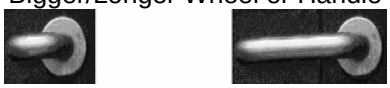
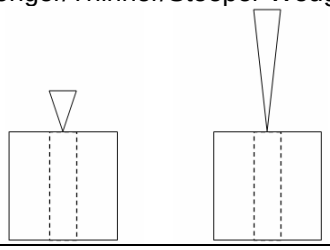
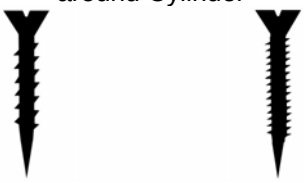
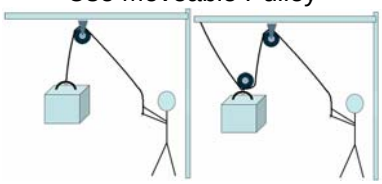
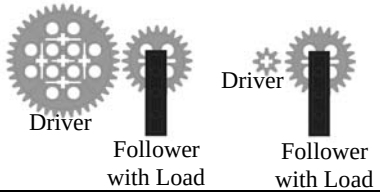
# How Can We Design Simple Machines To Be Most Helpful For Doing Work?

| Simple Machine | Design "Rules of Thumb" | |
|---|---|---|
| | How to Put in Less Force | Tradeoff for Putting in Less Force |
| Lever | Move Fulcrum Closer to Load  | Have to Push Lever for a Longer Distance AND Lever My be High in the Air When Push on It |
| Wheel-and-Axle System | Bigger/Longer Wheel or Handle  | Larger Rotation Distance/Circle |
| Wedge | Longer/Thinner/Steeper Wedge  | Have to Push Wedge for Longer Distance to Make Same-Sized Cut |
| Screw | Inclined Plane Wrapped Tightly around Cylinder  | Have to Spin more Times (more Distance) to Get the Screw in |
| Inclined Plane | Use Gentler Inclined Plane  | Inclined Plane will be Longer |
| Pulley | Use Moveable Pulley  | Moveable Pulley Requires the Rope be Pulled for TWICE the Distance to Move Something to the Same Height |
| Gear | Use Smaller Gear as Driver   | Have to Turn the Small Gear More time to Get the Follower to Go the Same Distance/Spin in a Full Circle |