Name: ~~#9~~ #6

IMPULSE AND MOMENTUM

Date: _____ 14

1. A 60-g golf ball leaves the face of a golf club with a velocity of 75 m/s. If the club exerted an average force of 3.0×10^4 N, what was the time of impact between the club and the ball?

$t =$ _____

2. A 900 N running back moving at 2.0 m/s is stopped in 0.70 seconds when hit by a linebacker.

   a. What average force did the linebacker exert on the running back?

   $F =$ _____

   b. How much did the running back's momentum change?

   $\Delta p =$ _____

3. Twin girls, each weighing 500 N, are riding in a car traveling at 20.0 m/s. One girl is wearing a seat belt while the other is not. The car is involved in an accident and the girl wearing the seat belt is brought to a stop in 0.120 seconds. Unfortunately, the dashboard brings the second girl to a stop in only 0.00800 seconds.

   a. What is the impulse exerted on each girl?

   $\Delta p =$ _____

   b. What is the force exerted on each girl?

   $F =$ _____

4. The engines of a 1.20×10^5 N rocket exert an upward thrust of 2.00×10^5 N for 1.50 minutes upon lift-off.

   a. What is the impulse exerted on the rocket?

   $\Delta p =$ _____

   b. What is the velocity of the rocket at the end of the 1.50-minute period?

   $v_f =$ _____