Name

Date

Momentum

*Calculating momentum*

1) An automobile with a mass of 1000kg is move at 20 m/s. Calculate its momentum.

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2a) A small sports automobile hits a heavy truck in a collision. What factors determine the outcome for the passengers of the two vehicles?

2b) Which driver will sustain more injuries? Why?

3) What is the mass of a motorcycle that has a momentum of 10,000 kg\*m/s and is moving at 25 m/s?

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4) What is the velocity of a bicycle that has a mass of 5 kg and a momentum of 4,000 kg\*m/s?

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*The Law of Conservation of Momentum*

5) Elastic Collision- A steel ball with a mass of 2 kg is travelling at 3 m/s west. It collides with a ball at rest (or stationary) that has a mass of 1 kg. Upon collision, the smaller ball moves to the west at 4 m/s. What is the velocity of the larger ball?

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6) Elastic Collision- A boy and girl are riding in bumper cars at an amusement park. A 75 kg boy and bumper car are moving to the east at 3.0 m/s towards the 50 kg girl and bumper car who are moving towards him west at 1.80 m/s.

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7) Inelastic Collision

A 45.0 kg girl runs at 1.10 m/s and jumps onto a raft in a pool. The raft has a mass of 0.08 kg and is not moving (0 m/s). After the collision the girl and raft are one unit. At what speed will the girl and the raft begin to travel across the pool?

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8) A railroad car with a mass of 2000 kg coasting at 3.0 m/s overtakes and locks together with an identical car coasting on the same track in the same direction at 2.0 m/s. What is the speed of the cars after they lock together?

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