

Solutions

Each answer shows the steps, then the **result**.

2.1

- $U = mgh = 5(10)(4) = 200 \text{ J}$

2.2

- $U = \frac{1}{2}kx^2 = \frac{1}{2}(200)(0.2)^2 = 4 \text{ J}$

2.3

- Gravitational potential energy

2.4

- $\Delta U = mg(h_2 - h_1) = 3(10)(4 - 1) = 90 \text{ J}$

3.1 B

- $U = mgh$

3.2 B

- $U \propto x^2$, so doubling gives $2^2 = 4$

3.3

(a)

- $U = \frac{1}{2}(500)(0.06)^2 = 0.9 \text{ J}$

(b)

- It converts into the block's kinetic energy

3.4

(a)

- $\Delta U = 10(9.8)(2.5) = 245 \text{ J}$

(b)

- 245 J