Orders: (888)-393-5663
Inquiries: 317-745-0443
Fax: 317-745-0249
mail@workshopplus.com

www.workshopplus.com
P.O. Box 425
3055 East Main Street
Danville, IN 46122

46170 – Laboratory Equipment Set
For Alpha-Omega Grade 12

Item	Quantity	Item Number
Acetate Sheets (Transparency)	3	46160
Acrylic Cube Prism	1	46185
Adding Machine Tape	1	46171
Alligator Clip	1	46132
Ball, steel	2	46176
Bar Magnet (Alnico I)	Set of 2	46116
Battery Holder (for D cell)	1	45051
Battery, D-size	1	40229-ba
Blue Tissue Paper (Blue Filter)	1	46189-blue
Bulb Holder	1	40540
Bulb, screw base, 1.5-volt	1	40539
Carbon Paper	10	46179
Cardboard, 8 ½ x 11	6	40282
C-clamp, 2”	2	46172
Clamp, burette	1	50545
Clay, modeling	2	40555-2
Clothespin	1	40346
Compass, magnetic	1	46303
Converging Lens	1	40254-1
Digital Pocket Scale	1	45020
Dynamics Cart Set, with spring	1	46180
Electrostatic Kit	1	46192
Glass Tube, 6”, 20 mm dia.	1	46195
Grad. Cylinder, 100 ml, glass	1	50644
Graph Paper	1	41026
Grooved Plastic Ruler	1	46196
Iron Metal Filings, 30 g	1	50022
Liquid Graphite, 10 ml	1	46190
Microscope Slides (5pk)	1	40034
Mirror, glass, flat, 2"x 2"	2	40740
Needle	1	40234
Nylon Casting Line, small roll	1	46181
Oleic Acid, 30 ml	1	46173
Paper Clip (5pk)	1	40530-5
Pen Light	1	46184
Pin (15pk)	1	40251-15

Pipet (Eyedropper), 4” (2pk)	1	50671
Pith Balls, threaded (2pk)	1	46191
Polarizer Analyzer	1	46188
Protractor, 6" semi-circle	1	40833
Razor Blade	2	46114
Red Tissue Paper (Red Filter)	1	40285-1
Ring Stand with Base	1	50540
Rubber Bands, thin (5pk)	1	40245
Rubber Stoppers, 2-hole, #4	2	50622
Rubbing Alcohol, 120 ml	1	40732-15
Screw	1	46177
Semicircular Petri Dish	1	46186
Small Wood Block	1	40829
Spark Timer	1	46174
Spool of Thread	1	40223
Stopwatch	1	40533
Straw	1	40288-1lg
Student Thermometer	2	40350
Talcum Powder, 10 g	1	46178
Tongue Depressor (Craft Stick)	1	40287-jumbo
Tracing Paper	5	46197
Washers, 1" diameter (10pk)	1	40271-10
Wave Demonstration Kit	1	46183
Weight Set (with hook) (10g, 50g, 2x100g, 200g,)	1	46182-set
Wire, insulated copper, 24 gauge, 6 ft.	1	40538-6

Please check your order for any shortages and/or damaged items upon receipt.
Please contact *Nature’s Workshop Plus!, Inc.* for any needed replacement, and/or additional items.
Please observe all safety precautions when doing experiments.
Please note that exact quantities may vary slightly, and some items may not be included due to limited availability or seasonal shortages.

Orders: (888)-393-5663
Inquiries: 317-745-0443
Fax: 317-745-0249
mail@workshopplus.com

www.workshopplus.com
P.O. Box 425
3055 East Main Street
Danville, IN 46122

46150 – Laboratory Equipment Guide
For Alpha-Omega Grade 12

UNIT 1

Page 3: Measure Small Objects

In Your Kit:	You Provide:
Screw Straw 2 Microscope slides Needle Ruler Small wood block Craft Stick (tongue depressor) Clothespin	Scissors Paper

Page 11: Use Scientific Notation in Determining Molecule Size

In Your Kit:	You Provide:
Graduated cylinder, 100 ml, glass 2 Eye droppers Talcum powder Oleic acid Rubbing alcohol	Large tray Meter Stick

