylight and darkness are the same on what two days?

Spring:

Fall:

84. Why is it colder an hour after sunrise than it is at sunrise itself?

85. In a weather forecast, what is the difference between a *watch* and a *warning*?

86. During a thunderstorm, does lightning appear before or after you hear thunder?

87. Name three kinds of precipitation.

- a)
- b)
- c)

88. What elements must be present for a rainbow to appear?

- a)
- b)

89. What is the difference between a hurricane and a tornado?

90. What type of scale do seismologists use to measure the strength of an earthquake?

# General Science Questions

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91. What does the suffix "ology" mean?

92. What is a hypothesis?

93. What are the two most common measurements of temperature?

- a)
- b)

94. How many pounds does one cup of water weigh?

95. Which weighs more: a ton of apples or a ton of feathers?

96. When scientists are performing an experiment, they make changes to the conditions that brought about a particular phenomenon to see how those changes affect what they are studying. How many things do scientists change at a time?

97. Why do scientists wear white lab coats?

98. What is a control group?

99. What is the goal of a double-blind, placebo-controlled study?

100. Name some important motives for studying science.

- a)
- b)
- c)

101. In ancient Greece, what were scientists called?

# Bonus Questions

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*Biology:* What percentage of all mammals are carnivores?

*Physics:* How tall does a flat mirror have to be for you to be able to see your entire image reflected in it when you are standing parallel to the mirror?\*

*Chemistry:* What metal is a liquid at room temperature?

*Earth Science:* Throughout history, people have fought wars over natural resources such as salt, land, and oil. Scientists are concerned that another resource will be the reason for the next global conflict. What resource is it?

*General Science:* What is the source of all energy on Earth?

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