

1. GAC013 Science II: Scientific Principles

Starter Quiz · 课前小测

GAC Science

Name: _____ Score: _____

1. What does it mean that scientific ideas are provisional?

- ☐ They are unreliable
- ☐ They stand until better evidence arrives
- ☐ They are only opinions
- ☐ They change every year

2. Which is a testable hypothesis?

- ☐ Plants have feelings we cannot measure
- ☐ Plants given fertiliser grow taller in four weeks
- ☐ Nature is beautiful
- ☐ Some plants are luckier than others

3. A balance reads 2.001, 2.002, 2.001 g for a mass known to be 1.500 g. What is it?

- ☐ Accurate but imprecise
- ☐ Precise but inaccurate
- ☐ Both
- ☐ Neither

4. What does peer review actually check?

- ☐ That the experiment was repeated
- ☐ That the method is sound and the claims match the evidence
- ☐ That the raw data are correct
- ☐ That the conclusion is true

5. Which statement is a value judgement rather than a measurement?

- ☐ The vaccine reduces transmission by 40%
- ☐ The vaccine should be mandatory
- ☐ Uptake was 62% in this region
- ☐ Side effects occurred in 1 in 10,000 cases

6. Assessing a risk properly needs which of these? Choose all that apply.

- ☐ How likely the harm is
- ☐ How serious it would be

☐ What the alternative is

☐ How dramatic it sounds

Tick every correct option.

7. It is correct to write that a scientific theory "has been proved".

☐ True ☐ False

8. Changing the fertiliser and the light together saves time and gives the same information.

☐ True ☐ False

9. How do you write a length of 12.4 cm with an uncertainty of 0.05 cm?

10. A study funded by a company with an interest in the result should be dismissed.

☐ True ☐ False

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1. **They stand until better evidence arrives**

A theory can be the best-supported explanation available and still be open to revision.

2. **Plants given fertiliser grow taller in four weeks**

A result could contradict it. If nothing could, it is not a hypothesis.

3. **Precise but inaccurate**

The repeats cluster tightly, and all of them are wrong by the same amount — a systematic error.

4. **That the method is sound and the claims match the evidence**

It rarely sees the raw data and never repeats the work. It filters; it does not guarantee.

5. **The vaccine should be mandatory**

Science can say what a policy would do. Whether it should be done is a different kind of question.

6. **How likely the harm is; How serious it would be; What the alternative is**

”Is X safe?” is unanswerable; ”is X safer than Y?” can be answered.

7. **False**

Science accumulates support and eliminates alternatives. ”Strongly supported” is the accurate phrase.

8. **False**

No result can then tell you which one mattered, and no later analysis can rescue it.

9. **12.4 ± 0.05 cm**

Value, uncertainty, unit. Stating the range is part of the claim, not an admission of weakness.

10. **False**

It is a reason to check the method more carefully, not to discard it. Funding shapes questions more than answers.