

MASTER MATERIALS AND EQUIPMENT LIST: NON-HOUSEHOLD CONSUMABLE MATERIALS

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Material	PASCO Part #	Yearlong Qty Per Group	Labs Requiring Material
100 NTU calibration standard for turbidity sensor (Small bottle included with sensor; check expiration date)	PS-2511	1 bottle	13D PROJECT: DESIGN A WATER PURIFICATION SYSTEM 23B THE WATER CYCLE
Activated carbon/charcoal		100 g	13D PROJECT: DESIGN A WATER PURIFICATION SYSTEM
Ammonium chloride (NH ₄ Cl)		2 g	7B CHEMICAL REACTIONS
Barium nitrate (Ba(NO ₃) ₂)		5 g	9D FLAME TEST
Butanoic acid (C ₄ H ₈ O ₂)		20 mL	20C FRAGRANT ESTERS
Buffer solution, pH 4	SC-2321	50 mL	16A WHAT IS PH? 16B TITRATION OF AN UNKNOWN ACID 16C ANTACIDS: AN INQUIRY STUDY 23D OCEAN ACIDIFICATION
Buffer solution, pH 10	SC-2321	50 mL	16A WHAT IS PH? 16B TITRATION OF AN UNKNOWN ACID 16C ANTACIDS: AN INQUIRY STUDY 23D OCEAN ACIDIFICATION
Calcium carbonate (CaCO ₃)		10+ g	14A OPTIMUM CONDITIONS
Calcium chloride (CaCl ₂)		100 g*	7B CHEMICAL REACTIONS 9D FLAME TEST 21A POLYMERS
Cobalt(II) nitrate (Co(NO ₃) ₂)		145.53 g*	5B NAMING IONIC COMPOUNDS
Copper(II) carbonate (CuCO ₃)		2 g	7B CHEMICAL REACTIONS
Copper(II) chloride (CuCl ₂)		6 g	8B PERCENT YIELD 9D FLAME TEST
Copper(II) nitrate trihydrate (Cu(NO ₃) ₂ · 3H ₂ O)		130 g*	5B NAMING IONIC COMPOUNDS 7C SOLUBILITY RULES

Material	PASCO Part #	Yearlong Qty Per Group	Labs Requiring Material
Copper(II) sulfate pentahydrate (CuSO ₄ • 5H ₂ O)		30 g	6C PERCENT COMPOSITION OF A HYDRATE 7B CHEMICAL REACTIONS 13B SOLUTION CONCENTRATION 18A ELECTROCHEMICAL CELLS 18B ELECTROPLATING 18D PROJECT: DESIGN A GALVANIC CELL
Copper plate or wire (Cu)		20 cm	18A ELECTROCHEMICAL CELLS 18B ELECTROPLATING 18C LEMON BATTERY 18D PROJECT: DESIGN A GALVANIC CELL
Ethanol (C ₂ H ₅ (OH) ₂), 95%		1 mL	20C FRAGRANT ESTERS
Ethanol (C ₂ H ₅ (OH) ₂), 70%		50 mL	22A CHLOROPHYLL EXTRACTION
Glacial acetic acid (C ₂ H ₄ O ₂)		10 mL*	16B TITRATION OF AN UNKNOWN ACID 20C FRAGRANT ESTERS
Hydrochloric acid (HCl), concentrated – or, 0.1 M 1 M 3 M		~20 mL 12M HCl stock, or 205+ mL 160 mL 10 mL	3C PHYSICAL OR CHEMICAL CHANGE 16A WHAT IS PH? 16B TITRATION OF AN UNKNOWN ACID 16C ANTACIDS: AN INQUIRY STUDY 7B CHEMICAL REACTIONS 11C HESS'S LAW 14A OPTIMUM CONDITIONS
Iodine (I ₂) solution, 0.010 M		150 mL	17A VITAMIN C TITRATION
Iron filings (Fe)		5 g	3B PHYSICAL OR CHEMICAL CHANGE
Isoamyl or isopentyl alcohol (C ₅ H ₁₂ O)		1 mL	20C FRAGRANT ESTERS
Iron(III) nitrate nonahydrate (Fe(NO ₃) ₃ • 9H ₂ O)		220 g*	5B NAMING IONIC COMPOUNDS 15B LE CHÂTELIER'S PRINCIPLE
Lead(II) nitrate (Pb(NO ₃) ₂)		1 g	7C SOLUBILITY RULES
Lithium chloride (LiCl)		5 g	9D FLAME TEST
Magnesium nitrate hexahydrate (Mg(NO ₃) ₂ • 6H ₂ O)		130 g*	18A ELECTROCHEMICAL CELLS
Magnesium oxide (MgO)		1 g	11C HESS'S LAW
Magnesium ribbon (Mg)		10 g	6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE 7B CHEMICAL REACTIONS 11C HESS'S LAW 18A ELECTROCHEMICAL CELLS
Manganese dioxide (MnO ₂)		1 g	11C HESS'S LAW
Methanol (CH ₄ O)		20 mL	14B CATALYSTS
Nickel(II) nitrate hexahydrate (Ni(NO ₃) ₂ • 6H ₂ O)		150 g*	5B NAMING IONIC COMPOUNDS
Phenolphthalein indicator		5 mL	7B CHEMICAL REACTIONS 16C TITRATION OF AN UNKNOWN ACID
pH storage solution	SC-3507	As needed	TO REPLACE PH SENSOR STORAGE SOLUTION

