

Second Law of Motion

Newton's second law of motion states that acceleration is produced when a force acts on a mass. The greater the mass of the object to be accelerated the greater the amount of force needed to accelerate the object. Each of the following situations demonstrates Newton's second law. Describe how the difference in mass will affect the force needed to change the acceleration..

- 1 Amy weighs 78 pounds and her dad weighs 187 pounds. They are rollerskating. Amy challenges her dad to a race. They are equally strong. They stand poised at a starting line. Explain who will win?

Amy and her dad are applying the same force.

Amy has less mass than her father. Therefore, she is going to accelerate towards the finish line first.

- 2 Tony and Jose play on the football team. Tony weighs more than Jose. During practice, Tony and Jose practice blocking on a tackle dummy. Both boys start from the same place and position. Each tackle dummy has the same mass. At the same speed, the boys run forward into the dummy. What is their affect on the dummy?

Tony weighs more therefore, he is going to apply a greater force. Tony's dummy is going to accelerate faster.

- 3 Two vehicles are broken down on the side of the road. One is a small sports car. The other is a delivery truck. The drivers need to push the vehicles forward and onto the shoulder of the road. Both drivers can push with the same amount of force. Who will get their car off the road first?

The sports cars will get his car off the road first. The sports car has a smaller mass therefore will accelerate quicker with the same amount of force applied to each vehicle.