

# Teacher Guide

*Organizing Things into Categories* • one day, 9:30–2:00 • book pp.43–49

**One-line goal:** Things that belong together get put together — a category is two or more things sharing a similarity or purpose, the same stuff can be sorted many right ways, and sorting is the first tool of every scientist.

*Prerequisites: none — this is the first lesson in the kit, and the place the habit of sorting begins. Everything later leans on it.*

## KEY CONCEPTS (DON'T MISS THESE)

- **A category is two or more things that share a similarity or purpose** (the book's key point). Not a place, not a box — a *belonging-together*.
- **The same set sorts many right ways** — by color, size, material, use. There is no single right way; we choose the sorting that suits our purpose.
- **Categories nest.** Groceries → fresh produce → fruits / vegetables — and small groups combine into bigger ones. The word is **subcategory**.
- **An attribute is the thing you notice.** Change the attribute and the same objects land in different groups.
- **Organization powers memory and thinking** — the Memory Tray proves it with the kids' own numbers.
- **The grown-up world is pre-sorted** (stores, libraries, kitchens); noticing it is the send-home.
- **Sorting is what scientists do with observations** — collect, organize, and patterns (and gaps) appear.

## VOCABULARY

**Key terms:** category • organize • sort • attribute • group • subcategory

**Copywork** (binder sheet, printed): sort • group • category • organize

Kid-sized definitions, used identically everywhere: *sort* — putting things into groups • *group* — things put together in one place • *category* — things that belong together • *organize* — putting everything in its place • *attribute* — the thing you notice: color, size, or use • *subcategory* — a group inside a group.

## OPENING ORATION — THE SECRET EVERY SCIENTIST USES FIRST (9:30 · ~3 min)

**Prop:** the covered junk-drawer tray — **dumped dramatically** at the marked moment. Full text printed as *Opening Oration.pdf* in this folder; the beats:

- “The grocery store, the library, and your bedroom share a secret...” — then the **DUMP**: a pile where everything is present and nothing can be found.
- The store/library/bedroom tour: thousands of things, each findable in a minute — because **things that belong together get put together**.
- Name the words: *category, sorting, organizing*. Promise the memory-game proof for later.
- The scientist’s first tool: sort the jumbled world and it starts to make sense. Close: “there’s more than one right way” — and hand them the pile.

### ACTIVITIES (KIDS DO)

#### A1 · The Big Sort — Card 1

9:45 · 30 min · card: *experiment-cards/01-the-big-sort.pdf*

The oration’s pile + the sorting set. Say only “**put together what belongs together**” and stay quiet. Ask WHY as groups form; letter a label card per named category; museum-walk and tally onto the worksheet FRONT. Then **mix it all back up** and re-sort by a different attribute. Record the favorite sort on the mat and finish “my categories are ... because ...”.

*Say: “Was the first way right? Was the second way right? BOTH were — the things never changed, only the thing we noticed. We pick the sorting that suits our purpose.”*

**Failure modes:** one child dominates — private muffin tins first, merge after. A “fits nowhere” pile — celebrate it, that IS a category. Sorting stalls into play — a bowl in each child’s hands restarts it.

#### A2 · Hula-Hoop Floor Venn — Card 3

10:40 · 25 min · card: *experiment-cards/03-hula-hoop-venn.pdf*

Two hoops APART, labelled *things made of wood* / *things that are red*. Kids place objects, saying why — until the planted **red wooden block** forces the crisis. Slide the hoops together; the block stands in the overlap; letter the BOTH card. Swap a label and watch the middle change. Name it: a **Venn diagram**.

*Say: “A thing can belong to TWO categories at the same time — it just stands in the middle.”*

**Failure modes:** no genuine both-objects = dead overlap — plant 3–4 on purpose. Hoops drift — tape the crossing points.

### A3 · Memory Tray Game — Card 4

11:05 · 25 min · card: [experiment-cards/04-memory-tray-game.pdf](#) · log: [student-binder/04 Number Log.pdf](#)

Round 1: 60 seconds of looking, cover, 2 minutes of recall in turns — tally, count, **shade the Round 1 bar**. Teach the secret with the tray visible: sort into categories, **one category per finger**. Round 2 on the re-stocked tray, looking category by category; recall by walking the fingers; shade the Round 2 bar. Compare.

*Say: “Your memory didn’t grow in ten minutes. You ORGANIZED what you saw — and the categories carried the things for you. Organizing is a tool for your MIND.”*

**Failure modes:** pre-counters — pair with an older “recorder” or shade as a group. One child dips in round 2 — compare GROUP totals (they almost never fail). Chaos-calling — turns around the circle, one item each.

### A4 · Real-World Sorting Walk — Card 6

12:40 · 30 min · card: [experiment-cards/06-sorting-walk.pdf](#)

Ten minutes outdoors collecting best-four finds; pool with kitchen items to 15–20. The group argues out a scheme, sorts, labels, counts — then re-sorts a different way. Finish by catching the house’s hidden sorts: silverware drawer, pantry, bookshelf, toolbox. Optional: sort the laundry.

*Say: “Every drawer in this house is somebody’s category. Today you started seeing them — and you will never stop.”*

**Failure modes:** collections bloat — cap at best four. Weather — recycling bin + sock drawer instead. Kitchen leg becomes snacking — sort unopenable things.

