1. Weight	D	A.	The units of weight and force.
2. Mass	E	B.	Newton's Second Law mathematically.
3. N	A	C.	The acceleration due to gravity = -9.8m/s^2.
4. F = ma	B	D.	The force of gravity on matter.
5. g	C	E.	How much matter an object contains.

Will an object accelerate faster or slower?
If its mass is increased? Slower
If the force pulling on it decreases? Slower
If the force pushing on it increases? Faster
If its mass is decreased? Faster

Why is F = ma not entirely correct?

$F_{net} = m \cdot a$

More, less, or the same as on the Earth?

When an astronaut lands on the moon:

The astronaut's mass is: same
The astronaut's weight is: less
The astronaut's inertia is: same

Without air friction, which falls faster, heavy or light objects?
Why? Same speed due to g

If there is air friction, which falls faster?
Why? heavier because air fricti slows lighter object more

How fast is the acceleration due to gravity? $\approx 10 m/s^2$

If an object falls from rest, how fast will it be going:
after 1 second? after 2 seconds? after 6 seconds?
10m/s 20m/s 60m/s

Using the weight equation, calculate the weight of a 45 kg rock?
$F_w = mg$
$m = 45kg$ $g = 10m/s^2$ $45kg \cdot 10m/s^2 = 450N$

Calculate the mass of a 10 N apple.
$F_w = mg$ $g = 10m/s^2$ $m = ?$ $10N$
$m = \frac{F_w}{g} = \frac{10N}{10m/s^2} = 1kg$

What is the mass of a 100 gram apple in kilograms?
0.1g (100g | 1kg | 60g)

What is the weight of the above apple?
F_w m 0.1kg a $10m/s^2$ $F_w = m \cdot g$ $0.1kg \cdot 10m/s^2 = 1N$

What is the weight of a 250 N object? 250N

If 100 kg person weighed 400 N on the planet Zorg, what is the acceleration due to gravity on Zorg?
m 100kg $a = ?$
F_w 400N
$F_w = mg$ $g = \frac{F_w}{m} = \frac{400N}{100kg}$
$g_{Zorg} = 4m/s^2$

Which of Newton's Three Laws Applies: Law 1, 2, or 3?

1 Pushing a cart down the hall, when you try to turn it it tries to go straight.

2 More acceleration takes more force.

3 When you push your knuckles into a table, it hurts your knuckles.

3 A ball thrown into the ground bounces back up.

A 6 kg object experiences a 5 m/s^2 acceleration? Find the force that caused this acceleration. $F = ma$
m 6kg
a 5m/s^2 $6kg \cdot 5m/s^2 = 30N$

A 3 kg rock accelerates to the left at 12 m/s^2. Find the net force that caused this. $F = ma$
m 3kg
a 12m/s^2 $= 3kg \cdot 12m/s^2 = 36N$

A 12 kg box is pushed to the left by a 48 N force. Find its acceleration. $F = ma$ $a = \frac{F}{m}$
m 12kg
F 48N $a = \frac{48N}{12kg} = 4m/s^2$

30 N ← **5 kg** (m =) → 25 N

A) Calculate the object's net force.
$-5N$

B) Calculate the object's acceleration.
$F_{net} = m \cdot a$ $a = \frac{F}{m}$ $\frac{-5N}{5kg} = -1m/s^2$

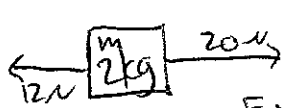
40 N ← **8 kg** → 24 N

Calculate the object's acceleration.
$F_{net} = -16N$
$m = 8kg$
$F = m \cdot a$ $a = \frac{F}{m}$ $\frac{-16N}{8kg} = -2m/s^2$

$a = 6 m/s^2$ →
F = ? ← **4 kg** → F = 30 N

Find the force pulling left.
$F_{net} = 30N - F$
$a = 6m/s^2$ $m = 4kg$ $F = ma$
$30N - F = 6m/s^2 \cdot 4kg = 6N$

12 N pulls to the left and 20 N pulls to the right on a 2 kg object.
Draw the problem:



$F_{net} = 8N$
$F = ma$

Calculate the object's acceleration.
$a = \frac{F}{m}$ $\frac{8N}{2kg} = 4m/s^2$