Unit (Dimensional) Analysis

Write each statement as a rate:

There are 5280 feet in a mile. $\frac{5280\text{ft}}{\text{mile}}$

There are 60 seconds in a minute. $\frac{60\text{sec}}{\text{min}}$

There are 60 minutes in an hour. $\frac{60\text{min}}{\text{hr.}}$

$60 \cdot 60 = 3600$

$= 1$

Use the rates to answer this question: If you a driving a car and you are travelling 50 feet per second, what is your rate in miles per hour?

$$\frac{50\text{ft}}{\text{sec}} \cdot \frac{1\text{ mi}}{5280\text{ft}} \cdot \frac{3600\text{sec}}{1\text{ hour}} = \frac{180{,}000}{5280} = \frac{34.1\text{ mi}}{\text{hour}}$$

The [redacted] can travel to the Skydeck in [redacted]

[redacted] Skydeck/103rd floor [redacted]

$$\frac{1354\text{ ft}}{70\text{ sec}} \cdot \frac{1\text{ mi}}{5280\text{ ft}} \cdot \frac{3600\text{ sec}}{1\text{ hour}} = \frac{4874400}{369600}$$

$$= \frac{13.2\text{ mi}}{\text{hour}}$$