One Problem on (almost) Every Formula:

Directions:
- Write every formula out BEFORE plugging values in.
- Plug values in BEFORE evaluating them.
- Answer on a separate piece of paper.

1. A car is driving with a speed of 24 m/s when the driver slams the break, coming to a stop in a time of 3 seconds. What is his average acceleration?

2. A dog is running with a speed of 4 m/s when it sees a squirrel and accelerates to a speed of 5 m/s in a time of 2 seconds. How far does it move while accelerating?

3. A battery provides a voltage of 12 Volts to a lightbulb with a resistance of 40 Ohms. What is the current through the light bulb?

4. A battery provides a voltage of 15 Volts to a circuit with a current of 3 A. What is the power of the circuit?

5. A top makes 8 complete spins in one second. What is the rotational velocity of the top?

6. What is the rotational inertia of a point mass of 1.5 kg a distance of 60 cm from the axis of rotation?

7. What is the period of a pendulum with a length of 80 cm on earth?

8. An object with a rotational velocity og 5 rad/sec has a rotational inertia of 3 kg m^2. What is its angular momentum? What is its rotational kinetic energy?

9. A car with speed of 8 m/s has a mass of 2000 kg. What is its momentum? What is its kinetic energy?

10. A spring with a spring constant of 200 N/m is stretched by 10 cm past its equilibrium point. How much elastic potential energy does it have?

11. A person pushes a box with a force of 50 Newtons while it moves a distance of 5 meters. How much work did the person do?

12. A box has a mass of 8 kg and is on earth. What is its weight?

13. What is the force of electrostatic repulsion between two electrons separated by 5 nanometers?

14. What is the free-fall acceleration on a planet with a mass of 5 x 10^26 kg and a radius of 8000 km?

15. An object is released from rest and falls 4 seconds before striking the ground. Assuming the object is on earth and air resistance is negligible, how far did it fall?

16. An object experiences a net force of 80 N and has a mass of 16 kg. What is its acceleration?

17. An object experiences a force of 10 N for a time of 0.04 seconds. What is the impulse acting on this object?

18. An object with a mass of 9 kg speeds up from 5 m/s to 7 m/s. What is the impulse that acted on the object?

19. What is the volume in meters of a sphere with a radius of 5 cm?

20. An object moving at a rate of 1.5 m/s stops in a time of 5 seconds. What is its acceleration?