Year 11 Science: The Earth system, the carbon cycle and rising CO_2

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Name the sphere each of these belongs to: a glacier, a kauri tree, a coal seam.

2. Write the balanced equation for burning methane. How many CO_2 molecules does one methane molecule make?

3. CO_2 at Mauna Loa rises and falls a little every year, peaking around May. Explain why.

4. Explain how burning fossil fuels can harm pāua.

5. Discuss one way warming can feed back to make itself worse.

Try it: CO_2 at Baring Head

Baring Head, on the coast just east of the entrance to Wellington Harbour, has measured CO_2 in clean Southern Ocean air for more than 50 years. Its readings are below.

Baring Head reading	CO_2 (ppm)
Latest (published July 2026)	424.7
One year earlier	423.3
Ten years earlier	401.1
Pre-industrial level	280

6. By how much did CO_2 at Baring Head rise over the ten years, and what is that per year?

7. By what percentage is the latest reading above the pre-industrial level?

8. Mauna Loa's yearly mean for 2025 was 427.35 ppm. Give one reason Baring Head reads a little lower.

Fix the mistake

9. Correct this statement: "Global warming is caused by the hole in the ozone layer letting in more heat."

10. Correct this statement: "Ocean acidification means the sea has turned into an acid."

11. Correct this statement: "The greenhouse effect is harmful and should be stopped."

12. Correct this statement: "Burning fossil fuels creates new carbon."