

## Planet Holloway **websheet 6.2**

### Cp Physics Momentum

You may print this out and write on it or work on your own paper.

### **Show all work.**

1. A 4.8 kg package is falling with a momentum of 96 kg-m/s, what is the velocity of the object?
2. In the problem above, what is the momentum 3 seconds later?
3. When billiard balls collide they have a \_\_\_\_\_ collision?
4. A 40 kg ice skater throws her 0.5 gloves away at 8 m/s. What speed does the skater move away from the gloves at if the ice is frictionless?
5. Krysta applies an impulse of 16 N-s to a 3 kg pineapple. What is the resulting speed of the pineapple if it was at rest originally?
6. Zach throws a 0.5 chunk of wet clay at 12 m/s at a 3 kg block resting on a frictionless surface. With what speed does the block and clay slide away?
7. A 160 kg sumo wrestler on roller skates, rolling at 4 m/s to the left, collides elastically with another sumo wrestler of mass 210 kg who is rolling at 2.5 m/s to the right on his roller skates. If the speed of the 160 kg wrestler after the collision is 3 m/s in his original direction, what is the speed of the second wrestler?

¡Bonus!

8. A 65 kg astronaut floating forward through space at 6 m/s fires his jetpack for 4 seconds. If his jetpack delivers a constant 30 N of force, what is the astronaut's velocity 7 seconds later?

Answers:

1. 20 m/s
2. 240 kg-m/s
- 3.
4. 0.1 m/s
5. 5.3 m/s
6. 1.71 m/s
7. -1.74 m/s
8. 7.8 m/s