

Simple Machines

Disclaimer

The AMMQC program is an Equal Opportunity program.

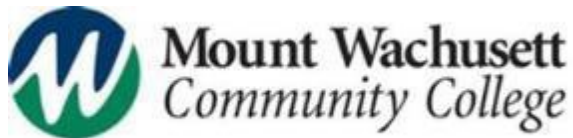
Adaptive equipment is available upon request for individuals with disabilities.

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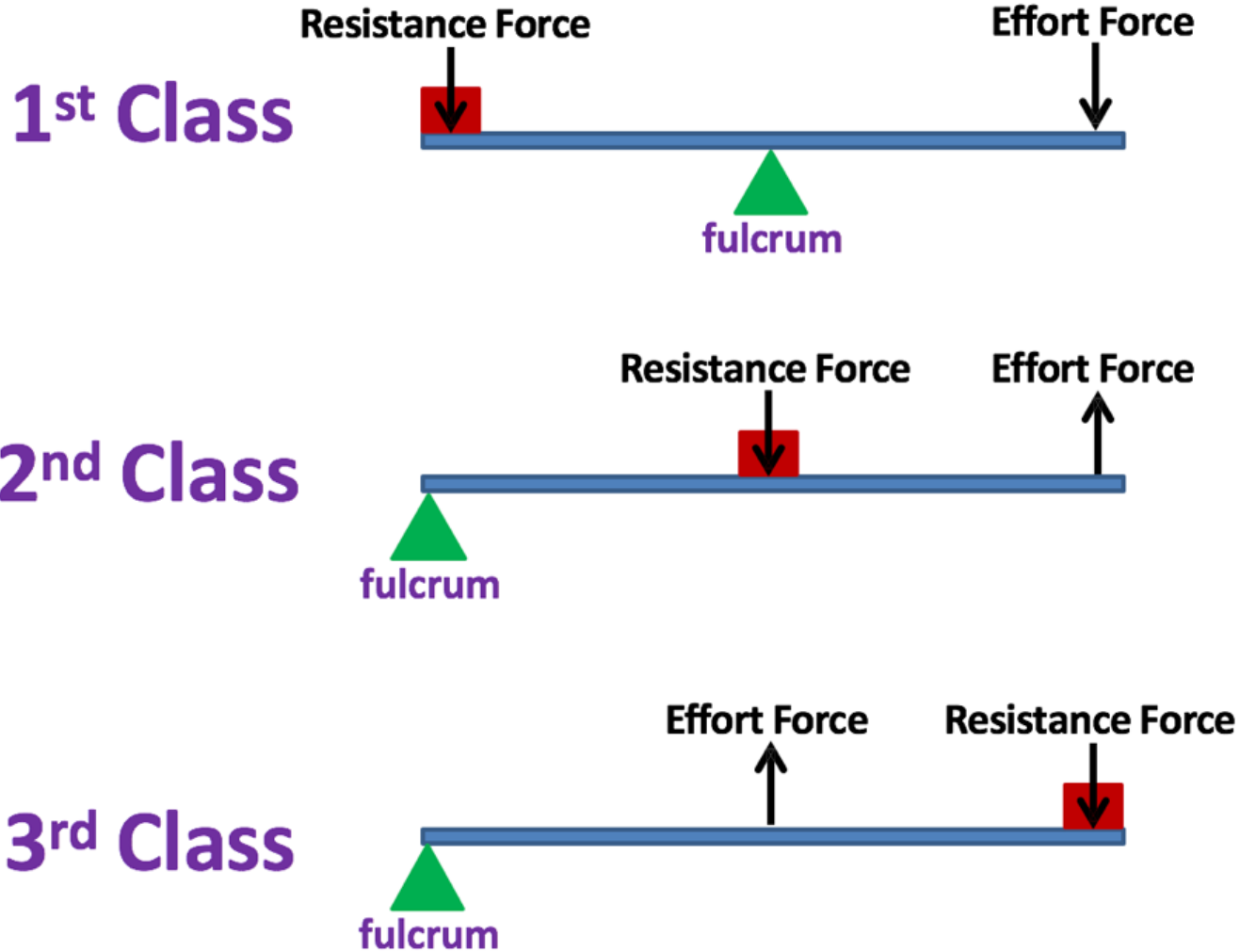
This project is sponsored by a \$15.9 million grant from the U.S. Department of Labor, Employment and Training Administration.

