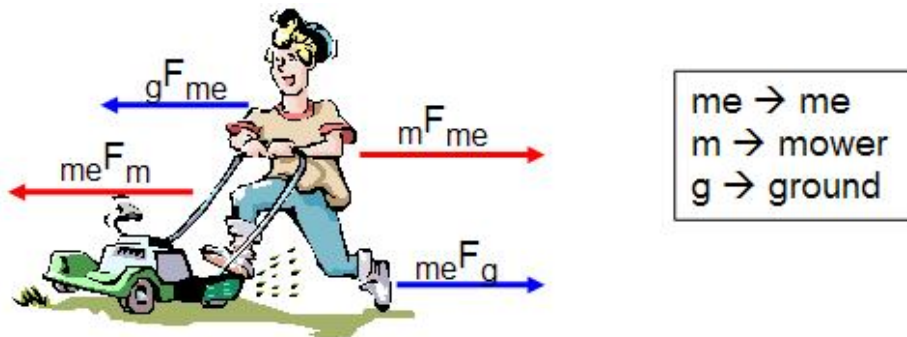


3rd law: _____ EN: _____

The Law of Force - Counter Force

When one body exerts a force on another body the second one exerts an _____ force on the first.

- unaccompanied forces do not exist in nature
- “action - reaction” forces are not the same as “balanced forces”



If I push on a lawn mower, it pushes back on me with an _____ but _____ force.

Explain why we don't both just stay still.

- The answer is that these forces are acting on different bodies
- It doesn't matter to the lawn mower that there is a force on me... all that matters to the lawn mower is that there is a force on it, so it starts to move!
- I am pushing backwards on the ground, and it pushes forwards on me.

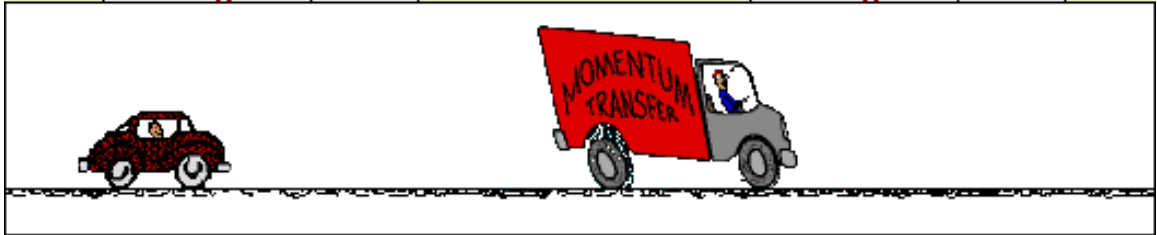
Questions to Consider...

Identify the “counterforce” : Draw a free body diagram and label the forces

- a. the push of a rifle on your shoulder when you shoot a gun
- b. The hit of a lineman on the QB
- c. The backwards force of the tires on the road
- d. The gravity of the Earth on the Moon

Why can you push harder on the pedals when pulling up on the handle bars?

Car		Truck	
mass (kg)	1000	mass (kg)	3000
vel. (m/s)	20.0	vel. (m/s)	0.0
mom. (kg m/s)	20 000	mom. (kg m/s)	0



Action-Reaction Pairs

- Action: the tires on a car push on the road...
Reaction: _____.
- Action: while swimming, you push the water backwards...
Reaction: _____
- Action: the earth pulls down on a ball...
Reaction: _____



How hard is the block pushing on the woman?