Material	PASCO Part #	Yearlong Qty Per Group	Labs Requiring Material
Pipets, disposable and graduated to 1.0 mL		42	REQUIRED FOR MANY INVESTIGATIONS
Potassium chloride (KCl)		5 g	9D FLAME TEST
Potassium hydroxide (KOH)		1 g	15B LE CHÂTELIER'S PRINCIPLE
Potassium nitrate (KNO ₃)		1 g	7C SOLUBILITY RULES
Potassium phosphate (K ₃ PO ₄)		5 g	15B LE CHÂTELIER'S PRINCIPLE
Potassium thiocyanate (KSCN)		1 g	15B LE CHÂTELIER'S PRINCIPLE
Salicylic acid (C ₇ H ₆ O ₃)		0.2 g	20C FRAGRANT ESTERS
Silver nitrate (AgNO ₃)		1 g	7C SOLUBILITY RULES
Sodium alginate (C ₆ H ₇ O ₆ Na) _n)		0.3 g	21A POLYMERS
Sodium carbonate (Na ₂ CO ₃)		9 g	5B NAMING IONIC COMPOUNDS 7B CHEMICAL REACTIONS 7C SOLUBILITY RULES 8B PERCENT YIELD
Sodium chloride (NaCl)		30 g	7C SOLUBILITY RULES 9D FLAME TEST 13A ELECTROLYTES 14B CATALYSTS 21A POLYMERS 23C OCEAN CURRENTS
Sodium hydroxide (NaOH) solid, or 0.1 M 1.0 M		10 g solid, or 275 mL 160 mL	3C PHYSICAL OR CHEMICAL CHANGE 7C SOLUBILITY RULES 16A WHAT IS PH? 16B TITRATION OF AN UNKNOWN ACID 16C ANTACIDS: AN INQUIRY STUDY
Sodium nitrate (NaNO ₃)		1 g	7C SOLUBILITY RULES
Sodium phosphate dodecahydrate (Na ₃ PO ₄ · 12H ₂ O)		200 g*	5B NAMING IONIC COMPOUNDS 7B CHEMICAL REACTIONS
Sodium sulfate (Na ₂ SO ₄)		20 g	7C SOLUBILITY RULES 18A ELECTROCHEMICAL CELLS 18D PROJECT: DESIGN A GALVANIC CELL
Strontium hydroxide (Sr(OH) ₂)		2 g	7B CHEMICAL REACTIONS
Strontium nitrate (Sr(NO ₃) ₂)		5 g	9D FLAME TEST
Sulfuric acid (H ₂ SO ₄), 18M		20 mL	20C FRAGRANT ESTERS
Universal indicator solution		8 mL	16A WHAT IS PH? 23D OCEAN ACIDIFICATION
Zinc metal, pellets (Zn)		10 g	7B CHEMICAL REACTIONS 14B CATALYSTS
Zinc metal, plates or strips (Zn)		15 g	18A ELECTROCHEMICAL CELLS 18B ELECTROPLATING 18C LEMON BATTERY 18D PROJECT: DESIGN A GALVANIC CELL
Zinc sulfate heptahydrate (ZnSO ₄ · 7H ₂ O)		150 mL	18A ELECTROCHEMICAL CELLS 18D PROJECT: DESIGN A GALVANIC CELL

