

Hooke's law

Elasticity

- When a force is applied, it changes its Shape/size.

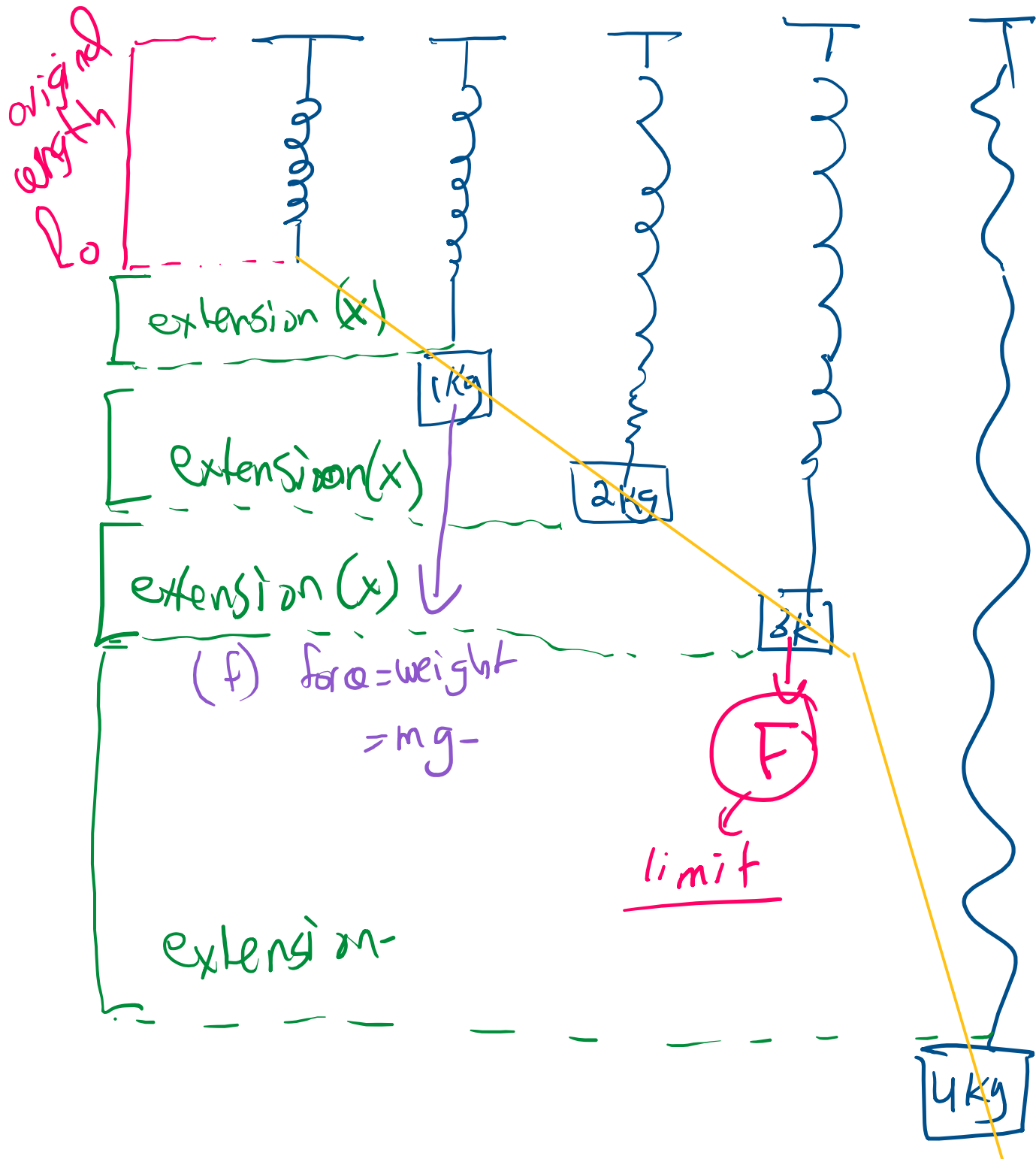
AND when the force is removed, it returns to the original shape/size.