Page 18: Operate a Spark Timer

In Your Kit:	You Provide:
C-clamp Spark timer Timer tape Ruler	*None*

Page 30: Determine Gravity

In Your Kit:	You Provide:
C-clamp Spark timer Ruler	Tape

Page 34: Explore a Region of Space

In Your Kit:	You Provide:
2 Thermometers 3 Acetate sheets (Transparency)	*None*

Page 37: Make a Scale Model of Part of the Solar System

In Your Kit:	You Provide:
Roll of adding machine tape Ruler	*None*

UNIT 2

Page 6: Investigate Relationships between Force, Mass, and Acceleration

In Your Kit:	You Provide:
Spark timer Timer tape 2 C-clamps Dynamics cart Ruler Masses Rubber Bands	Tape Plastic bags

** The rubber band can be tied to the small hole in the cart with a piece of string.*

Page 26: Investigate Centripetal Force

In Your Kit:	You Provide:
Glass tube Nylon casting line 2 Rubber stoppers Alligator clip Paper clip 10 Washers Stopwatch	*None*

Page 33: Investigate Conservation of Momentum in an Explosion

In Your Kit:	You Provide:
2 Dynamics carts (one with a spring) 2 clamps Assorted standard masses	Table 2 Boards Meter stick

Page 35: Investigate Collisions in Two Dimensions

In Your Kit:	You Provide:
2 Steel balls Grooved ruler Carbon paper Tracing paper	Plain paper Meter stick

Page 43: Investigate Kepler's Second Law

In Your Kit:	You Provide:
Ruler	Pencil

UNIT 3

Page 13: Measure Kinetic and Potential Energy of a Pendulum

In Your Kit:	You Provide:
Standard mass Fishing line, small roll Spark timer Ring stand (They come unattached in the box – Screw the [metal rod] stand into the [metal] base) Clamps	Meter stick Tape

UNIT 3 (continued)

Page 17: Calculate Mechanical Advantage of a Simple Machine

In Your Kit:	You Provide:
Weights with hooks (50 g, 100 g, and 200 g) Masses	Meter stick

Page 26: Determine an Experimental Value for Latent Heat of Fusion of Water

In Your Kit:	You Provide:
Digital scale Celsius thermometer Cardboard	Styrofoam cup Aluminum can Paper towel Crushed ice

UNIT 4

Page 2: Investigate Pulses

In Your Kit:	You Provide:
Slinky (Wave Demonstration Kit)	*None*

Page 4: Investigate the Effect of the Medium on Wave Speeds

In Your Kit:	You Provide:
Slinky (Wave Demonstration Kit) Stopwatch	Meter stick

Page 6: Observe Two-Dimensional Waves in Water

In Your Kit:	You Provide:
None	Ripple tank Light source Paper

Page 8: Investigate Compressional Waves

In Your Kit:	You Provide:
Slinky (Wave Demonstration Kit)	*None*

Page 10: Make a Torsion Wave Apparatus (OPTIONAL)

In Your Kit:	You Provide:
None	Flexible wire strip Metal rods with weighted ends

Page 13: Observe the Reflection of Waves from a Barrier

In Your Kit:	You Provide:
Protractor	Ripple tank with dampers, High intensity light source, White paper, Electrical wave generator, Thick wooden dowel, Paraffin blocks

Page 15: Observe the Effect of a Fixed End on Pulse

In Your Kit:	You Provide:
Slinky (Wave Demonstration Kit) Thread	*None*

UNIT 4 (continued)

Page 16: Observe Bending of Waves

In Your Kit:	You Provide:
None	Ripple tank, Light source, White paper, Wave generator, Glass plate, Washers, Paraffin blocks

Page 18: Observe Waves Passing from One Medium to Another

In Your Kit:	You Provide:
Slinky (Wave Demonstration Kit) Coil spring (Wave Demonstration Kit)	*None*

Page 19: Observe Diffraction

In Your Kit:	You Provide:
None	Ripple tank, Light source, White paper, Paraffin blocks, Wave generator

Page 21: Observe Interference

In Your Kit:	You Provide:
Slinky (Wave Demonstration Kit)	*None*

Page 23: Observe Standing Waves

In Your Kit:	You Provide:
Slinky (Wave Demonstration Kit)	*None*

Page 24: Observe Interference Phenomena with Water Waves

In Your Kit:	You Provide:
None	Ripple tank with buffers, Light source, White paper, Wave generator

Page 32: Produce Shock Waves in a Ripple Tank

In Your Kit:	You Provide:
None	Ripple tank, Light source, White paper, Wave generator

Page 33: Measure Wavelength and Speed of a Wave

In Your Kit:	You Provide:
None	Speed of sound apparatus, tuning fork, Thermometer

