Physics **Circular & Rotational Motion** **Mr. McMullen**

Name_____ Date _____ Period _____

Circular & Rotational Motion – Conceptual Questions

True or False – Circle the correct answer.

T F 1. A straight line about which rotation takes place is called an axis.

T F 2. Any force that causes an object to move in a circular path is called a centripetal force.

T F 3. It is possible to rotate a very large cylindrical space habitat around its central axis at just the right speed so that people living inside the cylinder will experience a force that feels like gravity.

T F 4. A bug on a turning record will make more turns per minute if it walks toward the center of the record.

T F 5. When you whirl a can on the end of the string, the centripetal force on the can is actually the pull of the string on the can.

Multiple Choice – Choose the best answer and write the appropriate letter in the space provided.

_____ 6. Which has the greater linear speed, a horse near the outside rail of a merry-go-round or a horse near the inside rail?

a) The outside horse b) The inside horse c) Neither. They both have the same linear speed

_____ 7. Which has the greater angular speed, a horse near the outside rail of a merry-go-round or a horse near the inside rail?

a) The outside horse b) The inside horse c) Neither. They both have the same linear speed

_____ 8. Which of the following is NOT a unit of rotational speed?

a) revolutions per second b) rotations per second c) revolutions per minute d) meters per second

_____ 9. What is the direction of the force that acts on clothes in the spin cycle of a washing machine?

a) outward b) inward c) up d) down

_____ 10. A tin can whirled on the end of a string moves in a circle because….

a) once the can starts moving, this is its natural tendency.
b) the can continually pulls on the string
c) there is a force on the cart pulling it outward.
d) there is an inward force acting on the can.

_____ 11. If you whirl a tin can on the end of a string and the string suddenly breaks, the can will…

a) fly directly away from you.
b) fly directly toward you.
c) fly off, tangent to its circular path.
d) spiral way from your hand.

_____ 12. A ladybug rests on the bottom of a tin can that is being whirled horizontally on the end of a string. Since the ladybug, like the can, moves in a circle, there must be a force on it. What exerts the force?

a) Your Hand b) The string c) The can d) Gravity

_____ 13. People in the future may well live inside a rotating space structure that is more than 2 km in diameter. Within this structure, people on the inside of the outer edge will experience 1 g while people halfway to the axis will experience.

a) 2 g b) 1 g c) ½ g d) ¼ g

_____ 14. As the rotational speed of a space habitat increases, the weight of the people inside.

a) Increase b) Decrease c) Stays the same

_____ 15. A car travels in a circle at a constant aped. The net force on the car…

a) is directed forward, in the direction of travel. b) is directed toward the center of the curve.
c) is zero because the car is not accelerating. d) none of the above