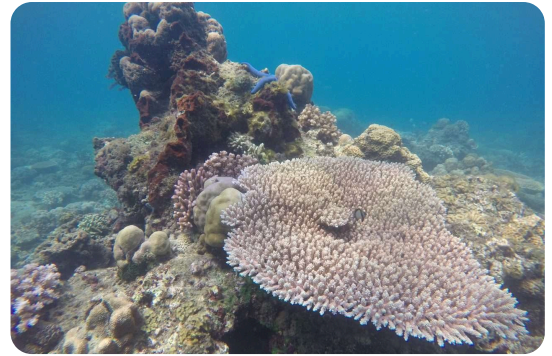




A partnership in the sunlight

Lesson plan: coral symbiosis, calcification, growth rates and reproduction, with growth calculations that show why reefs recover slowly



Ages	14 to 18 (grades 9 to 12)
Time	60 minutes
Group	Up to 36 students
Where	Any classroom. No internet needed.
You need	The slides and one coral maths worksheet per student

What students learn

- How corals and their algae depend on each other, and why this limits corals to shallow, clear water.
- How corals build reefs from calcium carbonate, and how fast they grow.
- How corals reproduce sexually and asexually.
- How growth rates affect recovery after damage.

Before the lesson

1. Print one **coral maths** worksheet per student.

The lesson

- 1 The partnership **15 minutes, slides 1 to 3**. Emphasise that corals are animals that farm algae.
- 2 Building with stone **10 minutes, slide 4**. Growth rates and growth bands.
- 3 Coral maths **20 minutes, slide 5**. Students work through the calculations.
- 4 Reproduction **10 minutes, slide 6**. Link fragmentation to coral nurseries.
- 5 Wrap up **5 minutes, slide 7**. Discuss one or two questions.

Answers and what to listen for

Answers: 2. About 50 years (growing 2 cm across a year). 3. About 10 years. 4. Fast branching corals regrow first, so the reef may be dominated by branching forms for decades, with less structural variety and fewer big, old massive corals. 5. Without their algae, corals lose most of their energy supply, so they have less energy for calcification.

Making it easier or harder

- **Younger groups:** do questions 2 and 3 together.
- **Older groups:** discuss how acidification (The changing ocean module) would change the calculations.

Curriculum links

- **Biology:** symbiosis, photosynthesis, reproduction.
- **Chemistry:** calcium carbonate.
- **Maths:** rates and proportion.
- **IB and GCSE:** ecology and interdependence.

The teacher reading has the science behind every slide, with links to the sources.

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