Gathering Supplies:
Items from the recycle bin: cardboard tubes, boxes, paper, plastic bottles...
- Rubber Bands
- Books
- Scissors
- Any Type of Tape
- Marbles (any size)

How To Steps:
This is a great family activity! Using empty cardboard rolls, boxes, bottles and paper, engineer a recycled marble run. Then test it out!

1. Have an adult in your house help you collect items that you can use for your Recycled Marble Run. You may also need an adult’s help when it come to cutting some of the cardboard pieces. Remember to always be careful cutting thick pieces of cardboard!

2. Imagine an Engineering Challenge for your marble run! It could be that the marble needs to knock over a row of dominos. Maybe you want the marble to make a certain noise or land in a cup on the floor.

3. Plan out your marble run. Look at the materials that you collected. For a marble to have enough energy to make it through the run you need to start it high! What can you use to build a tower for the start of your run? Try sketching out your idea!

4. Build it! Cut your tubes in half to help with making the track and tape them on to other objects for height. Make sure that each piece of the run connects to a lower section. Use the pull of gravity on your marble to send it along the track.

5. Test out your marble run! Does your marble make it to the end? Did it fall off the tracks somewhere? Keep trying! Remember engineers like to solve problems!

6. Congratulations! You are a Recycled Marble Run Engineer!!
Did You Know?

The science behind many roller coasters is the same as the science behind your marble run!

Think about a roller coaster. Many start by pulling the carts up to the top of a steep drop. This is because they use gravity! Gravity is the force that pulls objects to the ground, including your marble! Using the force of gravity to pull the roller coaster along its tracks, we now come to the two types of energy of motion. First is potential energy, which is the amount of energy an object has stored due to its position or condition. In this case the potential energy is increased as the starting height of the roller coaster increases. The higher, or heavier, your marble is, the greater potential energy it has. Once the roller coaster starts down the slope the potential energy is turned into kinetic energy. Kinetic energy is the energy that an object has because of its motion. When you let go of your marble at the start of your marble run the marble’s potential energy turns into kinetic energy. The kinetic energy from your marble can be transferred to another object, like a domino. The moving marble will hit the domino. As the energy goes from the marble to the domino, the marble will slow as the domino starts to move!

Try thinking about different roller coaster designs as you find inspiration for your own marble run! Have fun engineering a recycled marble run!