Enrich

Acceleration

When we think of acceleration, we normally think of an increase in speed, although it can be an increase or decrease in speed. In physics, the definition of acceleration is a change in the velocity of an object, where velocity is speed in a given direction.

Units of acceleration are given as $\frac{\text{length}}{\text{time}^2}$. You can use the relationships you know between lengths to convert units of acceleration.

Complete. Round to the nearest hundredth if necessary.

1. $75 \frac{\text{cm}}{\text{s}^2} =$ _____ $\frac{\text{m}}{\text{s}^2}$

2. $16{,}500 \frac{\text{cm}}{\text{s}^2} =$ _____ $\frac{\text{mm}}{\text{s}^2}$

3. $24 \frac{\text{ft}}{\text{s}^2} \approx$ _____ $\frac{\text{m}}{\text{s}^2}$

4. $15 \frac{\text{m}}{\text{s}^2} \approx$ _____ $\frac{\text{ft}}{\text{s}^2}$

5. $6 \frac{\text{ft}}{\text{s}^2} \approx$ _____ $\frac{\text{cm}}{\text{s}^2}$

6. $200 \frac{\text{mm}}{\text{s}^2} =$ _____ $\frac{\text{m}}{\text{s}^2}$

An object is in free fall when gravity is the only force acting upon it. The acceleration of an object in free fall is about $9.806 \frac{\text{m}}{\text{s}^2}$.

7. Convert $9.806 \frac{\text{m}}{\text{s}^2}$ into feet per second squared.

8.