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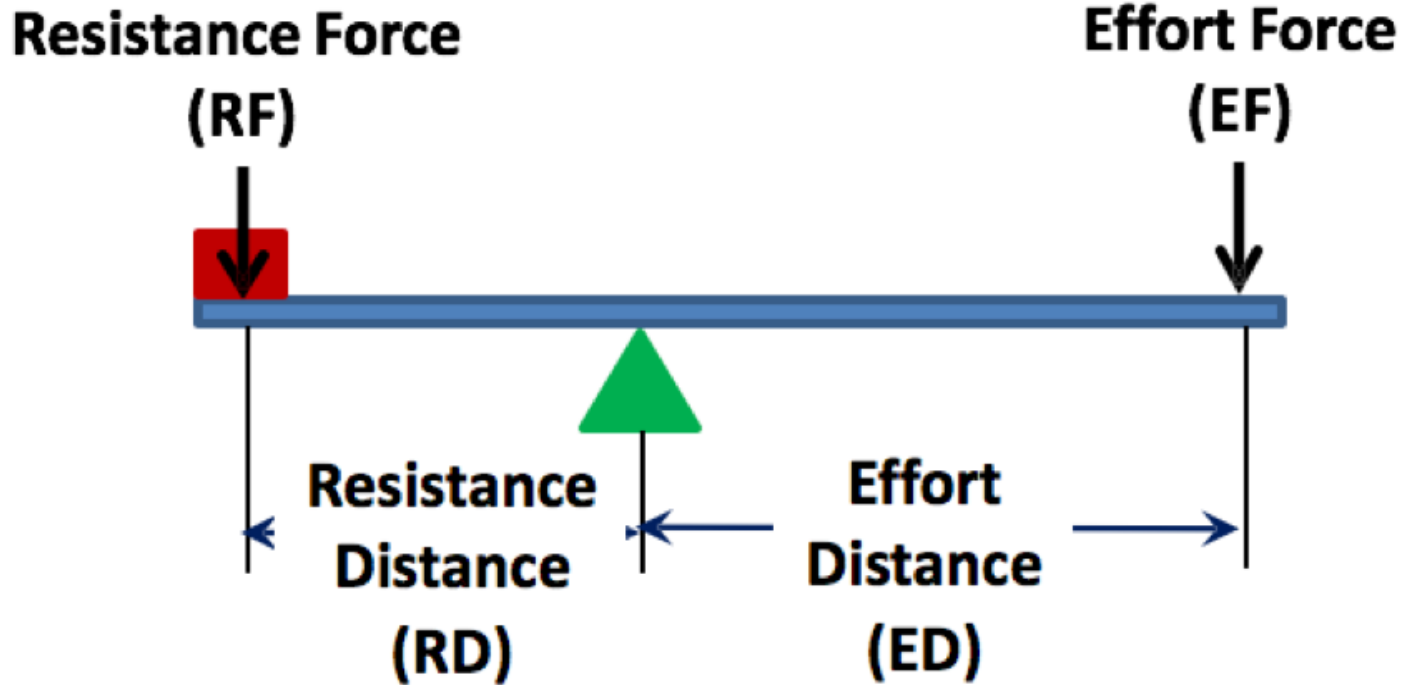
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THREE CLASSES OF LEVERS