## EXPERIMENTS (TEACHER RUNS, KIDS WATCH → DEDUCE → DISCUSS)

## E1 · Guess My Rule — Card 2

10:15 · 15 min · card: [experiment-cards/02-guess-my-rule.pdf](#)

**Silently** sort objects into two groups while kids watch and whisper. The ? card opens guessing; test every guess against the evidence. Round 2 uses a sneakier rule — **purpose, not appearance** (things for drawing vs. things for holding stuff together). Round 3: a kid sorts, you guess (wrongly, once, charmingly).

*Say: “You couldn’t SEE my rule — it was in my head. But every object I placed was a CLUE. Watching carefully and guessing the hidden rule is exactly what scientists do all day.”*

**Failure modes:** hard rule too early kills guessing — open with color or size. Shouting mid-sort spoils deduction — the ? card is the only talking signal. Round-3 sorter’s rule secretly random — they whisper it to you first.

## E2 · Categories Within Categories — Card 5

11:30 · 20 min · card: [experiment-cards/05-categories-within-categories.pdf](#)

ALL FOOD at the top of the board; branches grow as kids direct (produce · cereals · milk things · cans); produce splits again into FRUITS and VEGETABLES — a **subcategory**. Prediction game: each food prop walks its path (all food → produce → fruits). Run it upward too: combining is sorting’s reverse gear. At 11:50 the kids letter the same tree on the worksheet BACK.

*Say: “A category can live INSIDE a bigger category — fruits live inside produce, produce lives inside food. A group inside a group is called a subcategory.”*

**Failure modes:** more than two levels = a thicket — stop. Prop moves only when the group points the same path. Pre-readers: tiny icon in every bubble.

**STRETCH (ranch, adult-run — NOT part of the core day):**

- **Egg-Grading Station** — weigh real eggs on the grading scale, sort S/M/L/Jumbo cartons; the same eggs could also sort by color or cleanliness. A working category system the family runs weekly.
- **Museum Re-Sort** — bones, rocks, feathers, insects curated into the specimen cabinet + riker mounts; the kids invent this season’s scheme and re-sort each season — “no single right way” as a standing exhibit.
- **Label maker + laminator** — weatherproof kid-lettered labels for every drawer and mount: the difference between a pile and a collection.

## PROMPTS &amp; QUESTIONS (USE ALL DAY — FROM THE BOOK, PP.44-47)

- What makes these belong together? Could ANY two things share a category?
- Is there another way to sort this same pile? A third? Which way is “right”?
- How would shoppers find anything if the store were one giant jumble? How would the manager know what to restock?
- What is your bedroom’s sorting system? Who chose it? Would you choose differently?
- (Memory tray) Where were the categories — on the tray, or in your head?
- Can one thing belong to two categories at once? Where does it stand?
- What is a group inside a group called? Walk the apple’s address, branch by branch.
- (Puzzle prompt, p.47) Why sort puzzle pieces by edge and color first? What appears once they’re sorted?
- What does a scientist collect — and what do they do with it next?

## WHAT TO WATCH FOR IN DAILY LIFE (SEND HOME — FROM THE BOOK'S "TO PARENTS")

- At the grocery store: *what category are we standing in? how did the store sort its aisles?* Let the child navigate to a food by walking its categories.
- The silverware drawer, the toolbox, the closet: *what attribute is this sorted by?*
- Sorting laundry — the child runs the scheme (by owner? color? kind?) and defends it.
- Clean-up time IS the lesson: "everything back in its category" — assign each child one category to put away (book's tip, p.47).
- At bedtime, recall the day in categories — fun things, food things, learning things.
- Find one thing at home that could be sorted a second way — and re-sort it.

## SUPPLIES TO GATHER

Full list with prices: *Supply List.md* (~\$55 new spend). Headlines: sorting/counting objects set · 2–3 hula hoops or 50-ft rope · sorting trays/bowls or muffin tins · blank floor cards + chunky marker · two prepped trays (oration dump + 20-item memory tray) · both-category trap objects · pantry food props.

## PREP-AHEAD CHECKLIST

### A few days before

- ☐ Order/gather TO-BUY supplies (Supply List, ~\$55)
- ☐ Print binder sheets ×5 (B&W), six cards ×1 (B&W), posters ×1 each (color 12×18)

### The night before (out of the kids' sight — both trays are surprises)

- ☐ Load the oration junk-drawer tray; cover it
- ☐ Load the 20-item Memory Tray; cover it; stage the round-2 re-stock stash
- ☐ Cut/stack blank floor label cards; test the chunky marker
- ☐ Stage hoops/rope circles; plant the both-category traps (red wooden block, red pencil, wooden spoon)
- ☐ Stage E2 food props: apple, banana, carrot, potato, cereal, milk, can, bread

### The morning of

- ☐ Tray + cloth beside your circle spot; timer in pocket
- ☐ Muffin tins/bowls + worksheet FRONTS on the table; Number Logs + pencils staged
- ☐ Whiteboard wiped; baskets by the door for the 12:40 walk

## REVIEW HOOKS

- **Back:** the Montessori sorting shelf work (color/shape) and Gran's seed sorting — today they get their grown-up names: *category, attribute*.
- **Forward:** A-2 sorts the whole world into solid/liquid/gas — "next time we sort EVERYTHING into just three categories." B-2/B-3 sort all living things; A-5 sorts by material; D-4's biome sort (if already taught) is this skill at landscape scale.

## CORRELATED READ-ALOUDS (BOOK P.49, OPTIONAL)

Aboff, *If You Were a Set* · Mariconda, *Sort It Out!* · Marks, *Sorting by Color / by Size / Money / Toys* · Wong, *"L" Is for Library*.



