Ball Ramp Components

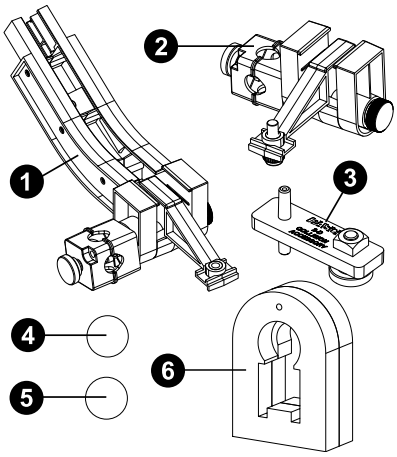
ME-7073

Introduction

The Ball Ramp Components allow you to easily construct a ramp from a pair of meter sticks. The included balls can be rolled down this ramp, allowing you to perform experiments to study acceleration and projectile motion.

Components

Included components:



1. Curved endpiece
2. 2× photogate rod clamps
3. 2-Dimensional Collision Accessory
4. 2× steel balls
5. 2× plastic balls
6. Foam end stop

Required components:

- 2× meter sticks
- Wireless Smart Gate (PS-3225)
- Photogate Head (ME-9498A)
- Small A-Base with Feet (ME-8989)
- Stainless Steel Rod, 45 cm (ME-8736)

About the equipment

Photogate rod clamps

The two photogate rod clamps serve two purposes within the Ball Ramp apparatus. The first is to secure the structure of the ramp and connect it to a mounting rod. The clamps contain slots for two meter sticks, which can be slid into the clamps to hold the sticks at a fixed distance of 0.5 inches (1.27 cm) from one another. One of the rod clamps can then be attached to the mounting rod at a fixed height, allowing you to adjust the angle of the ramp. The ramp is designed to be used with 1-inch (2.54 cm) diameter balls.

The other purpose of the photogate rod clamps is to attach photogates to the ramp, allowing you to measure the velocity of the ball as it descends. The Super Pulley tab on the photogate can be aligned with the tab at the end of the photogate rod clamp, allowing you to secure the photogate in place with a thumbscrew.

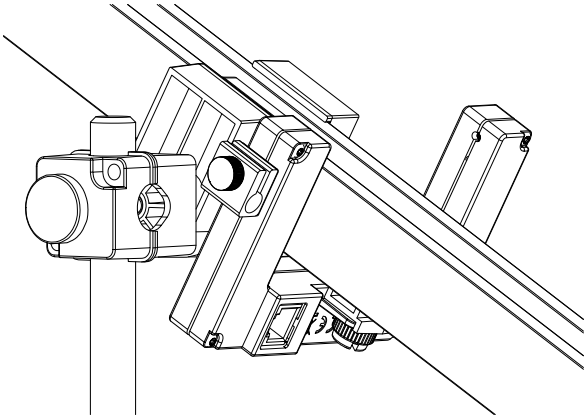


Figure 1

NOTE: When measuring velocity, make sure to use both a Photogate Head (ME-9498A) *and* a Wireless Smart Gate (PS-3225) connected via the Photogate Head's cable. Using two separate Wireless Smart Gates will cause problems with synchronization.

The part of the photogate rod clamps which connects the clamps to a mounting rod can be disconnected from the rest of the clamp by unscrewing the large thumbscrew. This section can then be reattached on either side of the clamp. If you will be using photogates, make sure to orient the photogate rod clamp connected to the mounting rod so that the tab for holding the photogate faces downward, as shown in Figure 1. This orientation prevents the rod from interfering with the photogate.

Curved endpiece

The curved endpiece is used to launch the ball horizontally at the end of its descent down the ramp. The two meter sticks can be inserted into the slots on one end of the curved endpiece (see Figure 2). This end also includes a tab for mounting a photogate in the same way as the photogate rod clamps. The opposite end features a leveling bubble and a slot for inserting the 2-Dimensional Collision Accessory. You can observe the bubble to level the flat portion of the endpiece for experiments requiring a perfectly horizontal launch. The bottom of this end features a threaded hole for mounting a photogate, allowing you to

measure the ball's velocity just before it leaves the ramp. To mount a photogate here, remove the screw from the top of the curved endpiece, remove the standoff from the screw, and use the screw to secure the photogate to the lower threaded hole. (Retain the standoff for future use with the upper hole.)

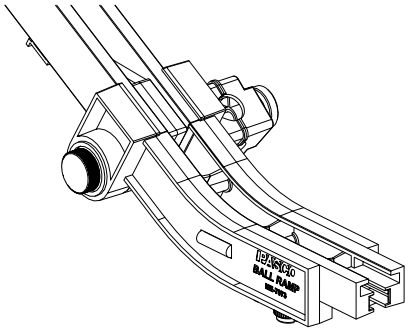


Figure 2

Collision Accessory

The 2-Dimensional Collision Accessory can be attached to the opposite side of the curved endpiece from the meter sticks, as shown in Figure 3. The accessory includes a post which can hold a ball at a position where the ball rolling down the ramp will collide with it. The accessory can be pivoted left and right, allowing observers to study the results of an impact at various angles.

NOTE: Always install the accessory with the side reading "PASCO 2-D COLLISION ACCESSORY" facing upwards.

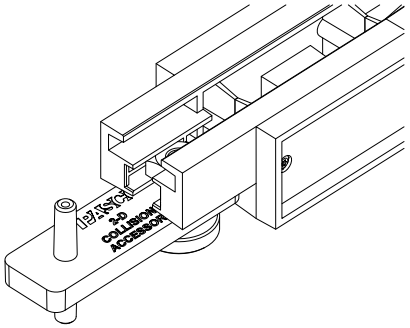


Figure 3

Foam end stop

The foam end stop is used as an alternative to the curved endpiece. The end stop can be inserted onto the lower end of the two meter sticks so that the ball comes to a stop upon entering it. Always orient the foam end stop so that the side with the wider opening (distinguished by the small circular hole above the ball hole) is facing up the slope toward the ball, as shown in Figure 4.

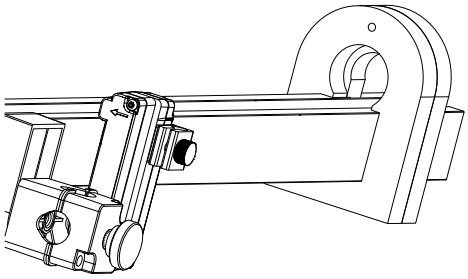


Figure 4

Specifications and accessories

Visit the product page at pasco.com/product/ME-7073 to view the specifications and explore accessories. You can also download experiment files and support documents from the product page.

Experiment files

Download one of several student-ready activities from the PASCO Experiment Library. Experiments include editable student handouts and teacher notes. Visit pasco.com/freelabs/ME-7073.

Technical support

Need more help? Our knowledgeable and friendly Technical Support staff is ready to answer your questions or walk you through any issues.

Chat	pasco.com
Phone	1-800-772-8700 x1004 (USA) +1 916 462 8384 (outside USA)
Email	support@pasco.com