MOMENTUM WORKSHEET II /27 Name: _____

$P = M V$ $P_{before} = P_{after}$ $M_1V_1 + M_2V_2 = M_1V'_1 + M_2V'_2$ $M_1V_1 + M_2V_2 = (M_1 + M_2)\, V'$

$M V = F t$ $MV = MV$ (recoil)

1. Which has more momentum, a 1000 kg car moving 1 m/s or a 70 kg person sprinting at 8 m/s?

2. What is the Momentum of a parked car?

3. What is the Momentum of a 920 kg car moving at a speed of 25 m/s?

4. Which has more Momentum: A 250 kg dolphin swimming at 4 m/s or a 350 kg manatee swimming at 2 m/s?

5. A 30 kg child running at 7 m/s jumps onto a 10 kg sled which was initially at rest. What will be the velocity of the child + sled immediately after the child jumps on the sled?

6. A 1500 kg car traveling at 15 m/s collides with a 500 kg moose which is at rest. If the moose is knocked backward at 20 m/s, what happens to the car?

7. A 1500 kg car traveling 5.0 m/s collides head on with a 3000 kg truck traveling 7.0 m/s in the opposite direction. If the bumpers lock (the collision is inelastic),
a) what is the velocity of the two vehicles together immediately following the collision?

b) what is the magnitude of the change in velocity experienced by the driver of each car during the collision?

8. A 70 kg astronaut floating in an orbiting space station throws a 1.0 kg water bottle across the room at a speed of 8.0 m/s. What is the magnitude of the astronaut's recoil velocity?