

NAME _____

PERIOD _____

PHYSICS HOMEWORK QUIZ #15.5D

ANGULAR MOMENTUM

Suppose that you are an ice skater and that your mass is 53.0 kg and that when your arms are fully extended you have a radius of gyration of 18.0 cm. As you skate you extend your arms fully and begin to go into a spin such that you make 2.5 complete revolutions each second.

1. What is your moment of inertia? [3 pts]
2. What is your angular velocity? [3 pts]

Suppose that you now pull your arms inward against your body and thus reduce your radius of gyration to 12.0 cm.

3. What will be your angular momentum after pulling your arms in to your side? [3 pts]
4. What will be your new moment of inertia? [3 pts]
5. How many revolutions does your body now make during each second? [3 pts]