ROTATIONAL VELOCITY & ACCELERATION

● The rotational equivalents of linear velocity and acceleration are Rotational Velocity and Rotational Acceleration:

$v_{,AVG}$ = _____ [_____] → _____ = _____ [_____]

a = _____ [_____] → _____ = _____ [_____]

● There are 3 additional variables that describe how quickly something rotates (similar to w). They are all related:

w = _____ = _____ = _____ 1 RPM = _____

(_____) 1 Hz = _____

- Often we will convert from any of these three back to _____ →

● Note that rotational equations work for both:

(1) Points Masses (_____) moving in a circular path; or

(2) Rigid Body/Shape (_____) rotating around themselves.

EXAMPLE 1: A 30-kg disc of radius 2 m rotates at a constant 120 RPM. Calculate its (a) period, (b) angular speed.

EXAMPLE 2: Calculate the rotational velocity for the Earth as it (a) rotates around itself, (b) rotates around the Sun.

PRACTICE: ROTATIONAL VELOCITY & ACCELERATION

PRACTICE**:** Calculate the rotational velocity (in rad/s) of a clock's minute hand**.**

→ EXTRA**:** Calculate the rotational velocity (in rad/s) of a clock's hour hand**.**

PRACTICE: ROTATIONAL VELOCITY & ACCELERATION

PRACTICE**:** A wheel of radius 5 m accelerates from 60 RPM to 180 RPM in 2 s. Calculate its angular acceleration**.**