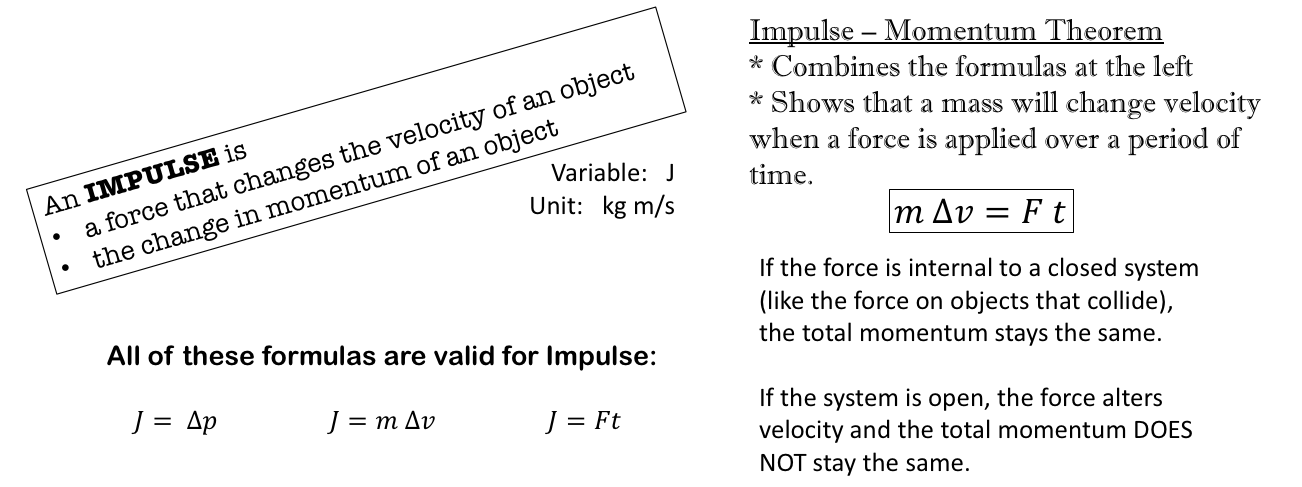
**Impulse Review**



1. An object with an initial momentum of 17 kg m/s is acted on by a force. Its momentum changes to -20 kg m/s.
   1. If the mass of the object is 3 kg, what was its initial velocity?
   2. What was the impulse on the object?
   3. What was the impulsive force (F) acting on the object if the force acted on the object for 0.5 seconds?
2. A 3.4 kg bat strikes an 0.45 kg ball. The bat is in contact with the ball for 0.034 seconds. If the change in velocity of the ball is 93 m/s, what was the force on the ball?
3. A 52 kg soccer player kicks 0.40 kg ball. The kicker’s foot contacts the ball for 0.084 seconds. If the change in velocity of the ball is 33 m/s, what was the force on the ball?
4. A 2 kg block strikes another 2kg block. The blocks are moving at the same speed but in opposite directions (they collide head-on). The force on each block is 650 N. The blocks come to a stop in 0.35 seconds. How fast were they travelling when the collision occurred?
5. In a car accident, two identical cars collide head-on and come to a complete stop. The red car exerts a force of 69,000 N on the 3500 kg blue car. If the time to come to a stop is 0.012 seconds, how fast was the red car traveling immediately before the impact?