

Ray Optics Module – Equipment List and Setup

What	Qty	Activities
Mirror which can be balanced vertically, perhaps 10 cm by 20 cm	1	2
Small sign on thin paper with the bold word “ Charles Dodgson ” printed on it	1	2
Basic Optics Light Source, Pasco OS-8470	1	3, 6, 7, 10
OS-8470 Light Source Power Supply	1	3, 6, 7, 10
Glass Rhombus [Hubbard 7-909-60]	1	3
Small semi-circular protractor, 10 cm in diameter	1	3, 6
Ruler	1	3, 6, 7, 10
Transparent container such as a beaker	2	5
Pyrex test tubes (1 water, 1 oil type)	2	5
Canola oil	1” depth or 40mL	5
Shallow Plastic Tray or Dishpan	1	5
Paper Towels or Kleenex	A few	5
Flat Convex Lens [Hubbard 7-909-60]	1	6
Flat Concave Lens [Hubbard 7-909-60]	1	6
2.2 meter Track, Pasco ME-9452	1	7, 10
Basic Optics Viewing Screen, Pasco OS-8460	1	7, 8, 10
Dynamics Optics Carriage, Pasco OS-8472	3	7, 10
board with 5 mm diameter hole in it, homemade	1	7
Distant Light Source – Long Gas Spectra Bulb or Florescent Bulb	1/room	8, 10
Lens Holder, Pasco OS-8474 with 50 mm Diameter, 100 mm Focal Length convex lens “A”, PASCO SE-7582	1	8, 10
Lens Holder, Pasco OS-8474 with 50 mm Diameter, convex lens “B”, PASCO SE-7583. The focal length seems to be either 200 mm or 250 mm.	1	8, 10

Setup Notes:

Activities 3, 6, 7, 8 and 10: The lights in the room need to be dimmed and the blinds lowered for these activities to be effective.

Activity 5: NOTE FROM HARLOW (Dec.2 08) to technologists: I have not tested this! The idea is that the oil is clear and the index of refraction of the pyrex rod is the same as the oil so it should disappear..

Activity 7: The board with the 5 mm diameter hole in it should be mountable on the track, held vertically, similar to the Viewing Screen. The hole should be at the same height as the the light-hole in the Light Source, or about 13.4 cm above the top surface of the aluminum track.

Activity 8: There needs to be a distant light source in the room, for example, a bare light bulb at both the front and back of the room. Every table should be able to get a line of sight to the bulb from near their table which is at least 4 m away. Note that for this activity they hold the lens and screen so the 2.2 m track does *not* have to be pointed at the distant light source!

Activities 8 and 10: The feet on the tracks should be set to 5 cm and 150 cm.

JJBH – Dec/08

last update Dec. 10, 2009 by Jason Harlow based on suggestions from Lilian Leung

revised April 2015 by Sean al-Baroudi