Use under the direct supervision of an adult when handling parts with sharp points or edges. Keep away from children under three years of age. Use only batteries! Never use any other source of electricity. Do not mix old and new batteries. Do not use rechargeable batteries.
**Robot**

The word Robot is used to describe any automatically operated machine that replaces the human being. It does not look like a human being nor does it necessarily do the same things as human beings.

The origin of the word Robot is from a Czech word, Robota, meaning "forced Labor". The word was used in a play written in 1920 showing how the industrial revolution created mechanical workers called robots, which could do all types of physical work. There is a very old Charlie Chaplin film called "Modern Times", in which the machine operator behaves like a machine.

One of the first robot devices was a water clock made by the Greeks in 250 BC. From as early as 3rd century BC, during the Han dynasty in China, a mechanical orchestra was made for the Emperor, later flying birds, an otter that caught fish and many mechanical dolls were made. The present day Robots started as mechanical toys and were later adapted for use in industry and led to the development of automatic industrial machinery. One of the most important parts of a Robot are its "arms" or manipulators, these usually consist of an arm and body with 3 joints connected by large links and a wrist consisting of 2 or 3 joints. Many everyday machines are made up of elementary robot mechanisms. It was only from 1960 that microelectronics were introduced into robots.

The electronic robots in this kit are simple to assemble and operate. They will show you how larger and more complicated robots function and behave.
How do these Robots "think"? Everyone has 5 basic senses; you see with your eyes, taste with your tongue, hear with your ears, smell with your nose, and feel with the skin on your fingers.

The information that you get from any of these 5 "sensors" is transmitted to your brain, the brain processes the information and the muscles in your body react.

Let's say you go out in the bright sun, what happens?
You immediately start to squint or shut your eyes completely.
A robot is programmed to operate in the same way, it receives information and reacts accordingly.
The simple robot will receive information from the sensor and will react immediately.
As an example; we will use the robot that moves forward until it meets an object in its way. It receives the information and stops.
We call this an open loop system: it works on the basis of receiving information and reacting.

A more complicated robot could do the following; it receives information that there is an object in its way; it stops and now it can be programmed to reverse, turn to the left, and try to go forward again.
If the object in the way is small, it can now go forward, but if the object is large it will have to reverse and turn further to the left until such time that it will not meet the object when it goes forward.
This robot works on what is called a closed loop system.
It receives information, compares it with what it has been programmed to do, acts, and waits to receive further information before acting again.

To use the same example of the sun in your eyes.
You go out in the bright sun, and you immediately squint, your brain now analyses the information and decides how you react, for example by raising your hand over your eyes to act as a shade or you put on sunglasses.
Before you start assembling your robot, make sure that you have recognized all the parts as they appear in the parts list.

REMOTE CONTROL ROBOT: This robot operates by flashing an Infra Red beam onto the front of the robot. Using any remote control from a TV or Stereo will start the robot moving. It will work in a range of 2 meters. Surprise your friends by placing the Robot next to the TV: when they use the Remote for the TV, the Robot will start moving towards them. Adjust the trimmer to make it more sensitive to the IR beam.

WAKE ME ROBOT: This Robot is sensitive to light. As soon as the sensor detects light, natural light or artificial light, it moves forward and makes a noise. You can use this in your room as a Wake Up Alarm. Place the robot next to the window at night, and in the morning when it becomes light, the robot will buzz and move forward. Try putting out the lights in the room and shining a torch on the robot: it will move, it may follow you as you walk. You can make your robot more sensitive to light by adjusting the trimmer.

DETECTOR ROBOT: This Robot has a sensor that detects obstacles in its way. As soon as it detects something in front of it, this robot will go backwards to avoid the obstacle. This is something like a guide dog used by the blind. Try and use this as watchdog for your room or desk. As soon as someone approaches and passes in front of the robot, it will move backwards and buzz. You can adjust the trimmer to increase its sensitivity to obstacles.

All the robots operate on two 1.5 AA batteries.
How to assemble your Robots.

The first step is to prepare the chassis which will be used for all three robots. All three modules and bodies fit the same chassis. Changing the modules will give you different robots. Changing the bodies gives them a different character. For the assembly you will need to use a very small screwdriver. We suggest that you have this ready before you start.

