Student Self Assessment Name _____ Period ____

Physics: Rotational Motion Part 1 – Small Circles v1.4

Track your learning for each target, write the resources that will help you learn. Add notes and useful tidbits too!

#	Standards	Learning Targets *I can….*	Tracking my progress				Resources		
			Have no clue	Kind of know it	I think I get it	I can teach this	Notebook pages	Textbook Sections	Other resources
1		Define Rotational motion in terms of the fundamental unit (rotational angle about a fixed point measured in radians)							
2		Translate an angular velocity into a tangential velocity for a known circular object of radius r							
3	4.D.1	Assign positive or negative vector direction values for all rotational variables (+ counter clockwise) and (- clockwise)							
4		Explain how Newton's 1st law describes constant angular velocity when net torque = 0							
5	5.E.2	Describe moment of inertia as a resistance to change in rotation							
6		Explain how the distribution of mass in an object effects its angular acceleration and is quantified as the moment of inertia							
7		Describe how to make an object move in a circle							
8		Construct force diagrams that display the forces acting on an object undergoing uniform circular motion							
9		Acknowledge the relationship between force and mass for an object traveling in a circle							
10		Quantify the relationship between F, m, v, and r in circular motion ____							
11		Solve for the missing quantity given three of the four variables above							
12	5E2	Define the orbit of a planet as elliptical with the sun at one focal point							
13		Describe the speed of a planet as faster when it is closer to the sun (sweeping out equal areas in equal time)							
14	2B1 3C1	Describe the force of gravity between two objects is proportional to the product of their masses							
15	2B1	Describe the gravitational field as proportional to the mass of the object (planet)							
16	2B2	Describe the force of gravity between two objects is inversely proportional to the square of the distance between them							
17	2B2	Describe a gravitational field as proportional to the mass of the object and inversely proportional to the distance away from the object ($g=GM/r^2$)							

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18	2B2	Approximate a numerical value of the gravitational field (g) given mass and radius								
19		Bonus – relate the period of revolution to the orbital radius								

Potential activities for model development:
1-8 Roll a circle to develop radian measurements (is there a relationship between degrees of rotation and distance traveled?)
Robots for angular velocity vs linear velocity (useful!)
9-12 Rolling the disks with distributable masses
13-14 Use pulleys with unbalanced masses (link rotational acceleration with linear acceleration) Superpulleys on tracks with photogates, or a bike tire with adjustable masses to show how the rotational acceleration depends on the applied torque AND the mass/distribution) and perhaps a rear bike wheel cluster
15-16 Spinning wheels running into each other?
19 Sitting and spinning with arms out versus crossed on platforms or using some other mechanism for changing the mass distribution.