Newton's 3rd Law

$$F_{\text{hand on wall}} = -F_{\text{wall on hand}}$$

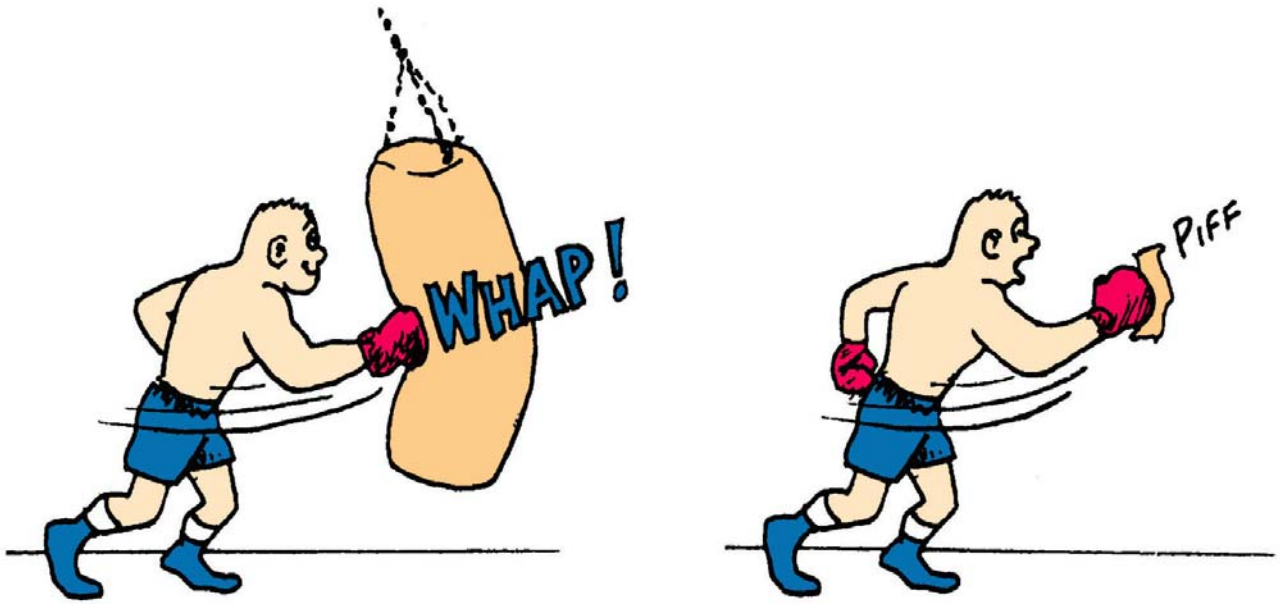
To every force there is an equal but opposite reaction force.

