

NAME:

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Period:

Collisions and explosions.

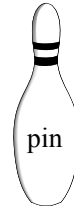
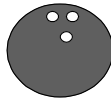
What is the formula for Momentum? _____

What is the formula for KE? _____

Are they similar? _____

1. During a bowling competition, a player throws a 5kg bowling ball along the lane with a velocity of 5m/s. The ball hits a 0.5kg stationary pin. After impact, the ball continues to move with a velocity of 4m/s.

bowling ball



- a) What is the momentum of the ball before the collision? _____
- b) What is the momentum of the pin before the collision? _____
- c) Find the total momentum before the collision. _____
- d) Calculate the velocity of the pin after the collision. _____

2. A dart of mass 75g (0.075kg) is tossed with a velocity of 20m/s and sticks to a stationary suspended dartboard of mass 7.5kg.

- a) Find the total momentum before the collision. _____
- b) What is the total momentum after the collision. _____
- c) Calculate the combined velocity of the dart and dartboard just after the collision. _____

3. A 50kg boy is sitting quietly in a boat. He suddenly jumps out of the rowing boat of mass 300kg onto the bank with a horizontal velocity of 3m/s. With what velocity does the boat begin to move backwards?