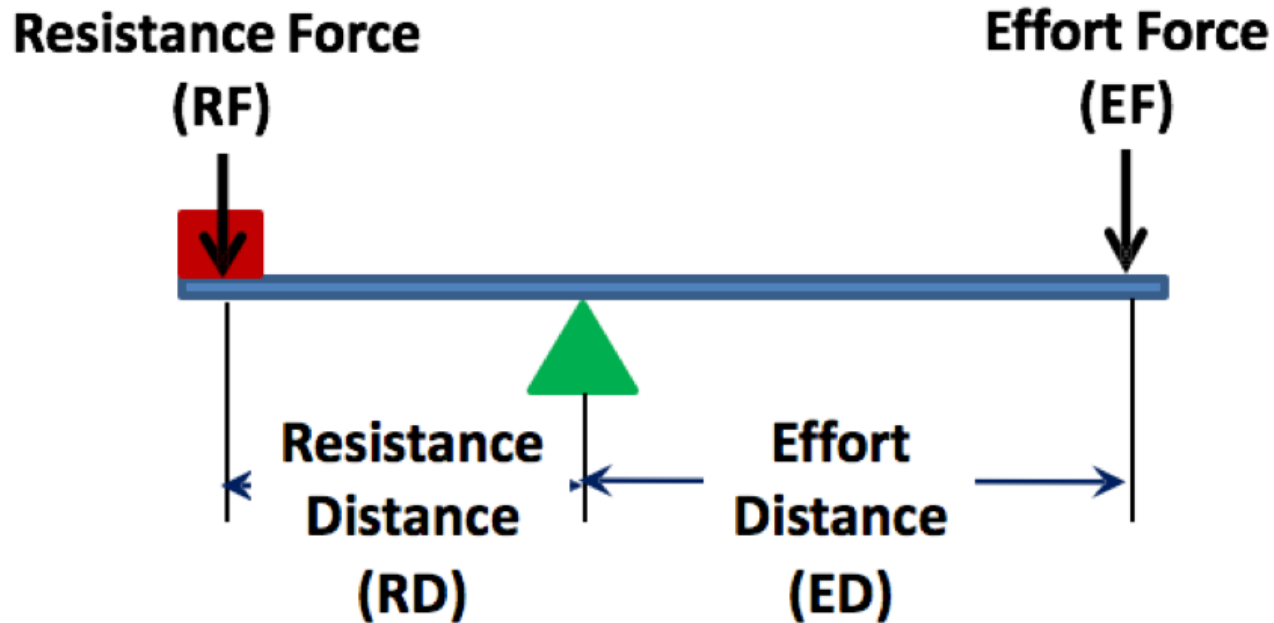


EQUILIBRIUM



$$RF \times RD = EF \times ED$$

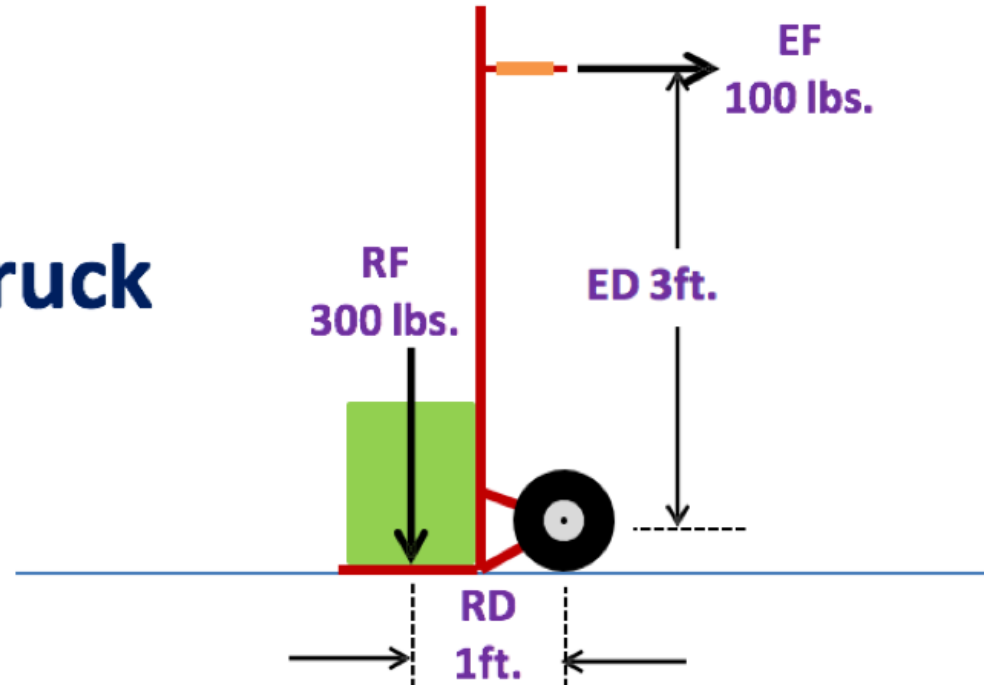
MECHANICAL ADVANTAGE OF LEVERS – MA



$$MA = RF/EF \text{ or } ED/RD$$

SAMPLE – 1st CLASS

