

A "Simple" Puzzle

Children will demonstrate their understanding of three simple machines.

Materials:

Two triangle cut outs (see attached)

Pencil

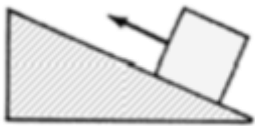
Scissors

Procedure:

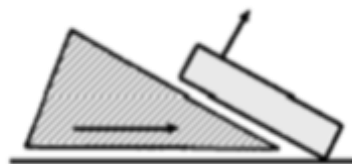
1. Cut out both objects from the attached page.
2. Instruct the child to use one or both of these objects to demonstrate the function of a wedge, a ramp and a screw. (A pencil will be needed to demonstrate the screw.)

Explanation:

This activity could be used as a follow up exercise to review the concept of the wedge, ramp and screw. In contrast, this activity could also be used to introduce these three simple machines with proper guidance from an adult. Regardless of which method is taken, the following pictures should assist you in the successful completion of this "puzzle".



Ramp

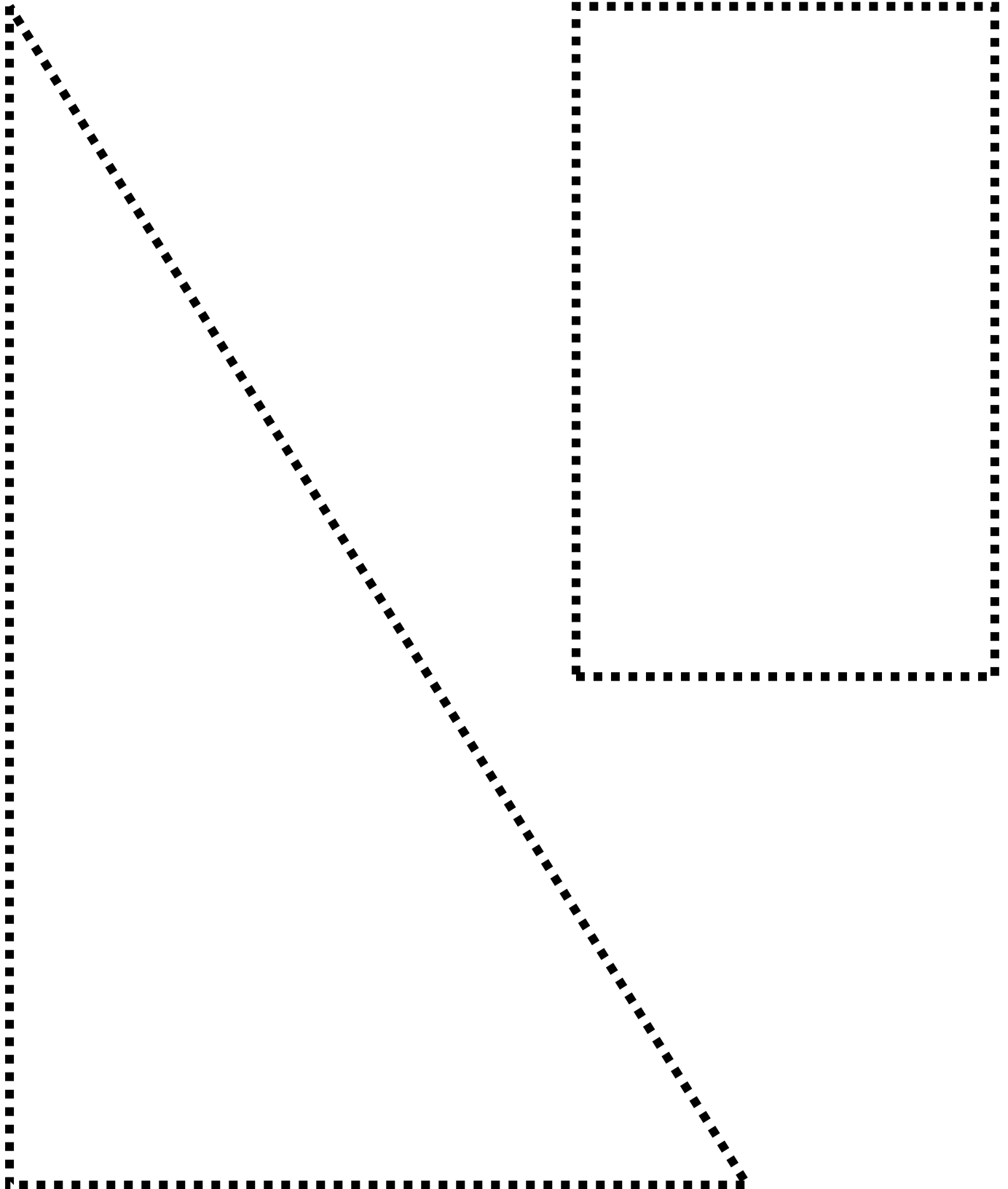


Wedge



Screw

Cut out both objects to complete the project.



Spin Your Wheels

Children will create a gear from paper plates.

Materials:

Two large paper plates

Two small paper plates

15-20 large rubber bands

Two small pieces of paper (less than one inch square)

Two push pins

Glue (White glue will take much longer than hot glue)

One large sheet of cardboard (2 foot square or larger)

Tape

Activity:

1. Cut apart several rubber bands.
2. Tie them together so they make one large "rope" of rubber bands.
3. Tie both ends of your rubber band "rope" together, making a huge rubber band.
4. Glue the bottoms of the two large paper plates together and the two small paper plates together. Place a small amount of glue around the **edges** of the paper plates to make a good seal where the plates are touching. We don't want anything getting in between the plates!
5. Let the glue dry. (If you are using hot glue, this process will go much faster!)
6. Once the plates are dry, place the large plate "sandwich" onto the corner of the large sheet of cardboard and place the small piece of paper in the middle of the plate.
7. Insert a push pin through the piece of paper and drive it through the cardboard sheet.
8. Place the large rubber band in the grooves of the large and small paper wheels.
9. Position the small paper wheel on the cardboard sheet so that the rubber band is stretched out just a little.
10. Attach the small wheel to the cardboard in the same way as the large wheel.

11. You may need to bend the push pins on the backside of the cardboard and tape them in place to keep them from falling out.
12. Ask the child how many times the small wheel will turn completely around for every single turn of the large wheel.
13. Challenge the child to change the device so that one wheel will turn clockwise while the other will turn counterclockwise.

Explanation:

Gears are used in tons of mechanical devices. They do several important jobs, but most important, they allow a small motor spinning very fast can provide enough power for a device and enough twisting force (known as "torque") to do work. For example, an electric screwdriver needs lots of torque to turn screws, but the motor only produces a small amount of torque at a high speed. By attaching a gear to the motor, the speed of the motor can be reduced while the torque is increased.