How much force happens when 3Kg mass is accelerated 5m/s^2?

$F = 15N \times \frac{3}{15}$ $F = mA$

$F = 3Kg \times 5m/s^2$

$15N = 3Kg \times 5m/s^2$

How much acceleration happens with a force of 3N and the mass is 1Kg?

$F = mA$

$\frac{3}{1} = \frac{1 \cdot A}{1}$ $= A = 3\frac{m}{s^2}$

How much mass was used if accelerated 2m/s^2 and caused 4N of force?

$F = MA$

$\frac{4}{2} = \frac{M \cdot 2}{2}$ $2Kg$

A student with 65Kg of mass pushes away at 2m/s from another with a mass of 30Kg. What was the speed?

$MV = MV$

$65 \cdot 2$

$\frac{130}{30} = \frac{30V}{30}$ $4.\overline{3}\ \frac{m}{s}$

4 Forces in Nature (or 3 if you go with Einstein)

electromagnetism
gravity
nuclear (strong)
radiation (weak)

Strong	1
Em	10^{-3}
weak	10^{-16}
Gravity	10^{-41}

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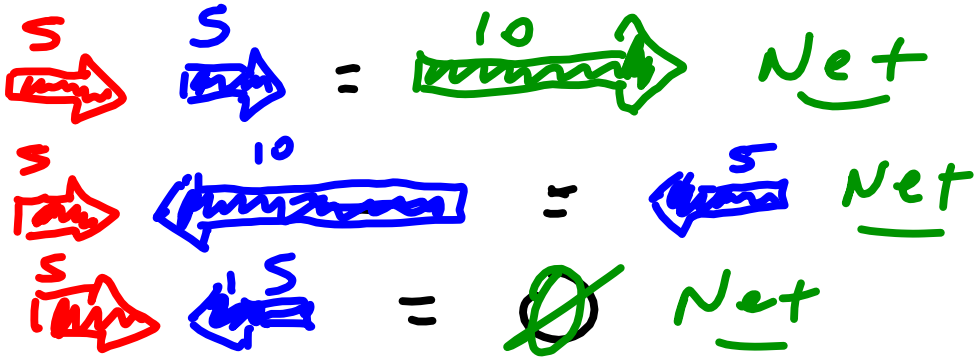
$10^{-3} \rightarrow .001 = 1/1{,}000$ th

Force - push or pull (in a direction)
– vectors –

Newton - $\frac{kgm}{s^2}$ $F = mA$ $(kg)(\frac{m}{s^2})$

Net Force -



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Newton's Laws Motion

1st Law - obj @ rest stays, motion stays forever unless outside force

Inertia - resistance to Δ

$\uparrow m = \uparrow$ inertia

2nd Law - $F = mA$

$A = \frac{F}{m}$ or $m = \frac{F}{A}$

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Third Law - for every action there is an equal + opposite reaction

momentum = mv

$(kg) \cdot \left(\frac{m}{s}\right) = \frac{kg\,m}{s}$

Conservation of momentum

$MV_b = MV_a$

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Friction - force that 2 surfaces exert on each other

strength based on — types of surfaces
— pressure between them

Static - stationary, not moving

Sliding - sliding "duh!" ☺

Rolling - rolling "duh!" - less force than static + sliding

Fluid - solid moving through fluid

liquids & gases - fluids

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Gravity - Newton. force that pulls objects together

Law of universal attraction $g = \frac{m_1 m_2}{r^2}$

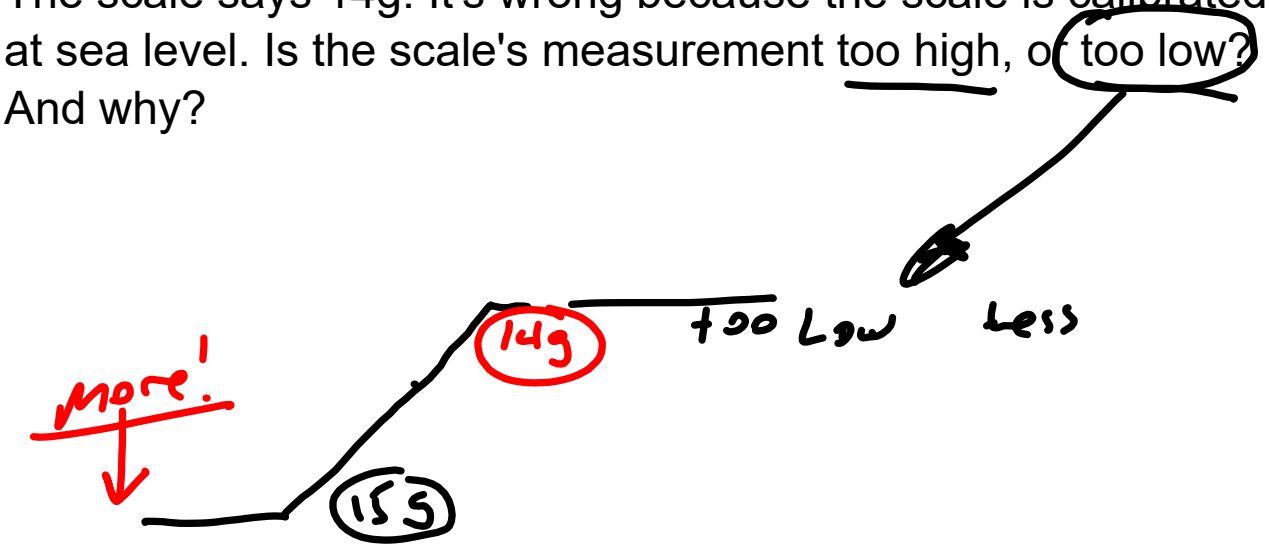
Mass - amnt. of matter in object

Weight - how much gravity pulls on a mass

both use scale to measure!

* problem! Calibrated @ sea level!

The scale says 14g. It's wrong because the scale is calibrated at sea level. Is the scale's measurement too high, or too low? And why?



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Freefall - When the only force on the object is gravity!

$9.8\ m/s^2$ on Earth

Air resistance -

fluid friction opposite to movement

Terminal velocity -

when air resistance = weight

Projectile motion -

vector properties