

# PHYSICAL SCIENCE SKILLS TEST

Each correct answer is worth 1 point. Total Score Possible = 100 points.

For questions 1–6, use these segments from the Periodic Table to answer the questions.

A. <table border="1" style="display: inline-table; text-align: center; width: 80px; height: 80px;"><tr><td style="font-size: small;">23</td></tr><tr><td style="font-size: large; font-weight: bold;">Na</td></tr><tr><td style="font-size: small;">11</td></tr></table>	23	Na	11	B. <table border="1" style="display: inline-table; text-align: center; width: 80px; height: 80px;"><tr><td style="font-size: small;">64</td></tr><tr><td style="font-size: large; font-weight: bold;">Cu</td></tr><tr><td style="font-size: small;">29</td></tr></table>	64	Cu	29	C. <table border="1" style="display: inline-table; text-align: center; width: 80px; height: 80px;"><tr><td style="font-size: small;">1</td></tr><tr><td style="font-size: large; font-weight: bold;">H</td></tr><tr><td style="font-size: small;">1</td></tr></table>	1	H	1
23											
Na											
11											
64											
Cu											
29											
1											
H											
1											

1. What element is shown in A? \_\_\_\_\_
2. What is the atomic number of B? \_\_\_\_\_
3. What is the atomic mass of A? \_\_\_\_\_
4. How many electrons does hydrogen have? \_\_\_\_\_
5. What element is shown in B? \_\_\_\_\_
6. How many neutrons are in element A? \_\_\_\_\_

For questions 7–16, match the correct term with each definition below. Write the letter of the correct answer.

- |                 |                   |
|-----------------|-------------------|
| A. suspension   | F. acid           |
| B. pH           | G. neutralization |
| C. condensation | H. base           |
| D. solute       | I. viscosity      |
| E. volume       | J. electrons      |

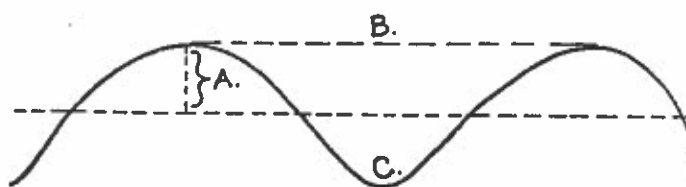
- \_\_\_ 7. amount of mass
- \_\_\_ 8. heterogeneous mixture in which particles can be seen
- \_\_\_ 9. process of combining a base with an acid
- \_\_\_ 10. scale for measuring acidity
- \_\_\_ 11. shared when elements combine to form a compound
- \_\_\_ 12. change from a gas to a liquid
- \_\_\_ 13. compound that produces hydronium ions in water solution
- \_\_\_ 14. ability of liquid to be poured
- \_\_\_ 15. substance dissolved in a solvent
- \_\_\_ 16. the chemical opposite of an acid

For questions 17–19, for each formula show the name of each element and the number of atoms represented by the formula:

Ex:  $C_2H_2 = 2$  carbon atoms + 2 hydrogen atoms

17.  $CaSO_4$  \_\_\_\_\_
18.  $NH_3$  \_\_\_\_\_
19.  $NaO_2$  \_\_\_\_\_

For questions 20–22, use the diagram below to answer these questions. Write the letter of the correct answer on the line.



- \_\_\_ 20. Which letter is in the trough?
- \_\_\_ 21. Which letter represents the amplitude of a wave?
- \_\_\_ 22. Which letter represents wavelength?

For questions 23–32, write the letter of the correct answer on the line.

- \_\_\_ 23. The particle in an atom that has no electric charge is the \_\_\_\_\_.
 

a. electron	c. proton
b. neutron	d. electron cloud
- \_\_\_ 24. The atomic mass of an element is equal to this:
 

a. # of protons
b. # of neutrons
c. # of protons + electrons
d. # of neutrons + protons
- \_\_\_ 25. Groups on the Periodic Table with similar properties are \_\_\_\_\_.
 

a. families	c. tables
b. periods	d. compounds

Name \_\_\_\_\_

26. Particles found in an atom other than protons, neutrons, and electrons are \_\_\_\_\_.  
 a. polymers                      c. quarks  
 b. isotopes                        d. acids

27. If an element has 18 electrons, how many would be in the third energy level?  
 a. 16                                c. 10  
 b. 8                                 d. 2

28. What state of matter has no definite shape and no definite volume?  
 a. gas                                c. liquid  
 b. solid                              d. element

29. At what point does a liquid change to a gas?  
 a. freezing point                c. dew point  
 b. melting point                d. boiling point

30. Molecules will move faster and farther apart when state changes from  
 a. liquid to solid                c. gas to solid  
 b. gas to liquid                 d. liquid to gas

31. When a container decreases in size, what will happen to an amount of gas in the container?  
 a. temperature of the gas will decrease  
 b. volume of the gas will increase  
 c. pressure gas exerts on the container will increase  
 d. pressure gas exerts on the container will decrease

32. Two or more elements bonded together chemically form a  
 a. mixture                        c. compound  
 b. colloid                         d. suspension

For questions 33–35, write the correct answer for these problems with rate, time, and distance.