# Opening Oration

*The Secret Every Scientist Uses First • read aloud, ~3 minutes*

**Prop:** A tray loaded with genuine junk-drawer miscellanea — pencils, paper clips, coins, buttons, string, a spoon, toy pieces, rubber bands. Keep it covered beside you. At the marked moment, **dump the whole tray out on the floor in the middle of the circle**, dramatically, and let the clatter do its work. (Prep: load it the night before, out of the kids' sight; cloth over it until the moment.)

I'm going to tell you a secret this morning. It's a secret that the grocery store knows, and the library knows, and — believe it or not — your own bedroom knows. All three of them share the very same secret. And it is the first tool every scientist ever uses.

But before I tell you, I have to show you a problem.

*(Whip the cloth off and DUMP the tray onto the floor. Let everything clatter and roll. Pause. Look at the mess with them.)*

Look at that. What a jumble! Pencils and coins and buttons and string, all tangled up together. Now — suppose I need one paper clip. Where is it? Suppose you need the little spoon. Can you find it fast? Everything is here, but *nothing can be found*. A pile like this is almost like having nothing at all.

Now think about the grocery store. The grocery store has a hundred times more things than this tray — thousands and thousands of things! But is it a jumble on the floor? No! Every apple sits with the apples. Every cereal box stands with the cereals. The milk lives with the milk. You could walk in and find one tiny thing in one minute — out of thousands!

And the library — so many books! But every book has its own shelf, with its own family of books, and the librarian can walk straight to any one of them. And your bedroom — when it's picked up — the shirts live in the shirt drawer, and the blocks live in the block bin, and your shoes sit with the shoes.

So here is the secret they all share: **things that belong together get put together**. A bunch of things that belong together has a name — a *category*. And putting things into their categories has a name too — *sorting*, or *organizing*. When things are organized, you can find them, you can count them, and you can even remember them better — I'll prove that part to you later today with a game.

And why do I call it the scientist's first tool? Because that is exactly what a scientist does! A scientist looks at a great big jumbled world — rocks and bugs and stars and bones — and starts to sort: *these belong together... those are different...* And the moment the sorting starts, the world begins to make sense.

Today, this mess is ours. We are going to sort it — and here's the best part — there's more than one right way to do it.

*(Gesture at the pile, and let them start telling you what belongs together.)*

# A-B-1 Supply List — Organizing Things into Categories

Everything for the full 9:30–2 day. Prices are rough. Nothing here has a long lead time, but the **two trays must be assembled the night before, out of the kids' sight** — the Memory Tray only works as a surprise.

## ALREADY HAVE (TYPICAL HOUSEHOLD)

| <input type="checkbox"/> | ITEM                                                                                           | USED IN                                                        |
|--------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| <input type="checkbox"/> | A "junk drawer" tray of miscellanea (pencils, clips, coins, string, buttons...)                | Oration prop — dumped dramatically                             |
| <input type="checkbox"/> | A second tray + a cloth to cover it, loaded with 20 miscellaneous small items                  | A3 Memory Tray (Card 4)                                        |
| <input type="checkbox"/> | Extra miscellanea stash (out of sight) to re-stock the tray for round 2                        | A3 Memory Tray (Card 4)                                        |
| <input type="checkbox"/> | Whiteboard or big paper + marker                                                               | E2 tree diagram (Card 5) · tally counts                        |
| <input type="checkbox"/> | Muffin tin(s) and/or small bowls                                                               | A1 Big Sort (Card 1) · A4 walk sort                            |
| <input type="checkbox"/> | A basket or bag per child                                                                      | A4 Sorting Walk (Card 6)                                       |
| <input type="checkbox"/> | Kitchen timer or phone                                                                         | A3 Memory Tray (60 s look / 2 min recall)                      |
| <input type="checkbox"/> | Laundry basket of clean unsorted laundry (optional follow-through)                             | A4 / closing block                                             |
| <input type="checkbox"/> | Yarn or string (circle-making fallback)                                                        | A2 Floor Venn (Card 3)                                         |
| <input type="checkbox"/> | "Both-category" trap objects: a red wooden block, a red pencil, a wooden spoon                 | A2 Floor Venn (Card 3) — planted so the overlap earns its keep |
| <input type="checkbox"/> | 6–8 food props from the pantry (apple, banana, carrot, potato, cereal box, milk, a can, bread) | E2 tree diagram (Card 5)                                       |
| <input type="checkbox"/> | Index cards or card stock, cut blank                                                           | floor label cards (teacher letters them live)                  |
| <input type="checkbox"/> | Pencils + the printed binder sheets (worksheet, Number Log)                                    | A1, A3 recording                                               |

## TO BUY

| <input type="checkbox"/> | ITEM                                                                                    | QTY       | ~PRICE | WHY                                                                                 | ORDER AHEAD?            |
|--------------------------|-----------------------------------------------------------------------------------------|-----------|--------|-------------------------------------------------------------------------------------|-------------------------|
| <input type="checkbox"/> | Sorting/counting objects set (mixed buttons, bears, gems, shells)                       | 1 big set | \$20   | A1 Big Sort + E1 Guess My Rule — enough pieces that five kids sort at once          | Yes — needed on the day |
| <input type="checkbox"/> | Hula hoops (or a 50-ft soft rope to lay as circles)                                     | 2–3       | \$15   | A2 Floor Venn — two overlapping circles kids can stand in                           | Yes                     |
| <input type="checkbox"/> | Small sorting trays / bowls set (or a second muffin tin)                                | 1 set     | \$12   | A1 + A4 — one landing spot per category                                             | Yes                     |
| <input type="checkbox"/> | Large blank floor cards + a chunky marker                                               | 1 pack    | \$8    | Category labels the teacher letters live; one card marked BOTH for the Venn overlap | Yes                     |
| <input type="checkbox"/> | (optional) Montessori sorting bowls • felt Venn mat • a dedicated junk-drawer prop tray | —         | —      | Nice-to-haves; hoops + tins + any tray do the same jobs                             | No                      |

Total new spend: ~\$55.