Hand Truck

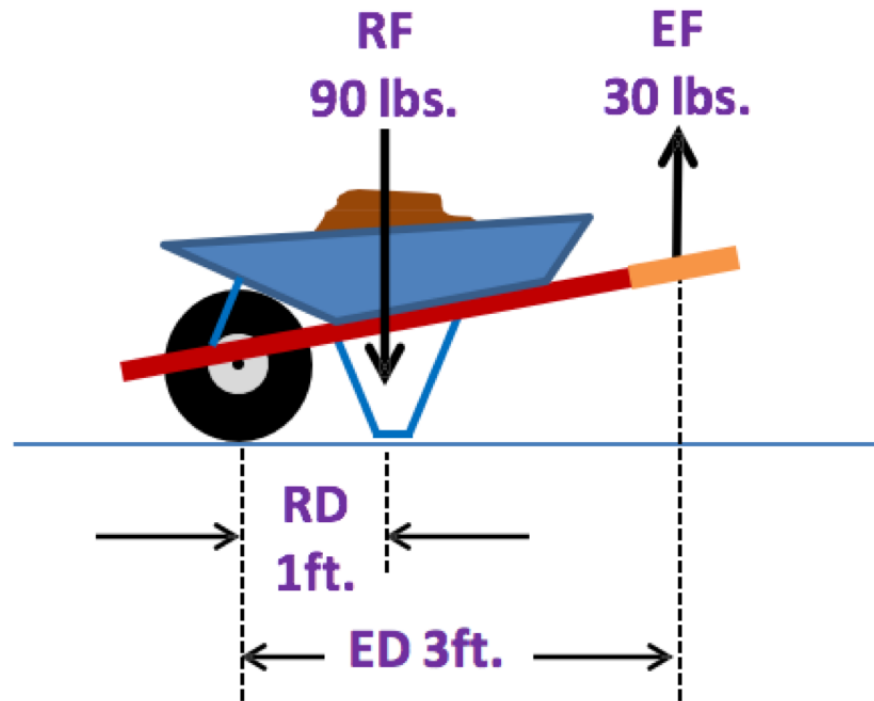


$$MA = RF / EF = 300 / 100 = 3$$

OR

$$MA = ED / RD = 3/1 = 3$$

SAMPLE – 2nd CLASS

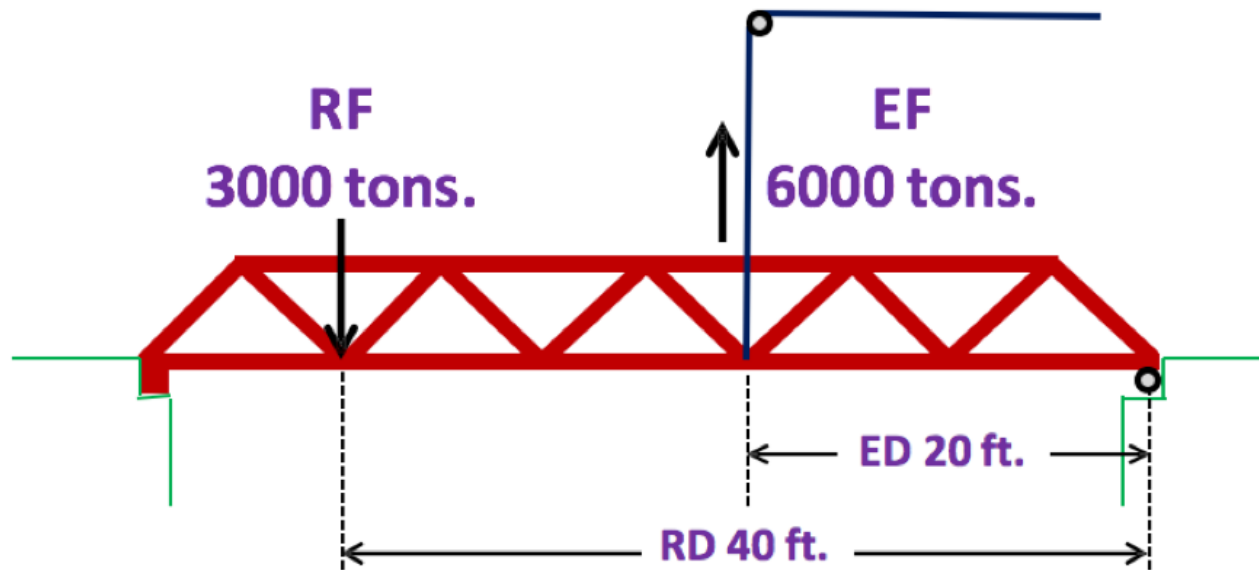


$$MA = RF / EF = 90 / 30 = 3$$

OR