Newton's 3rd Law

$$F_{\text{hand on wall}} = -F_{\text{wall on hand}}$$

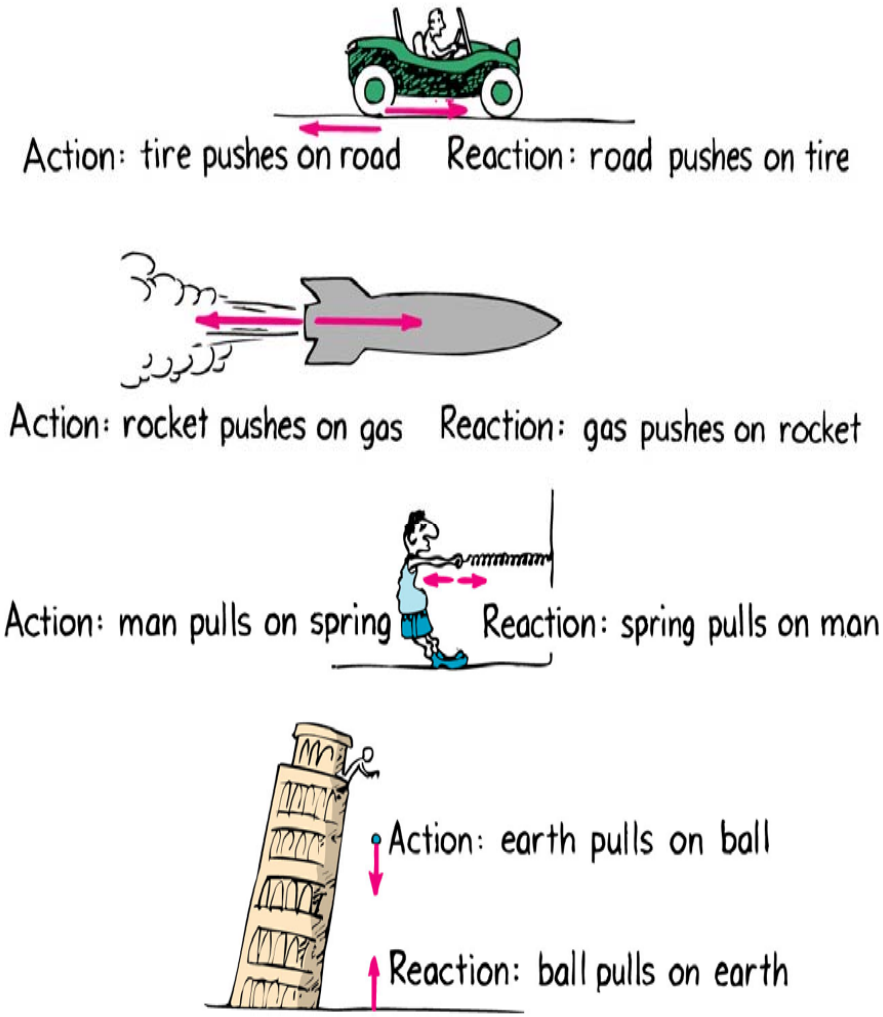
You can't TOUCH without being TOUCHED back!!

An interaction requires a pair of forces acting on two objects.



Action-Reaction Pairs

If ACTION is A acting on B, then REACTION is B acting on A.



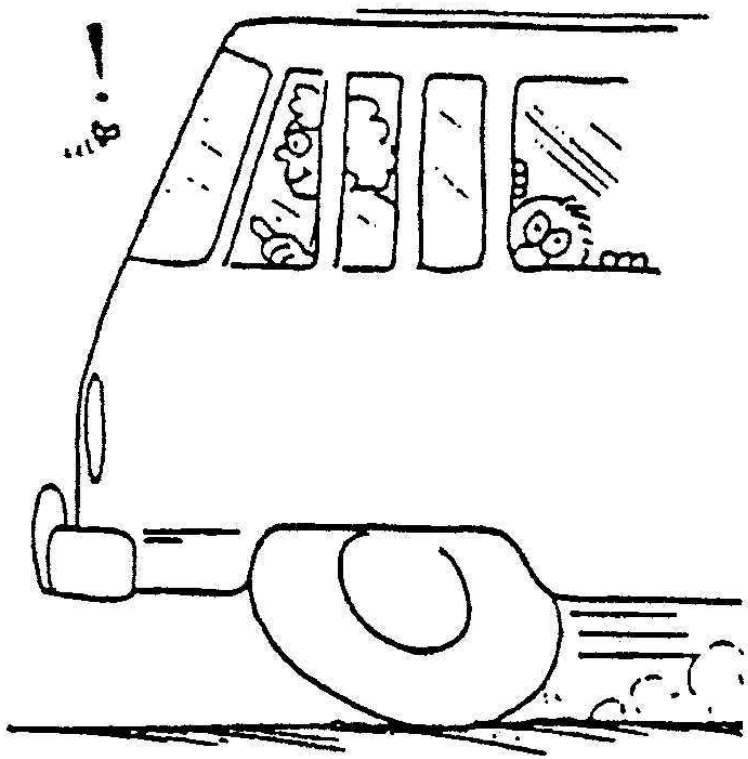
Bug Splat

A bug and bus have a head on collision.
Compared to the **FORCE** that acts on the bug,
how much force acts on the bus?