33. Two trains are traveling toward each other from 800 miles apart, each at 80 miles per hour. How long will it be before they meet?

34. The *Speed Chaser* covers 1350 miles in 15 hours. What is its rate?

35. The *Silver Streak* travels at a rate of 102 mph for 6 hours. What distance is covered?

For questions 36–47, write the name of the element or compound that is represented by the symbol.

36. Fe \_\_\_\_\_

37. N \_\_\_\_\_

38. O<sub>2</sub> \_\_\_\_\_

39. NaCl \_\_\_\_\_

40. C \_\_\_\_\_

41. CO \_\_\_\_\_

42. Au \_\_\_\_\_

43. Ca \_\_\_\_\_

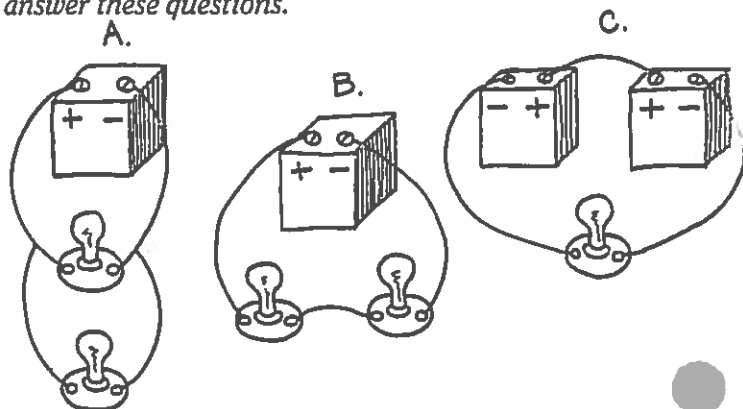
44. He \_\_\_\_\_

45. HCl \_\_\_\_\_

46. CO<sub>2</sub> \_\_\_\_\_

47. Hg \_\_\_\_\_

For questions 48–50, use the diagrams of circuits to answer these questions.



48. Which circuit(s) is/are parallel?

49. Which circuit(s) is/are series?

50. In which example will a light be unlikely to light up?

For questions 51–60, match the correct term with each definition below. Write the correct letter on the line.

- |                |                         |
|----------------|-------------------------|
| A. centripetal | F. friction             |
| B. conduction  | G. convection           |
| C. inertia     | H. acceleration         |
| D. momentum    | I. kinetic              |
| E. velocity    | J. mechanical advantage |

51. speed and direction of moving object

52. tendency of a body to resist change in velocity

53. mass of an object multiplied by its velocity

54. transfer of energy from particle to particle through matter

55. rate of change in velocity

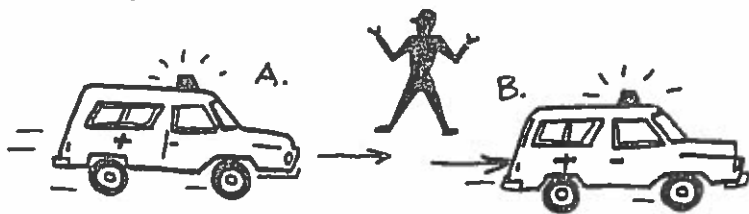
56. energy of motion

Name \_\_\_\_\_

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- \_\_\_ 57. force that opposes motion of two touching surfaces
- \_\_\_ 58. force pulling toward the center of a circular path
- \_\_\_ 59. transfer of energy through movement of a fluid
- \_\_\_ 60. increase in amount of work done with help of a machine

For questions 61–63, use the diagram below to answer these questions.

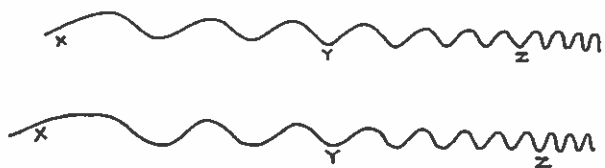


- \_\_\_ 61. At which point are the sound waves closer together?
- \_\_\_ 62. At which point is the pitch of the sound lowest?
- \_\_\_ 63. At which point is the pitch of the sound highest?

For questions 64–66, write the correct answer on the line.

- \_\_\_ 64. Jana is drying her hair using a 120 V source of power with a current of 12.5 A. How many watts of power is her hairdryer using?
- \_\_\_ 65. The oven is baking a cake using a current of 12 A and 2640 watts of power. What is the voltage of the power source?
- \_\_\_ 66. If your stereo uses 2 A of current from a power source of 120 V, what is the wattage of power it's using?

For questions 67–69, use the diagram of the electromagnetic wave below to answer these questions.



- \_\_\_ 67. Which point would represent visible light waves?

