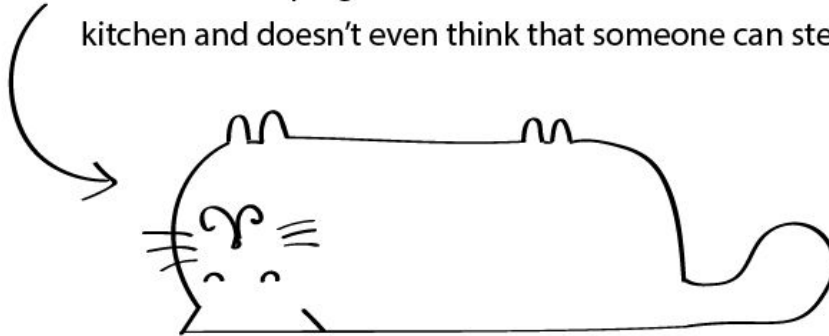


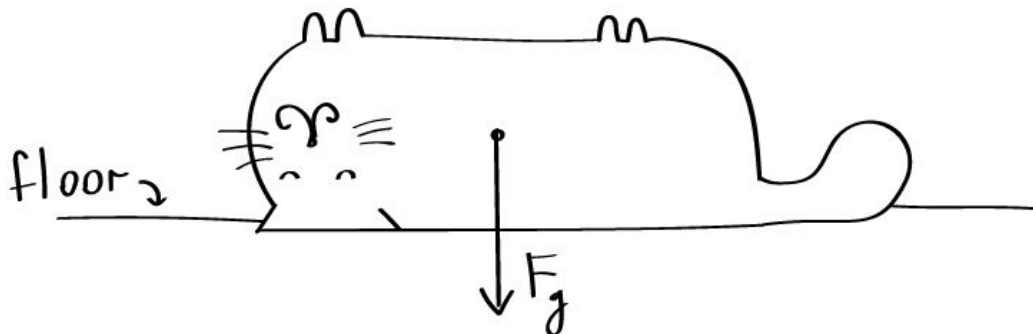
What happens when a cat sleeps (from physics point of view)

That's Newton. She is sleeping on the wooden floor in the middle of the kitchen and doesn't even think that someone can step on her.



She doesn't move, even her tail is motionless. Are there any forces acting on her? Surprisingly yes! Even two of them - the force of gravity and the normal force are acting on the cat.

Gravity force is directed to the center of the Earth (colloquially known as "down"), perpendicular to the floor in our case .

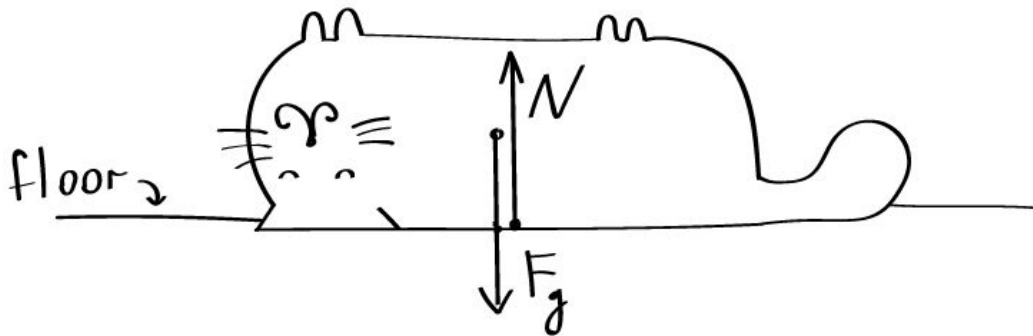


Usually this force is denoted as F_g . To get the numerical value of gravity force, we can use the following equation:

$$\vec{F}_g = m\vec{g}$$

where m is the mass of the cat in kg and g is the acceleration of free fall (constant, usually value of 10 m/s^2 is used for calculations).

Another force acting on a resting cat is normal force . By convention it's denoted by letter N. Normal force is directed perpendicularly to the surface on which the cat is lying.

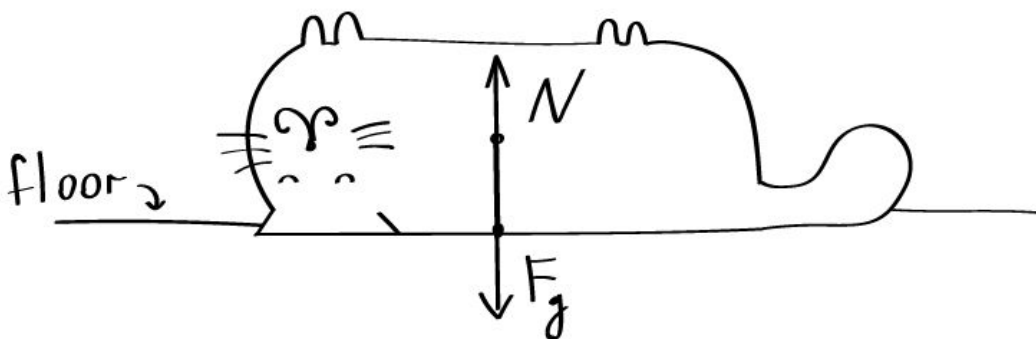


Our cat lies on horizontal hard immobile floor. So the normal force is calculated as:

$$N = mg$$

Same as before m is the mass of the cat , and g is gravitational acceleration.

As you can see, in our particular case these forces are in equilibrium but it's not always the case.



For example it is not true when the floor is titled at an angle. To check what happens in this case, check out the next chapter.