

SUMMER SLOPES

EXPERIMENT: SKEEBALL SKI JUMP

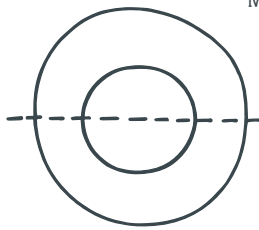
Try this twist on a classic carnival game. Experiment with variables of speed and height as you launch a marble down a ski jump to land in a target. Then build your math skills as you tally up your points!



MATERIALS

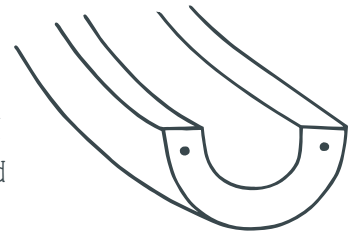
Pool noodle
 Pizza box
 Three paper cups
 Cardboard box
 Two 6-inch pieces of stiff wire or metal hanger
 Marbles
 Duct tape
 Masking tape or clear tape
 Scissors
 Pencil

INSTRUCTIONS

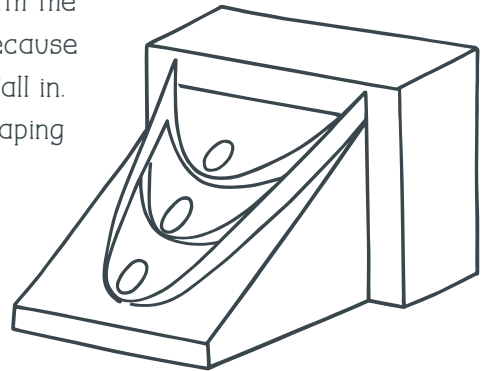


Make the ski jump. Cut the pool noodle in half lengthwise, so you have two pieces of track with a curved chute down the middle. Tape the tracks together to make one really long track. Be sure to put the tape on the outside of the pool noodle; if you put tape on the inside, it will cause friction and slow down the marble.

Carefully insert the wires into one end of the ski jump (ask an adult to help!). The wires should be embedded in the foam material and parallel to the curved chute. These wires will allow you to bend the end of the jump to adjust it.

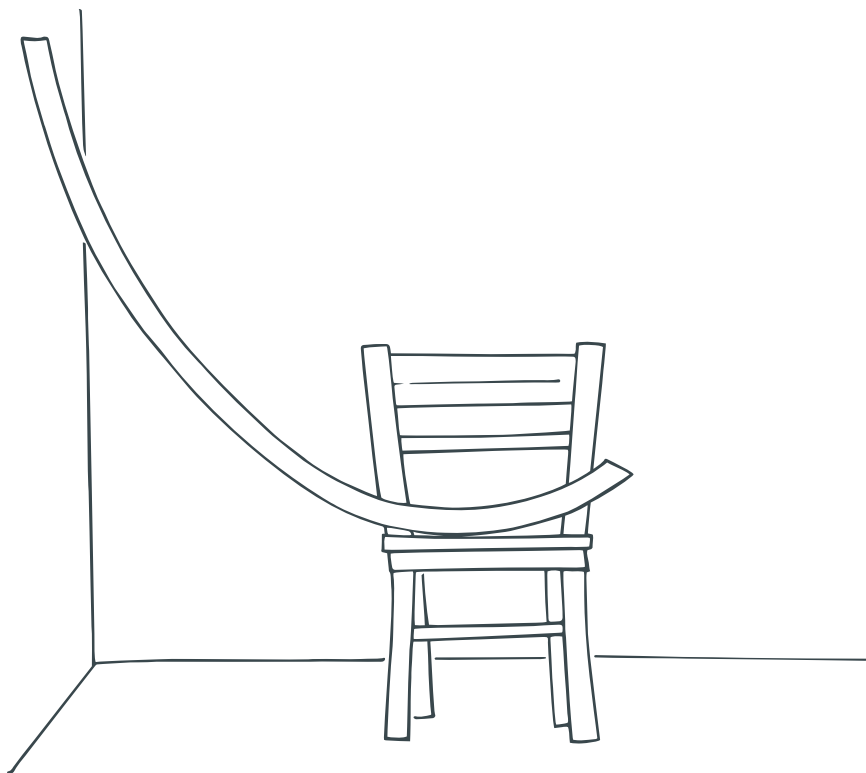


Make the skeeball target. Cut three holes in the lid of the pizza box that are the same size as the paper cup. Insert the cups in the holes so they are flush with the lid - there should be no lip because the marble won't be able to fall in. Secure the cups in place by taping around the lip. Assign a point value for each cup. Use some cardboard to prop open the lid so that the front with the cups is at an angle.



The bumpers that surround the holes are made from duct tape. For each bumper, put two pieces of tape together with the sticky sides touching. Attach each bumper to the target with clear tape so that they stand upright around each cup. Use a cardboard box as a backboard for the skeeball target – this helps deflect any poorly aimed marbles!

Get ready to play! Tape the top of the ski jump track high up on a wall and prop the curved end of the ski jump up on chairs, boxes or other objects. Place the skeeball target opposite the ski jump track. Adjust its position after you send a test marble down the track.



To launch, place a marble at the top of the ski jump track and let it go. The marble should land in one of the cups without bouncing on the floor.

GAME ON

Challenge your friends to a game. Each person gets to launch three marbles, and you can adjust the ski jump track or the target position after each attempt. The person with the most points wins! Make the game more challenging by adding a loop or hill in your ski jump track.

LIKE THIS ACTIVITY?

You could be a ...

- Mechanical engineer
- Inventor
- Amusement park designer

▲ SAFETY FIRST:

Remember what grandma always says – don't run with scissors!



WHAT'S HAPPENING?

Several types of energy are at work in the ski jump skeeball. The marble has potential energy when it's sitting on the track before it starts to roll downhill. As it rolls, the potential energy transforms to kinetic energy or the energy of motion. Where the marble lands depends on two variables: how fast it is going when it leaves the ski jump and the angle at which it leaves. By changing these variables you can aim for the higher point targets. Generally, the marble will travel farthest if it leaves the ski jump at a 45-degree angle. And if the marble starts at the higher end of the ski jump track, it will travel faster and farther.