## STRETCH PURCHASES (ONLY IF PURSUING THE RANCH INSTALLS — SEE TEACHER GUIDE STRETCH)

| <input type="checkbox"/> | ITEM                                              | ~PRICE          | FOR                                                                                       |
|--------------------------|---------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | Egg-grading scale + graded cartons                | ~\$30           | Weigh & sort your own or a local farm's real eggs S/M/L/Jumbo — a working category system |
| <input type="checkbox"/> | Specimen cabinet or printer's tray + riker mounts | ~\$60 + \$10 ea | Permanent natural-history museum the kids re-sort each season                             |
| <input type="checkbox"/> | Label maker + laminator                           | ~\$50           | Weatherproof kid-lettered drawer labels — the difference between a pile and a collection  |

Tick the box beside each item as it goes in the box. Anything flagged **order ahead** ships — buy it a week before the lesson.



# The Big Sort

KIDS HANDS-ON

RUN AT 9:45

30 MIN

## The point

A category is things that belong together — and the same pile sorts many right ways, depending on the attribute you notice.

## Materials

- The oration's dumped junk-drawer pile
- Sorting/counting objects set, poured in
- Muffin tins / small sorting bowls (one per child)
- Blank floor label cards + chunky marker
- Worksheet FRONT (sorting mat) + pencils

## Steps

- 1 Say only: **"put together what belongs together"** — then stay quiet and let them start.
- 2 As piles form, ask each child **WHY** — then letter a **label card** for each named category.
- 3 Walk the finished sort like a museum; **count each category aloud** and tally on the worksheet.
- 4 **Mix everything back into one pile** (let the gasp happen).
- 5 "Now sort it a **different** way." Offer attributes only if stuck: color? size? use? material?
- 6 Name the word: the **attribute** is the thing you notice — change it, and the groups change.
- 7 Each child records their favorite sort on the **worksheet mat** and finishes "my categories are ... because ...".

*Say: "Was the first way right? Was the second way right? BOTH were — the things never changed, only the thing we noticed. We pick the sorting that suits our purpose."*

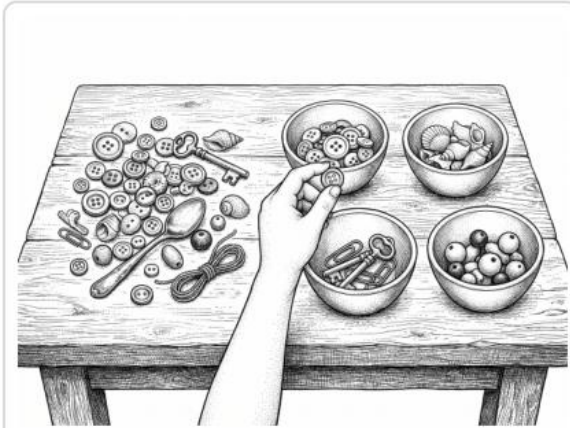


Fig. 1 — the same jumble, one bowl per category

## TEACHER PREP — THE NIGHT BEFORE

Load the junk-drawer tray out of the kids' sight (varied: pencils, clips, coins, buttons, string, spoon, toy bits). Stage tins, bowls, blank cards, marker.

## What to watch for

- Different kids inventing **different correct schemes**
- A "fits nowhere" pile forming — celebrate it, that IS a category
- Arguments about where one thing goes — that's the thinking, let it run

## EXPECTED RESULT

Every sort "works." The pile re-sorts completely when the attribute changes — **the rule lives in the sorter, not in the stuff.**

# Guess My Rule

TEACHER DEMO

RUN AT 10:15

15 MIN

## The point

The sorting rule lives in the sorter's head — and a careful watcher can figure it out from the evidence alone. That is what scientists do.

## Materials

- Sorting/counting objects set + a few household items
- Two blank label cards, face down
- One card with a big ? on it (the talking signal)

## Steps

- 1 **Silently** place objects one at a time into two groups. No talking — suspense is the engine.
- 2 Kids **watch and whisper** guesses to a neighbor; nobody calls out yet.
- 3 Hold up the ? **card** — now take guesses, one each.
- 4 **Test each guess against the evidence:** “if my rule were big/small, where would this button have gone?”
- 5 Confirm the real rule; flip the label cards and **letter them**.
- 6 Round 2 with a **sneakier rule** — **purpose, not looks**: things for drawing vs. things for holding stuff together.
- 7 Round 3: **a kid becomes the sorter** (they whisper their rule to you first); you guess — and get one charmingly wrong.

*Say: “You couldn’t SEE my rule — it was in my head. But every object I placed was a CLUE. Watching carefully and guessing the hidden rule is exactly what scientists do all day.”*

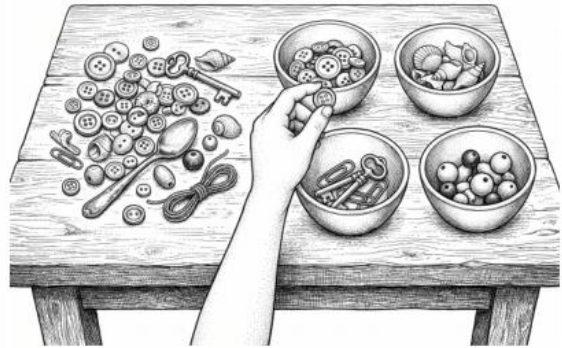


Fig. 1 — sort silently while the children infer the hidden rule from each placement

## TEACHER PREP

Pick your three rules in advance: (1) easy — color or shape; (2) sneaky — purpose; (3) leave open for the kid sorter. Make the ? card.

