provide input force output force on target a lever is a

machine and then isolate the machine

force acting on machine

force acting on machine

force acting

depends on

lengths to pivot

conservation of energy to link these forces to distances moved

compensating output distance moved at steady speed

input distance moved at

steady speed

simple machine

two linked pistons are a simple

for pulleys stiff rope links

instances of machines

link

forces to

stiff material links input and output

> force acting on piston in fluid depends on area

nearly incompressible fluid links pairs of pistons

input and output moments the same

> moment links force and length

pressure same everywhere in fluid

> pressure links force and area

machines: pressure and moment are useful compensating measures

machines link input and output force, trading force for distance

similar triangles relate length from pivot to distance moved

conservation of volume links areas of pistons with distance moved