MASTER MATERIALS AND EQUIPMENT LIST: HOUSEHOLD CONSUMABLE MATERIALS

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Material	Yearlong Qty Per Group	Labs Requiring Material
Alka-Seltzer®	1 tablet	8A CONSERVATION OF MASS
Aluminum can	3	4C ENERGY FROM FOOD
Aluminum foil	16 in ² or more	4C ENERGY FROM FOOD 4E PROJECT: DESIGN AN INSULATOR
Antacid tablets (solid, various brands)	2-3	16C ANTACIDS: AN INQUIRY STUDY
Artificial sweetener, 1-g packet	1	22B RESPIRATION AND ENERGY
Battery, 9-V	1	18B ELECTROPLATING
Batteries, coin cell replacement (PASCO Part # PS-3504)	As needed	FOR NON-RECHARGEABLE WIRELESS SENSORS
Beans or small candies	150 g	6A COUNTING BY WEIGHING
Beef liver, pea-sized cube	1	14B CATALYSTS
Bird seed	5 g	3B PURE SUBSTANCES AND MIXTURES
Black beans, dry	1 bag	9A ISOTOPIC COMPOSITION
Bleach	50 mL	1A EXPERIMENTAL VARIABLES
Bottled water	250 mL	13D PROJECT: DESIGN A WATER PURIFICATION PROCESS
Bubble wrap, strips	Several	4E PROJECT: DESIGN AN INSULATOR
Carbonated water	50 mL	23D OCEAN ACIDIFICATION
Cardboard pieces	Several	4E PROJECT: DESIGN AN INSULATOR
Chalk	1 piece	6B MOLAR MASS
Chips (different flavors)	3 pieces	4C ENERGY FROM FOOD
Citric acid (C ₆ H ₈ O ₇)	2 g	8D DETERMINING LIMITING REACTANTS
Clear tape	1 roll	4C ENERGY FROM FOOD 4E PROJECT: DESIGN AN INSULATOR 8E PROJECT: DESIGN AN AIRBAG 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS
Construction paper	1 sheet	6B MOLAR MASS
Coffee filter	1	22A CHLOROPHYLL EXTRACTION
Colored pencils (green, yellow, orange)	1 each	22A CHLOROPHYLL EXTRACTION

Material	Yearlong Qty Per Group	Labs Requiring Material
Cotton balls	1 bag	4E PROJECT: DESIGN AN INSULATOR 11A EVAPORATIVE COOLING 20C FRAGRANT ESTERS
Cotton swabs (or, wooden splints)	1 bag/box	9D FLAME TEST
Distilled water	As needed	REQUIRED FOR MANY INVESTIGATIONS
Filter paper	10 filters	3B PURE SUBSTANCES AND MIXTURES 8B PERCENT YIELD 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 18A ELECTROCHEMICAL CELLS 18D PROJECT: DESIGN A GALVANIC CELL 22A CHLOROPHYLL EXTRACTION
Foam cup, 8-oz, with 1 lid	15 cups, 1 lid (for 11C)	4A TEMPERATURE AND THERMAL ENERGY 4B SPECIFIC HEAT 4D HEAT OF FUSION 6A COUNTING BY WEIGHING 8A CONSERVATION OF MASS 11C HESS'S LAW
Foam cup, 12-oz	5	4A TEMPERATURE AND THERMAL ENERGY 22A CHLOROPHYLL EXTRACTION
Food coloring, 4 colors	1 box per 3 classes	1A EXPERIMENTAL VARIABLES 3C PHYSICAL OR CHEMICAL CHANGE 13C COLORED SOLUTIONS 15A EQUILIBRIUM REACTIONS 23C OCEAN CURRENTS
Fruits/vegetables	Variety	17A VITAMIN C TITRATION
Gravel	100 g	13D PROJECT: DESIGN A WATER PURIFICATION PROCESS
Ground pepper (small flakes)	2 g	10C SURFACE TENSION
Household items (cleaners, etc.)	Various	5C STORE LABELS AND MODEL BUILDING
Hydrogen peroxide (H ₂ O ₂), 3%	6 mL	14B CATALYSTS
Ice	2.0 kg	REQUIRED FOR MANY INVESTIGATIONS
Lactose	1.0 g	22B RESPIRATION AND ENERGY
LED bulbs	10	18C LEMON BATTERY 18D PROJECT: DESIGN A GALVANIC CELL
Lemons	3	18C LEMON BATTERY
Marker	1	11A EVAPORATIVE COOLING 12C CHARLES' LAW 13B SOLUTION CONCENTRATION 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 16A WHAT IS PH? 21A POLYMERS
Marshmallows (miniature)	3	12A VOLUME OF A GAS