More Same Less

Newton's 3rd Law:

$$F_{bus-bug} = -F_{bug-bus}$$



Bug Splat

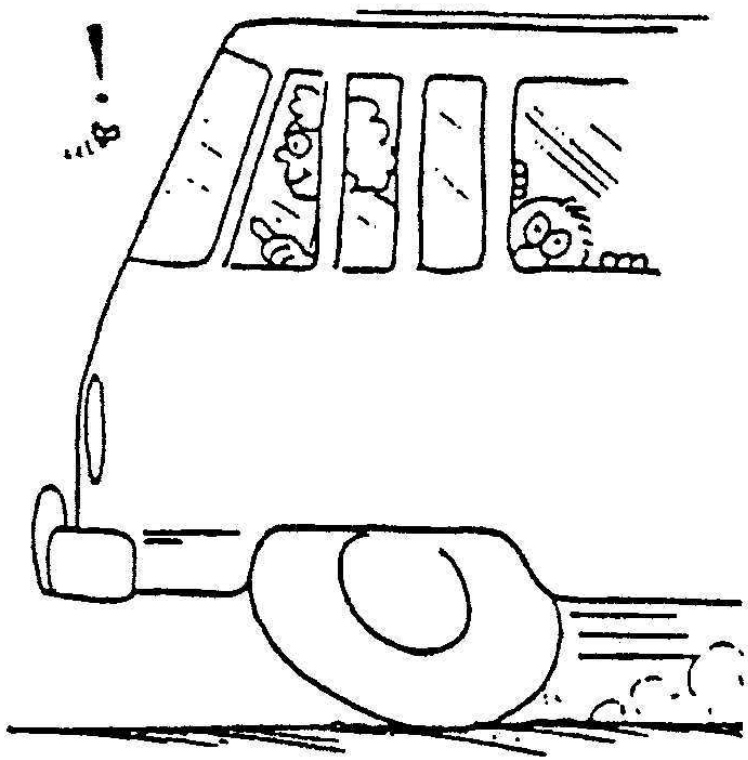
Which undergoes the greater acceleration?

