PULLEY AND WHEEL AND AXLE

MACHINES

Machines are ways to make it easier to do work. We use machines to reduce the amount of effort or work we exert, and also to increase our ability to lift or move objects.
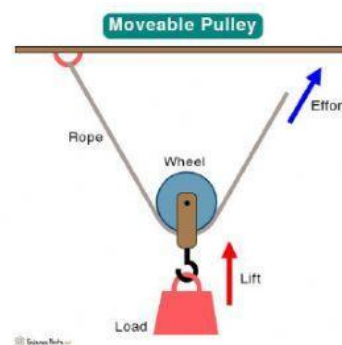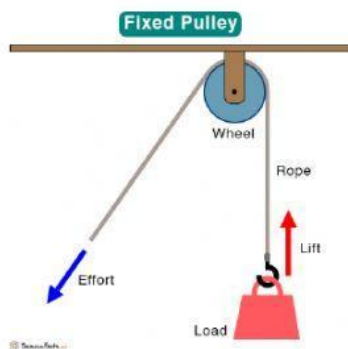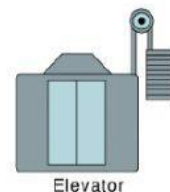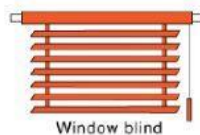
SIMPLE MACHINES

PULLEY

A **pulley** is a simple machine. It is made up of a rope or chain and a wheel around which the rope fits. When you pull down on one rope end, the wheel turns and the other rope end moves up.

A pulley that stays in one place is called a **fixed pulley**. It is used to raise and lower something lightweight such as a flag or a small sail.

The other kind of pulling is called a **movable pulley**. It is free to move up and down. One end of the rope is tied down. The load is hooked to the pulley. Pulling upon the rope makes both the pulley and the load Rise.
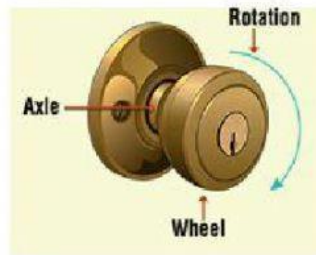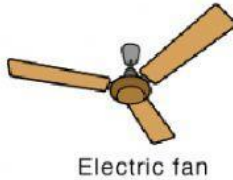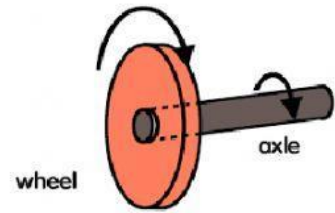
Fixed Pulley

Wheel
Rope
Lift
Effort
Load

Moveable Pulley

Effort
Rope
Wheel
Lift
Load

Pulley Examples

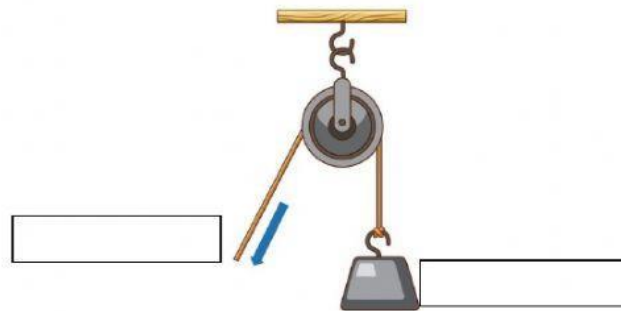Water well   Window blind   Crane   Flagpole   Elevator

WHEEL AND AXLE

The **wheel and axle** is made up of a large wheel attached to a smaller wheel or rod. A door knob is part of a wheel and axle. The large round knob turns the smaller axle. The axle is what pulls in the latch to open the door. Without the large knob, it would be difficult to turn the axle. The small effort force you use to turn the knob becomes a large resulting force put out by the axle.

wheel   axle

Electric fan

Rotation
Axle
Wheel

Bicycle

REVIEW QUESTIONS

1. Draw and label the following diagram. [**load, effort**] [**2 points**]

2. The diagram above shows a _____.
3. A pulley is an example of simple _____.
4. List two types of pulleys. [**2 points**]
5. A pulley that stays in place is called a _____ pulley
6. A pulley that moves up and down is called a _____ pulley.
7. Explain how a pulley works. [**2 points**]
8. Give three examples of a pulley. [**3 points**]
9. Describe a wheel and axle. [**2 points**]
10. What turns a smaller axle in a wheel and axle?
11. What cause the door to open?
12. Give three examples of wheel and axle. [**3 points**]