Homework

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(1) (a) Action :- Force exerted on the bullet.
Reaction :- Recoil experienced by the gun.

(b) Action :- The force exerted by the hammer on the nail.
Reaction :- The force applied by the nail on the hammer.

(c) Action :- Weight of the book acting downwards.
Reaction :- force acted by the table upwards.

(d) Action :- force exerted by the rocket on the gases backwards.
Reaction :- force exerted by outgoing gases on the rocket in forward direction.

(e) Action :- force exerted by the feet on the ground in backward direction.
Reaction :- Force exerted by the ground on feet in forward direction.

(f) Action :- force exerted by a moving train on a stationary train
Reaction :- force exerted by a stationary train on a moving train.

(2) (a) When a fireman holds a hose, which is ejecting large amounts of water at a high velocity, then, a reaction force is exerted on him by the ejecting water in the backward direction. This is because of Newton's third law of motion. As a result, of the backward force, the stability of the fireman decreases. Hence, it's difficult for him to remain stable while holding the hose.

(b) Action & reaction force pairs don't cancel because they act on different objects.

(3) (a) According to Newton's 3rd law, to every action, there is an equal & opposite reaction. When we jump on the shore from the boat; we're applying force on the boat in the opposite direction in order to move forward & hence the boat moves in the opposite direction.

(b) If a balloon filled with compressed air & its mouth untied is released with it's mouth in the downward direction, the balloon moves in the upward direction because the air present in the balloon rushes out in the downward direction.