

ScienceWorkshop[®]

Physics Labs with Computers

Teacher's Guide

Volume 1

Physics experiments using the *ScienceWorkshop*[®]
or *DataStudio*[™] program and interfaces from PASCO scientific[®]

PASCO[®]
scientific

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Equipment List

Boldface type indicates items available from PASCO scientific. *Italics* type indicates optional items.
NOTE: Each activity also requires protective gear for each student (e.g., safety goggles).

Act	Title	Equipment & Consumables	Qty	Cat. #
P01	Position and Time - Understanding Motion 1	Motion Sensor II Base and Support Rod	1 1	CI-6742 ME-9355
P02	Velocity and Time - Understanding Motion 2	Motion Sensor II Base and Support Rod	1 1	CI-6742 ME-9355
P03	Acceleration on an Incline	Acceleration Sensor Angle Indicator (w/ Track) Base and Support Rod Dynamics Cart (w/ Track) Meter stick 1.2 m Track System	1 1	CI-6558 ME-9595 ME-9355 ME-9430 ME-9429A
P04	Position, Velocity and Acceleration Graphs	Motion Sensor II Fan Cart String 2.2 m Track System	1 1 1 m 1	CI-6742 ME-9485 SE-8050 ME-9452
P05	Acceleration of a Freely Falling Picket Fence	Photogate/Pulley System Picket Fence Universal Table Clamp	1 1 1	ME-6838 ME-9377 ME-9376B
P06	Acceleration Due to Gravity	Motion Sensor II Base and Support Rod Ball, rubber <i>Level (optional)</i> Meter stick	1 1	CI-6742 ME-9355
P07	Acceleration of a Cart	Acceleration Sensor Motion Sensor II Block (or book) Dynamics Cart (w/ Track) Protractor 1.2 m Track System	1 1 1 1 1 1	CI-6558 CI-6742 ME-9430 ME-9429A
P08	Newton's Second Law - Constant Force	Economy Force Sensor Motion Sensor II Balance Dynamics Cart (w/ Track) Mass and Hanger Set String Super Pulley 1.2 m Track System	1 1 1 1 1 1 m 1 1	CI-6746 CI-6742 SE-8723 ME-9430 ME-9348 SE-8050 ME-9448A ME-9429A
P09	Newton's Second Law - Push and Pull a Cart	Economy Force Sensor Motion Sensor II Balance Dynamics Cart (w/ Track) 1.2 m Track System	1 1 1 1 1	CI-6746 CI-6742 SE-8723 ME-9430 ME-9429A

P16	Heat versus Temperature	Temperature Sensor Graduated cylinder Heating resistor, 10 Ω, 1 W Power Supply, DC, 10 W ----- Styrofoam cup w/ lid Water	1 1 1 1 1 300 ml	CI-6505A CI-6514 SE-9720
P17	Pressure versus Temperature	Pressure Sensor Temperature Sensor Beaker, 1 L Clamp, buret Connector, rubber stopper Coupling, quick-release Flask, Erlenmeyer, 125 ml Hot plate Rubber stopper, one-hole Tongs Tubing, plastic ----- Glycerin Ice, crushed Water	1 1 4 1 1 1 1 1 1 1 1 1 ml 1 L 3 L	CI-6532A CI-6505A SE-9446 w/ sensor w/ sensor w/ sensor
P18	Boyle's Law - Pressure and Volume	Pressure Sensor Coupling, quick-release Syringe Tubing, plastic ----- Glycerin	1 1 1 1 1 ml	CI-6532A w/ sensor w/ sensor w/ sensor
P19	Work-Energy Theorem: $W = \Delta E$	Economy Force Sensor Photogate/Pulley System Balance Dynamics Cart (w/ Track) Mass and Hanger Set String Universal Table Clamp 1.2 m Track System	1 1 1 1 1 1 m 1 1	CI-6746 ME-6838 SE-8723 ME-9430 ME-9348 SE-8050 ME-9376B ME-9429A
P20	Conservation of Mechanical Energy	Economy Force Sensor Photogate/Pulley System Balance Base and Support Rod 'C'-clamp Dynamics Cart (w/ Track) Photogate Track Bracket Picket fence for Cart Ruler, metric String 1.2 m Track System	1 1 1 1 1 1 1 1 1 1 0.5 m 1	CI-6746 ME-6838 SE-8723 ME-9355 ME-9430 003-04662 648-04704 SE-8050 ME-9429A
P21	Kinetic Friction	Photogate/Pulley System Balance Friction Block w/ hook Mass and Hanger Set String Universal Table Clamp	1 1 1 1 2 m 1	ME-6838 SE-8723 003-04708 ME-9348 SE-8050 ME-9376B