In-elastic

- When a force is applied, it changes its Shape/size.

but when the force is removed, it doesn't return to the original shape/size.

Example: spring



Force (N)	Length	Ext	f/x
0	3	0	0
1	5	$5-3=2$	$\frac{1}{2}$
2	7	$7-3=4$	$\frac{2}{4} = \frac{1}{2}$
3	9	$9-3=6$	$\frac{3}{6} = \frac{1}{2}$
4	19	$19-3=16$	$\frac{4}{16} = \frac{1}{4}$

limit of proportionality → (points to the first three rows)

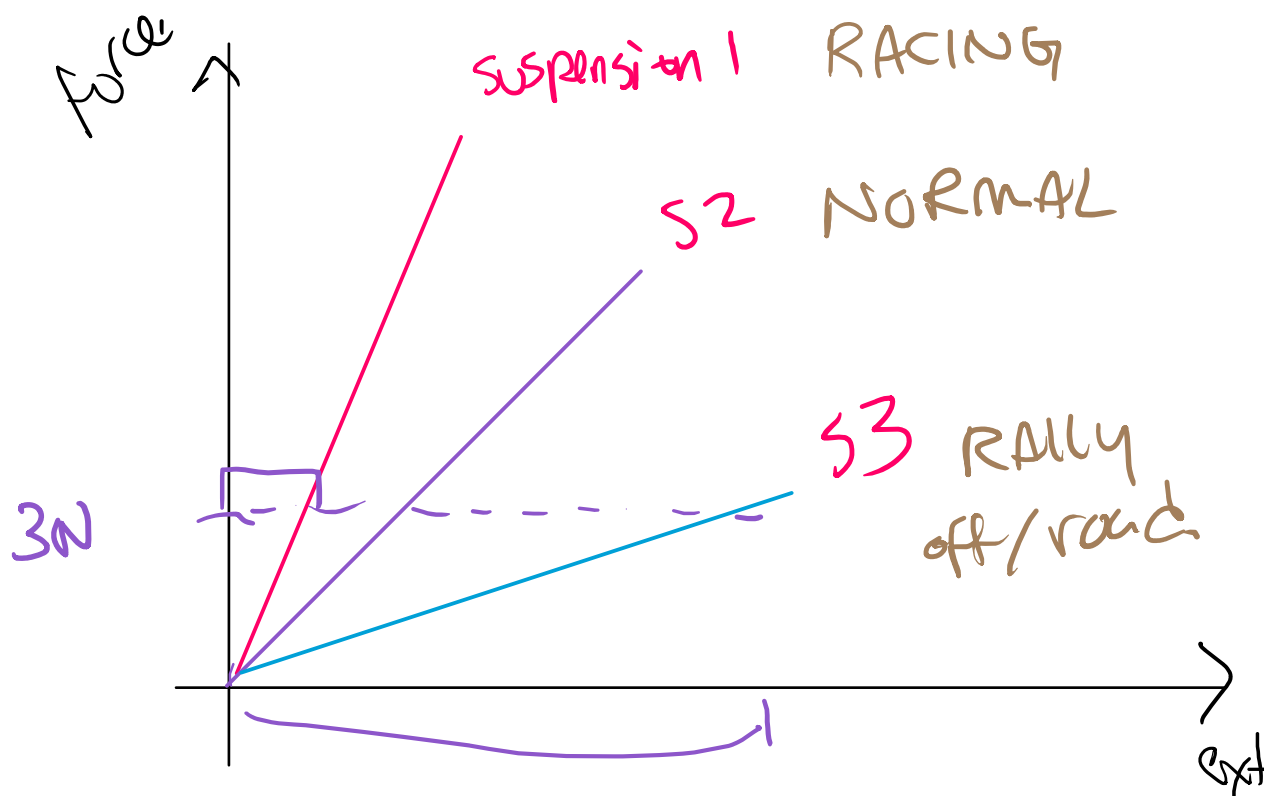