Material	Yearlong Qty Per Group	Labs Requiring Material
Matches	1-2 books	4C ENERGY FROM FOOD 6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE 7B CHEMICAL REACTIONS 9D FLAME TEST 23D OCEAN ACIDIFICATION
Metal samples, various, with 1M solutions	3 or more	18C LEMON BATTERY 18D PROJECT: DESIGN A GALVANIC CELL
Nail polish remover	25 mL	11A EVAPORATIVE COOLING
Paper clips	5	4C ENERGY FROM FOOD 10C SURFACE TENSION
Pencil	1	8B PERCENT YIELD 14B CATALYSTS
Plastic bottle, 2-L	1	13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 23D OCEAN ACIDIFICATION
Plastic cup, 9-oz, narrow	1	23D OCEAN ACIDIFICATION
Plastic cup, 9-oz, wide	1	23D OCEAN ACIDIFICATION
Plastic cup, 18-oz, wide	1	22A CHLOROPHYLL EXTRACTION 23D OCEAN ACIDIFICATION
Plastic fork	1	21A POLYMERS
Plastic knife	1	18C LEMON BATTERY
Plastic spoon	1	23A GREENHOUSE GASES
Plastic storage bin, 30 cm x 20 cm x 10 cm	1	10C SURFACE TENSION
Plastic weighing dish	3	4C ENERGY FROM FOOD
Plastic wrap	1 ft ²	23D OCEAN ACIDIFICATION
Plastic zipper bag, 1-quart size	1	8E PROJECT: DESIGN AN AIRBAG
Plastic zipper bag, sandwich size	16	8E PROJECT: DESIGN AN AIRBAG 9A ISOTOPIC COMPOSITION 19A HALF-LIVES
Polystyrene foam pieces	Many	4E PROJECT: DESIGN AN INSULATOR
Pond water	350 mL	13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 23B THE WATER CYCLE
Potato cube, pea-sized	1	14B CATALYSTS
Red beans, dry	1 bag	9A ISOTOPIC COMPOSITION
Rubber bands	6	4E PROJECT: DESIGN AN INSULATOR 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 22A CHLOROPHYLL EXTRACTION
Rubbing alcohol (isopropyl alcohol)	25 mL	11A EVAPORATIVE COOLING
Sand	150 g	3B PURE SUBSTANCES AND MIXTURES 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS
Sandpaper or steel wool, 2-in ² pieces	6	6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE 18A ELECTROCHEMICAL CELLS 18B ELECTROPLATING 18C LEMON BATTERY

Material	Yearlong Qty Per Group	Labs Requiring Material
Soap, liquid	5 mL	10C SURFACE TENSION
Sodium bicarbonate (baking soda, NaHCO_3)	50 g	8D DETERMINING LIMITING REACTANTS 8E PROJECT: DESIGN AN AIRBAG 10A TYPES OF BONDING 23A GREENHOUSE GASES
Spices	Variety	20B DISTILLING AROMATIC COMPOUNDS
Spinach leaves	4	22A CHLOROPHYLL EXTRACTION
Sponge	1	23A GREENHOUSE GASES
Sports drink	10 mL	13A ELECTROLYTES
Staples	5	10C SURFACE TENSION
Starch, soluble	1 g	13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 17A VITAMIN C TITRATION
Straws	2	15A EQUILIBRIUM REACTIONS
Table sugar (sucrose)	15 g	10A TYPES OF BONDING 13A ELECTROLYTES 22B RESPIRATION AND ENERGY
Table salt	20 g	3B PURE SUBSTANCES AND MIXTURES 10A TYPES OF BONDING 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 20B DISTILLING AROMATIC COMPOUNDS 23D OCEAN ACIDIFICATION
Tea light candle	1	23D OCEAN ACIDIFICATION
Toothpicks	25	7C SOLUBILITY RULES
Vinegar, 5%	250 mL	8A CONSERVATION OF MASS 8D DETERMINING LIMITING REACTANTS 8E PROJECT: DESIGN AN AIRBAG 10A TYPES OF BONDING 23A GREENHOUSE GASES
Vitamin C tablets	2	17A VITAMIN C TITRATION
Water balloon	1	12C CHARLES' LAW
Weighing paper, sheets	15	8D DETERMINING LIMITING REACTANTS 14A OPTIMUM CONDITIONS
White beans, dry	1 bag	9A ISOTOPIC COMPOSITION
Wipes, lint/scratch-free for cuvettes	1 box	13B SOLUTION CONCENTRATION 13C COLORED SOLUTIONS 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 22A CHLOROPHYLL EXTRACTION 23B THE WATER CYCLE
Wooden splints (or cotton swabs for 9D)	1 box	4C ENERGY FROM FOOD 7B CHEMICAL REACTIONS 9D FLAME TEST
Yeast (active, dry baker's yeast)	1 packet (7 g)	22B RESPIRATION AND ENERGY

