Name: _____**Date:** _____

The Spin on Things Worksheet

1. How many rotations did the spinner make within 10 seconds when the pencil was poked through the center?

2. What was the angular velocity of the spinner when the pencil was poked through the center? (angular velocity = rotations/sec)

3. What happened to the spinner when you poked the pencil through a point away from the center? _____
    How many rotations did it make within 10 seconds? _____
    Why do you think this happened?

4. What was the angular velocity of the spinner when the pencil was poked away from the center? (angular velocity = rotations/sec)

5. How did the spinner spin differently when you had a short tip and a long handle versus a long tip and a short handle?
    What would cause such a difference?

6. Measure the length of the handle when it is short and long.
    Short = _____
    Long = _____

7. What difference did you see when the pennies were close to the circle versus close to the outer edge of the circle?

    Hints:

    A. How many rotations did the two spinners make within 10 seconds?

    B. Measure the radius from the center to the pennies for the two scenarios (close to the center and close to the outer edge).

8. When the spinners were shaped like a triangle and a square, how did they spin differently than when the spinner was circular? (How many rotations did these spinners make within 10 seconds?)

9. Use the radii you measured in Step 5 and the equation below to find out which weight arrangement creates the most rotational inertia:

    rotational inertia = mass x radius x radius (use a mass of 1.5 grams).

Bonus Question

Here's a tricky question! Use the same two radii and this equation:

Angular momentum = mass x velocity x radius x radius

See if you can state which law is occurring…

Here's the situation: The first spinner has pennies close to the center and the second spinner has pennies close to the outer edge. If the mass is the same for both, and the angular momentum is the same for both, for which spinner would the velocity be bigger?