

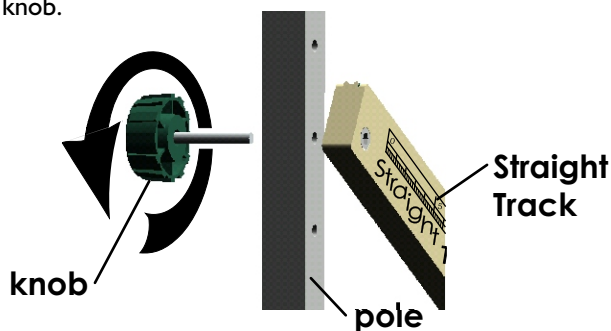
Straight Track

Assembly Instructions

The CPO Science Straight Track is a versatile piece of classroom equipment that allows you to investigate speed, acceleration and trajectory motion. The straight portion of the track is exactly one meter in length. The track can be set at angles between 0 and 90 degrees. Follow these instructions to set up your Straight Track.

Attaching to the Physics Stand Pole

Locate the 10th hole from the bottom of the pole. This is a good position to start your investigations. Insert the knob's threaded rod through the hole. Thread the knob into the Straight Track from the side without the scale. Then tighten the knob.

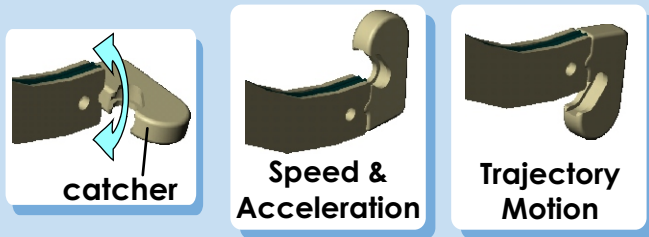


Configuring the Straight Track

The Straight Track can be set up in two different configurations. In one configuration, you can experiment with speed and acceleration. The other allows you to investigate trajectory motion off the end of a table or other elevated surface.

Speed and Acceleration Investigations:

Configure the marble catcher as shown below by simply rotating the catcher to stop the marble as it reaches the end of the track (center diagram).



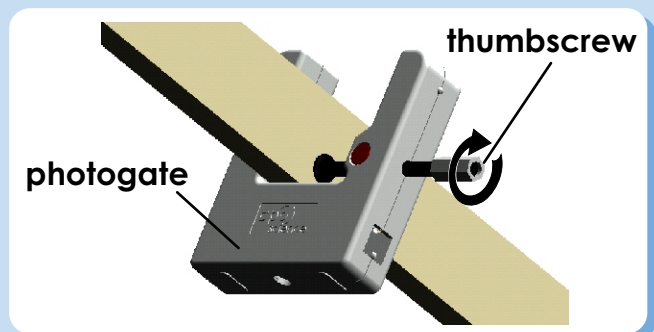
Trajectory Motion Investigations:

Rotate the catcher so that the marble can fly off the end of the track.

Note: the Straight Track must be mounted on the 10th hole of the Physics Stand so that the angle of the marble as it starts its trajectory is 0 degrees (i.e. parallel with the floor). See the flip side of this sheet for a diagram.

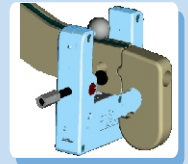
Attaching the Photogate

Attach the photogate at the desired position on the Straight Track by sliding the photogate from the bottom edge of the Straight Track. Tighten the thumbscrew by turning clockwise as shown below. To get accurate measurements, make sure the photogate is flush against the bottom of the track.



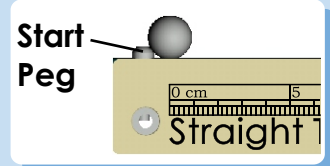
For Trajectory Motion Investigations:

Attach a single photogate as in the diagram at right to measure the speed of the marble as it leaves the track and begins its trajectory.



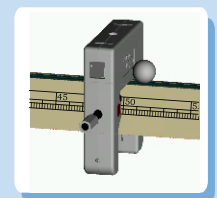
Releasing the Marble

The Straight Track has a start peg to provide a consistent, repeatable release location for the marble.



Releasing the Marble for Trajectory Motion Investigations:

Sometimes you may want to reduce the energy of the marble for the trajectory motion investigations. You can do this by starting the marble at a position further down the track.



Tip: One way that will give you a repeatable release at a location away from the start peg is to use the photogate as a fixed start position. Simply attach the photogate as in the diagram (above right) with no wires connected.