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Alligator clip leads, jumper style	EM-8634	3 pair or more	18B ELECTROPLATING 18C LEMON BATTERY 18D PROJECT: DESIGN A GALVANIC CELL
Alligator clip test leads, red and black (included with Wireless Voltage sensor)	PS-3544	1 pair	18A ELECTROCHEMICAL CELLS 18C LEMON BATTERY 18D PROJECT: DESIGN A GALVANIC CELL
Beaker, 50-mL		4	REQUIRED FOR MANY INVESTIGATIONS
Beaker, 100-mL	SE-7287	8	REQUIRED FOR MANY INVESTIGATIONS
Beaker, 150-mL		2	16C ANTACIDS: AN INQUIRY STUDY 17A VITAMIN C TITRATION 21A POLYMERS 23B THE WATER CYCLE
Beaker, 250-mL		8	REQUIRED FOR MANY INVESTIGATIONS
Beaker, 400-mL		4	10C SURFACE TENSION 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS
Beaker, 600-mL		3	11B STATE CHANGES 14A OPTIMUM CONDITIONS
Beaker, 1-L	SE-7288	1	12C CHARLES' LAW 23C OCEAN CURRENTS
Beaker tongs		1	4B SPECIFIC HEAT 4E PROJECT: DESIGN AN INSULATOR 7B CHEMICAL REACTIONS 12C CHARLES' LAW
Boiling chips		5 or more	20B DISTILLING AROMATIC COMPOUNDS
Bunsen burner with tubing		1	6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE 7B CHEMICAL REACTIONS 9D FLAME TEST
Buret, 50-mL		1	16B TITRATION OF AN UNKNOWN ACID 16C ANTACIDS: AN INQUIRY STUDY 17A VITAMIN C TITRATION

Material	PASCO Part #	Maximum Per Group	Labs Requiring Material
Buret clamp		1	16B TITRATION OF AN UNKNOWN ACID 16C ANTACIDS: AN INQUIRY STUDY 17A VITAMIN C TITRATION
Clay triangle		1	6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE
Coin, large		1	22A CHLOROPHYLL EXTRACTION
Condenser	PS-3402	1	13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 20B DISTILLING AROMATIC COMPOUNDS 23B THE WATER CYCLE
Crucible and cover		1 of each	6C PERCENT COMPOSITION OF A HYDRATE 6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE
Crucible tongs		1	4C ENERGY FROM FOOD 6C PERCENT COMPOSITION OF A HYDRATE 6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE
Cuvettes and caps (included with the Colorimeter and with the Spectrometer)	SE-8739	1	13B SOLUTION CONCENTRATION 13C COLORED SOLUTIONS 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 22A CHLOROPHYLL EXTRACTION 23B THE WATER CYCLE
Device with SPARKvue software (visit www.pasco.com for details)	PS-3600 PS-3601	1	REQUIRED FOR MANY INVESTIGATIONS
Digital balance (readability: 0.01 g)	SE-8823A	1	REQUIRED FOR MANY INVESTIGATIONS
Dime		1	10C SURFACE TENSION
Discover Density set (optional)	SE-9719A	1	2A DENSITY OF A LIQUID
Dropper bottles		33 total/yr	REQUIRED FOR MANY INVESTIGATIONS
Electrode support	PS-3505	1	11B STATE CHANGES 16B TITRATION OF AN UNKNOWN ACID 16C ANTACIDS: AN INQUIRY STUDY 20C FRAGRANT ESTERS
Erlenmeyer flask, 250-mL		3	3B PURE SUBSTANCES AND MIXTURES 8B PERCENT YIELD 14A OPTIMUM CONDITIONS 17A VITAMIN C TITRATION 22B RESPIRATION AND ENERGY 23A GREENHOUSE GASES
Erlenmeyer flask, 500-mL		1	8D DETERMINING LIMITING REACTANTS
Evaporating dish		1	3B PURE SUBSTANCES AND MIXTURES
Film canister with lid		8 total/yr	8E PROJECT: DESIGN AN AIRBAG 9D FLAME TEST
Forceps		1	3B PURE SUBSTANCES AND MIXTURES 6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE 10C SURFACE TENSION 14B CATALYSTS

