General Physics

Name Date Period

Forces and Newton's Laws of Motion Review

Matching

1. _____ Newton's Third Law	a. An object continues to stay at rest or in motion at a constant speed unless acted upon by a net force
2. _____ Normal Force	b. Force = mass x acceleration
3. _____ Equilibrium	c. For every action there is an equal and opposite reaction
4. _____ Kinetic Friction	d. perpendicular force that surface exerts on an object
5. _____ Newton's First Law	e. represent object as point and all forces acting on it
6. _____ Weight	f. friction when object is at rest
7. _____ Free Body Diagram	g. change in velocity equals zero
8. _____ Static Friction	h. tendency to be pulled apart
9. _____ Newton's Second Law	i. force of gravity on a specific amount of matter
10. _____ Tension	j. force opposing motion proportional to the normal force

Fill in the Blank

11. SI Unit for Force: _____

12. Weight = _____ x _____

13. _____ does not change regardless of location.

14. $N = \frac{\_\_\_\_\_}{s^2}$

Calculations. Do not forget to **show all work clearly** and pay attention to significant figures and units!

15. a.) In the district soccer championship Joseph kicks a 0.800 kg soccer ball with a force of 90.0 N. How much does he accelerate the ball from rest in the process?

b.) How much would the ball be accelerated if its mass were 0.400 kg?

c.) What can you infer about the relationship between Force, mass, and relationship with your results from 15 a and 15 b?

16. Determine the coefficient of friction for a penguin slipping on flat seaweed if its mass is 21.8 kg and the force due to friction is 18.9 N.

17. A 1350 kg slippery hippopotamus slides down a mud-covered hill inclined at an angle of 22 degrees to the horizontal. If the coefficient of friction between the hippo and mud is 0.0900, what force of friction impedes the hippo's motion down the hill? Draw a **FBD**.

18. Explain when the normal force is not equal to the weight. How can the normal force be found?

15. Victoria receives a 15.00 kg present for Christmas tied in a red ribbon as shown. If she lifts the box by the ribbon in the center so that each ribbon makes a 45 degree angle with the vertical, what is the tension in each piece of string?

17. Erica and her sisters, Melanie and Katie, are fighting over a sweater. If Katie pulls with a force of 25 N at 30. degrees from the horizontal and Melanie pulls with a force of 20. N straight down, how hard is Erica pulling? Assume that the sweater is in equilibrium.