

Mission 9: Power Planner

Role: Energy Planner **Duration:** 60 minutes

Learning Intentions & Success Criteria

We are learning to:

- Calculate a percentage saving between two costs.
- Read and plot a point on a graph using a month number and a total cost.
- Use a graph to find the point where one option becomes cheaper than the other.

Success criteria — I can:

- I can calculate a monthly saving and express it as a percentage.
- I can explain what a point like (0, 3600) means on this graph.
- I can read a break-even point from a graph and check it using multiplication.

Curriculum focus: Number — rates, percentages, and reading a break-even point from a graph

Materials

- Calculator
- Whiteboard
- Printed worksheet

Lesson Flow & Scripted Questions

Use these prompts rather than explaining the maths yourself — let students reason first.

Stage	Ask students
Context	"What costs money to run in a school hall — lights, fridges, hot water?" "Why might a big upfront cost sometimes save money later?"
Student Exploration	"The school hall pays \$240 a month now, and \$60 a month with solar — but solar costs \$3600 to install. Is it worth it? Talk about it in groups before we calculate anything."
Reading the Graph (do this explicitly)	"What do you think the numbers along the bottom show us?" "What do you think the numbers up the side show us?" "What do you think (0, 3600) means on the solar line?"
Discussion	"Does 'costs \$3600' automatically mean 'not worth it'?" "What happens to the gap between the two lines over time?"
Introduce the Maths	"What does the point where the two lines cross actually mean?" "How could we check that point using multiplication instead of just reading the graph?"
Reflection	"Why is a graph useful here instead of just comparing two single numbers?"

Do Not Default To

- Assuming students already know how to read a graph — walk through the axes explicitly first, before asking them to interpret anything.
- Telling students the break-even month before they find it on the graph themselves.
- Treating the \$3600 installation cost in isolation, without comparing it to savings over time.

 Differentiation**Extra support:**

- Pre-teach key words: installation cost, monthly bill, saving, break-even.
- Focus only on Step 1 and Step 3 for a first attempt, skipping the checkpoint table.

Extension / mentor track:

- Ask students to find the exact break-even month using calculation alone (no graph), and check it matches what they read off the graph.
- Introduce a second solar quote with different costs and have students compare three options.

 Adapting This Mission To Your Community

- Replace the school hall with a real local building — a classroom block, clinic, or community hall — and use real or realistic bill figures if available.
- If solar isn't the relevant technology locally (e.g. diesel generators are the real issue), swap in the locally relevant energy comparison.
- Invite the school's Maintenance staff or a local energy project officer to discuss a real project, if one exists.

This mission uses a placeholder context. Please localise names, places, and any cultural knowledge in consultation with local Traditional Owners, Elders, or community members, and only include specific cultural knowledge that has been given permission to share.