

Primary Lentil Science Quick Start Guide

This guide is designed to help homeschoolers manage the set-up of this program. On page 2 is a materials page which shows all items needed for the entire program, and which items are included in the support kit. On pages 3-9, there is one page for each chapter to help organize the set-up process.

Purchasing the support kit is highly recommended. It cuts down on a lot of gathering and preparing the more difficult-to-find materials. To make things easy, we recommend preparing Chapter A/Pour to start out. Chapter C/Compare is easy to set up next, if you ordered the support kit. That will give you 17 lessons for your student to work on. Once you are ahead, you can pick your next chapter and start collecting and preparing materials listed in advance. This keeps the program moving without an overwhelming set-up time.

We ALWAYS encourage improvisation, and if teachers or kids think of a substitute material, or an original or better way to do something, that is the essence of great science exploration. (Even if it doesn't work as well!)

Step 1: Prepare a lentil workstation. These items will be used for most of the lessons in the book.:

*Job box (see p. 8)	*Cleaning screen (1/8 inch mesh hardware cloth, six inches square p. 6)
*Scoop (made out of the bottom of a pint or quart milk carton, p.10)	Funnel (made from the top of a liter bottle, p. 8),
2 one-liter bottles filled with lentils	Paper and pencil

**included in Primary Lentil Science support kit – under the Quick Ordering tab, choose “Order Books and Kits”*

Step 2: Make sure to have the following items available:

Clear packing tape	*String
Electrical tape	*Assortment of rubber bands
Masking tape	Scissors
Clear tape	Fine-tipped permanent marker
White glue	Stapler
*Paper clips	Hole punch

**items are available through TOPS – under the Quick Ordering tab, choose “Order Supplies”. Most of these items are teacher supplies used for preparing student materials.*

Step 3: Pick a chapter to prepare in advance:

Pages 3-9 contain one sheet for each chapter with a materials list, assembly instructions, and a lesson-by-lesson list of materials needed. Some of the set-up is for making and labeling containers to store other items. These are marked as optional. If you are not planning to store your Primary Lentil Science kit, these items can be collected for the lessons and put in a sandwich baggie or other convenient container.

Primary Lentil Science Materials

Recyclables and special materials to collect:

Not included in support kit:	TOPS support kit materials:
<p>4 pounds lentils</p> <p>Bag of pinto beans or sort 75 pintos out of bean mix</p> <p>2 bags of bean mix (15- or 16-bean variety soup mix)</p> <p>3 medium cans (15-16 oz.)</p> <p>Quart milk carton</p> <p>Half-gallon milk carton</p> <p>Old towel or cloth</p> <p>6 half-liter bottles with lids</p> <p>5 one-liter bottles with lids</p> <p>24 oz. water bottle</p> <p>Two-liter soft drink bottle</p> <p>8 oz. yogurt tub</p> <p>6 oz. tuna can</p> <p>5 one-pound margarine tubs</p> <p>Small yogurt lid</p> <p>1 x 2 inch piece of flat, translucent plastic (from a clamshell food container or deli lid)</p> <p>Spoon – metal or plastic teaspoon works best</p> <p>Paper towel tube or other cardboard tube about 11 inches long</p> <p>10 empty toilet tissue rolls</p> <p>10 pennies</p> <p>5 marbles</p> <p>Brad (also called brass fastener or split pin)</p> <p>Small glass mirror</p> <p>2 wood blocks (2x4's cut to 15" long, or substitute with 4 bricks or other prop)</p> <p>*10 clear plastic cups (10 oz, tall, tapered cups)</p> <p>*Clothespin</p> <p>*Paper plate</p> <p>*2 baby food jar lids</p> <p>*Canning ring and lid</p> <p>*4 film containers (optional – for storage of smaller items)</p> <p>Quart jar (optional – for storing bean mix)</p> <p>5 plastic one-gallon jugs (optional – used for storage)</p> <p>Plastic sandwich bag (optional – used for storage)</p> <p><i>* items can be ordered through TOPS</i></p>	<p>8 oz. mayonnaise jar</p> <p>6 oz. baby food jar</p> <p>4 oz. baby food jar</p> <p>2½ oz. baby food jar</p> <p>T-40 dram I-O plastic vial</p> <p>T-30 dram I-O plastic vial</p> <p>T-16 dram I-O plastic vial</p> <p>T-8½ dram I-O plastic vial</p> <p>20-dram plastic vial</p> <p>16-dram plastic vial</p> <p>16- or 13-dram plastic vial</p> <p>Eight 60-dram plastic vials</p> <p>Two 30-dram plastic vials</p> <p>40 bottle caps</p> <p>6 x 6 inch piece of ¼ inch hardware cloth (wire screen)</p> <p>6 x 6 inch piece of ⅛ inch hardware cloth (wire screen)</p> <p>4 magnets</p> <p>30 BB's</p> <p>60 craft sticks</p> <p>Double lid</p> <p>Cardboard job box 19 x 14.5 x 3 inches</p> <p>Scoop (made out of a quart or pint milk carton)</p>

