

Exercise 84

In a recent Grand Prix, the winner completed the race with an average speed of 229.8 km/h. What was his speed in miles per hour, meters per second, and feet per second?

Solution

Use conversion factors to write the speed in miles per hour.

$$229.8 \frac{\cancel{\text{km}}}{\text{h}} \times \frac{1000 \cancel{\text{m}}}{1 \cancel{\text{km}}} \times \frac{1250 \cancel{\text{ft}}}{381 \cancel{\text{m}}} \times \frac{1 \text{ mi}}{5280 \cancel{\text{ft}}} \approx 142.8 \frac{\text{mi}}{\text{h}}$$

Use conversion factors to write the speed in meters per second.

$$229.8 \frac{\cancel{\text{km}}}{\text{h}} \times \frac{1000 \text{ m}}{1 \cancel{\text{km}}} \times \frac{1 \text{ h}}{60 \cancel{\text{min}}} \times \frac{1 \cancel{\text{min}}}{60 \text{ s}} \approx 63.83 \frac{\text{m}}{\text{s}}$$

Use conversion factors to write the speed in feet per second.

$$229.8 \frac{\cancel{\text{km}}}{\cancel{\text{h}}} \times \frac{1000 \cancel{\text{m}}}{1 \cancel{\text{km}}} \times \frac{1250 \text{ ft}}{381 \cancel{\text{m}}} \times \frac{1 \cancel{\text{h}}}{60 \cancel{\text{min}}} \times \frac{1 \cancel{\text{min}}}{60 \text{ s}} \approx 209.4 \frac{\text{ft}}{\text{s}}$$