$$MA = ED / RD = 3/1 = 3$$

SAMPLE – 3rd CLASS

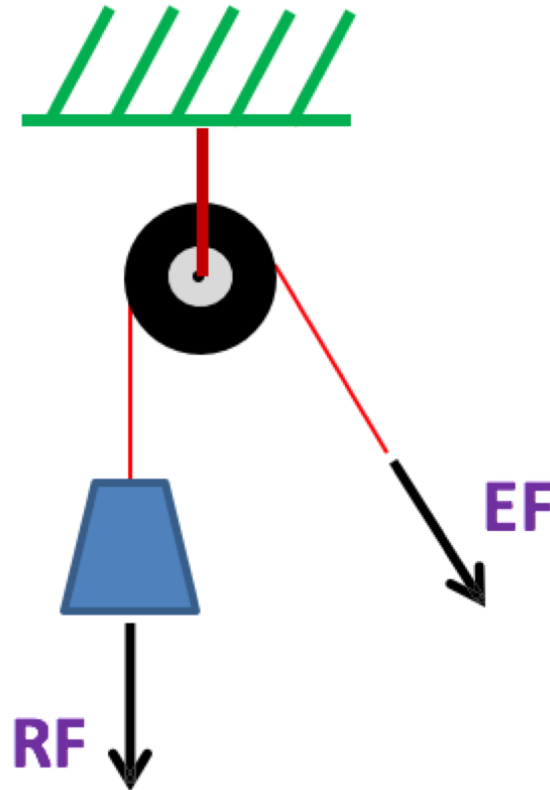


$$MA = RF / EF = 3000 / 6000 = .5$$

OR

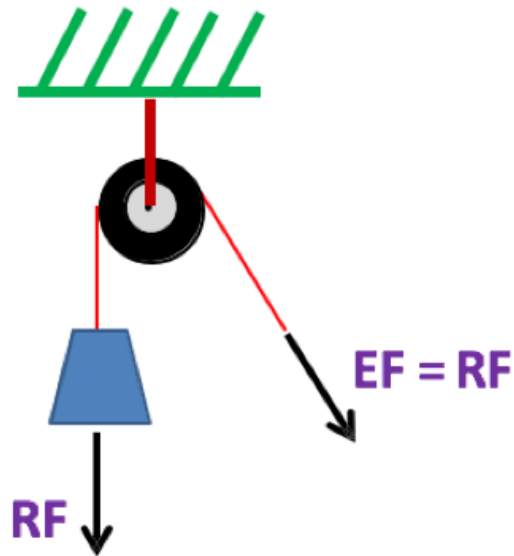
$$MA = ED / RD = 20/40 = .5$$

MECHANICAL ADVANTAGE OF PULLEYS – MA



