

Ch 9&10

CH.9

2- An object at rest explodes into three pieces A, B and C. After the explosion, A has a mass of 2.0 kg and velocity $(3.0 \mathbf{i})$ m/s, B has a mass of 3.0 kg and velocity $(-1.0 \mathbf{j})$ m/s, and C has a mass of 1.0 kg and velocity \mathbf{v} . Find the velocity \mathbf{v} .

[Correct answer: $(-6\mathbf{i} + 3\mathbf{j})$ m/s]

5- Two masses, 5 kg each, have velocities (in m/s): $\mathbf{V}_1 = 12 \mathbf{i} - 16 \mathbf{j}$ and $\mathbf{V}_2 = -20 \mathbf{i} + 14 \mathbf{j}$. Determine the momentum of the center mass of the two masses (in kg m/s).

[Correct answer: $(-40 \mathbf{i} - 10 \mathbf{j})$ m/s]

CH.10

1- A 2.00 kg object moving with a speed of 3.00 m/s collides with a 1.00 kg object initially at rest. Immediately after collision, the 2.00 kg object has a velocity of 1.73 m/s directed 30 deg from its initial direction of motion. What is the speed of the 1.00 kg just after collision?

[Correct answer: (3.46 m/s)]

10- Body A has a mass of 5 kg and a velocity of $+2 \mathbf{i}$ m/s. Body B has a mass of 3 kg and a velocity of $-2 \mathbf{i}$ m/s. The two bodies collide head-on and the collision is completely inelastic. Find the loss in kinetic energy due to the collision.

[Correct answer: (15 J)]

The Hunter & The Polar Bear

A 80-kg hunter gets a rope around a 120-kg polar bear. They are stationary, 10 m apart, on frictionless level ice. When the hunter pulls the polar bear to him, what is the distance that the polar bear will move?

[Correct answer 4.0 m]

Good Luck