Name: _____ Date: _____ Period: _____

Newton's Laws Activity

Directions: Mark each of the following situations as an example of Newton's First (1st), Second (2nd) or Third (3rd) Law on the blank before the number. Then explain in complete sentences how the situation is an example of that particular law.

1. A magician pulls a tablecloth out from under dishes and glasses on a table without disturbing them.

Law:	Explanation:

2. A person's body is thrown outward as a car rounds a curve on a highway.

Law:	Explanation:

3. Rockets are launched into space using jet propulsion where exhaust accelerates out from the rocket and the rocket accelerates in an opposite direction.

Law:	Explanation:

4. A picture is hanging on a wall and does not move.

Law:	Explanation:

5. A person not wearing a seatbelt flies through a car window when someone slams on the breaks because the person's body wants to remain in continuous motion even when the car stops.

Law:	Explanation:

6. Pushing a child on a swing is easier than pushing an adult on the same swing, because the adult has more inertia.

Law:	Explanation:

7. A soccer ball accelerates more than a bowling ball when thrown with the same force.

Law:	Explanation:

8. A soccer player kicks a ball with their foot and their toes are left stinging.

Law:	Explanation:

9. A student leaves a pencil on a desk and the pencil stays in the same spot until another student picks it up.

Law:	Explanation:

10. Two students are in a baseball game. The first student hits a ball very hard and it has a greater acceleration than the second student who bunts the ball lightly.

Law:	Explanation:

Name: _____ Date: _____ Period: _____

Directions: Use the force and acceleration formulas to answer the following questions. Be sure to show your work.

11. How much force is needed to accelerate a 68 kilogram-skier at a rate of 1.2 m/sec2?

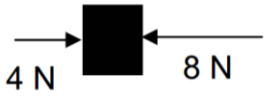
12. The Space Shuttle has a liftoff mass of 2,041,000 kg and accelerates at a rate of 16 m/s^2. Calculate the force (thrust) that is accelerating the Space Shuttle.

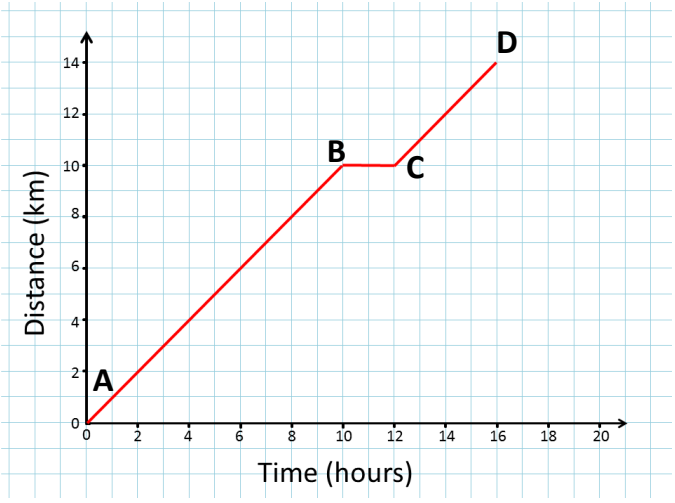
13. A runner has a mass of 89 kilograms. He produces a force of 84 Newtons between the ground and his running shoes. How fast does he accelerate?

14. Calculate the acceleration of a car if the force on the car is 450 Newtons and the mass is 1300 kilograms.

15. A rocket accelerates at 56 m/s^2. It has a mass of 800,000 kg. Calculate the force (thrust) that the rocket engines must supply.

16. Find the acceleration of the 2 kg block in the following diagram.





Describe what each of the following lines represent.

17. AB: _____

18. BC: _____

19. CD: _____