

Practice Worksheet — Grade 9 Science

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Biological diversity

1. The scientific process of grouping living things based on shared characteristics is called:
 - a) evolution
 - b) reproduction
 - c) classification
 - d) adaptation
2. A trait that helps an organism survive in its environment is called a(n):
 - a) adaptation
 - b) habitat
 - c) classification
 - d) mutation
3. The scientific naming system that gives every species a two-part Latin name is called:
 - a) Linnaean code
 - b) binomial nomenclature
 - c) taxonomy chart
 - d) classification key
4. Organisms that share a recent common ancestor are more likely to be:
 - a) in different kingdoms
 - b) unrelated
 - c) closely related
 - d) non-living

Electrical principles

5. A small space heater plugged into a 120 V outlet draws a current of 8.0 A. What is the resistance of the heater, in ohms?
6. A 120 V kitchen circuit is protected by a 15 A breaker. On that one circuit a kettle rated at 1200 W and a toaster rated at 900 W are switched on at the same time. What total current does the circuit carry, in amperes?
7. A device operates at 120 V and draws 0.50 A. What is its power consumption in watts?

Answer: _____ (ohms)

Answer: _____ (A)

Answer: _____ (W)

8. What energy conversion happens in an electric motor?

- a) chemical energy into light energy
- b) mechanical energy into electrical energy
- c) thermal energy into chemical energy
- d) electrical energy into mechanical energy

Energy efficiency

9. Why is energy efficiency an important consideration for electrical devices?

- a) less wasted energy means lower cost and less environmental impact
- b) an inefficient device uses no electricity at all when idle
- c) efficiency makes no difference to what a device costs to run
- d) an efficient device always costs less to buy in the first place

Environmental chemistry

10. The pH scale measures how acidic or basic a substance is. A pH of 7 is considered:

- a) neutral
- b) strongly basic
- c) undefined
- d) strongly acidic

11. On the pH scale, which value represents the MOST acidic substance?

- a) 1
- b) 10
- c) 14
- d) 7

12. A substance that dissolves in water to increase the concentration of contaminants is a source of:

- a) pollution
- b) evaporation
- c) purification
- d) dilution only

13. Testing water quality often includes measuring dissolved oxygen because it indicates:

- a) the colour of the water at the surface
- b) the exact volume of water in the lake
- c) how well the water can support aquatic life
- d) the exact temperature of the water sample

Matter and chemical change

14. A student times how long an antacid tablet takes to react completely in a beaker of water. A whole tablet takes 90 seconds. An identical tablet, crushed to powder first, takes 30 seconds. How many times faster is the reaction with the crushed tablet?

Answer: _____

15. On the periodic table, aluminium has an atomic number of 13. How many protons and electrons are in one neutral aluminium atom?
- a) 13 protons and 27 electrons
 - b) 13 protons and 14 electrons
 - c) 27 protons and 13 electrons
 - d) 13 protons and 13 electrons
16. A change that produces a new substance is called a:
- a) mechanical change
 - b) physical change
 - c) state change
 - d) chemical change
17. Which of these is a sign of a chemical change?
- a) a change in the shape of the object
 - b) production of gas bubbles
 - c) a change in the size of the pieces
 - d) a change in the state of matter

Space exploration

18. A satellite in low Earth orbit completes one full orbit every 90 minutes. How many complete orbits does it make in 24 hours?

Answer: _____ (orbits)

19. How did the invention of the telescope change our understanding of the solar system?
- a) it revealed moons and detail that supported a Sun-centred model
 - b) it had no real effect on how astronomers pictured the solar system
 - c) it showed that the planets were made of glass rather than rock
 - d) it proved that Earth sat at the centre with everything orbiting it
20. Which problems must be solved for humans to live in space? Select all that apply.
- a) protecting against radiation
 - b) providing alphabetical signage
 - c) supplying breathable air
 - d) managing the effects of microgravity on the body