P22	Rotational Inertia	Rotary Motion Sensor Balance Base and Support Rod Calipers Mass and Hanger Set Rotational Accessory Thread (w/ CI-6691)	1 1 1 1 1 1 1 m	CI-6538 SE-8723 ME-9355 SF-9711 ME-9348 CI-6691
P23	Conservation of Angular Momentum	Rotary Motion Sensor Balance Base and Support Rod Calipers Rotational Accessory	1 1 1 1 2	CI-6538 SE-8723 ME-9355 SF-9711 CI-6691
P24	Conservation of Linear and Angular Momentum	Photogate/Pulley System Balance Calipers Mass and Hanger Set Projectile Catcher Projectile Launcher Rotating Platform Rubber band, large Spirit Level String	1 1 1 1 1 1 1 1 1 1	ME-6838 SE-8723 SF-9711 ME-9348 ME-6815 ME-6800 ME-8951 SE-8729 SE-8050
P25	Transforming GPE to KE	Rotary Motion Sensor Balance Base and Support Rod Mass and Hanger Set Rotational Accessory Thread (w/ CI-6691)	1 1 1 1 1 1 m	CI-6538 SE-8723 ME-9355 ME-9348 CI-6691
P26	Centripetal Force on a Pendulum	Economy Force Sensor Photogate/Pulley System Balance Base and Support Rod Calipers Clamp, right angle Mass and Hanger Set Pendulum bob String Support Rod	1 1 1 1 1 2 1 1 1 m 1	CI-6746 ME-6838 SE-8723 ME-9355 SF-8711 SE-9444 ME-9348 SE-8050 ME-8736
P27	Speed of Sound in Air	Sound Sensor Base and Support Rod Clamp, three-finger Tape Measure ----- Tape, duct Tube, cardboard, 15 cm diameter	1 1 1 1 1 1 roll 1	CI-6506B ME-9355 SE-9445 SE-8712
P28	Interference of Sound Waves-Beats	Voltage Sensor Dual Function Generator Speaker	1 1 1	CI-6503 WA-9301A WA-9303
P29	Electrostatic Charge	Charge Sensor Charge Producers Faraday Ice Pail	1 1 set 1	CI-6555 ES-9057A ES-9042A

P30	Induction - Magnet through a coil	Voltage Sensor AC/DC Electronics Lab Bar Magnet, alnico	1 1 1	CI-6503 EM-8656 EM-8620
P31	Magnetic Field of a Permanent Magnet	Magnetic Field Sensor Magnet, disk, Neodymium Meter stick, non-metal	1 1 1	CI-6520A EM-8648
P32	Variation of Light Intensity	Light Sensor Flashlight (or other DC light source) Fluorescent light source (AC) Incandescent light source (AC)	1 1 1 1	CI-6504A
P33	Light Intensity versus Position	Light Sensor Rotary Motion Sensor Aperture Bracket Base and Support Rod Basic Optics System Mass and Hanger Set String	1 1 1 1 1 1 1 m	CI-6504A CI-6538 OS-8534 ME-9355 OS-8515 ME-9348 SE-8050
P34	Polarization - Verify Malus' Law	Light Sensor Rotary Motion Sensor Aperture Bracket Basic Optics System Polarization Analyzer	1 1 1 1 1	CI-6504A CI-6538 OS-8534 OS-8515 OS-8533
P35	Diffraction Patterns	Light Sensor Rotary Motion Sensor Aperture Bracket Basic Optics System Diode Laser Linear Translator Slit Accessory	1 1 1 1 1 1 1	CI-6504A CI-6538 OS-8534 OS-8515 OS-8525 OS-8535 OS-8523