ACTIVITY ANSWER KEY

Chapter 3, Section 1

Check your answers from the Answer Key.
Correct all errors, then complete your next goal.



Lesson 1: ***Light and Sound***

Sound

1. a gray blanket
2. (b) gloomy
3. lovesick sea monster
4. (b) compressed air
5. For sound to occur, something has to move.
6. (a) air
7. _3_ molecules expand farther apart
   _6_ impulses carried to brain
   _1_ air is compressed, increasing air . . .
   _7_ brain interprets impulses as sound
   _5_ vibrating motion changed to . . .
   _2_ air is released, decreasing air . . .
   _4_ ear drums vibrate
8. (b) wave
9. (d) They spread out and keep going.
10. (b) Objects in a vacuum do not move back and forth.
11. (wording may vary) they communicate with each other by electric powered radios.
12. (c) decrease it
13. (b) greatly reduce sound vibrations in a room
14. (any order) hitting, rubbing, plucking, blowing
15. blowing
16. (b) harmonica
17. pitch
18. 20; 20,000
19. 256; middle C
20. (c) It impairs both higher and lower ranges.
21. _c_ pitch
22. _a_ ***loudness***
23. _b_ speed
24. fastest
25. slower
26. slowest
27. (a) temperature and air pressure
28. speed, air
29. Shore Trail and Ridge trail
30. connecting trails
31. all others
32. *"Welcome sounds uplift our spirits."*



Lesson 2: ***Light and Sound***

Light

1. (d) ↖
2. (c) evict messy campers
3. (d) somewhat, partly
4. (any order) sound, water, light
5. (any order) sound, water; (wording may vary) They both require a medium in which to travel.
6. light
7. ___ Light waves require a medium.
   _X_ Light waves do not require a. . .
   _X_ Light waves travel in a vacuum.
   _X_ Light waves are electromagnetic.
8. slowest, fastest
9. slowest, fastest
10. it enters a new medium at an angle
11. _e_ ***Refraction***
12. _d_ ***Convex lens***
13. _b_ ***Reflection***
14. _a_ ***Concave*** mirror (or lens)
15. _c_ ***Diffraction***
16. (c) diffraction
17. pitch

18. color
19. violet; red
20. violet, blue (indigo), green, yellow, orange, red
21. (any order) radio waves, television waves, radar, microwaves, infrared waves, ultraviolet, X-rays, gamma rays
22. (c) They help animals detect their prey's body heat.
23. (b) ultraviolet rays
24. (c) X-rays and gamma rays
25. (c) victimized
26. *"Our actions are reflections of thoughts we repeatedly allow to enter our minds."*



Lesson 3: *Light and Sound*
Reading Lenses and Telescopes

1. (d) Tom and James Olsen
2. magnification, diameter of the lens in millimeters
3. Farsighted
4. Roger Bacon, 1200s
5. reading lenses, magnifying glass (or lens)
6. (c) a mirror-image of a real person or thing
7. (a) used by artists to project an image around which they can trace
8. focal length
9. (b) less
10. Nearsighted
11. (c) concave
12. (b) it focuses light which can get hot enough to start a fire
13. (b) sight
14. (c) Definition 2
15. telescope, 1608
16. spyglass
17. telescope, the heavens
18. telescope, refractor
19. Galileo, 1669
20. mirror, light to a focus.
21. (b) reflectors
22. the Book of Job
23. (c) prove it true or confirm it
24. (any order) convex, single, tiny
25. (a) They blocked the trails with brush and fallen tree branches.
26. *"Whoever has searched the heavens with a telescope and found no God would not have found the human mind if he had searched the brain with a microscope."*



Lesson 4: *Energy*
Heat

1. (b) careless and sloppy
2. "We can almost follow him by the litter he drops on the ground!"
3. (a) heavy
4. (d) footprints
5. (b) ground pad
6. direct contact
7. (b) It controls heat transfer.
8. (any order within categories)

Conductors	Insulators
teakettle	potholder
most metals	fiberglass
hot water pipes	wool felt
steel beams	coats
	blankets
	feathers, fur/hair
	foam

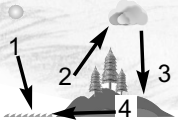
9. currents
10. (c) gases, liquids
11. convection is the movement of heat by currents
12. Radiation
13. It is the only method of heat transfer that can pass through the vacuum of space.
14. energy, motion
15. Temperature
16. (b) down to a lower region of temperature
17. (b) total energy

18. Heat capacity
19. water
20. (c) The water temperature increased by 1ºC
21. (a) comparison
    (b) contrast
    (c) contrast
22. calories, Celsius degrees
23. (a) Most substances expand when they are heated.
24. buckle, expand, twist, gaps between them, expansion joints
25. The boys avoided making noise.
26. (wording may vary) they ducked behind a boulder
27. *"A hot temper is a mental condition that cools friendships."*



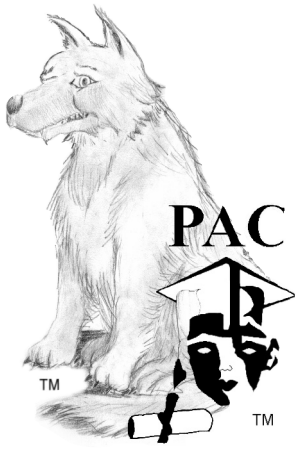
Lesson 5: *Energy*

Energy

1. 4 The man jumped into the boat.
   1 The man sat on the backpack. . .
   9 Bryan prepared hot cocoa.
   6 The man started his outboard. . .
   2 Tom ran down the beach, yelling.
   8 Tom began shivering violently.
   3 The man dropped the backpack.
   7 Tom gashed the boat with. . . .
   5 Tom ran into the water.
2. Matter
3. Energy
4. (c) It can be traced to the energy of the Sun.
5. (wording may vary) muscle power
6. Sun
7. plant
8. animal
9. person
10. blood glucose
11. **muscle power**
12. (d) the Sun
13. wind, moving water
14. (b) 

15-21. (wording may vary)

15. Wood
    (a) Used for centuries
    (b) Releases carbon dioxide and heat when burned
16. Peat
    (a) Forms in bogs
    (b) Mostly composed of plant material
    (c) compressed, dried peat used as fireplace fuel
17. Coal
    (a) Formed by vegetation under extreme pressure
    (b) Called a fossil fuel
18. Plant fuels
    (a) Include wood, peat, coal (any order)
    (b) Main energy source was the Sun
19. Natural gas
    (a) Fossil fuel from plant, animal matter
    (b) Simplest form is Methane
    (c) Used as common home heating fuel
    (d) Stored in metal containers
20. Petroleum (or crude oil)
    (a) A fossil fuel with many uses
        (1) As a heating oil
        (2) As vehicle fuel
        (3) As raw material for plastics, etc
    (b) Probably formed from dead sea animals and vegetation
    (c) Formed in shale rock
    (d) Collects in pockets in rock
    (e) Brought to surface of ground by oil wells
21. Hydrocarbons
    (a) Include natural gas and petroleum (or crude oil)
    (b) Made of hydrogen and carbon
    (c) Forms carbon dioxide when burned
22. an old map
23. *"A smile is the lighting system of the face and the heating system of the heart."*


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