Primary Lentil Science Chapter A: Pour

Lentil workstation, paper and pencil

Chapter A/Pour Materials	<ul style="list-style-type: none"> +one-pound margarine tub +4 nesting containers (we suggest using a half-liter bottle, a 24 oz. water bottle, a one-liter bottle, and a two-liter soft drink bottle cut to the same height – directions pg. 8) +4 half-liter bottles with lids +6 clear plastic cups (10 oz, tall, tapered cups) +10 empty toilet tissue rolls 20 craft sticks +plastic sandwich bag with a canning lid, a small yogurt lid, and a small glass mirror Double lid; 2 one-liter bottle lids or 2 one-liter bottles taped together for an hourglass (directions p. 19) +plastic gallon storage jug (optional - directions p. 8) +string +paperclips +fine tipped marker
+items not included in support kit	
Chapter A/Pour Assembly	<ul style="list-style-type: none"> Copy and fold job cards and job sheets Copy labels on p. 20 (optional) Copy movie frames (p. 22), cut and arrange in random order, then paper clip together. Cut and assemble 40 cardboard rings out of empty toilet tissue rolls, tape label to storage jug (instructions p. 19) Label craft sticks with fractions to make fraction spoons (p. 19) Make double lid (included with support kit or instructions p. 19) Cut nesting containers saving liter bottle top for a funnel (p. 8)

Chapter A/Pour – Materials needed in addition to lentil workstation, by lesson:

Lesson 1	Scrambled movie frames
Lesson 2	Job sheet
Lesson 3	Jug of rings
Lesson 4	Nesting containers, job sheet
Lesson 5	Job sheet, baggie with lids and mirror
Lesson 6	Half-liter bottle, fraction spoons, six clear cups
Lesson 7	4 half-liter bottles with lids, margarine tub, job sheet
Lesson 8	Double lid or tape two one-liter bottles into an hourglass (instructions on p. 19)
Lesson 9	Students request materials to experiment

Primary Lentil Science Chapter B: Search

Lentil workstation, paper and pencil

Chapter B/Search Materials	<ul style="list-style-type: none"> +Paper plate +2 one-pound margarine tubs +Bag of pinto beans, or sort 75 pintos out of bean mix +2 bags of bean mix (15- or 16-bean variety soup mix) +4 film containers (optional) +Quart jar (optional) 6 x 6 inch piece of ¼ inch hardware cloth (wire screen) +10 pennies plus 10 pintos and 10 red beans from bean mix +2 baby food jar lids +2 medium to large rubber bands +5 marbles plus 5 garbanzos and 5 limas from bean mix 4 magnets +Brad (also called brass fastener or split pin) +20 paper clips +2 wood blocks (2 x 4's cut to 15" long) 30 BB's 1 bottle cap
+items not included in support kit	<ul style="list-style-type: none"> +1 x 2 inch piece of flat, translucent plastic (from a clamshell food container or deli lid)
Chapter B/Search Assembly	<p>Copy and fold job cards, job sheets and story paper p. 40 (several per student)</p> <p>Prepare screen out of hardware cloth (directions on p. 36)</p> <p>Make eye covers out of baby food jar lids, masking tape and rubber bands (directions on p. 36)</p> <p>From bean mix: 75 pintos, 5 garbanzos, 10 pintos, 10 red beans and 5 limas.</p> <p>Prepare magnets (masking tape, string and brad, instructions on p. 36)</p> <p>Cut two 2x4's to 15 inches long (or use bricks or some other substitute to prop job box up off the table)</p> <p>Create a circle pattern out of 1x2 piece of plastic and a hole punch (p. 36)</p> <p>Optional: Copy labels (p. 37), label film canisters for storing small items</p>

Chapter B/Search – Materials needed in addition to lentil workstation, by lesson:

