18 What is a correct derivation of the equation relating power, force and velocity?

A power = $\frac{\text{work done}}{\text{time taken}}$ and work done = force × displacement

so power = $\frac{\text{force} \times \text{displacement}}{\text{time taken}}$

so power = force × velocity

B power = $\frac{\text{work done}}{\text{time taken}}$ and work done = force × distance

so power = $\frac{\text{force} \times \text{distance}}{\text{time taken}}$

so power = force × velocity

C power = $\frac{\text{work done}}{\text{time taken}}$ and work done = $\frac{\text{force}}{\text{displacement}}$

so power = $\frac{\text{force}}{\text{displacement}}$ × time taken

so power = $\frac{\text{force}}{\text{velocity}}$

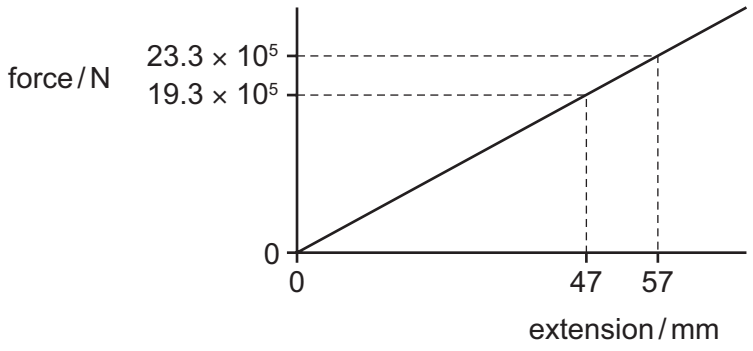
D power = $\frac{\text{work done}}{\text{time taken}}$ and work done = $\frac{\text{force}}{\text{distance}}$

so power = $\frac{\text{force}}{\text{distance}}$ × time taken

so power = $\frac{\text{force}}{\text{velocity}}$

19 A cable on a suspension bridge supports a weight of 19.3×10^5 N. This weight causes the cable to stretch by 47 mm.

A lorry crossing the bridge then increases the force on the cable to 23.3×10^5 N. The force-extension graph for the cable is shown.



What is the **increase** in strain energy in the cable when the lorry is crossing the bridge?

A 21 kJ **B** 23 kJ **C** 45 kJ **D** 66 kJ