5.1. Six kinds of simple machines

Look and label.

can opener	axe	scissors
seesaw	wheel	screw





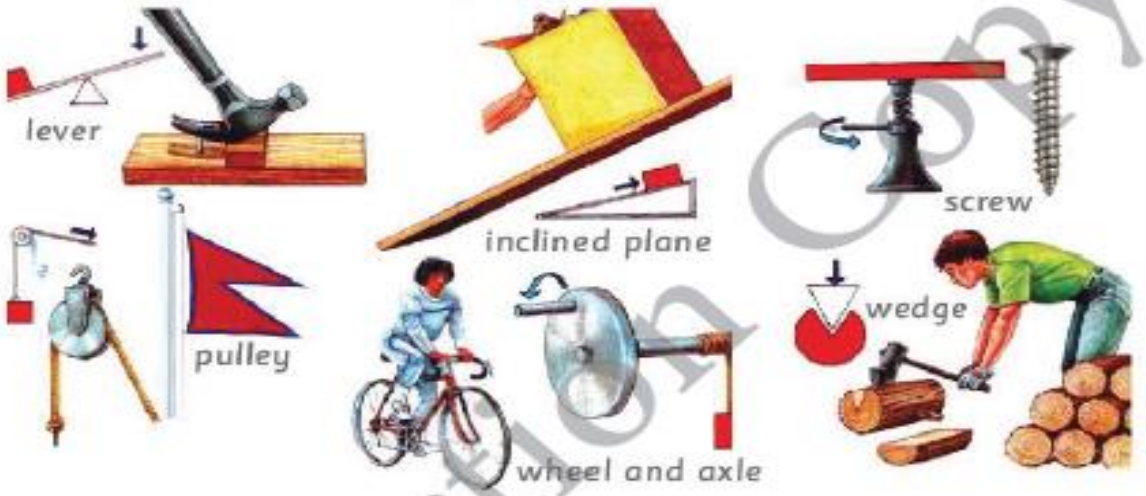

What is each of the machines used for? Discuss with a partner.

When someone says the word machine, do you think of a slide or a jar lid? These objects really are machines. They are called simple machines. Simple machines help you do work with less force.

Inspection Copy

There are six kinds of simple machines. Have you ever seen any of these machines before?

To understand how simple machines work, you need to know about force. Force makes things move. You use force when you push against something or pull something.



Look at the pictures. In one, a man is lifting a heavy box. In the other, a man is using a ramp. It takes less force to slide the box up the ramp than to lift it up.

A ramp is a kind of simple machine called an inclined plane.

Inspection Copy

Inclined plane

Inclined planes make it easier to move things up or down. The road in this picture is an inclined plane.
The slide on your playground is also an inclined plane.

Wedge

A wedge is another kind of simple machine.
An axe is a kind of wedge. It goes into the wood and splits it apart.

Inspection Copy

Screw

A screw is also a simple machine. The lid of a jar and the bottom of a light bulb are both kinds of screws.
Screws make it easier to put things together. Think about the lid on a jar. As you turn the lid, it screws down onto the jar, closing it tightly.

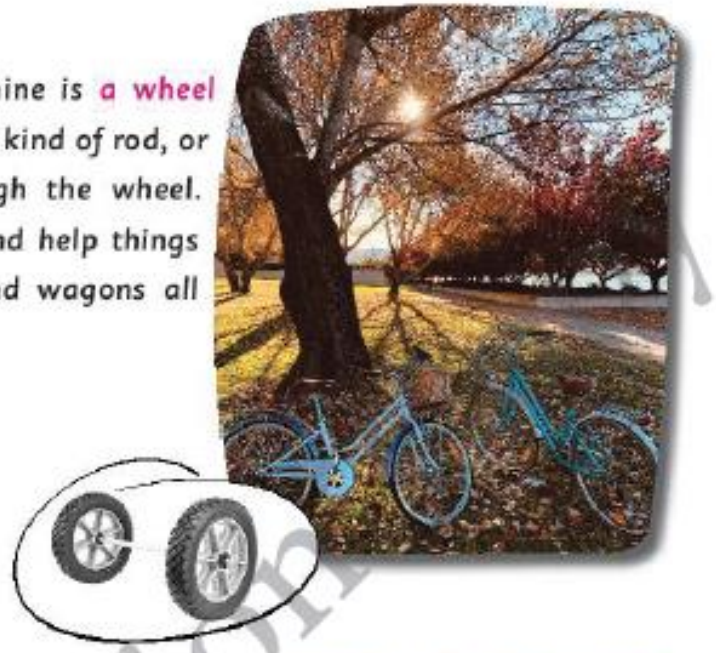
Lever

In the pictures below, you see levers. A lever is a simple machine for pushing things up. When you push down on one end of the lever, the other end goes up.
Did you know that a seesaw is also a lever?

Inspection Copy

Wheel and axle

The next simple machine is a wheel and axle. The axle is a kind of rod, or bar, that goes through the wheel. Together, they turn and help things move. Cars, bikes, and wagons all use wheels and axles.



Pulley

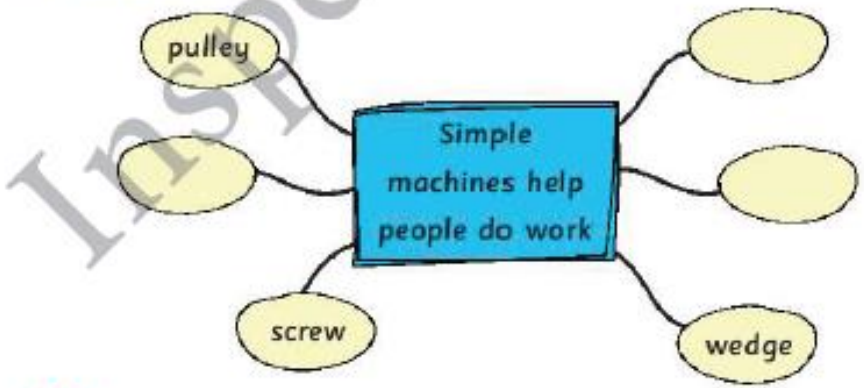
A pulley is a simple machine used for lifting things.
When you pull on one end of a pulley's rope or chain, whatever is on the other end goes up. The man in this picture is using a pulley to hoist the flag.

Inspection Copy

Simple machines make it easier to do work. They let you move an object with less force.

People have used simple machines a since long ago. We still use them today. All kinds of workers are glad to have simple machines.

Complete the web.



Inspection copy

5.2. Classes of levers

Levers come in three basic classes. They each have a fulcrum or pivot point. Each lever has a force put into the lever called an effort or input force. Each lever also has a force, called the load, which is the object being moved. The type of lever is determined by where the effort and load are placed in relation to the fulcrum.

Use the terms in the word box to label each class of lever and the diagrams. Some terms are used more than once.

first class	second class	third class
fulcram	load	effort

Type of lever: .....

The effort and load are on the same side of the fulcrum, but the effort is closer in.

Type of lever: .....

The fulcrum is between the effort and the load.

Type of lever: .....

The effort and load are on the same side of the fulcrum, but the effort is farther out.

Inspection Copy