Material	PASCO Part #	Maximum Per Group	Labs Requiring Material
Funnel		1	3B PURE SUBSTANCES AND MIXTURES 8B PERCENT YIELD 13A ELECTROLYTES 16B TITRATION OF AN UNKNOWN ACID 16C ANTACIDS: AN INQUIRY STUDY
Glow-in-the-dark object		1	9C LIGHT ENERGY
Graduated cylinder, 10-mL		2	REQUIRED FOR MANY INVESTIGATIONS
Graduated cylinder, 25-mL		1	8E PROJECT: DESIGN AN AIRBAG 10A TYPES OF BONDING
Graduated cylinder, 50-mL	SE-7289	1	8D DETERMINING LIMITING REACTANTS 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 16C ANTACIDS: AN INQUIRY STUDY
Graduated cylinder, 100-mL		2	REQUIRED FOR MANY INVESTIGATIONS
Hot plate or heater stirrer	PS-3401	1	REQUIRED FOR MANY INVESTIGATIONS
Incandescent light source (60-W bulb)		1	23A GREENHOUSE GASES
Jar, medium-sized		1	3B PURE SUBSTANCES AND MIXTURES
Iron ring		1	3B PURE SUBSTANCES AND MIXTURES 4C ENERGY FROM FOOD 6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE 8B PERCENT YIELD
Jump rope		1	9B WHAT IS A WAVE?
Magnet		1	3B PURE SUBSTANCES AND MIXTURES
Magnetic stirrer or heater stirrer with magnet	PS-3401	1	3B PURE SUBSTANCES AND MIXTURES 16B TITRATION OF AN UNKNOWN ACID 16C ANTACIDS: AN INQUIRY STUDY 22B RESPIRATION AND ENERGY
Metal samples (Cu, Al, Fe, etc.), solid, to fit in a 100-mL graduated cylinder	SE-6849	2	4B SPECIFIC HEAT
Meter stick	SE-8827	1	9B WHAT IS A WAVE?
Metric ruler		1	2A DENSITY OF A SOLID 4E PROJECT: DESIGN AN INSULATOR 22A CHLOROPHYLL EXTRACTION
Molecular Model Set	PS-3400	1	REQUIRED FOR MANY INVESTIGATIONS
Mortar and pestle		1	16C ANTACIDS: AN INQUIRY STUDY 17A VITAMIN C TITRATION 20B DISTILLING AROMATIC COMPOUNDS 22A CHLOROPHYLL EXTRACTION
Patterns and Trends cards	EC-3405	1 set	5A PATTERNS AND TRENDS
Pennies (or, 1 penny and 100 candies with 2 distinct sides)		100	10C SURFACE TENSION 19A HALF-LIVES

