

Solutions

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

2.1

- $F = kx = 100 \times 0.2 = 20 \text{ N}$

2.2

- The force opposes the displacement (points back toward the natural length)

2.3

- $k = F/x = 12/0.03 = 400 \text{ N m}^{-1}$

2.4

- Spring A (more force for the same stretch means a larger k)

3.1 B

- $F = kx$, proportional to displacement

3.2 B

- the restoring force points back toward the natural length

3.3

(a)

- $F = kx = 500 \times 0.04 = 20 \text{ N}$

(b)

- Opposite to the compression (pushing outward)

3.4

(a)

- $F = mg = 20 \text{ N}$

(b)

- $k = F/x = 20/0.1 = 200 \text{ N m}^{-1}$