Signature: Name: Marks:

Momentum Worksheet

Q1.

A boy with a mass of 50 kg runs towards a skateboard with a mass of 2kg. The boy then jumps on the skateboard and moves on top of the skateboard with a velocity of 5ms^{-1}. Find the initial velocity of the boy.

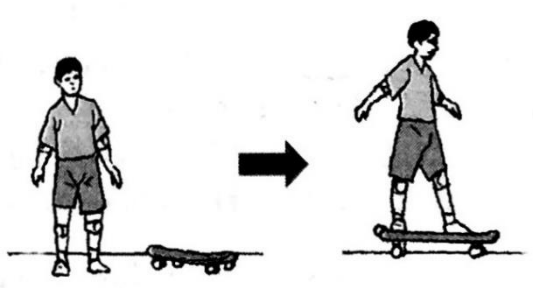

Figure 1.

Q2.

A policeman fires a pistol with a mass of 2 kg. The bullet reaches a velocity of 150 ms^{-1} after a shot is fired. If the recoil velocity of the pistol is 5 ms^{-1}, find the mass of the bullet in grams.

Signature: Name: Marks:

Q3.

The figure below shows a 4 kg rifle which recoils backwards with a velocity of 2 ms^{-1} when a bullet of 0.02 kg is fired.

Figure 2.

a) Calculate the momentum of the rifle when the bullet is fired.
b) What is the momentum of the bullet?
c) Find the value of v

Q4.

A bullet with mass of 20 g is fired from a 3 kg rifle with a velocity of 250 ms^{-1}. What is the total momentum of the bullet and the rifle after the explosion?

Signature: Name: Marks:

Q6.

A 1000 kg car travelling at 15 ms^{-1} collides with a 100 kg motorcycle which is at rest. After collision, both vehicles move together. What is their velocity after the collision?

Q7.

Car A of mass 600 kg moving at 10 ms^{-1} collides with car B of mass 1000 kg moving in the opposite direction. If both cars move together after the accident at 4 ms^{-1} in the direction of car B, find the initial velocity of car B.