

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} .

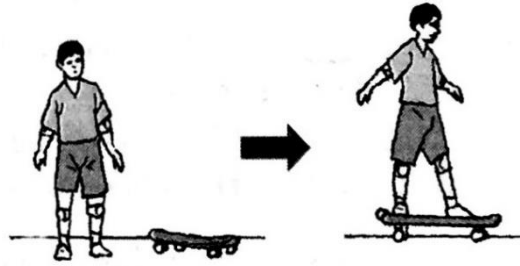


Figure 1.

Q2.

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

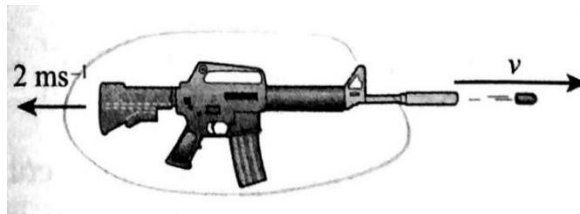


Figure 2.

- Calculate the momentum of the rifle when the bullet is fired.
- What is the momentum of the bullet?
- 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?

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Q6.

A 1000 kg 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.