

Solutions

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

2.1

- Opposite to the motion

2.2

- Drag equals weight (net force zero)

2.3

- Zero

2.4

- About g ($\approx 9.8 \text{ m s}^{-2}$) — the speed is still low, so drag is negligible

3.1 B

- drag increases with speed

3.2 B

- at terminal velocity the forces balance, so the net force is zero

3.3

(a)

- Drag grows with speed until it equals the weight; the net force becomes zero, so the velocity stops changing

(b)

- It rises steeply, curves over, and levels off at a constant value

3.4

(a)

- $\text{drag} = mg = 70 \times 10 = 700 \text{ N}$

(b)

- Zero