

# Simple Machines

VOCABULARY 6.1 – 10 INDEX CARDS

## S8P5c

- Demonstrate the effect of simple machines (lever, inclined plane, pulley, wedge, screw, and wheel and axle) on work.

# Introduction

- <https://www.youtube.com/watch?v=UtfVZtuyuHU>

# 1. Work

- The scientific definition of work is: using a force to move an object over a distance (when both the force and the motion of the object are in the same direction.)

<https://www.youtube.com/watch?v=OyGG1Lm6L2Y>

## Formula for work

$$\text{Work} = \text{Force} \times \text{Distance}$$

- The unit of force is newtons
- The unit of distance is meters
- The unit of work is newton-meters
- One newton-meter is equal to one joule
- So, the unit of work is a **joule**

## 2. Joule

- The standard unit of energy in electronics and general scientific applications.
- One joule is defined as the amount of energy exerted when a force of one newton is applied over a distance of one meter.

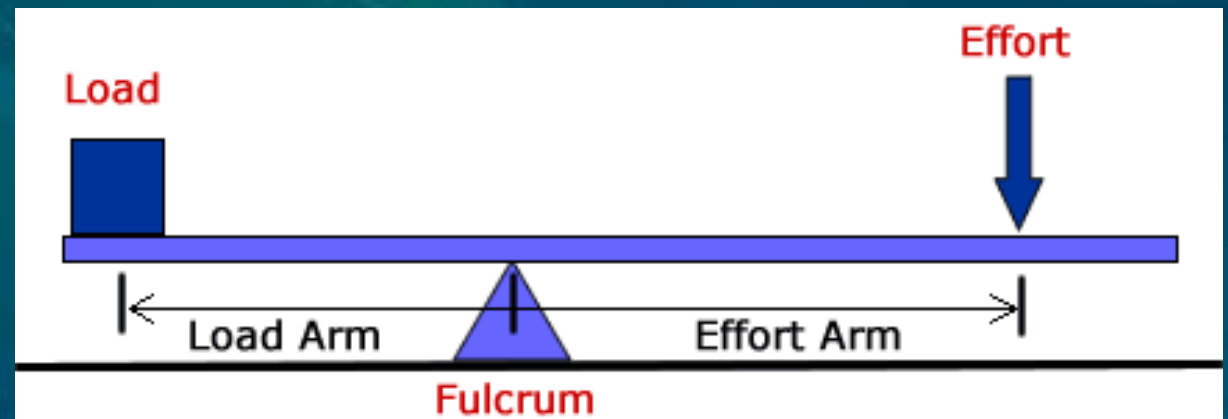
### 3. Power

- In physics, power is the rate of doing work.
- It is the amount of energy consumed per unit of time.
- In the SI system, the unit of power is the joule per second (J/s).
- <https://www.youtube.com/watch?v=w4QFJb9a8vo>

## 4. Lever

- A simple machine consisting of a bar that pivots on a fixed support, or fulcrum, and is used to transmit torque.
- A force applied by pushing down on one end of the lever results in a force pushing up at the other end.

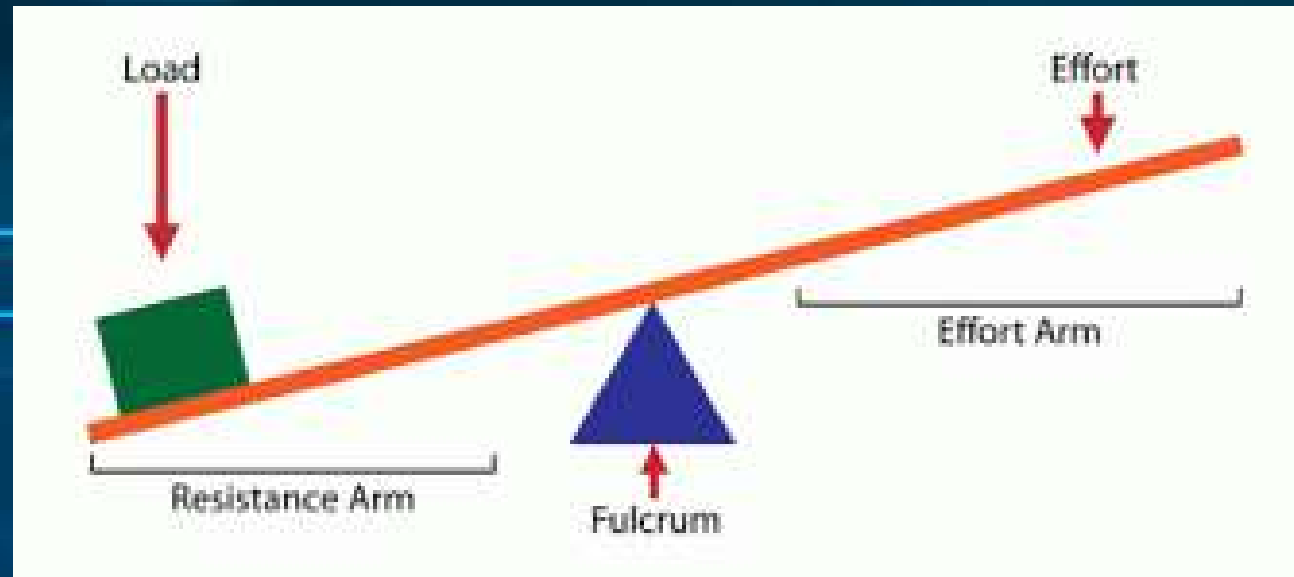
- <https://www.youtube.com/watch?v=YIYEi0PgG1g>





