1. A coin of mass 15 g tied to a string moves (uniformly) in a complete circle of radius 1.0 m every 1.0 second. Its radial acceleration is:

   A) 1.0 m/s²
   B) 5.9 m/s²
   C) 6.3 m/s²
   D) 39 m/s²

2. A car travelling at a speed of 75.0 miles per hour is moving how many meters per second?

   A) 13.0
   B) 33.5
   C) 75.0
   D) 121

Useful constants and equations:

\[ x = \frac{1}{2} at^2 + v_0 t + x_0 \quad a_r = \frac{v^2}{r} \]
\[ v = v_0 + at \quad T = \frac{2\pi r}{v} \]
\[ v^2 = v_0^2 + 2a(x - x_0) \quad \sum F = m a \]
\[ g = 9.8 \text{ m/s}^2 \quad 1 \text{ mile} = 1.608 \text{ km} \]
Physics 2305
Quiz 2—Form B

28 January, 2000

1. A satellite in low-earth orbit experiences a centripetal acceleration close to \( g \). If it’s in a circular orbit of radius 6500 km, what is its orbital velocity?

   A) 2.5 km/s  
   B) 8.0 km/s  
   C) 25 km/s  
   D) 64 km/s

2. The speed of light is \( 3.00 \times 10^8 \) m/s. What is it in km/h?

   A) \( 1.86 \times 10^5 \)  
   B) \( 3.00 \times 10^5 \)  
   C) \( 3.00 \times 10^8 \)  
   D) \( 1.08 \times 10^9 \)

Useful constants and equations:

\[
\begin{align*}
x &= \frac{1}{2} a t^2 + v_o t + x_o \\
v &= v_o + a t \\
v^2 &= v_o^2 + 2a (x - x_o) \\
g &= 9.8 \text{ m/s}^2 \\
a_r &= \frac{v^2}{r} \\
T &= \frac{2 \pi r}{v} \\
\Sigma F &= ma \\
1 \text{ mile} &= 1.608 \text{ km}
\end{align*}
\]
1. Which of the following could not be correct?

A) \( a = \frac{t}{v^2} \)
B) \( v = (gr)^{1/2} \)
C) \( t = \frac{\Delta x}{v_0} \)
D) \( y = \frac{v^2}{g} \)

2. The speed of light is \( 3.0 \times 10^8 \) m/s. One furlong is 220 yards (or 201 m). A fortnight is 2 weeks. What is the speed of light in furlongs per fortnight?

A) 1.2  
B) \( 1.8 \times 10^{12} \)  
C) \( 3.6 \times 10^{14} \)  
D) \( 7.3 \times 10^{16} \)

Useful constants and equations:

\[
\begin{align*}
x &= (1/2) a t^2 + v_0 t + x_0 \\
v &= v_0 + a t \\
v^2 &= v_0^2 + 2 a (x - x_0) \\
g &= 9.8 \text{ m/s}^2 \\
T &= 2 \pi \frac{r}{v} \\
\Sigma F &= m a
\end{align*}
\]

1 mile = 1.608 km