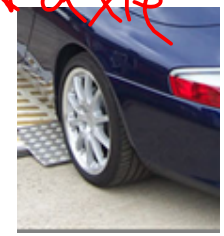
1. lever

4. Screw

2. pulley

5. wheel + axle

3. wheel + axle



6. Wedge

1. Using *figure* A, what is the mechanical advantage? 3

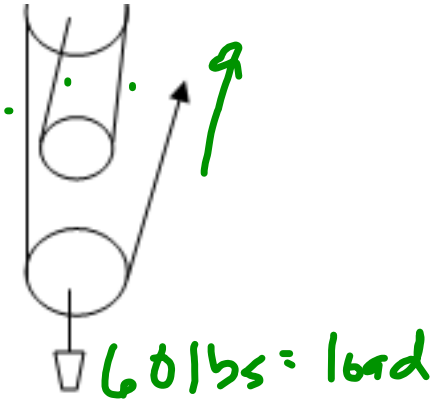


figure A.

2. In *figure* A, what is the pull/effort required to lift a load of 60 pounds?

$M.A. = \frac{\text{Load}}{\text{Effort}}$

$3 = \frac{60\text{lbs}}{E}$ (E) $3E = 60\text{lbs}$

$E = \frac{60\text{lbs}}{3} = 20\text{lbs}$

3. Using *figure* B, what is the mechanical advantage? 4

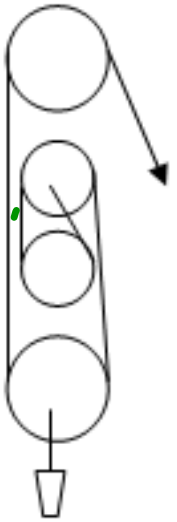


figure B.

4. In *figure* B, if you pull 20 feet, how much do you move the load? 5ft

$5 = \frac{20\text{ ft}}{4}$ $= \frac{\text{distance effort}}{M.A.}$

Wheel and Axle:

In *figure* A, the wheel has a radius of 4 feet and the axle has a radius of 1 foot.

7. Using *figure* A, what is the mechanical advantage?

$$\frac{RE}{RL} = \frac{4ft}{1ft} = 4$$

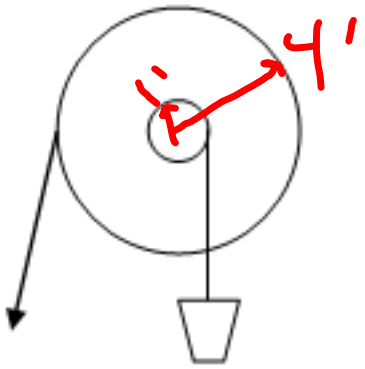


figure A.

8. In *figure* A, what effort/pull is needed to lift a load of 300 pounds?

Load = 300 lbs

M.A = 4

$$M.A = \frac{L}{E} = \frac{300lbs}{E} = 4$$

$$\frac{300lbs}{4} = \frac{4E}{4}$$

$$E = 75lbs$$

Incline Plane:

In *figure* A, the ramp is 6 feet tall (vertical distance) and the base (horizontal distance) is 8 feet long.

13. Using *figure* A, what is the mechanical advantage of this ramp?

$$MA = \frac{L}{H} = \frac{10'}{6'} = 1.7$$

$A^2+B^2=C^2$

$6^2+8^2=C^2$

$C=10'$

$=L$

$H=6'$

$8'$

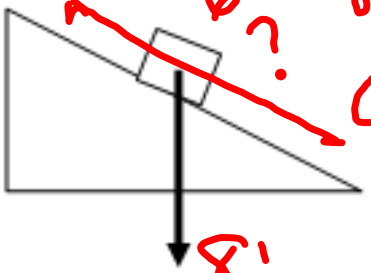


figure A.

14. In *figure* A, what is the effort needed to push the 200 pound weight up the ramp?

$$M.A. = \frac{\text{Load}}{\text{Effort}} = 1.7 = \frac{200lb}{E}$$

$$E = \frac{200lb}{1.7} = 117.61b$$

Lever:

In *figure* A, the load is 5 feet from the pivot point, the effort is applied 15 feet from the pivot point and the load weights 30 pounds.

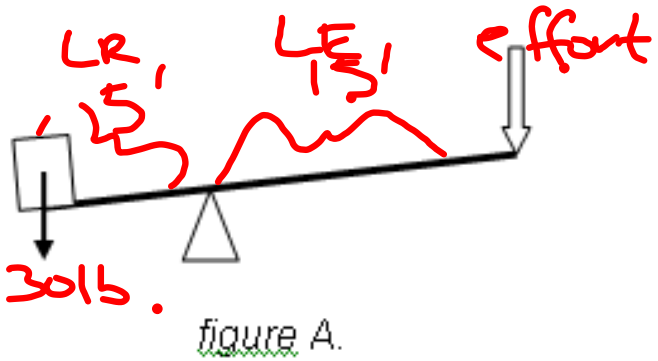


figure A.

19. In *figure* A, what is the mechanical advantage?

$MA = \frac{LE}{LR} = \frac{15'}{5'} = 3$

20. Using *figure* A, what is the effort required to lift that 30 pound load?

$MA = \frac{Load}{Effort} = \frac{30lb}{E} = 3$

$E = 10lb.$