## 5. Fulcrum

- The fixed point around which a lever pivots.
- <https://www.youtube.com/watch?v=czfF4k0bRVQ>



## 6. Inclined Plane

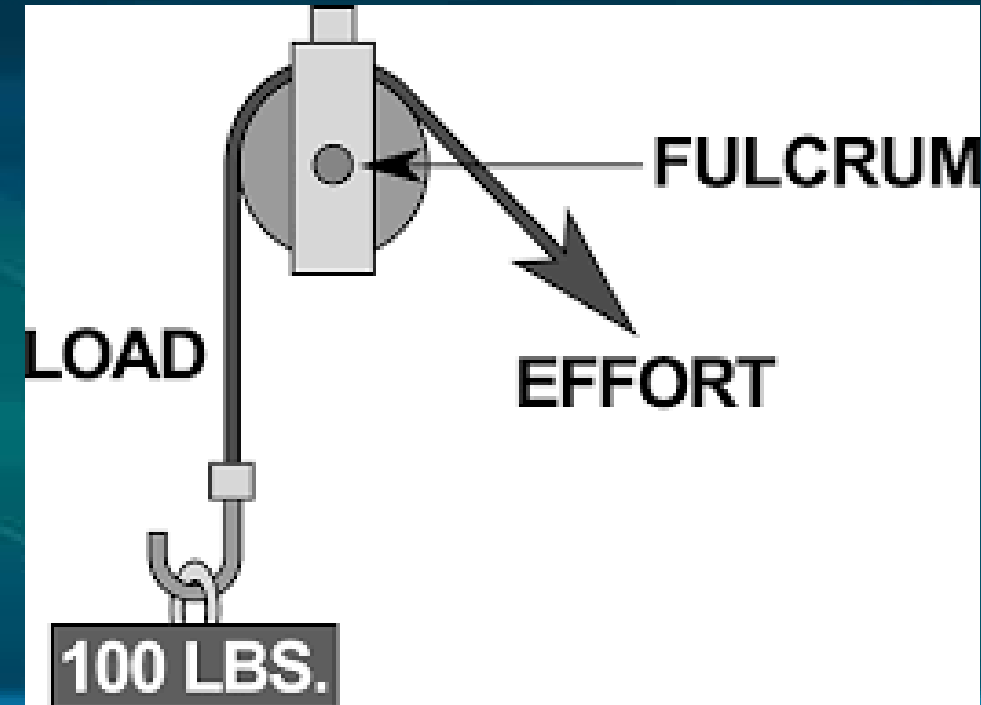
- An inclined plane, also known as a ramp, is a flat supporting surface tilted at an angle, with one end higher than the other.
- It is used as an aid for raising or lowering a load.
- The inclined plane is one of the six classical simple machines defined by Renaissance scientists.
- <https://www.youtube.com/watch?v=igrMlzHL-qg>



## 7. Pulley

- A machine consisting of a wheel over which a pulled rope or chain runs to change the direction of the pull used for lifting a load.
- Combinations of two or more pulleys working together reduce the force needed to lift a load.

<https://www.youtube.com/watch?v=LiBcur1aqcg>



## 8. Wedge

- An inclined plane that moves to do its work.
- Usually Triangular shaped used to separate or split something with force.

On-level:

<https://www.youtube.com/watch?v=LAAwZird80k>

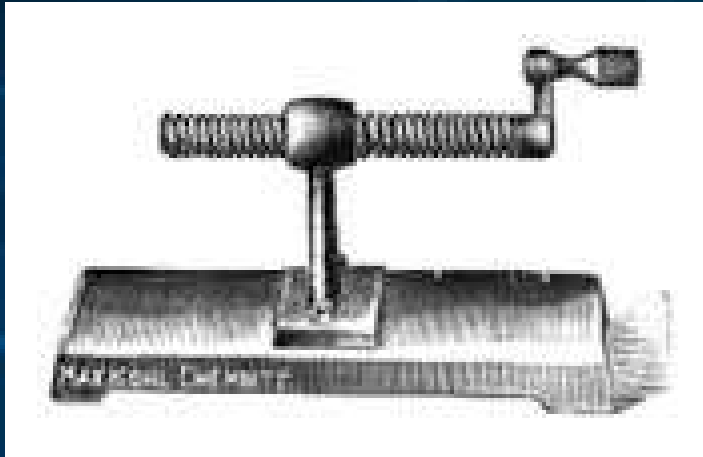
Advanced

<https://www.youtube.com/watch?v=iHeXFRlo17g>



## 9. Screw

- An inclined plane consisting of a spirally grooved solid cylinder and a correspondingly grooved hollow cylinder into which it fits.
- <https://www.youtube.com/watch?v=4oPPQpF7bHY>



## 10. Wheel and Axle



- A wheel and axle is really two machines in one because you can use each part in different ways. The axle is the object that attaches the wheel to the object it's moving.
- The first Use is to roll something along.
- The Second use is like a lever in the round. A door knob or a faucet on a sink are really round levers, and the "fulcrum" is in the middle where the axle turns.
- <https://www.youtube.com/watch?v=P7xu9O0miEc>

# Conclusion

- <https://www.youtube.com/watch?v=Y31DtT3Hbog>
- [https://quizlet.com/\\_38w0fe](https://quizlet.com/_38w0fe)