

Name: _____

Date: _____

Newton's Laws Assessment

Multiple Choice – Select the best answer.

1. A person's body is forced back into their seat when an airplane suddenly accelerates during takeoff. Which law of motion does this demonstrate?
 - a. Newton's 1st Law
 - b. Newton's 2nd Law
 - c. Newton's 3rd Law
 - d. Newton did not have cars in his time so he was not able to observe this kind of motion.
2. When rockets launch they use thrusters which apply a force against the ground. This force then pushes the rocket up into space. What law does this demonstrate?
 - a. Newton's 1st Law
 - b. Newton's 2nd Law
 - c. Newton's 3rd Law
 - d. All of the above
3. Which of the following formulas best represents Newton's 2nd Law of Motion?
 - a. $F = M/A$
 - b. $F = M \times d$
 - c. $F = M/d$
 - d. $F = M \times A$
4. Which of the following best represents inertia?
 - a. When paddling a canoe, you push the oar backward and the canoe moves forward.
 - b. A balloon playing around the room when the air is let out of it.
 - c. A motorcycle requires less force to accelerate than a truck.
 - d. Moving forward when your bicycle suddenly stops moving due to hitting a curb.
5. Which of the following is an example of Newton's 1st Law?
 - a. Using a force to push a grocery cart
 - b. Pulling back a rubber band to shoot it forward
 - c. A chair remains motionless in a room
 - d. None of the above
6. Which of the following is an example of Newton's 2nd Law?
 - a. A basketball requires more force to roll than a tennis ball
 - b. A picture hanging on the wall
 - c. A rocket blasting off from the launch pad
 - d. All of the above
7. Which of the following is an example of Newton's 3rd Law?
 - a. A child on a swing requires less force to move than an adult
 - b. Pushing water backward in order to move forward while swimming
 - c. A pencil resting on a desk
 - d. None of the above

8. Your neighbor has a lawn sprinkler that spins quickly as water shoot out of the top. Which principle best explains why the sprinkler spins?
- Objects in motion remain in motion unless acted upon by an unbalanced force
 - Objects at rest remain at rest unless acted upon by an unbalanced force
 - For every action there is an equal and opposite reaction
 - The force of an object is equal to its mass multiplied by its acceleration

Fill in the Blank – Each answer choice will be used once.

1 st Law	2 nd Law	3 rd Law
Force	Inertia	Acceleration

9. Newton's _____ of motion states that the force of an object is equal to its mass multiplied by its acceleration.
10. A push or a pull on an object that may change the motion of the object is known as a _____.
11. Newton's _____ of motion states that an object at rest will remain at rest and an object in motion will remain in motion until acted upon by an unbalanced force.
12. _____ is the rate of change of velocity which includes speeding up, slowing down, or changing direction.
13. Newton's _____ of motion states that for every action there is an equal and opposite reaction.
14. An object's tendency to resist a change in motion is known as _____.

True or False – Write "T" for True and "F" for False.

15. _____ The Earth orbits the Sun continuously without stopping because of inertia.
16. _____ Forces come in pairs and one force is always greater than the other.
17. _____ Objects that are motionless do not have inertia.
18. _____ A more massive object has more inertia than a less massive object.
19. _____ Fast moving objects have more inertia than slow moving objects.
20. _____ The only way to slow down a moving object is to apply a force to the object.

Matching – Identify which law each statement represents. Write "A" for 1st Law, "B" for 2nd Law, or "C" for 3rd Law.

21. _____ It takes less force to pull an empty wagon than a wagon with someone in it.
22. _____ The law of action – reaction.

Matching - continued

- 23._____ A person's body is thrown outward when turning a corner quickly in a car.
- 24._____ The law of inertia.
- 25._____ Sitting in a chair you exert a force on the chair and it exerts an equal force on you.
- 26._____ The law of acceleration.

Short Response – Answer each question in detail.

- 27.How do Newton's Laws act simultaneously with vehicle restraints in a car?
- 28.Explain why it requires more force to push an adult on a swing than a child on a swing.
- 29.Explain what happens when you blow up a balloon and then let it go without tying the end. Be sure to use one of Newton's Laws in your answer.
- 30.List and describe an example of each of Newton's Laws that you observe on a daily basis.