Lesson 1	Screen, 75 pintos
Lesson 2	Screen, 10 pennies, 10 pintos, 10 red beans, paper plate, story paper
Lesson 3	Paper plate, 5 marbles, 5 garbanzos, 5 giant limas, eye covers, job sheet
Lesson 4	Screen, bean mix, 2 tubs, paper plate
Lesson 5	4 magnets, 20 paper clips
Lesson 6	Story paper, 20 paper clips, 4 magnets, wood blocks
Lesson 7	Wood blocks, 30 bb's and a bottle cap, 4 magnets, paper clip, circle pattern
Lesson 8	Students
Lesson 9	Students request materials to experiment

Primary Lentil Science Chapter C: Compare

Lentil workstation, paper and pencil

Chapter C/Compare Materials	8 oz. mayonnaise jar 6 oz. baby food jar 4 oz. baby food jar 2½ oz. baby food jar Six plastic vials, sizes below – see notes p. 10 T-60 dram I-O plastic vial T-40 dram I-O plastic vial T-30 dram I-O plastic vial T-13 dram I-O plastic vial T-16 dram I-O plastic vial T-8-½ dram I-O plastic vial
+items not included in support kit	6 puzzle books +Gallon jug (optional)
Chapter C/Compare Assembly	Copy and fold job cards and job sheets Copy labels on p. 50 and apply to jars and vials with packing tape Jars and vials can be stored in a gallon jug (optional) Copy and assemble six puzzle books p. 59, 60, 62, 63, 65 and 66

Chapter C/Compare – Materials needed in addition to lentil workstation, by lesson:

Lesson 1	Jars and vials
Lesson 2	Two job sheets, jars and vials
Lesson 3	Job sheet, jars and vials
Lesson 4	Jars and vials
Lesson 5	Puzzle books 5A and 5B, jars and vials
Lesson 6	Puzzle books 6A and 6B, jars and vials
Lesson 7	Puzzle books 7A and 7B, jars and vials
Lesson 8	Students request materials to experiment

Primary Lentil Science Chapter D: Design

Lentil workstation, paper and pencil

Chapter D/Design Materials	Baby food jar 2½ oz. – or use cloud jar from Chapter C Baby food jar 4 oz. – or use moon jar from Chapter C Baby food jar 6 oz. – or use triangle jar from Chapter C 2 craft sticks +Spoon – metal or plastic teaspoon works best +Canning Ring Book of shapes Landforms book 22 bottle caps 24 craft sticks +Clothespin +2 clear cups (10 oz cups used in previous chapters) +Rubber band
+items not included in support kit	Copies of story paper p. 40 +One-liter bottle
Chapter D/Design Assembly	Copy and fold job cards and job sheets Label small, medium and large baby food jars with masking tape, or label the back of the triangle, moon, and cloud baby food jars from Chapter C Copy and assemble book of shapes p. 73 Copy drawing paper p. 74, several copies per student Copy and assemble landforms booklet p. 76 Copy and assemble landscape and townscape props (instructions on p. 69); store in labeled plastic cups Copy and assemble street sticks (instructions on p. 69); rubber band together

Chapter D/Design – Materials needed in addition to lentil workstation, by lesson:

Lesson 1	Spoon, canning ring
Lesson 2	Job sheet, canning ring, book of shapes, spoon
Lesson 3	Landscape props, story paper, landforms book, spoon, canning ring
Lesson 4	Job sheet, landscape props, spoon, canning ring
Lesson 5	Townscape props, street sticks, story paper
Lesson 6	Baby food jars, landscape props, townscape props, spoon, canning ring, one-liter bottle
Lesson 7	Students request materials to experiment

Primary Lentil Science Chapter E: Measure

Lentil workstation, paper and pencil

Chapter E/Measure Materials	Eight 60-dram plastic vials Two 30-dram plastic vials +2 plastic gallon storage jugs (optional) One set of equation tags p. 93 +2 one-liter bottles +8 oz. Yogurt tub +6 oz. Tuna can +Quart yogurt tub or margarine tub cut to size Two puzzle books
+items not included in support kit	+Half-liter bottle +One-pound margarine tub +Plastic cup
Chapter E/Measure Assembly	Copy and fold job cards and job sheets Copy and assemble equation tags p. 93, store in labeled plastic cup Copy and assemble puzzle book p. 91 and 95 Label extra cups (p. 7); label storage jug (optional) Prepare measuring bottle (p. 10) Prepare 4 funny cups (p. 85); label with masking tape Prepare set of 5 measuring cups (p. 85); label storage jug (optional)