## What to watch for

- Guesses shifting as evidence accumulates — deduction happening out loud
- Appearance-guesses failing on the purpose rule — productively

## EXPECTED RESULT

Kids deduce a rule they were never told — and discover the same objects obey **different hidden rules** in different rounds.

# Hula-Hoop Floor Venn

KIDS HANDS-ON

RUN AT 10:40

25 MIN

## The point

One thing can belong to two categories at once — it stands in the overlap. This is a real Venn diagram, big enough to stand in.

## Materials

- 2 hula hoops (or rope/yarn laid as circles)
- ~15 objects, incl. planted “both” traps: red wooden block, red pencil, wooden spoon
- 3 label cards + chunky marker (one card lettered BOTH)

## Steps

- 1 Lay the hoops **apart**. Label them: *things made of wood* / *things that are red*.
- 2 Kids place objects one at a time, **saying why** each belongs.
- 3 Produce the trap: the **red wooden block**. Let the argument happen — “it’s wood! it’s red! where can it live?”
- 4 When someone despairs, **slide the hoops together until they overlap**. Stand the block in the middle.
- 5 Letter the **BOTH** card and lay it in the overlap; kids hunt for more both-things.
- 6 **Swap one label** (e.g. red → kitchen things) and watch the middle empty or fill.
- 7 Name it: a **Venn diagram** — two circles that share a middle.

*Say: “A thing can belong to TWO categories at the same time — it just stands in the middle. Grown-up scientists call this a VENN DIAGRAM, and you made one the size of the floor.”*

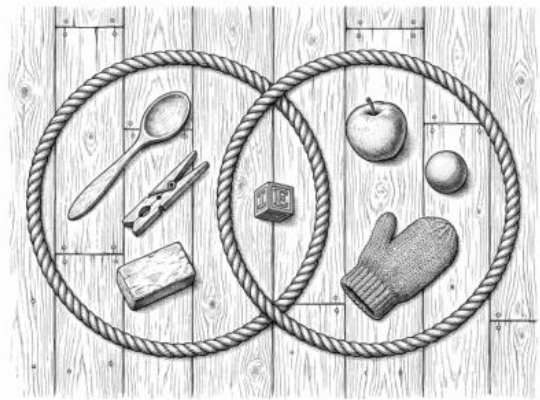


Fig. 1 — wooden things left, red things right — the block belongs to BOTH

## TEACHER PREP

Stage hoops (or pre-cut rope circles) and **plant 3–4 genuine both-objects** in the bin — a dead overlap kills the lesson. Tape the crossing points down.

## What to watch for

- The argument over the trap object — the overlap is **invented under pressure**
- Kids hunting for more both-things unprompted

## EXPECTED RESULT

The overlap only exists where the circles cross; a thing in the middle belongs to **both categories at once** — and changing a label re-sorts the whole floor.

# The Memory Tray Game

KIDS HANDS-ON

RUN AT 11:05

25 MIN

## The point

Organization powers memory — Nebel’s own proof (book p.46). Sorting the tray *in your head* makes the recall number jump, and the kids measure it themselves.

## Materials

- The covered 20-item tray (a SURPRISE — prepped last night)
- Cloth cover • kitchen timer
- Re-stock stash of 10–15 fresh swap-in items (round 2)
- Number Log sheet + pencils • whiteboard for tallies

## Steps

- 1 **Round 1:** unveil the tray for **60 seconds** of silent looking. Cover it.
- 2 2 minutes: kids call remembered items **in turns**; you tally each on the board.
- 3 Count the tally; kids **shade the Round 1 bar** on the Number Log.
- 4 Name the problem: “your mind got stuck on two or three things, didn’t it?”
- 5 **Teach the secret**, tray visible: sort it into categories together, then **assign each category to a finger**.
- 6 **Round 2** on the re-stocked tray: 60 seconds of looking **category by category**. Cover it.
- 7 Recall by **walking the fingers** (“kitchen things... what was there?”); tally, count, shade the Round 2 bar.
- 8 Compare bars: **which is taller — and what changed?**

Say: “Your memory didn’t grow in ten minutes. You **ORGANIZED** what you saw — *four categories on four fingers* — and the categories carried the things for you. Organizing is a tool for your **MIND**.”

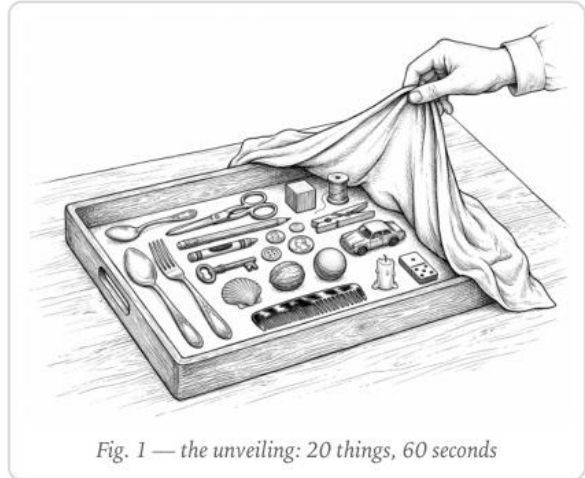


Fig. 1 — the unveiling: 20 things, 60 seconds

## TEACHER PREP — THE NIGHT BEFORE

Load 20 varied items from several natural categories (utensils, desk things, toys, coins). **Cover it and keep it secret** — the game only works as a surprise. Stage the round-2 swap stash.

