

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## PHYSICS

### Forces and Newton's Laws of Motion

Identify which law of motion is described by the action or scenario.

1. The soccer ball is motionless on the ground. It remained motionless because no one kicked it.



2. The force of tennis racquet hitting the tennis ball is equal in magnitude and opposite in direction of the force of the tennis ball pushing back on the racquet at their point of contact.



3. The force of the tennis racquet hitting the tennis ball caused the tennis ball to change direction and move very fast back to the other player.



4. The man pushed on the rock with a lot of force. The rock, however, was so massive that it did not move. The rock resisted the force.



5. Julian and Dante **pulled with equal forces** on the strings attached to rocks of different masses.

Julian pulled on the smaller rock, it moved very quickly across the table. Dante pulled on the larger rock, it moved very slowly across the table.



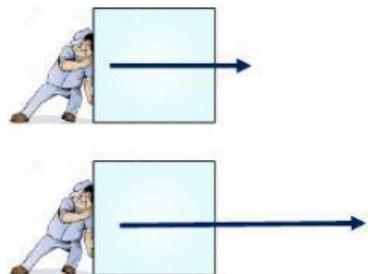
6. A car was moving on the street at 10 m/s. It collided with a traffic post and came to an instant stop.



7. The airplane flew in the air. The backwards thrust from the jet engines pushed on the air behind the plane, which pushed the plane forward.



8. Esteban pushed on the box with a force of 100 N. The box moved slowly across the floor.



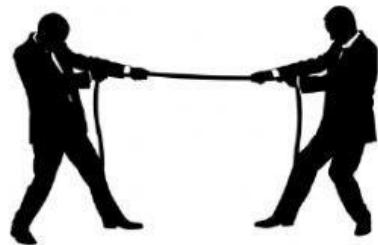
9. An asteroid is moving through deep space with no stars or planets around. It will move at the same speed and in the same direction through space for a long, long time.



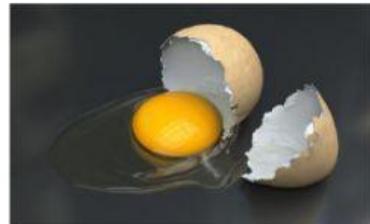
10. The books were very heavy. They pushed downward onto the tabletop with a lot of force. The force of the table pushing upward on the books prevented the books from falling downward to the floor.



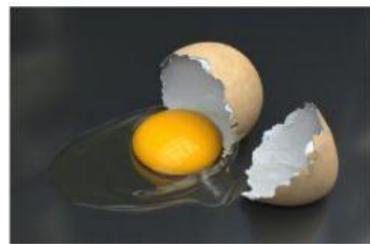
11. Clyde pulled the rope to the left. Jules pulled the rope to the right. The force of tension through the rope to the left was equal in magnitude and opposite in direction to the force through the rope to the right.



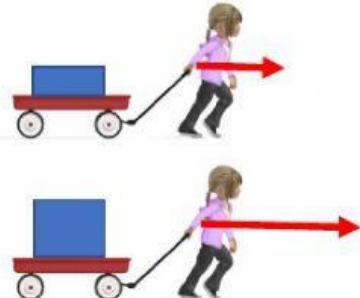
12. The force of the falling egg when it hit the floor was countered by the pushback force of the floor on the egg. That is why the egg shattered.



13. The egg fell and was moving very fast at the instant it hit the floor. The force of impact stopped the egg from moving downward in 1/10 of a second.



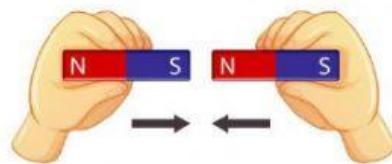
14. Tanya Sue pulled her wagon that had a 10 kg box in it. She used a weaker force to move the wagon. She then pulled her wagon that had a 20 kg box in it. She used a much stronger force to move the wagon.



15. The running back ran and carried the football to the north. The defensive end tackled the running back. He pushed the running back to the right.



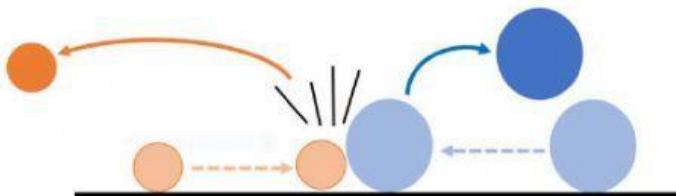
16. You have two magnets. You place the south pole of one magnet near the north pole of the other magnet. The magnets quickly move toward each other.



17. Edward was transporting a microwave oven on the top of his car. As he was driving on the road, he made the car brake to a sudden stop. The car stopped, but the microwave oven continued to move forward and slid off of the front of the car.



18. Two toy balls collided head-on. The heavier blue ball bounced a shorter distance and moved slower away from the point of impact. The lighter brown ball bounced a longer distance and moved faster away from the point of impact.



19. When hammer head hit the nail, the nail moved deeper into the plank of wood.



20. When hammer head hit the nail, force of impact cause the hammer handle to vibrate.



21. The space shuttle's hot air jets push on the surface of the ground. The ground pushes back on the hot air, forcing the space shuttle to move upward.



22. The space shuttle is accelerating in the up direction away from the surface of the Earth because the hot jets of air are pushing on the shuttle with a strong force.



23. The baseball player hit the baseball, causing the baseball to change direction and velocity.



24. The force of the baseball hitting the baseball bat was equal in magnitude and opposite in direction to the force of the baseball bat hitting the baseball.



25. Henry was driving his car. When he pressed on the brake pedal, his body folded forward as the car slowed to a stop.



26. Betty putted the golf ball. She hit the golf ball with a weak force. The golf ball accelerated slowly for a short distance across the green into the cup.



27. Ricardo drove the golf ball. He hit the golf ball with a very strong force. The golf ball accelerated very quickly for a very long distance.



28. The 10 bowling pins were motionless at the end of the alley. They were scattered in all directions when the bowling ball collided with them.

