

Solutions

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

2.1

- $+4.0 + 1.0 = +5.0 \text{ m s}^{-1}$

2.2

- -20 m s^{-1}

2.3

- Take one car as $+15$ and the other as -15 ; relative velocity $= (+15) - (-15) = 30 \text{ m s}^{-1}$, closing

2.4

- Their relative velocity is constant, so their measured velocities differ by a constant amount; the rate of change of velocity — the acceleration — is therefore the same

3.1 A

3.2 B

- $12 + (-1.5) = 10.5 \text{ m s}^{-1}$ forward

3.3

(a)

- $200 + 30 = 230 \text{ m s}^{-1}$ east

(b)

- $200 - 30 = 170 \text{ m s}^{-1}$ east