Dropper

Design and build a track with at least 2 drops to the next track. Include the track parts you will need in your drawing.

When does *Vertical Motion* occur on a Double Dropper track?

Jump

Design and build a track that jumps a marble into a container. Include the track parts you will need in your drawing.

What force causes the *Parabolic Curve* flight path of the marble?

S-Curve

Design and build a track with at least one S-Curve. Include the track parts you will need in your drawing.

Where does *Centrifugal Force* on sharp turns push the marble?

U-Turn

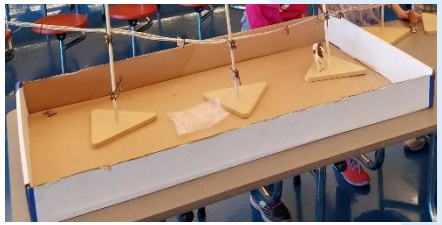
Design and build a track with at least one U-Turn. Include the track parts you will need in your drawing.

What keeps the marble in Circular motion on the turn?

Setting Up

Laminate the Activity before cutting them to size, so they can be reused.

The ideal track-building work area is in a large carboard box lid that will fit through a door, so you can store or exhibit the completed model. Prior to a session uncoil and straighten the wire and tubing, stretching them between your thumbs and fingers, like you are removing soil from the surface. Thread the wire into the tubing using pliers, leaving two inches of lead wire sticking out of each end to join another section of track; inserting the lead wires inside the adjoining tubing and butting the two sections together. Assemble the spacers & brackets with nuts and screws. Loosely attach the spacers assemblies to the dowel rods anchored in the base plates.



Space the base plates approximately 18 to 24 inches apart. Begin at one end attach one of the track rails to the spacers. Then attach the second track rail, making sure they start together and are running perfectly parallel. Add rail clips between dowel rods to help keep the track rails running parallel. Use small marbles. Larger marbles won't stay on the track. To remove spacers and rail clips, pinch the rails together. Twisting them off will damage the parts.

Crash Course

Design and build a track so marbles collide on the track. Include the track parts you will need in your drawing.

When marbles collide where is the *Energy Transferred*?

Racing

Design and build a side-by-side race track. Include the track parts you will need in your drawing.

How *does Friction* from the track rails affect the marble's speed?

Circle

Design and build a track with at least one circle. Include the track parts you will need in your drawing.

In circular motion where does the *Centripetal Force* come from?