

Name _____
Regents Physics
Period _____

Date _____
Forces 1D WS 4R
Mr. Moy

Newton's 2nd and 3rd Laws

1. Chris P. Bacon applies a net force of 19.4 N to a wheel barrow causing it to accelerate at a rate of 4.82 m/s^2 . Determine the mass of the wheel barrow.

2. David Purley, a race car driver, survived a deceleration from 48.1 m/s to 0 m/s over a distance of 0.660 m when his car crashed. Assuming that Purley's mass is 70.0 kg, determine the average force acting on him during the crash.

3. The whale shark is the largest type of fish in the world. Its mass can be as large as $2.00 \times 10^4 \text{ kg}$, which is the equivalent mass of three average adult elephants. Suppose a crane lifts the whale shark off the ground. The net holding the whale shark is steadily accelerated from rest over an interval of 2.5 seconds until the net reaches a speed of 1.0 m/s.
 - a. Draw the free body diagram of the whale shark.

 - b. Calculate the acceleration of the whale shark.

 - c. Calculate the net force acting on the whale shark.

 - d. Calculate the weight of the whale shark.

 - e. Calculate the tension in the cable pulling the shark upwards.

4. A baseball bat with a mass of 4.75 kg exerts a force of 20.0 N on a 0.350 kg baseball. Find the resultant acceleration of each object.

a. bat

b. ball

5. According to Newton's Third Law, if a car hits a garbage can, will they both experience the same force? Will they experience the same acceleration? Explain.