# Physics 30 Worksheet # 2: *Impulse*

1. A force of 20.0 N is applied to a 3.00 kg object for 4.00 seconds. Calculate the impulse experienced by the object.

2. A 1200 kg car traveling at 20.0 m/s speeds up to 30.0 m/s. What is the impulse experienced by the car?

3. A 1500 kg car accelerates from 55.0 km/h to 90.0 km/h. Calculate the impulse experienced by the car.

4. A 1200 car accelerates from rest to 10.0 m/s in a time of 4.50 seconds. Calculate the force that the car's tires exerted on the road.

5. A 1500 kg car traveling at 80.0 km/h comes to a screeching halt in a time of 4.00 seconds. Calculate the force of friction experienced by the car.

6. A 1.00 kg ball traveling towards a soccer player at a velocity of 5.00 m/s rebounds off the soccer player's foot at a velocity of 8.50 m/s. If the time of contact between the ball and the player's foot was $2.00 \times 10^{-2}$ seconds, what was the force that the foot applied on the ball?

7. A 1.50 kg rock falls from the top of a 10.0 m high building and strikes the ground below. Calculate the impulse experienced by the rock during its fall.

8. A 1.50 kg rock falls from the top of a 10.0 m high building and strikes the ground below. What is the force of the ground acting on the rock if it comes to a stop in 0.350 seconds.

9. Calculate the impulse experienced by the 4.00 kg object represented in the graph below. Calculate the object's change in velocity.