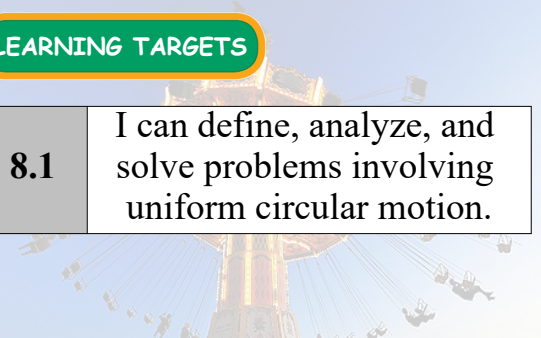


8.1 Circular Motion

LEARNING TARGETS

8.1

I can define, analyze, and solve problems involving uniform circular motion.



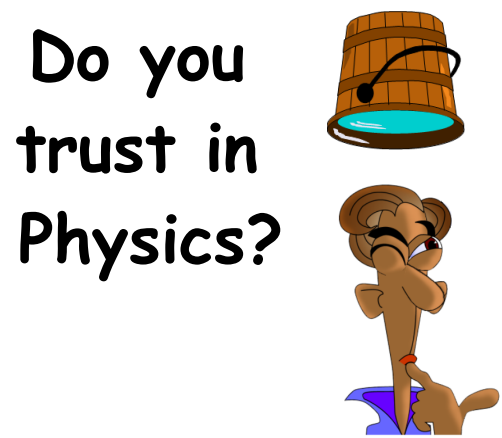
Circular Motion

Key Concepts

- An object moving in a circle at a constant speed accelerates toward the center of the circle, and therefore, it has centripetal acceleration.
- Centripetal acceleration depends directly on the square of the object's speed and inversely on the radius of the circle.

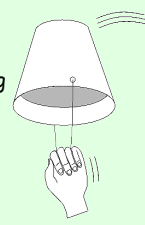
$$a_c = \frac{v^2}{r}$$
- A net force must be exerted toward the circle's center to cause centripetal acceleration.


$$F_{\text{net}} = ma_c$$
- The velocity vector of an object with a centripetal acceleration is always tangent to the circular path.



How Fast?

What is the minimum speed that I can swing the bucket without the water pouring out?





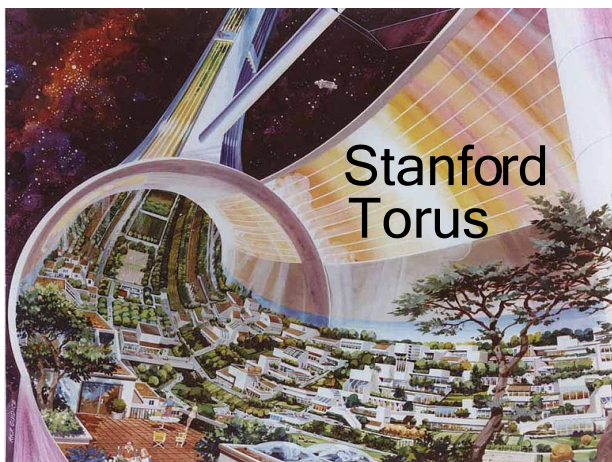
$$F_{\text{net}} = F_g + N$$

$$ma_c = mg$$

$$\frac{v^2}{r} = g$$

$$v = \sqrt{r \cdot g}$$





8.2
Universal Gravitation

LEARNING TARGETS

8.2

I can define, explain, and apply Newton's Law of Universal Gravitation to solve problems.

Gravitation Simulation

Purpose:
The purpose of this activity is to investigate the variables that affect the gravitational force between a planet and its moon.

