

Physics

name _____ period _____

Inv-7 Expan Part VB Impulse & 2D Momentum

sheet # _____

1.) What is the relationship (equation) between the change in momentum of an object related to the force put on that object?

2.) What is the symbol, equation, and units for Impulse?

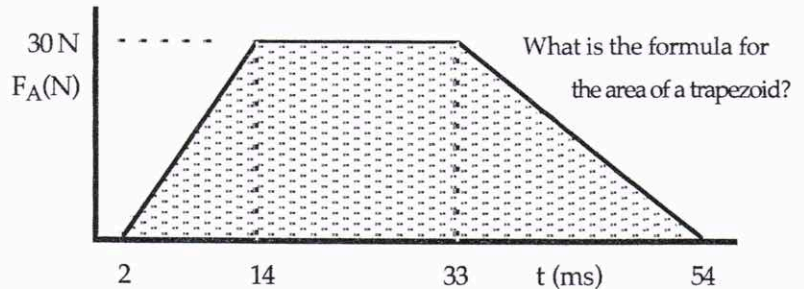
5a.) What is the direction of the momentum vector?

5b.) What is the direction of the impulse vector?

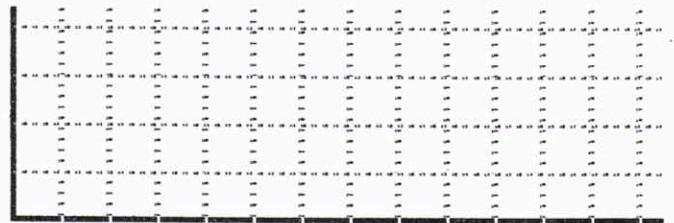
6a.) How much impulse is represented by the following graph?

6b.) What is the maximum force?
What is the average force?

6c.) Which force do you use in the impulse equation?



7.) Graph the following: A maximum force of 800 N applies an impulse of 88 mN·s to an object. The force reaches its maximum in 30 μ s. It holds this maximum force for 50 μ s. Draw a graph representing this impulse.



8.) CAUTION: FRUSTRATINGLY MIXED UP UNITS AHEAD!

With how many lbs of force must a batter swing her bat if she wants to hit an 85 mph fast pitch softball (mass = 0.025 slugs) directly back at the pitcher at 150 mph? (The softball is in contact with the bat for 10 ms)

9.) The front of a 1400 kg car is designed to absorb the shock of a collision by having a "crumple zone" in which the front 1.20 m of the car collapses in absorbing the shock of a collision. If a car traveling 25.0 m/s stops in 1.20 m . . .

a.) how long does the collision last?

b.) what is the magnitude of the average force on the car?

c.) what is the acceleration of the car in g's?