Chapter E/Measure – Materials needed in addition to lentil workstation, by lesson:

Lesson 1	Job sheet, four extra cups, measuring bottle
Lesson 2	4 funny cups, measuring bottle
Lesson 3	Puzzle book measure 3, set of 5 measuring cups
Lesson 4	3 extra cups, set of 5 measuring cups, equation tags
Lesson 5	Measure 5 puzzle book, set of 5 measuring cups
Lesson 6	Equation tags, set of 5 measuring containers
Lesson 7	Measuring bottle, job sheet, set of 5 measuring containers
Lesson 8	Students request materials to experiment

Primary Lentil Science Chapter F: Divide

Lentil workstation, paper and pencil

Chapter F/Divide Materials	<i>Equation tags from Chapter E</i> <i>Extra Cups from Chapter E</i> <i>Measuring bottle from Chapter E</i> Set of 7 fraction cups: (follow instructions on p. 101) 2 whole cups from extra cups set 1 half-cup from extra cups set 20-dram plastic vial 16-dram plastic vial 16- or 13-dram plastic vial 2 puzzle books p. 106-107 +Paper towel tube or other cardboard tube about 11 inches long Fraction ruler from p. 111 Fraction labels (instructions on p. 101) +Medium can +Thick rubber band 5 craft sticks Plastic gallon jug (optional)
+items not included in support kit	
Chapter F/Divide Assembly	Copy and fold job cards and job sheets Copy and assemble fraction ruler p. 111 Copy and assemble 2 puzzle books p. 106 and 107 Copy templates and labels for fraction cups p. 102-103 Assemble set of 7 fraction cups (instructions on p. 101); store in plastic gallon jug (optional) Assemble fraction labels p. 115 (instructions on p. 101) Label prediction tube (instructions on p. 101)

Chapter F/Divide – Materials needed in addition to lentil workstation, by lesson:

Lesson 1	Set of 7 fraction cups
Lesson 2	Puzzle books A and B, set of 7 fraction cups
Lesson 3	Equation tags, set of 7 fraction cups
Lesson 4	Prediction tube, set of 7 fraction cups
Lesson 5	Two job sheets, fraction ruler (no lentil workstation required for this lesson)
Lesson 6	Set of 7 fraction cups, 6 extra cups, fraction ruler, fraction labels, job sheet
Lesson 7	Fraction labels, measuring bottle with rubber band, set of 7 fraction cups, up to 6 extra cups
Lesson 8	Students request materials to experiment

Primary Lentil Science Chapter G: Calibrate

Lentil workstation, paper and pencil

Chapter G/Calibrate Materials	<p><i>Materials from previous chapters:</i> <i>Extra cup and half cup (Ch. E)</i> <i>3 tubs (Ch. A)</i> <i>7 clear cups (Ch. A)</i> <i>4 nesting containers (Ch. A)</i> <i>Small, medium and large baby food jars (Ch. C)</i> <i>Half-liter bottle (Ch. A)</i> <i>Paper plate (Ch. B)</i></p> <p>9 craft sticks +2 medium cans +28 thin rubber bands +Quart milk carton +Half-gallon milk carton +Clear tape +Masking tape +Blunt scissors</p>
+items not included in support kit	<p>+Old towel or cloth Calibrating strips – photocopied from book</p>
Chapter G/Calibrate Assembly	<p>Copy and fold job cards and job sheets Assemble cup bands (instructions p. 120) Assemble fraction bands (instructions p. 120) Copy and assemble cloth bundle (copy p. 121, instructions p. 120) Copy and assemble calibrating strips p. 131, store in clear cup Cut milk cartons to size (instructions p. 120)</p>

Chapter G/Calibrate – Materials needed in addition to lentil workstation, by lesson:

Lesson 1	Cup bands, extra cup and half cup, one-liter bottle
Lesson 2	Cloth Bundle
Lesson 3	Fraction bands, 6 clear cups, 3 tubs, one-liter bottle
Lesson 4	Job sheet, extra cup, 2 craft sticks, nesting containers, paper plate
Lesson 5	Job sheet, baby food jars (S,M,L), large and small milk carton, 2 craft sticks
Lesson 6	Job sheet, tape, baby food jars, large milk carton, tub, calibrating strips
Lesson 7	One-liter bottle, masking tape, scissors, baby food jars, job sheet
Lesson 8	Students request materials to experiment