## What to watch for

- Round 1 recall stalling after 6–8 items
- Round 2: whole categories arriving **in a burst** as a finger is touched

## EXPECTED RESULT

Round 2 beats round 1 for nearly everyone — a visibly **taller bar they shaded themselves**. If one child dips, the **GROUP** total still wins.



# Categories Within Categories

TEACHER DEMO

RUN AT 11:30

20 MIN

## The point

Groups hold groups: categories subdivide into subcategories and combine into bigger ones. A tree diagram grows live on the board while the kids direct it.

## Materials

- Whiteboard (or big paper) + marker
- 6–8 food props from the pantry: apple, banana, carrot, potato, cereal box, milk, a can, bread
- Worksheet BACK (food-tree fill-in, done at 11:50)

## Steps

- 1 Write **ALL FOOD** in a bubble at the top: “every one of these lives here — but the store doesn’t dump them in one pile, does it?”
- 2 Grow the first branches **as the kids direct**: fresh produce • cereals • milk things • cans. Draw each line slowly — the drawing IS the lesson.
- 3 Point at fresh produce: “one big happy pile? No — it **splits again**.” Grow **FRUITS** and **VEGETABLES** beneath it.
- 4 Name it: a **subcategory** — a group inside a group. Draw a tiny icon in each bubble for the pre-readers.
- 5 **The prediction game**: hold up each prop — “where will the apple land?” The prop only moves when the group points the same path.
- 6 Run it **upward** too: fruits + vegetables **COMBINE** into produce; produce + cereal + milk combine into... groceries.
- 7 Stop at two levels down — more becomes a thicket.

Say: “A category can live **INSIDE** a bigger category — fruits live inside produce, produce lives inside food. A group inside a group is called a subcategory.”



Fig. 1 — smaller food groups can live inside one larger food category

## TEACHER PREP

Stage the food props (or picture cards) in a bag so each reveal is a fresh puzzle. Wipe the board.

## What to watch for

- Kids pointing a prop’s whole path, branch by branch — every food has an address
- The word **subcategory** coming back unprompted at 11:50 on the worksheet

## EXPECTED RESULT

Every prop lands by walking the branches; the tree runs both directions — **splitting down, combining up**.

# Real-World Sorting Walk

KIDS HANDS-ON

RUN AT 12:40

30 MIN

## The point

Anything can be sorted — and the house is already full of sorting somebody chose on purpose. Once you see it, you can't stop seeing it.

## Materials

- A basket or bag per child
- The yard/garden + the kitchen
- Muffin tins / sorting bowls • blank label cards + marker
- Optional: a laundry basket of clean unsorted laundry

## Steps

- 1 **Collect:** 10 minutes outdoors — each child gathers their **best 4–5 finds** (leaves, pebbles, seed pods, sticks, feathers).
- 2 Swing through the kitchen for a few utensils and pantry items; **pool everything:** 15–20 items.
- 3 **The group argues out a scheme** — don't hand them one (nature/kitchen? big/small? by color?).
- 4 Sort, letter label cards, count each category.
- 5 Then, of course: **“now a different way.”** One re-sort.
- 6 **Find the sorts adults hid:** open the silverware drawer — “who sorted this? by what attribute?” Then the pantry, the bookshelf, the toolbox.
- 7 Optional follow-through: **sort the laundry** by owner or by kind — a category system the family runs every week.

*Say: “Every drawer in this house is somebody’s category. Today you started seeing them — and you will never stop.”*

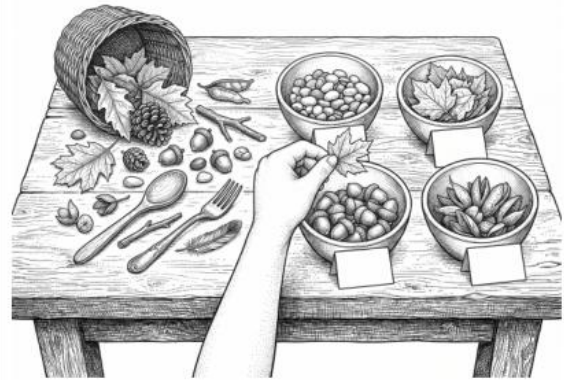


Fig. 1 — collect, pool, and sort the finds — one bowl per category

## TEACHER PREP

Baskets by the door before lunch. Rainy-day fallback: raid the recycling bin and the sock drawer — the sort works the same.

## What to watch for

- Kids proposing schemes and defending them to each other
- “Living-once vs. never-living” emerging — a B-2 preview, celebrate it

## EXPECTED RESULT

The pooled finds sort, then re-sort a second way — and the kids catch the house's **hidden category systems** (drawer, pantry, shelf) red-handed.





## THE BIG IDEA

A **category** is two or more things that belong together because they are alike in some way — and **sorting** things into categories is the very first tool of every scientist.

A jumbled pile hides everything inside it. But the grocery store keeps apples with apples and milk with milk, the library shelves each book with its family, and your shirt drawer holds only shirts — so anything can be found in a moment. The whole grown-up world is already sorted; today you learn to see it.

## MANY RIGHT WAYS

The same pile can be sorted by **color**, by **size**, by **what it's made of**, or by **what it's used for**. The things never change — only the **attribute** you notice. Every way that suits your purpose is right.

