🧪 **2018 Ph H1 Q1**
Section: Our Dynamic Universe
Topic: Motion, Equations and Graphs

Question Summary

A car accelerates from **2.0 m s⁻¹** to **14 m s⁻¹** at a constant acceleration of **4.0 m s⁻²**.
What distance does it travel during this acceleration?

✅ Final Answer:

C. 24 m

Working

Use the equation of motion:

$$s = \frac{v^2 - u^2}{2a}$$

Where:

- $u = 2.0\,\text{ms}^{-1}$
- $v = 14\,\text{ms}^{-1}$
- $a = 4.0\,\text{ms}^{-2}$

Substitute values:

$$s = \frac{(14)^2 - (2.0)^2}{2 \times 4.0} = \frac{196 - 4}{8} = \frac{192}{8} = 24\,\text{m}$$

Quick Tips

- Use $v^2 = u^2 + 2as$ when you don't know the time.
- Always check the square of both velocities before subtracting.
- Keep units consistent: m/s for speed, m for distance.