

GAC Science

Name: _____ Score: _____

1. Which are on the checklist for a living thing? Choose all that apply.

- ☐ Takes in energy
- ☐ Responds to its surroundings
- ☐ Reproduces
- ☐ Is made of carbon

Tick every correct option.

2. A dolphin resembles a fish. Why is it classified with mammals?

- ☐ It is larger than most fish
- ☐ Classification follows shared ancestry, not appearance
- ☐ It lives near the surface
- ☐ Its name is Latin

3. Plants capture 10000 units. Roughly how many units reach the third consumer level?

4. A forest is cut faster than it grows back. How is it being used?

- ☐ Renewably, because trees regrow
- ☐ Non-renewably, because the rate of use exceeds the rate of replacement
- ☐ Neither applies to forests
- ☐ It depends on the species

5. What determines which element an atom is?

- ☐ The number of neutrons
- ☐ The number of protons
- ☐ The total mass
- ☐ The number of electrons

6. What is the problem with the greenhouse effect?

- ☐ That it exists at all
- ☐ A change in its size, since without it the planet would be far colder
- ☐ It destroys the ozone layer
- ☐ It only affects cities

7. A cork bobs on a rippling pond. What has the wave transferred?

- ☐ Water, from one side to the other
- ☐ Energy, without transferring matter
- ☐ Both equally
- ☐ Neither

8. Fossil fuels are non-renewable because the process that forms them has stopped.

- ☐ True
- ☐ False

9. The greenhouse effect and the hole in the ozone layer are the same phenomenon.

- ☐ True
- ☐ False

10. A wave has frequency 250 Hz and wavelength 1.4 m. What is its speed in m/s?

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1. **Takes in energy; Responds to its surroundings; Reproduces**

Fire consumes fuel and spreads; a crystal grows. Neither does everything on the list.

2. **Classification follows shared ancestry, not appearance**

Similar shapes evolve repeatedly because water imposes the same constraints on every swimmer.

3. **10**

About 90% is lost at each transfer: $10000 \rightarrow 1000 \rightarrow 100 \rightarrow 10$.

4. **Non-renewably, because the rate of use exceeds the rate of replacement**

”Renewable” describes a rate, not a category the resource belongs to permanently.

5. **The number of protons**

The atomic number is the element. Change the neutrons and you have an isotope of the same element.

6. **A change in its size, since without it the planet would be far colder**

The effect keeps the planet habitable. The concern is the change, not the mechanism.

7. **Energy, without transferring matter**

The medium oscillates about a fixed position and returns to it. Water travelling would be a current.

8. **False**

It continues, but over tens of millions of years — impossibly slow relative to how fast we use them.

9. **False**

Different gases, different mechanisms, different parts of the atmosphere — and examiners test the confusion directly.

10. **350**

$v = f\lambda = 250 \times 1.4 = 350$ m/s, close to the speed of sound in air — a useful sanity check.