

Answers to Review of Chapter 2

- 1.(3) 2.(1) 3.(4) 4.(4) 5.(1) 6.(2) 13.(3) 14.(4) 15.(1) 16.(2) 17.(1) 18.(3)
7.(4) 8.(2) 9.(1) 10.(1) 11.(3) 12.(3) 19.(2) 20.(3)

Answers to Questions in Reviewing Intermediate-Level Science

ENERGY BASICS

Review Questions Pages 67-70

Part I

- 1.(1) 2.(1) 3.(2) 4.(2) 5.(3) 6.(1)
7.(2) 8.(2) 9.(1) 10.(4) 11.(4)

Part II

12. The matches in the book have potential energy. Striking the match uses kinetic energy.
13. When you strike the match on the rough strip of the match book cover, you are transforming mechanical (kinetic) energy into heat energy.
14. When the match is burning, chemical energy in the match is transformed into light and heat energy.
15. When you operate each of the items below, the following energy transformations are taking place:
(a) stove—chemical to light and heat
(b) fan—electrical to mechanical
(c) hair dryer—electrical to heat (and mechanical fan)

HEAT

Review Questions Pages 73-76

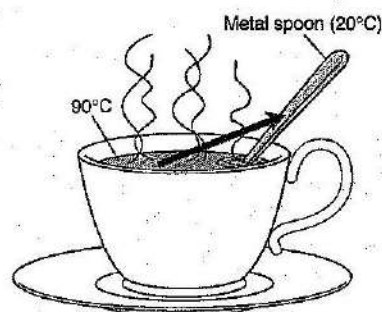
Part I

- 16.(2) 17.(3) 18.(2) 19.(2) 20.(4) 21.(3)
22.(2) 23.(1)

Part II

24. Heat will be transferred in the spoon by conduction.

25.



Arrow should show the heat being transferred up the spoon handle away from the hot liquid.

26. Over time, the temperature of the spoon and hot water will be equal.
27. When the candle is placed under the liquid, the liquid will become hot, expand, and move up the glass tube.
28. thermometer
29. Location 1 shows heat transfer by radiation. Location 2 shows heat transfer by conduction. Location 3 shows heat transfer by convection.
30. Chemical in the log is transformed to heat and light energy.

MAGNETISM AND ELECTRICITY

Pages 83-84—Laboratory Skill: Measuring Electrical Conductivity

1.

Conductors	Nonconductors
Aluminum foil	Plastic comb
Brass screw	Glass stirrer
Copper wire	Plastic stirrer
	Wooden splint
	Pencil

2. Wire A allows the electrons to move more easily and is a better conductor than wire B.
3. Plastic and rubber material that cover electrical wires insulates the wires and confines the electricity that flows through the wire.

Review Questions Pages 84–87

Part I

31. (3) 32. (4) 33. (4) 34. (1) 35. (1) 36. (1) 37. (2)

Part II

38. The diagram shows a parallel circuit.
39. No lightbulbs will be on. All lightbulbs will be off.
40. Bulbs A and C will be on if bulb B is removed.
41. In your home, when you turn off one light, the other lights remain lit. This is indicative of a parallel circuit.
42. When the positive glass rod is brought close to the balloon the two items will attract.
43. The glass rod got a positive charge by being rubbed with a silk cloth. The electrons moved from the glass rod to the silk cloth.
44. Some other examples of static electricity: lightning; after combing your hair, the comb will pick up small pieces of paper; walking across a nylon rug and touching a metal doorknob will cause a spark; and rubbing a sweater in the dark will produce small sparks.

SOUND

Pages 89–90—Process Skill: Determining the Speed of Sound From a Graph

1. (2) 2. (3) 3. (3)

Review Questions—Pages 90–92

Part I

45. (4) 46. (1) 47. (2) 48. (4) 49. (2)

Part II

50. The sound traveled 640 meters from Josh, across the canyon, and back to Josh.

$$d = v \times t = 340 \text{ m/s} \times 2 \text{ s} = 680 \text{ m}$$

51. The distance across the canyon is 340 meters.
52. It would take 4 seconds for Josh to hear his echo.
53. Wave A has the highest amplitude, and is therefore the loudest.
54. Wave D has the longest wavelength.
55. Wave B has the highest frequency.
56. The speed of sound in air at 30° C is 349 m/s:

$$(30^{\circ}\text{C} - 20^{\circ}\text{C}) \times 0.6 \frac{\text{m/s}}{^{\circ}\text{C}} + 343 \text{ m/s} = 349 \text{ m/s}$$

LIGHT

Review Questions—Pages 97–100

Part I

57. (3) 58. (4) 59. (1) 60. (2) 61. (2) 62. (1) 63. (2) 64. (4) 65. (1)

Part II

66. The blue light was reflected.
67. The red light was absorbed.
68. The surface will appear blue
69. X-rays have a higher frequency and a smaller wavelength than radio waves.
70. There is an inverse relationship between wave frequency and wavelength. An increase in frequency causes a decrease in wavelength.
71. Radar
77. Diagram A is a mirror.
73. In diagram B, light is being absorbed and transformed to heat.
74. The lightning bolt is 2040 m or about 2 km away. ($6 \text{ s} \times 340 \text{ m/s} = 2040 \text{ m}$)
75. The time difference between a flash of lightning and the clap of thunder 3.4 km (3400 m) away would be 10 s. ($3400 \text{ m} / 340 \text{ m/s} = 10 \text{ s}$)
76. There is a direct relationship between the speed of sound and the air temperature. An increase in air temperature will cause an increase in the speed of sound.