**1B Conservation of Momentum**

1. A particle of mass 2kg is moving with speed 3ms-1 on a smooth horizontal plane. Particle Q of mass 3kg is at rest on the plane. Particle P collides with Q and after the collision Q moves away with a speed of 21/3ms-1. Find:
2. The speed and direction of the motion of P after the collision
3. The magnitude of the impulse received by P and by Q in the collision
4. Two particles, P and Q of mass 2kg and 4kg respectively are moving towards each other along the same straight line on a smooth horizontal plane. The particles collide. Before the collision, the speeds of P and Q are 3ms-1 and 2ms-1. Given that the magnitude of the impulse due to the collision is 7Ns, find:
5. The speed and direction of P after the collision
6. The speed and direction of Q after the collision
7. Two particles, A and B, of masses 8kg and 2kg respectively, are connected by a light inextensible string. The particles are at rest on a smooth horizontal plane with the string slack. Particle A is projected directly away from B with speed 4ms-1.
8. Find the speed of the particles when the string goes taut
9. Find the magnitude of the impulse transmitted through the string when it goes taut