Material	PASCO Part #	Maximum Per Group	Labs Requiring Material
Periodic table	EC-3404	1	3A CHEMICAL FORMULA 5A PATTERNS AND TRENDS 5C STORE LABELS AND MODEL BUILDING 6B MOLAR MASS 8C MODELING LIMITING REACTANTS 10B LEWIS STRUCTURE AND VSEPR
Replacement tubing, connectors, etc.	PS-3503	As needed	
Ring stand		1	REQUIRED FOR MANY INVESTIGATIONS
Rubber policeman		2	8B PERCENT YIELD
Rubber stopper, 1-hole, to fit Erlenmeyer flask		3	8D DETERMINING LIMITING REACTANTS 14A OPTIMUM CONDITIONS 22B RESPIRATION AND ENERGY 23A GREENHOUSE GASES
Scissors		1	4E PROJECT: DESIGN AN INSULATOR 6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE 13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 22A CHLOROPHYLL EXTRACTION
Scoopula		3	10A TYPES OF BONDING 14A OPTIMUM CONDITIONS 14B CATALYSTS 20C FRAGRANT ESTERS
Sensors	SEE ACTIVITY BY PASCO SENSORS AND EQUIPMENT (NEXT SECTION)		
SPARKvue software (visit www.pasco.com for details)			REQUIRED FOR MANY INVESTIGATIONS
Specific heat set (optional)	SE-6849	1	4B SPECIFIC HEAT
Spectrum Cards	EC-3403	1 set	24A SPECTROSCOPY
Spot plate		1	5B NAMING IONIC COMPOUNDS 7C SOLUBILITY RULES
Stirring rod (glass)		2	REQUIRED FOR MANY INVESTIGATIONS
Test tube clamp		1	20C FRAGRANT ESTERS
Test tube holder		1	7B CHEMICAL REACTIONS
Test tube rack		1	REQUIRED FOR MANY INVESTIGATIONS
Test tubes, 20-mm × 150-mm		12	REQUIRED FOR MANY INVESTIGATIONS
Timer or stopwatch	SE-8768	1	13D PROJECT: DESIGN A WATER PURIFICATION PROCESS 15A EQUILIBRIUM REACTIONS
Volumetric flasks (teacher use only): 100-mL, 250-mL, 500-mL, 1-L		1 of each	REQUIRED TO PREPARE SOLUTIONS FOR INVESTIGATIONS
Wash bottle with distilled water		1	REQUIRED FOR MANY INVESTIGATIONS
Watch glass		1	3B PURE SUBSTANCES AND MIXTURES 21A POLYMERS
Wire gauze		1	6C PERCENT COMPOSITION OF A HYDRATE 6D EMPIRICAL FORMULA OF MAGNESIUM OXIDE

ACTIVITY BY PASCO SENSORS AND EQUIPMENT

This table indicates which lab activity uses the sensors or special equipment listed. Consumable PASCO item replacement information is also listed. The quantity indicated is per student group.

PASCO Part #	PASCO Sensor or Equipment Name	Qty	Activity # Where Used
PS-3201	PASCO Wireless Temperature Sensor	1	1B, 3C, 4A, 4B, 4C, 4D, 4E, 7B, 8E, 11A, 11B, 11C, 12C, 14A, 20C, 23A, 23C
PS-3203	PASCO Wireless Pressure Sensor (may require included syringe, tubing, or connectors)	1	8D, 8E, 12A, 12B, 14A, 22B
PS-3503	Pressure sensor replacement parts (tubing, connectors, etc.)		
PS-3204	PASCO Wireless pH Sensor	1	3C, 7B, 16A, 16B, 16C, 23D
SC-3507	Replacement pH Sensor Electrode Storage Solution (500 mL)		
SC-2321	pH Buffer Capsule Kit (to make pH sensor calibration solutions)		
PS-3210	PASCO Wireless Conductivity Sensor	1	3C, 7B, 10A, 13A, 13D, 23B, 23C
PS-3211	PASCO Wireless Voltage Sensor (includes 1 pair of red and black alligator clip leads)	1	18A, 18C, 18D
PS-3544	Replacement alligator clip test leads, 1 pair, red and black		
PS-3215	PASCO Wireless Colorimeter and Turbidity Sensor (includes 10 cuvettes and 100 NTU calibration standard solution)	1	13B, 13C, 13D, 22A, 23B
SE-8739	Replacement cuvettes and caps (100 count)		
PS-3402	Condenser	1	13D, 20B, 23B
PS-3505	Electrode support	1	11B, 16B, 16C, 20C
PS-3400	Molecular Model Set	1	3A, 5C, 6B, 7A, 8C, 10B, 11A, 15A, 20A, 20C, 21B
EC-3404	Periodic Table	1	3A, 5A, 5C, 6B, 8C, 10B
EC-3405	Patterns and Trends Cards	1 set	5A
PS-3504	Replacement batteries for pH, Temperature, and Conductivity sensors		
EC-3403	Spectrum Cards	1 set	24A