Bug Same Bus

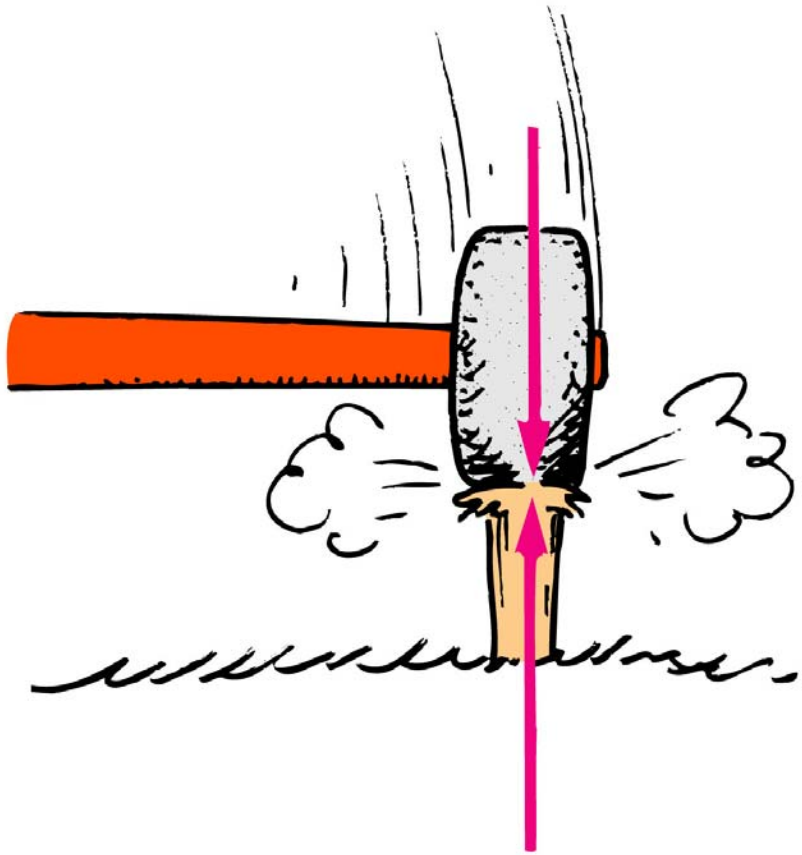
$$a = \frac{F}{m}$$

Which suffers the greatest damage?

Bug Same Bus



Action-Reaction Pairs

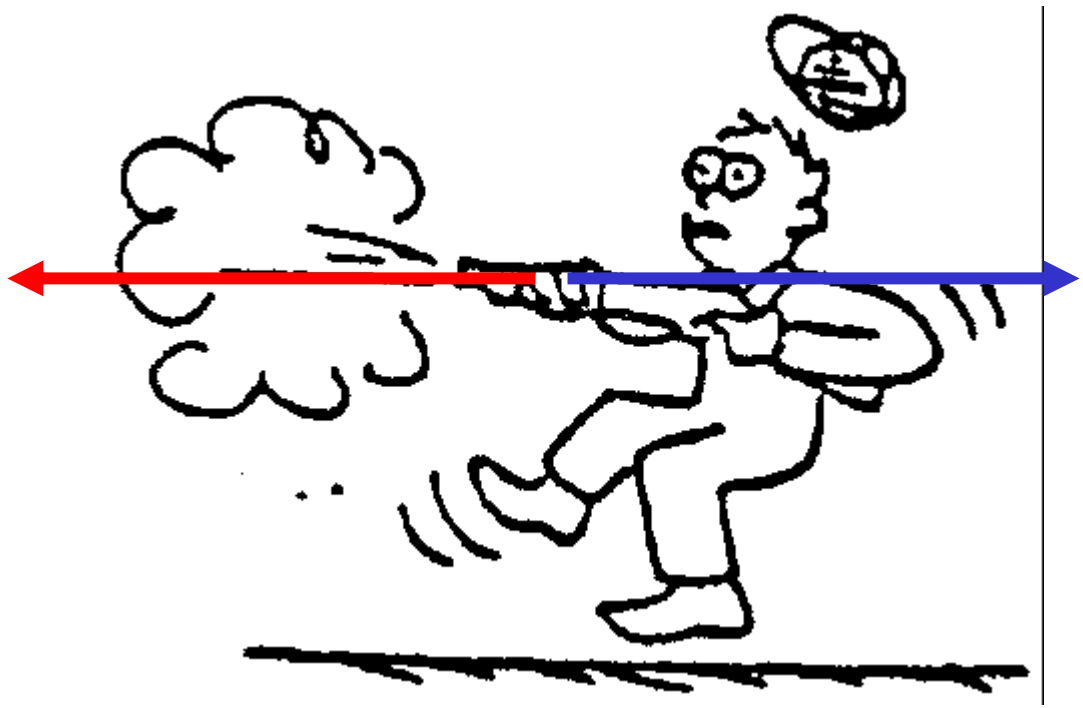


Action-Reaction

You push a heavy car by hand. The car, in turn, pushes back with an opposite but equal force on you. Doesn't this mean the forces cancel one another, making acceleration impossible? Why or Why not?

Action-Reaction pairs act on different objects.
For F = ma, all the forces act on the same object.

Action Reaction Pairs



Gun Pushes Bullet out.
Bullet Pushes back on Gun (& Man)

Rocket Thrust

Rocket Pushes Gas Out.

Gas Pushes Back on Rocket.

Newton's 3rd Law

$$F_{\text{hand on wall}} = -F_{\text{wall on hand}}$$

This is an INTERACTIVE Universe.