Setup information continues on page 2

Straight Track

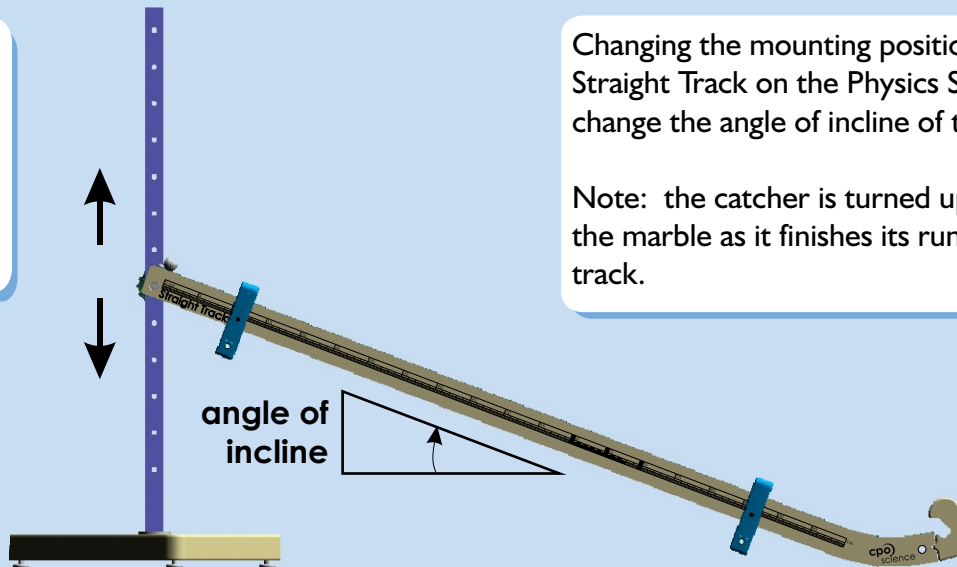
Assembly Instructions

Using the CPO Timer

Connect the photogate to the Timer using one of the colored wires that come with the CPO Timer. Plug one end of the wire into the photogate and the other end into slot A on the Timer console. When using **two photogates**, plug the second photogate to slot B. The arrangement should be set so that as the marble travels down the track, it first passes photogate A then passes photogate B. The unit should be set to interval mode. **NOTE:** For most investigations in trajectory motion, you will need to connect only one photogate.

For detailed instructions on using the Timer and photogates, please refer to the manual that is supplied with the CPO Timer

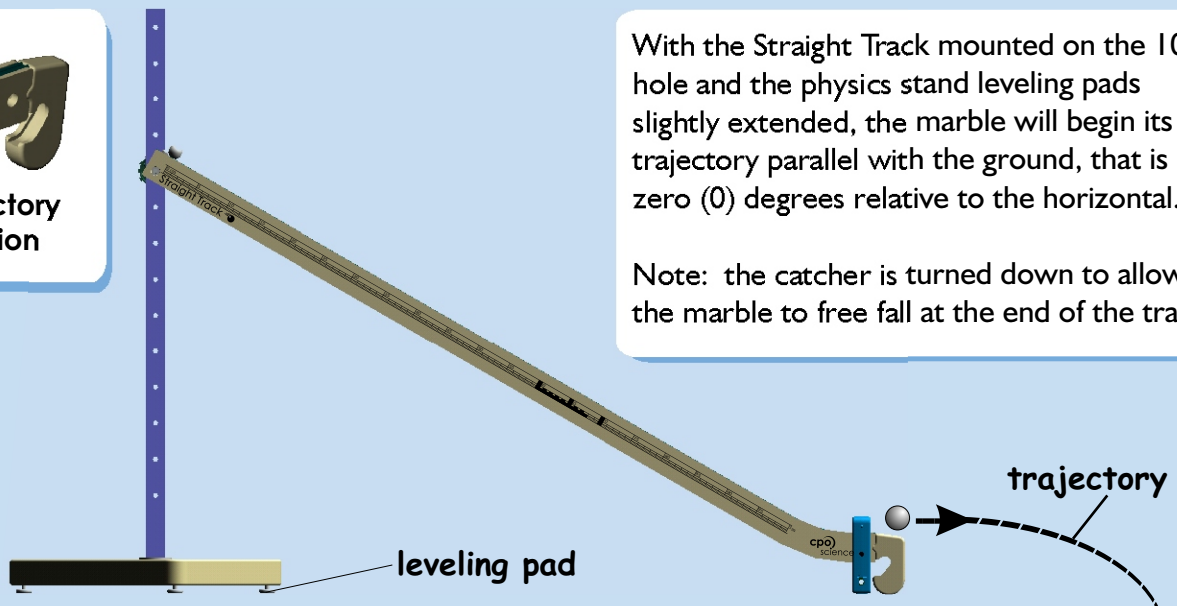
Configure for Speed & Acceleration



Changing the mounting position of the Straight Track on the Physics Stand pole will change the angle of incline of the track.

Note: the catcher is turned up to capture the marble as it finishes its run down the track.

Configure for Trajectory Motion



With the Straight Track mounted on the 10th hole and the physics stand leveling pads slightly extended, the marble will begin its trajectory parallel with the ground, that is zero (0) degrees relative to the horizontal.

Note: the catcher is turned down to allow the marble to free fall at the end of the track.

For technical assistance, please call 866.588.6951.