Practice Worksheet — Grade 7 Science

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Ecosystems and interactions

1. A class studies a pond behind the school. Which of these are abiotic (non-living) parts of that pond ecosystem? Select all that apply.
   a) the frogs resting along the edge
   b) the minerals dissolved in the water
   c) the sunlight reaching the surface of the pond
   d) the temperature of the water
   e) the algae growing on the rocks

2. Biologists testing an Alberta lake find that the small minnows carry a mercury concentration of 0.04 ppm in their tissue. The northern pike that feed on those minnows are found to carry 12 times that concentration. What is the mercury concentration in the pike, in ppm?

   Answer: _____ (ppm)

3. An organism that makes its own food using sunlight is called a:
   a) decomposer
   b) predator
   c) consumer
   d) producer

4. An organism that breaks down dead plants and animals is called a:
   a) decomposer
   b) consumer
   c) producer
   d) predator

Heat and temperature

5. Highway bridges in Alberta are built with small gaps between the concrete sections. Which explanation for those gaps fits the particle model of matter?
   a) The gaps stop heat from being conducted along the bridge deck into the supports
   b) When the concrete warms up its particles slow down and pack closer together, so the sections shrink away from each other
   c) When the concrete warms up its particles move faster and spread further apart, so the sections need room to get longer
   d) The gaps let the concrete change state from solid to liquid on very hot days

6. An engineer knows that the steel in a bridge span gets longer by 0.36 mm for every metre of its length when it warms by 30 degrees Celsius. The span is 30 metres long. How much longer, in millimetres, is the whole span after warming by 30 degrees Celsius?

   Answer: _____ (mm)

7. The transfer of heat through direct contact is called:
   a) convection
   b) conduction
   c) radiation
   d) insulation

8. The transfer of heat through liquids and gases by circulation is called:
   a) conduction
   b) convection
   c) reflection
   d) radiation

Plants for food and fibre

9. The process by which plants use sunlight, water, and carbon dioxide to make food is:
   a) respiration
   b) photosynthesis
   c) pollination
   d) germination

10. The transfer of pollen from one flower to another, enabling seed production, is called:
    a) photosynthesis
    b) transpiration
    c) pollination
    d) germination

11. Selective breeding of crop plants is done mainly to:
    a) remove a crop's need for water entirely
    b) stop plants from reproducing on their own
    c) produce plants with more desirable traits
    d) make plants shorter and nothing else

12. After pollination, which part of the plant develops into the structure that carries the seeds?
    a) the ovary wall of the root, which swells underground
    b) the stem, which thickens and stores the seeds inside it
    c) the leaves, which fold over the seeds as they ripen
    d) the flower, which becomes the fruit

Rocks and the rock cycle

13. GPS measurements show a tectonic plate creeping along at a steady 2.5 cm each year. Over 20 000 years, how far does the plate move, in metres?

Answer: _____ (m)

14. In parts of the Alberta Rockies, thick layers of rock are bent into arches and troughs instead of being snapped apart. Geologists call these fold mountains. How did they form?
a) Rivers and wind carved out the valleys, leaving the untouched ground standing high
b) The layers cracked along a break, and one block slid up past the block beside it
c) Sections of crust pushed toward each other and the layers buckled upward without breaking apart
d) Molten rock rose through a vent and piled up in layers as it cooled at the surface

15. Which type of rock forms when molten material cools and solidifies?
a) igneous
b) fossilised
c) metamorphic
d) sedimentary

16. How does sedimentary rock usually form?
a) minerals evaporate directly from the air
b) existing rock is changed by intense heat and pressure
c) magma cools deep underground
d) layers of sediment are deposited, compacted and cemented together

Structures and forces

17. The external force or weight that a structure has to support is called:
a) a load
b) inertia
c) friction
d) gravity

18. A structure's ability to stay upright and resist tipping over is called its:
a) stability
b) mass
c) flexibility
d) density

19. Triangles are commonly used in structures like bridges because they are:
a) always the lightest option available
b) very rigid and resist changing shape
c) the cheapest shape there is to build
d) only ever useful for decoration

20. A structure supports a load of 50 N on one side and 30 N on the other. What is the total load, in Newtons?

Answer: _____ (N)