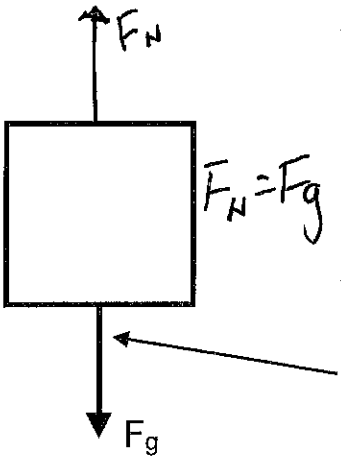
Force Diagrams (aka Free Body Diagrams)

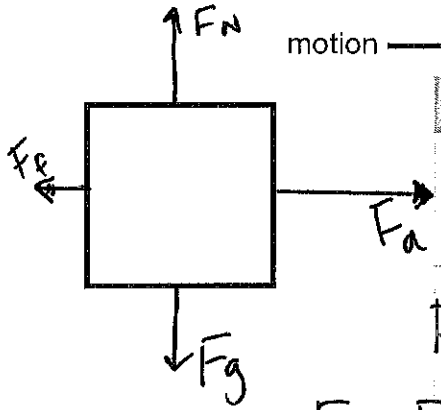
We use force diagrams to show all of the external forces acting on an object. The object is isolated from other objects. Let's start with a simple block on the table. Notice that the diagram does not show the table.

1. What are the forces working on the block?
   If only gravity were working on the block, what would be happening to the block?



Force	Symbol	Description of force
Gravity	F_g	The force of gravity is pulling down on the object toward the center of the earth. Always a pull.
Normal	F_N	⊥ perpendicular to the surface that the object is on.

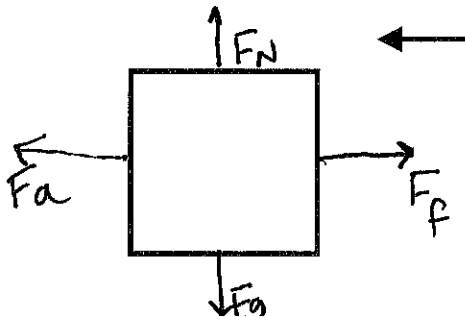
2. The block above is sitting still and there are only two forces working on it.
What if we pushed the block to the right? Add the two forces from above since they are both still working on the the block.
Why doesn't the block keep moving when we stop? Which force would this be?



Force	Symbol	Description of force
Applied	F_a	an external force applied to the object.
Friction	F_f	the force of resistance when one object touches another.

$F_N = F_g$
$F_a > F_f$

3. Draw a force diagram for a block that is being pushed from the left but not moving.



$F_N = F_g$
$F_a = F_f$