$$MA = RF/EF$$

FIXED PULLEY

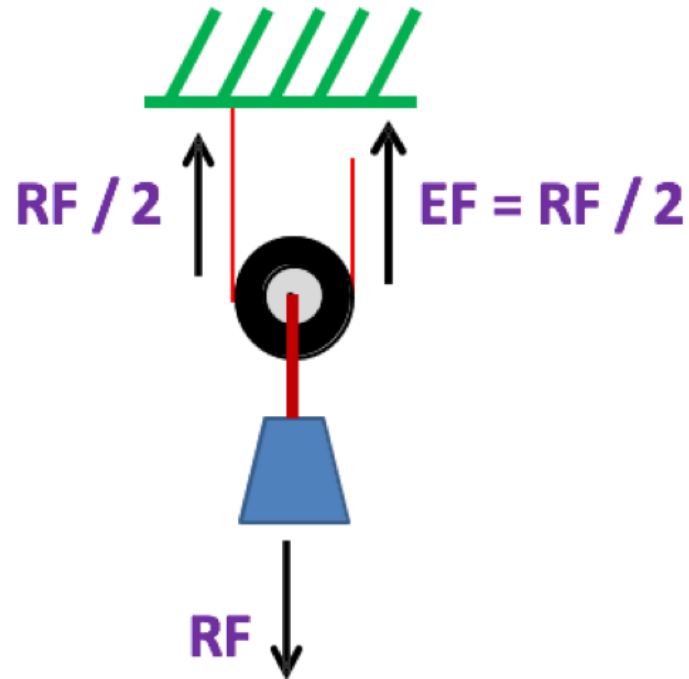


Redirects the direction of the Effort Force

$$MA = RF / EF = 1$$

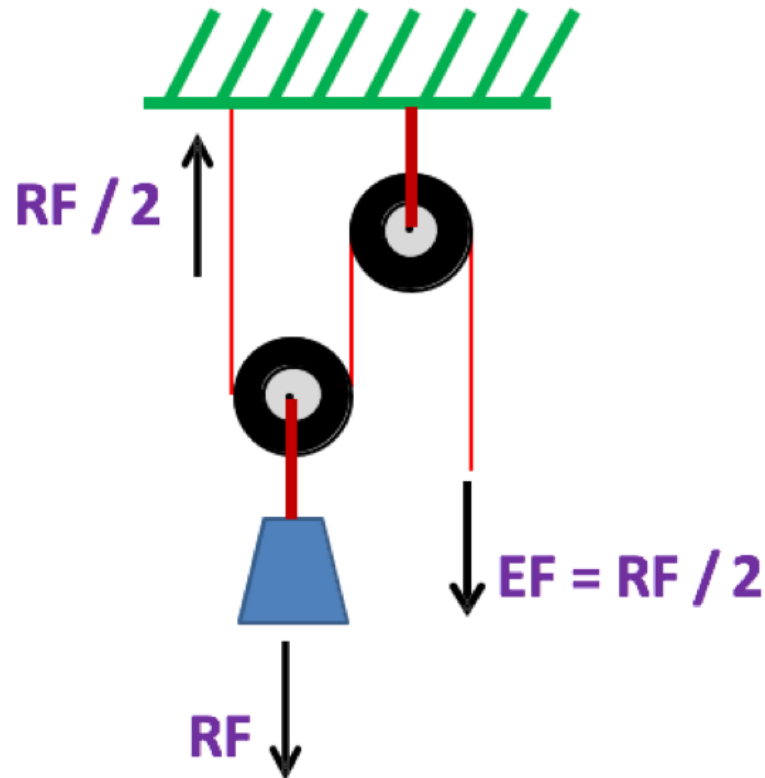
(No Mechanical Advantage)