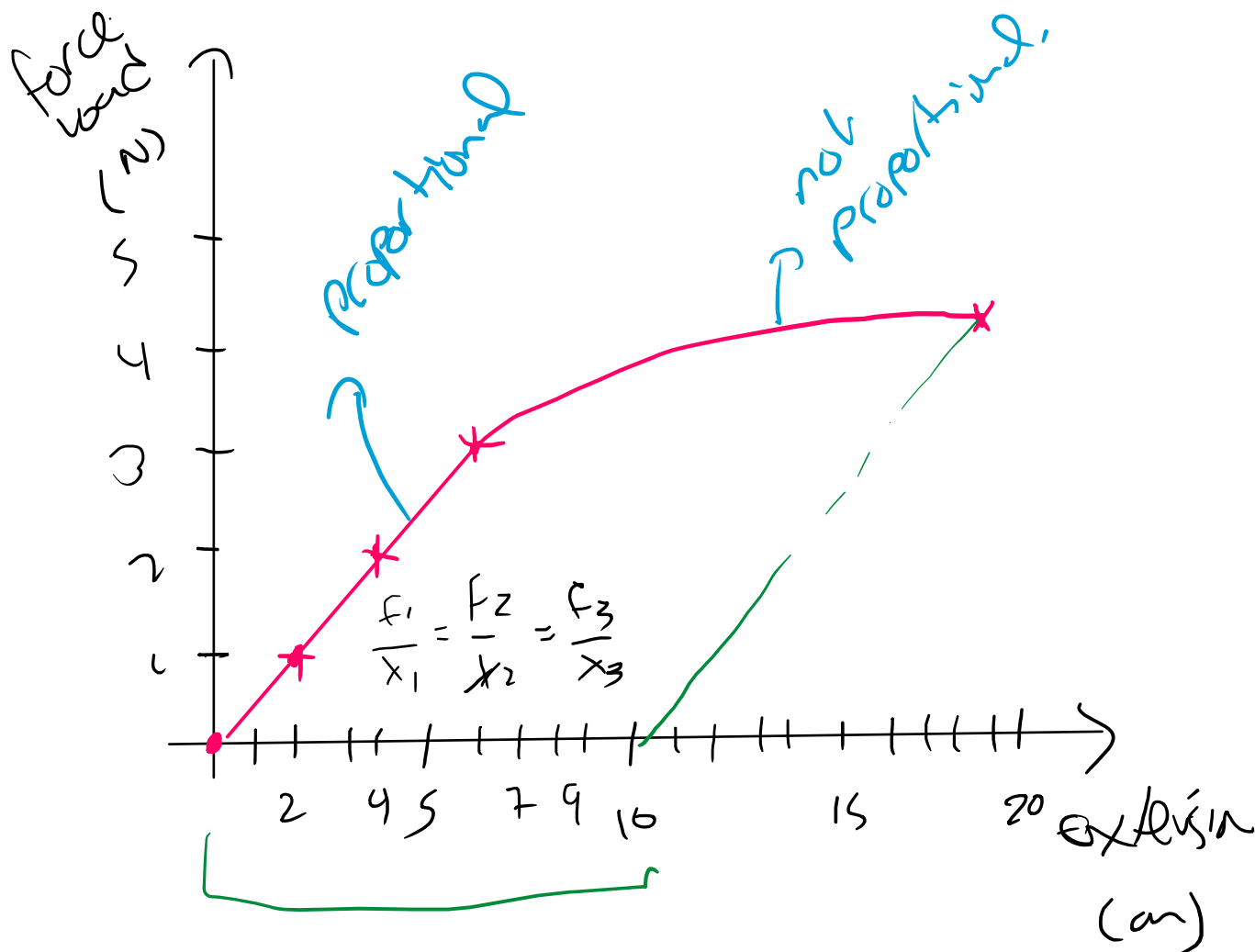
constant → *spring constant (k)* (points to the first three rows)

(The last row is circled in pink, indicating it is outside the limit of proportionality.)

Hooke's Law

the ratio between the force & extension is constant until the limit of proportionality. After the limit, the force & ext are no longer proportional.

constant →
$$K = \frac{f}{x}$$



which is stronger?