And groups hold groups: fruits live inside *fresh produce*, and produce lives inside *food*. A group inside a group is a **subcategory**.

## WATCH FOR THIS IN EVERYDAY LIFE

- At the grocery store, look up and down the aisle — “how did the store sort all of this?”
- Open the silverware drawer — “what attribute is this drawer sorted by?”
- Find one thing at home that could be sorted a **second** way — “what else could these be sorted by?”
- At bedtime, remember the day in categories — fun things, food things, learning things — “does the finger trick work on a whole day?”

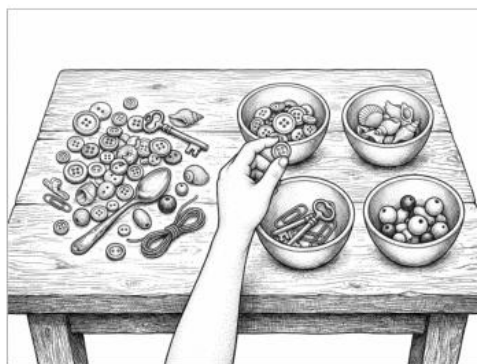


Fig. 1 — sorting: the same jumble, one bowl per category — buttons with buttons, shells with shells.

## WORDS TO KNOW

sort

group

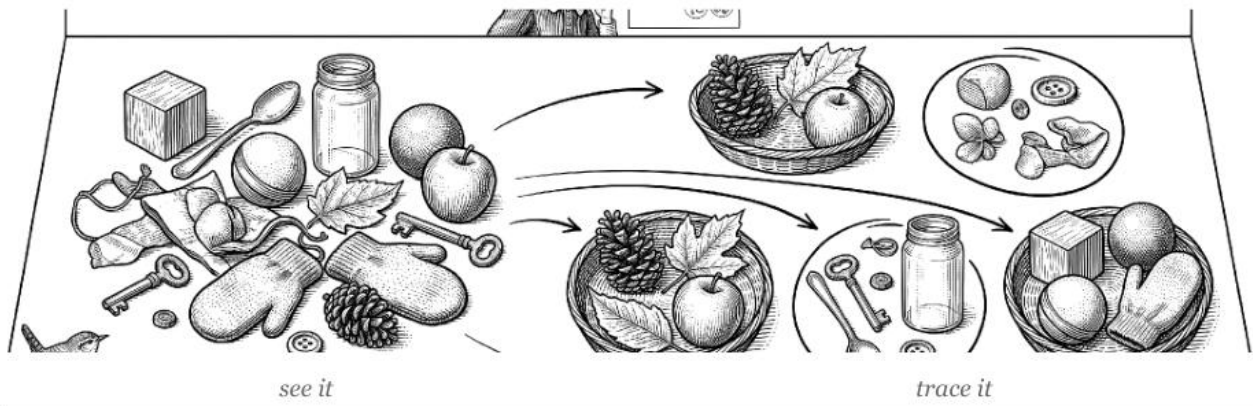
category

organize

attribute

subcategory

*sort* — putting things into groups · *group* — things put together in one place · *category* — things that belong together · *organize* — putting everything in its place · *attribute* — the thing you notice: color, size, or use · *subcategory* — a group inside a group



sort

sort

group

group

category

category

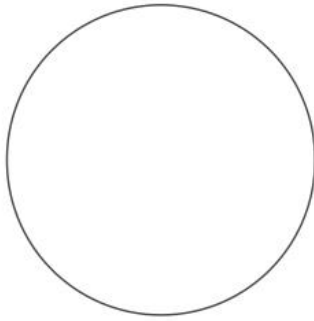
organize

organize



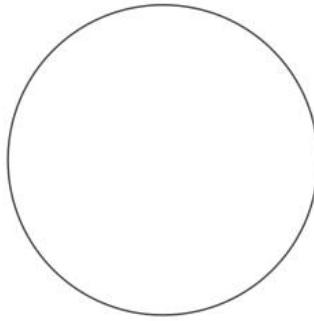
## 1 • MY CATEGORIES

Grab a handful of things from a junk drawer or from around the house, put them on the floor, and decide on your categories. Write each category's name on its line, then draw the things that went in that circle.



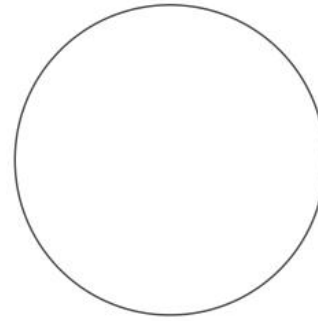
Category 1

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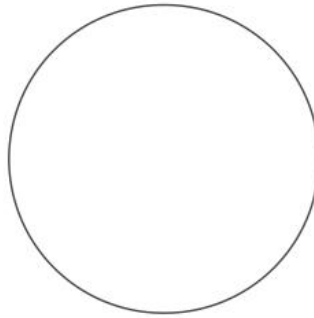
Category 2

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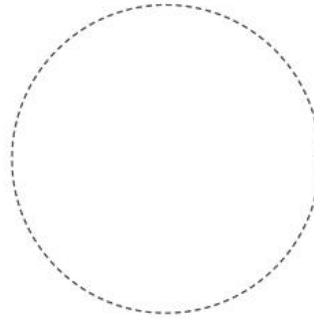
Category 3

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Category 4

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things that fit nowhere yet  
(scientists keep this pile too!)