MOVABLE PULLEY



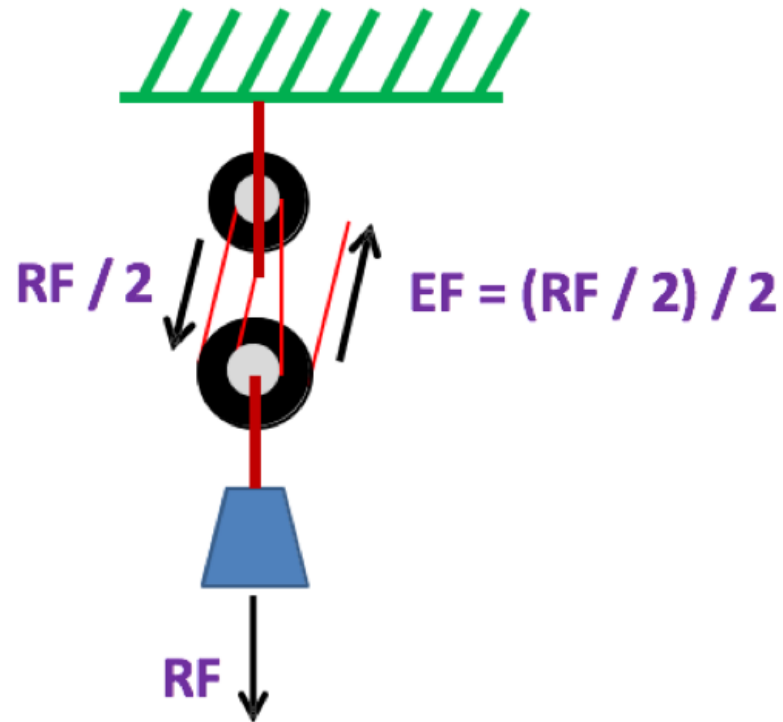
$$MA = RF / EF = RF / (RF/2) = 2$$

COMBINATION OF PULLEYS #1



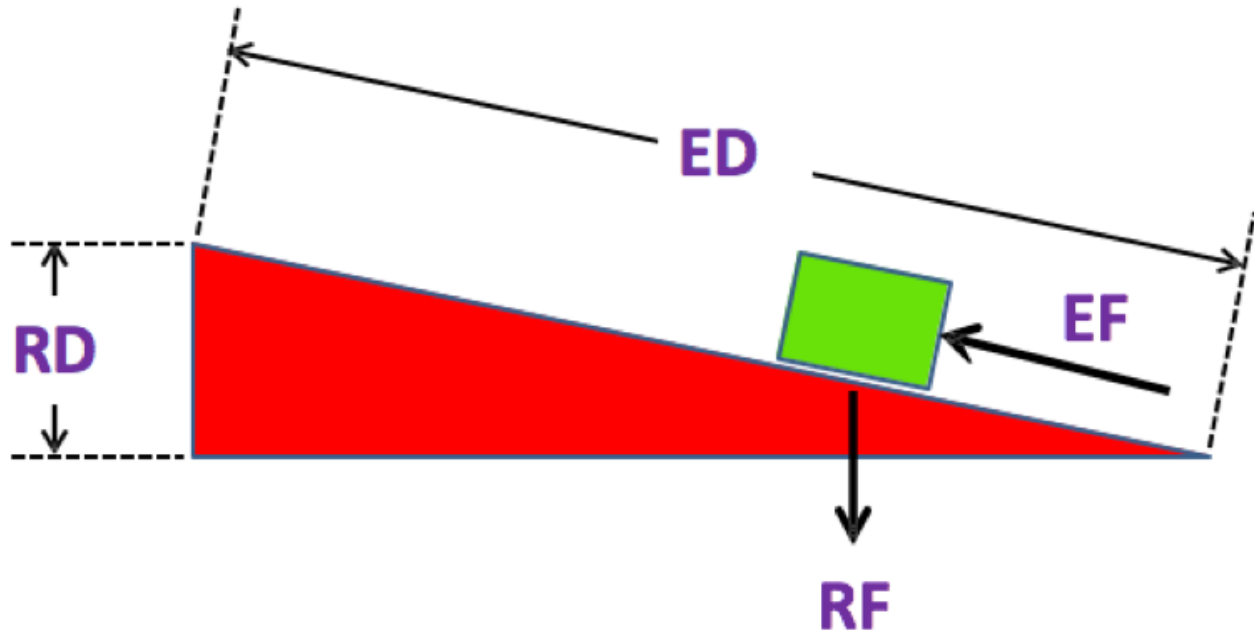
$$MA = RF / EF = RF / (RF/2) = 2$$

COMBINATION OF PULLEYS #2



$$MA = RF / EF = RF / ((RF/2) / 2) = 4$$

INCLINED PLANE



$$MA = RF / EF \text{ or } ED / RD$$