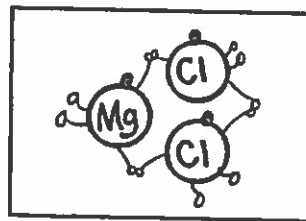
- \_\_\_ 68. Which point would represent gamma rays?
- \_\_\_ 69. Which point would represent radio waves?

For questions 70–78, match the correct term with each definition following.

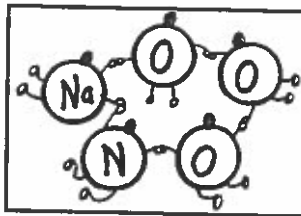
- |                   |              |                 |
|-------------------|--------------|-----------------|
| A. direct current | D. potential | G. filter       |
| B. indicator      | E. insulator | H. effort force |
| C. distillation   | F. lipid     | I. density      |

- \_\_\_ 70. energy due to position or condition of matter
- \_\_\_ 71. substance that does not conduct heat or electricity well
- \_\_\_ 72. mass of a material divided by its volume
- \_\_\_ 73. flow of electricity in one direction
- \_\_\_ 74. force applied to a machine
- \_\_\_ 75. separation of liquids by vaporization and condensation
- \_\_\_ 76. device for separating parts of a mixture
- \_\_\_ 77. organic compound which changes color in an acid or base
- \_\_\_ 78. class of organic compounds that contains fats and oils

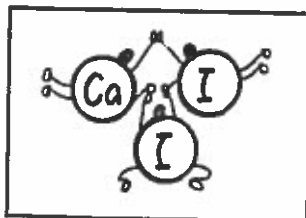
For questions 79–81, write the chemical formula for each molecule.



79. \_\_\_\_\_



80. \_\_\_\_\_



81. \_\_\_\_\_

Name \_\_\_\_\_

For questions 82–91, write the letter of the correct answer on the line.

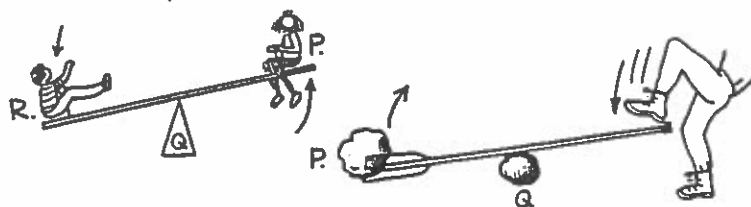
- \_\_\_ 82. Which is not a physical change?
  - a. melting butter
  - b. whipping cream
  - c. mixing lemonade
  - d. molding bread
- \_\_\_ 83. Which is not a chemical change?
  - a. boiling, evaporating water
  - b. burned toast
  - c. rusting nails
  - d. bleaching your hair
- \_\_\_ 84. Which is not an organic compound?
  - a. vitamin
  - b. starch
  - c. sulfuric acid
  - d. protein
  - e. carbohydrate
- \_\_\_ 85. A substance that speeds up a chemical reaction without changing itself is a(n)
  - a. catalyst
  - b. inhibitor
  - c. acid
  - d. lipid
- \_\_\_ 86. Which will turn red when dipped in an acidic solution?
  - a. red litmus
  - b. blue litmus
  - c. both
  - d. neither
- \_\_\_ 87. What causes a spaceship to get red-hot when reentering Earth's atmosphere?
  - a. inertia
  - b. friction
  - c. pressure
  - d. momentum
- \_\_\_ 88. What is the greatest distance a wave travels from its resting position?
  - a. pitch
  - b. wavelength
  - c. amplitude
  - d. frequency

- \_\_\_ 89. Which gives opposition to the flow of electricity?
  - a. a resistance
  - b. a circuit
  - c. a conductor
  - d. an ampere
- \_\_\_ 90. What term refers to the bending of light as it passes through an opening or around a bend?
  - a. reflecting
  - b. refraction
  - c. radiation
  - d. diffraction
- \_\_\_ 91. Unit for measuring electric power:
  - a. hertz
  - b. kelvin
  - c. newton
  - d. watt

For questions 92–96, write the correct answer on the line.

- \_\_\_ 92. What happens to a wavelength as the frequency of a wave increases?  
\_\_\_\_\_
- \_\_\_ 93. Which has a higher frequency, a TV wave or an X-ray?
- \_\_\_ 94. What unit is used to measure wave frequencies?
- \_\_\_ 95. What kind of energy is transferred by electromagnetic waves?
- \_\_\_ 96. What term means the rapid movement of particles back and forth?

For questions 97–100, use the drawings below to answer these questions.



- \_\_\_ 97. What point is the fulcrum?
- \_\_\_ 98. What point is the effort force?
- \_\_\_ 99. What point is the resistance force?
- \_\_\_ 100. What simple machine is this? \_\_\_\_\_

SCORE: Total Points \_\_\_\_\_ out of a possible 100 points

Name \_\_\_\_\_