UNIT 5

Page 5: Study Angles of Light

In Your Kit:	You Provide:
Mirror Pen light Ruler Protractor Steel ball	Pencil Sheet of paper

Page 6: Investigate the Refraction of Light through Glass

In Your Kit:	You Provide:
Cube of glass Protractor Pen light	*None*

Page 7: Investigate Refraction using Objects

In Your Kit:	You Provide:
Steel ball Carbon Paper Cardboard Ruler Protractor	2 Sheets of paper

Page 9: Measure Wavelength and Speed of a Wave

In Your Kit:	You Provide:
Semicircular plastic dish Ruler Protractor 15 Pins Graph paper	Corrugated cardboard

Page 12: Observe Total Internal Reflection at a Water-to-air Boundary

In Your Kit:	You Provide:
Small mirror String Pen light Prism	Glass tank of water Optical fibers

Page 14: Observe Polarization of Light

In Your Kit:	You Provide:
Polarizer analyzer	*None*

Page 19: Measure the Location of a Virtual Image

In Your Kit:	You Provide:
2 Mirrors Pins Clay Ruler Protractor Cardboard	Sheet of paper

Page 23: Observe Convergence of Waves

In Your Kit:	You Provide:
None	Ripple tank, Rubber hose, Wooden dowel, Light source

UNIT 5 (continued)

Page 27: Investigate Images Formed by a Converging Lens

In Your Kit:	You Provide:
Battery Battery holder Light bulb and socket Wires Converging lens Clay Adding machine tape	Meter stick

Page 34: Measure the Frequency of Light

In Your Kit:	You Provide:
Razor blade Red Filter (tissue paper) Blue Filter (tissue paper) Stand Liquid graphite 2 Glass slides Burette clamp	Lamp Meter stick

Page 36: Measure the Wavelength and Frequency of Light

In Your Kit:	You Provide:
2 Razor blades Red filter (tissue paper) Blue filter (tissue paper) Stand 2 Glass slides Liquid graphite	Straight filament lamp Meter stick

UNIT 6

Page 5: Investigate Static Electricity

In Your Kit:	You Provide:
Glass wand Hard rubber wand Stand Pith balls Wool friction pad Piece of silk	Straight filament lamp Meter stick

UNIT 7

There are no experiments in this unit.

UNIT 8

Page 4: Investigate the Nature of Magnetic Fields

In Your Kit:	You Provide:
2 Bar magnets 3 Sheets of cardboard Iron filings	*None*

UNIT 8 (cont.)

Page 13: Determine the Shape of a Magnetic Field

In Your Kit:	You Provide:
Copper wire, 6ft Lamp socket and bulb Battery Battery holder Compass	Wire cutters or strong scissors

UNITS 9-10

There are no experiments in these units.

Please check your order for any shortages and/or damaged items upon receipt.
Please contact *Nature's Workshop Plus!, Inc.* for any needed replacement, and/or additional items.
Please observe all safety precautions when doing experiments.
Please note that exact quantities may vary slightly, and some items may not be included due to limited availability or seasonal shortages.

Orders: (888)-393-5663
Inquiries: 317-745-0443
Fax: 317-745-0249
mail@workshopplus.com

www.workshopplus.com
P.O. Box 425
3055 East Main Street
Danville, IN 46122

PRECAUTIONS AND FIRST AID INFORMATION

Oleic Acid

Warning: *May cause irritation. Avoid contact with eyes, skin and clothing. Do not inhale.*

First Aid Information: *Flush eyes with plenty of water for at least 15 minutes. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. If inhaled, remove to fresh air. If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Get medical attention immediately.*

Liquid Graphite

Warning: *Avoid contact with eyes, skin and clothing. Do not inhale.*

First Aid Information: *Flush eyes with plenty of water for at least 15 minutes. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. If inhaled, remove to fresh air. If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Get medical attention immediately.*

Talcum Powder

Warning: *May cause irritation. Avoid contact with eyes, skin and clothing.*

First Aid Information: *Flush eyes with plenty of water for at least 15 minutes. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. If inhaled, remove to fresh air. If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Seek medical attention.*

Please check your order for any shortages and/or damaged items upon receipt.
Please contact *Nature's Workshop Plus!, Inc.* for any needed replacement, and/or additional items.
Please observe all safety precautions when doing experiments.
Please note that exact quantities may vary slightly, and some items may not be included due to limited availability or seasonal shortages.