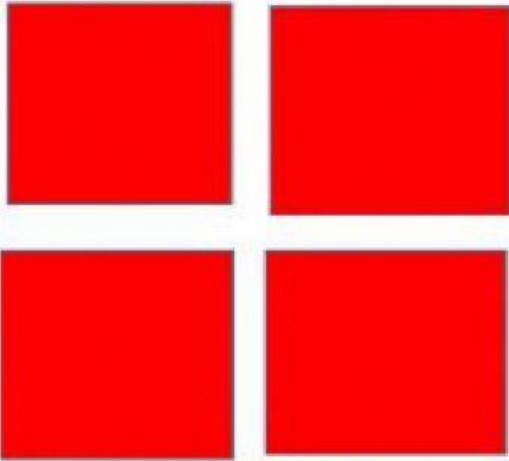


## Force and motion

Identify the force applied in each picture. Is it a push or a pull? Drag your answer to the correct box.

# push



# pull



| <b>Vocabulary</b>       | <b>Meaning</b> |
|-------------------------|----------------|
| <b>Force</b>            |                |
| <b>Interaction</b>      |                |
| <b>Acceleration</b>     |                |
| <b>Deformation</b>      |                |
| <b>Gravity</b>          |                |
| <b>Friction</b>         |                |
| <b>Static friction</b>  |                |
| <b>Sliding friction</b> |                |
| <b>Rolling friction</b> |                |
| <b>Fluid friction</b>   |                |
| <b>Tension</b>          |                |

$$\text{Weight (N)} = \text{Mass (kg)} \times \text{Acceleration due to gravity (m/s}^2\text{)}$$

$$W = mg$$

1.) Calculate the weight of this lunchbox if its mass is 1.2 kg.




2.) Jenny experiences an average downward force of 441 N anywhere she goes on Earth. Calculate her mass.




3.) Calculate the acceleration due to gravity on the planet where this 80 kg astronaut weighs only 304 N.




4.) This bird has a mass of 0.8 kg. Calculate the weight of the bird acting downward as it flies.




5.) Joe is carrying a load of building supplies and likely injuring his back by supporting 882 N of weight. Calculate the mass of what he is carrying.




6.) This armed rover weighs 1900 N and has a mass of 340 kg. What is the acceleration due to gravity on its current planet?




7.) This feather experiences 0.075 N of downward force. Assuming it is on earth, what is its mass?

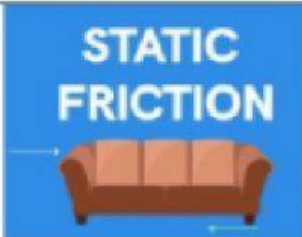



8.) Java the alien has a mass of 50 kg. How much would he weigh on earth?




9.) This 200 kg stag that weighs 1,960 N on earth would only weigh 324 N on the moon. Calculate the moon's acceleration due to gravity.



| Examples                            | Type of Friction | Characteristics                                                                      | Illustration                                                                          |
|-------------------------------------|------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <div></div> <div></div> <div></div> | Static           | Frictional Force causing object(s) to stay at rest. No Movement                      |    |
| <div></div> <div></div> <div></div> | Sliding          | Frictional Force between two objects causing the object(s) to slide past each other. |    |
| <div></div> <div></div> <div></div> | Drag Force       | Frictional Force between an object and a fluid.                                      |  |
| <div></div> <div></div> <div></div> | Rolling          | Frictional Force between two objects causing the object(s) to roll.                  |  |

**c**