Unit 6 Physics

Momentum Flipped Lesson Review

Scalars vs. Vectors

Is momentum a scalar or vector?

Units for Momentum

Elastic vs. Inelastic Collisions

Practice Problems

Let's say we roll a 5 kg (about 12 lbs, the smallest size) bowling ball at 1.5 m/s. How much momentum does it have?

How fast would we have to roll a 3 gram ping pong ball for it to have the same momentum?

Practice Problem

Ally (45 kg) is sitting in a rolling chair and throws a 3 kg exercise ball with a velocity of 3 m/s. What velocity does she go backward?

Complete for Tuesday

Page 1 of Practice Packet

Page 3 Explosions ONLY

Thursday

- Review Lab Results
- Review Flipped Lesson
- Identifying masses and velocities
- Practice White Board Problems

— — —

Elasticity 100%

a. Did the balls bounce off each other or did they stick together?
b. Do you notice any patterns in total initial momentum and total final momentum?
c. Do you notice any patterns in total initial kinetic energy and total final kinetic energy?

Elasticity 0%

a. Did the balls bounce off each other or did they stick together?
b. Do you notice any patterns in total initial momentum and total final momentum?
c. Do you notice any patterns in total initial kinetic energy and total final kinetic energy?

Inelastic Collision #1

Suppose that you have a mass of 45.7 kg and are standing on frictionless roller skates at rest. Someone then throws you a 2.50 kg mass with a velocity of 14.5 m/s and you catch it. What will be your resultant velocity?

Inelastic Collisions #2

A 1250 kg car is moving down the highway with a velocity of 32.0 m/s when it bumps into the car ahead of it which has a mass of 875 kg and a velocity of 25.0 m/s. After the collision, the two cars stick together. What will be the resulting velocity of the two cars together?

Elastic Collisions #1

An astronaut at rest in space with mass 84 kg fires a thruster that expels 35 g of hot gas at 875 m/s. The thruster is at rest after the collision. What is the velocity of the astronaut after firing the thruster?

Elastic Collision #2

– – –

Gavin (60 kg) runs into at 3 m/s Josh (50 kg) who is sitting at rest . They collide and bounce off each other. Josh moves to the right with a velocity of 1.3 m/s. What is final velocity and direction of Gavin?

Elastic Collisions #3

– – –

Car A (m= 2000kg) travels at 10 m/s to the right while Car B (m=1200kg) travels 15 m/s to the left. The cars collide and bounce off. Car A travels 4 m/s to the left. What is final velocity and direction of Car B?

Friday

- White Board Problems (Which Collision)
- Unit Packet Page 2

Which Collision???

– – –

While practicing football, Matt (m = 65 kg) runs into a tackle sled (30 kg) with a speed of 3.6 m/s. What is final velocity of matt and the tackle sled?

Which Collision???

– – –

A 50.0 kg woman, riding on a 10 kg cart, is moving east at 5.0 m/s. The woman jumps off the front of the cart and lands on the ground at 7.0 m/s eastward. What is the final velocity of the cart?

Which Collision????

– – –

A 9.00 kg mass is moving to the right with a velocity of 14.0 m/s. A 12.0 kg mass is moving to the left with a velocity of 5.00 m/s. Assuming that these two balls have a head on collision and stick together, what will be the final velocity of the combination?