Physics Newsletter Challenge
Quantum Tunnelling

Complete the tasks below to earn rewards!

Name: _____ Form/Year: _____ Date: _____

Read the Quantum Tunnelling newsletter carefully, then complete as many tasks as you can. Each tier earns you a different reward — how far can you go?

🥉 TIER 1 — Bronze: Recognition Points

Answer these general questions based on the newsletter overview.

In your own words, what is quantum tunnelling?

Why can't a person quantum tunnel through a wall in real life?

What is the Schrödinger equation used for?

Your answer:

🥈 TIER 2 — Silver: Sweets + Recognition Points

Answer these more detailed questions from across the whole newsletter.

Explain what happens to the wave function when it hits a barrier. Why does the barrier's thickness matter?

What is the Josephson Junction and what did the 2025 Nobel Prize experiment demonstrate?

What is a superconductor, and why is cooling the circuit important in the Nobel Prize experiment?

How does the Nobel Prize discovery connect quantum tunnelling to quantum computers?

What did early scientists in the late 1800s/early 1900s think atoms were, and why did that view break down?

Your answer:

🥇 TIER 3 — Gold: Sweets + Recognition Points + Special Prize

Complete ALL questions above AND write your thoughts on the videos and activities.

After watching the videos and exploring the newsletter activities, answer the following:

1. Watch the quantum tunnelling visualisation video (https://www.youtube.com/watch?v=Yg0LT3n4mYY). What did you find most surprising or interesting? Did it change how you picture particles?

2. Watch the Schrödinger equation explanation video (https://www.youtube.com/watch?v=O6g-7rUgrdg). What part of the equation did you find hardest to understand? What do you still wonder about?

3. Watch the applications video (https://www.youtube.com/watch?v=MyVlldYiVbk). Which real-world application of quantum tunnelling did you find most impressive, and why?

4. Research Point: What other equations are used to detect or describe particles? Write a short paragraph on what you found.

5. "I Wonder?" Question: What do you think the Universe is made of? Give your own idea and explain your reasoning.

Hand your completed sheet to your physics teacher. Good luck!