

MECHANICAL PRINCIPLES

PULLEYS:

1. The more pulleys, the easier it is to pull or lift an object.
2. The more pulleys involved, the greater distance you must pull, but it is still easier to lift an object.
3. The thinner a windlass, the easier it is to turn.
4. In two different sets of pulleys, if the wheels are connected by a shaft, and the two wheels on one pulley are the same as the other two that they are connected to, then they both turn at the same speed.

BELTS:

1. Always determine in which direction one of the wheels in a diagram is turning, as the belt will be going in the same direction. Also, you can determine the direction of the belt and the wheel direction will be the same.
2. Wheels under a belt that is not twisted all turn in the same direction. Those on the outside of the same belt would turn in the opposite direction of those on the inside.

WHEELS:

1. If wheels are a different size on the same vehicle, then the smaller wheel will turn faster.
2. When wheels of different sizes are joined together by belts, the smallest wheel turns fastest, the largest wheel slowest.
3. When two gears of different sizes are locked together, the smaller gear turns faster than the shaft connected to the larger gear.

TURNING/DIRECTIONS:

1. The faster an object whirls around, the more it will pull from the center of rotation.
2. If a car or tractor or objects are turning, then the inside wheels or objects will turn less distance and more slowly than the outside ones.
3. When a car skids, its speed increases momentarily to the outside when turning.

CENTER OF GRAVITY: (referring to the point which weight is evenly distributed)

1. A solid object with a space drilled out will rest on the section that is solid.
2. The higher a vehicle is packed with materials, the easier it will turn over when on an incline.

VOLUMES AND AREAS OF SOLID OBJECTS:

1. If several solid figures have the same width and height but different shapes, then their weight and volumes are different. The lowest weight or least volume is a solid of triangular shape. Then comes a cylindrical solid (circular in shape) and then a cube (square shape).
2. Objects (cars) placed or parked parallel to each other and perpendicular to the side occupy less space.

SIX PRINCIPLES OF FLUID PRESSURE:

1. Liquid pressure is exerted in a perpendicular direction to any surface on which it acts.
2. At any given point beneath the surface of a liquid, the pressure is the same in all directions--downward, upward and sideways.
3. Pressure applied to a confined liquid from without is transmitted in all directions without diminution (reduction in intensity).
4. The pressure of a liquid in an open vessel is proportional to the depth of the liquid.
5. The pressure of a liquid in an open vessel is proportional to the density of the liquid.
6. Liquid pressure on the bottom of a vessel is unaffected by the size and shape of the vessel.