Step 1

Take the rear wheels (4).
Insert the rear wheels into the gear box at the back of the chassis, you will see that the wheels only fit in in one direction.
Step 2

Take the motor (10) and insert it into the large hole (motor housing) from the top side of the chassis, so that the "worm wheel" of the motor connects (meshes) with the cog wheel that drives the back wheels.
Place the gearbox cover (8) on the gearbox and secure it with 4 screws.
After you have secured the gearbox cover, secure the motor.
Between the motor and the switch there is a post, take the screw with the shape as shown in the picture, tighten it to the post, this will hold the motor in place.

Step 3

Take the Module (printed circuit) and very carefully place it at the front of the chassis, inserting the plastic rod into one of the two holes, either on the right or the left, depending on the module.
The plastic rod is the trimmer, used for adjusting the sensitivity.
In the middle of the module there is a small hole for the small screw in your kit and two small holes at the back of the module that fit onto two small pins on the chassis. Using your screwdriver tighten the screw in place on the pillar on the chassis. Using a small screwdriver tighten the screw in place on the pillar of the chassis. When secured, take the wires and place each wire next to one of the springs.
Step 4

Connect all the wires of the same color to the same spring (there should be 2 or 3 wires of the same color). It does not matter which spring you use; take whichever spring is easiest to reach with the same colored wires. The springs are only used to connect the colored wires together, the numbers next to them are meaningless. The wires are connected by bending the spring sideways with your finger; this creates a gap in the side of the spring. Push the wires into the gap, making sure that only the bare parts of the wires are inserted into the spring. Now let go and the wires are trapped in the spring.

Step 5

If the black and red wires from the battery holder are not on the bottom side of chassis push them through the hole next to the battery holder.

Step 6

Make sure that all the wires are in the right place and that none of the wires have come out of the springs. Take one of the bodies of your choice and place it on the chassis. Hold the body with one hand and turn the Robot over: with your other hand insert the the 2 screws into the holes situated between the springs on both sides, and tighten them with a small screwdriver.

Step 7

Insert two AA batteries, switch on and try out the Robot. You will probably want to change the sensitivity: you can do this by adjusting the trimmer. This can be done from the bottom of the Robot. You will see a small rod by the front wheel. Gently rotate it in one direction and then the other until your Robot responds, the way you want. When not in use remove the batteries. NOTE: DO NOT USE RECHARGABLE BATTERIES It is best to use new batteries when starting to use the Robot for the first time.
...researchers at robotics labs around the world are studying the way people and robots interact. If people are to teach machines, they ask, what would be the best way? And if machines are to serve people, washing dishes and sending faxes, what kind of robotic behavior will people be comfortable with? How should the robot appear?

...training, the robot moves beyond simple imitation. Once the robot has learned a task, it is able to perform it even under different circumstances.

“In a task that involves making photocopiers, the robot can get to the copy machine even if there’s a stack of boxes in the way, or if the door to the copy room is closed.”

Cynthia Breazeal and her colleagues at the Artificial Intelligence Lab at the Massachusetts Institute of Technology have spent countless hours talking to Kismet, a robot that is programmed to recognize basic emotions in a human voice and can respond through mechanically driven movements of its eyes and mouth.

For years, the researchers have treated Kismet as if it were a baby, at times shaking a stuffed toy in front of it or speaking lovingly to it. Last year, Breazeal and a colleague reported that the robot could tell from the tone of an instructor’s voice whether it was being praised, scolded or comforted. By refining Kismet’s responses, the researchers hope to enable it to develop new behaviors through social interaction.
“When people interact with a young child, they have a lot of prosody in their voice, exaggerate their facial expressions, slow down their gestures, all to make it easy for the child to understand them,” Breazeal said. “If we are willing to do this for infants and even pets, there’s no reason why we would not do the same for robots that have emotional appeal.”

As researchers plug away, trying to breathe human characteristics into circuits and metal, they parade the best of the humanoid robots before museum visitors and television cameras. Asimo, a robot made by Honda Motor Co. that resembles an astronaut and can walk up and down stairs, does a little work as well. At the automaker’s Tokyo headquarters, Asimo sometimes guides visitors to a conference room.

“People really enjoy this,” a company representative said. “The only problem is that when Asimo leaves the room, the guests want to follow it to see what it’s going to do next.”

(With compliments to the New York Times)