

1 A train travels from Paris to Milan.

(a) The train departs from Paris at 20.28 and the journey takes 9 hours 10 minutes.

(i) Find the time the train arrives in Milan.

$$\begin{array}{r} 20.28 \\ 9.10 + \\ \hline 29.38 \end{array} \quad \begin{array}{r} 29.38 \\ 24.00 - \\ \hline 05.38 \end{array}$$

Answer(a)(i) 05.38 [1]

(ii) The distance between Paris and Milan is 850 km.

Calculate the average speed of the train.

$$\begin{aligned} \text{Average Speed} &= \frac{\text{Distance}}{\text{Time}} \\ &= \frac{850 \text{ km}}{9\frac{1}{6} \text{ h}} \\ &= 92.727272 \dots \text{ km/h} \\ &\approx 92.7 \text{ km/h} \end{aligned}$$

$$\begin{aligned} \text{Time} &= 9 \text{ h } 10 \text{ min} \\ &= 9\frac{10}{60} \text{ h} \\ &= 9\frac{1}{6} \text{ h} \end{aligned}$$

Answer(a)(ii) 92.7 km/h [2]

(b) The total number of passengers on the train is 640.

- (i) 160 passengers have tickets which cost \$255 each.
330 passengers have tickets which cost \$190 each.
150 passengers have tickets which cost \$180 each.

Calculate the mean cost of a ticket.

$$\begin{aligned} \bar{x} &= \frac{160 \cdot 255 + 330 \cdot 190 + 150 \cdot 180}{640} \\ &= \frac{40800 + 62700 + 27000}{640} \\ &= \frac{130500}{640} \\ &= 203.90625 \\ &\approx 204 \end{aligned}$$

Answer(b)(i) \$ 204 [3]