

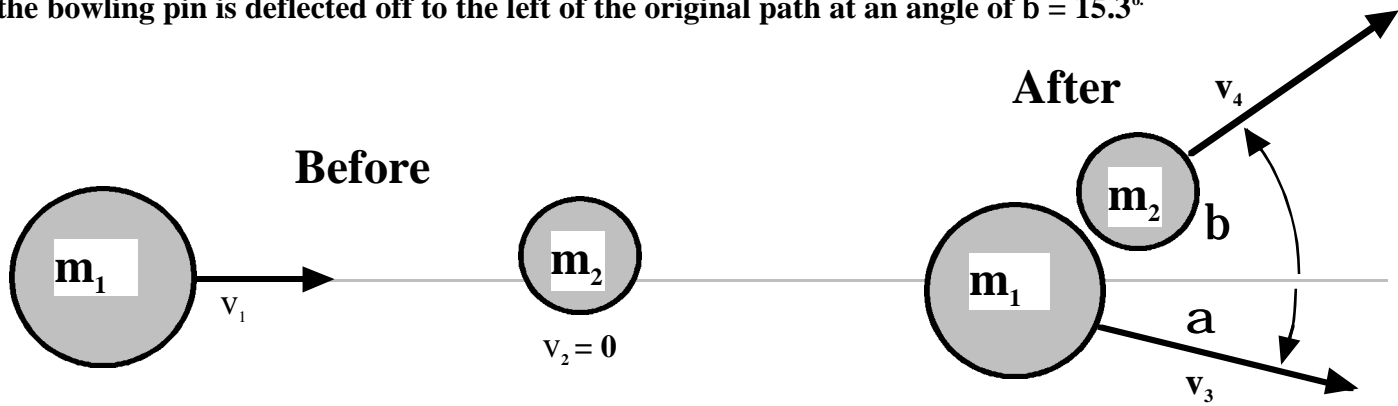
Name _____

Period _____

PHYSICS HOMEWORK QUIZ #13D

2D MOMENTUM CONSERVATION

A bowling ball, which has a mass of $m_1 = 6.50$ kg is moving toward the right with an initial velocity of $v_1 = 7.40$ m/sec when it collides with a bowling pin, which has a mass of $m_2 = 0.85$ kg and is at rest. After the collision the bowling ball moves off to the right of the original path of motion at an angle of $a = 3.90^\circ$ while the bowling pin is deflected off to the left of the original path at an angle of $b = 15.3^\circ$.



1. What will be the total momentum of this system just before the collision? [3 pts]
2. What will be the total momentum of this system immediately after the collision.? [3 pts]
3. What will be the speed of the bowling ball after the collision? [3 pts]
4. What will be the speed of the bowling pin ball after the collision ? [3 pts]
5. Is this collision elastic, inelastic or an explosion ? You MUST support your answer with appropriate calculations! [3 pts]