

Physics

Unit 3: forces – Review Part 2

Name: _____ Block: _____

Answer the following questions on lined paper and staple it to this sheet. For problems that involve equations, ***you must show your work.***

1. Define Inertia.
2. Define Newton's three laws and give a real-world example of each.
3. Define force.
4. If the same force is applied to two objects that have different masses, how will their accelerations compare?
5. A box weighing 45N is supported by a steel cable. What is the tension in the cable when the box is accelerated upward at a rate of 5m/s^2 ?
6. Your tennis racquet hits a ball coming at it with a 1300N instantaneous force. The ball hits the racquet with an instantaneous force that is...?
7. A 50 kg block of ice accelerates down a 25° angle. Friction is negligible. Draw a force diagram.
8. A bat hits a baseball; identify the action-reaction pair in this situation.
9. A 20 kg box is pulled at a constant speed horizontally across the floor by a 75N force. Calculate μ .
10. A horizontal 10 N force is applied to a crate that is sliding across ice, a frictionless surface. The crate weighs 15 N, what is the acceleration of the box?
11. An elephant weighs 175N, what is its mass?
12. An object is moving at a constant speed, what force is required to maintain that speed?
13. A chair on wheels is moving in a straight line at a constant speed. What do we know about it?
14. Sam is pushing on a box with a 17 N force. Al is pushing on the box with a 25 N force. Both are pushing in opposite directions. Draw a force diagram and what is the net force on the box?
15. According to problem 14, what is the net force, or resultant force if both Sam and Al push in the same direction?
16. What is equilibrium?
17. A gymnast whose weight is 450N hangs from a trapeze bar. What is the tension in each rope that attaches to the bar?
18. Define friction.
19. A box has a mass of 50 kg, what is its weight?
20. Do action-reaction pairs act on the same object?
21. If I increase my mass, what happens to my inertia?
22. What is the unit for force? What is that unit equal to?
23. If an object has no acceleration, are there any forces acting on it?
24. Is inertia a force?
25. Is mass a force?

$$\Sigma F=ma$$

$$W=mg$$

$$F_f=\mu F_N$$