

Create a Central Net Force Model

- Properties
- Representations → Graphical, Mathematical, Diagrammatic
- Rules of Behavior

• Properties:

- Time
- Mass
- Angular displacement
- Angular velocity
- Angular acceleration
- Velocity
- Acceleration
- Force

• Representations:

- Graphical

- Force v. time
- acceleration v. time
- angular velocity v. time

- Mathematical

- $a_c = \frac{v^2}{r}$

- $F_c = ma_c = \frac{mv^2}{r}$

- Diagrammatic

- Free-Body
- Force
- Motion maps

• Rules of Behavior

- Velocity is tangent to curve.
- Centripetal acceleration points radially inward.
- Centripetal force points radially inward.
- There is always a real force that "produces" a centripetal force.

- Model → Representation of the structure in a given system
- System → Set of related objects, which may be real or imaginary, physical or mental, simple or composite
- Structure → Set of relations among objects