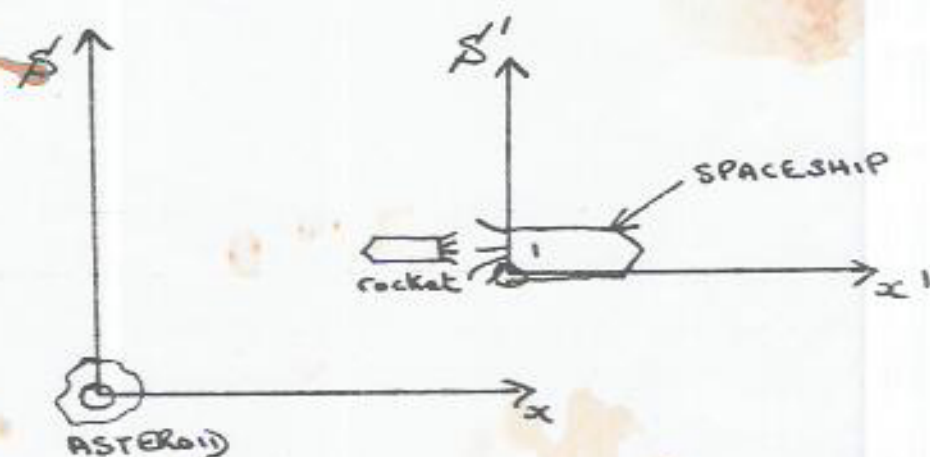


Q3) There's only 1 sure way to solve "relativity" problems!

- 1) Draw standard configuration axes.
- 2) Relate question to dashed and undashed frames. (You will probably have to read the question several times to do this!!)
- 3) Write down transformation formulas.
- 4) Plug-in values.



Useful transformation,
$$v'_x = \frac{v_x - V}{1 - \frac{Vv_x}{c^2}}$$

also
$$E = \frac{mc^2}{\sqrt{1 - \frac{v^2}{c^2}}}$$

- (i) Rocket's initial speed (in frame of spaceship) is 0.6c. Hence, its initial energy is,

$$E_i = \frac{mc^2}{\sqrt{1 - (0.6)^2}}$$

If its final speed (also in spaceship's frame) is v_f , then its final energy is,