## 2 • COUNT EACH CATEGORY

Use the same groups as your circles above. Make one tally mark for every thing in that group, then write the total.

| CATEGORY   | TALLY MARKS | TOTAL |
|------------|-------------|-------|
| Category 1 |             |       |
| Category 2 |             |       |
| Category 3 |             |       |
| Category 4 |             |       |

# Both at Once & Groups Inside Groups



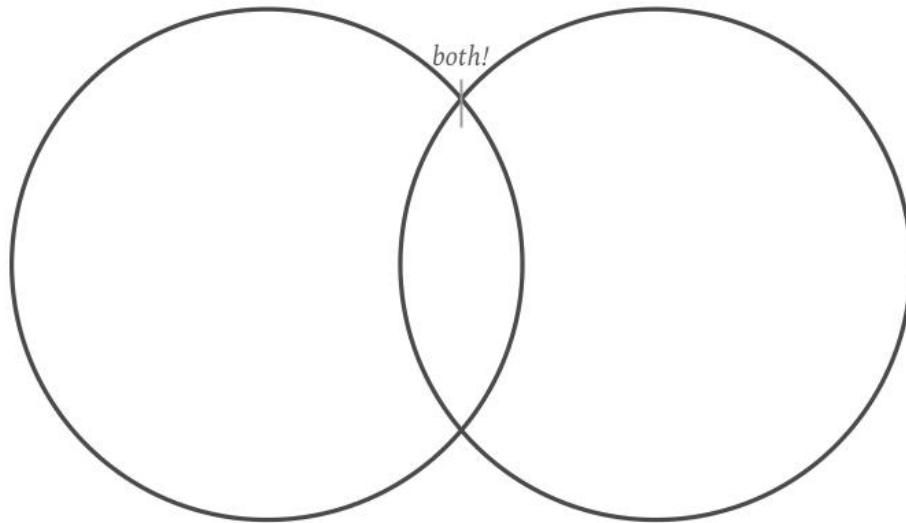
A Venn diagram and a tree diagram — real scientists' tools

## 1 • THE TWO-CIRCLE SORT — A VENN DIAGRAM

Just like the floor hoops: write (or have a grown-up letter) each circle's category on its line, then draw each thing where it belongs. A thing that fits **both** circles stands in the middle.

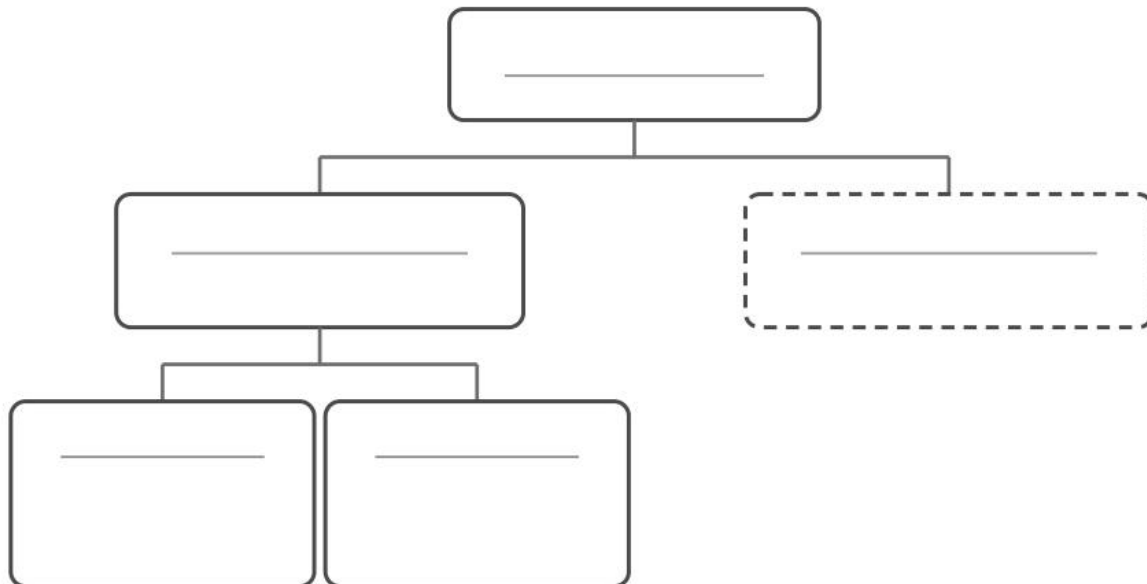
circle 1 is things that are...

circle 2 is things that are...



## 2 • GROUPS INSIDE GROUPS — THE FOOD TREE

Write each group's name on its line, then draw foods in the open space below it. A grown-up can help with the writing.



## 3 • THINK LIKE A SCIENTIST

Point to a **subcategory** on your tree. Tell someone: what bigger group does it live inside?



### 1 • SHADE A STRIPE FOR EVERY THING YOU REMEMBERED

Round 1: just looking. Round 2: after learning the category trick — one category on each finger. Shade the bar up from the bottom, *one stripe per remembered thing*.

Round 1  
just looking

Round 2  
with the category  
trick

### 2 • WRITE THE NUMBERS

Round 1: I remembered  things

Round 2: I remembered  things

We sorted the tray into  categories — one on each finger

### 3 • THINK LIKE A SCIENTIST

Which bar is taller? Your brain didn't grow between the rounds — so **what changed?** Tell someone the secret.

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# Put It With Its Friends

*the lesson's song — sing it, then say what it means*



SONG

**VERSE 1**

Here's a drawer of this-and-that, a jumble on the floor,  
Buttons, keys, and pencil stubs, and half a dozen more.  
Can't find one paper clip in all that mess — oh dear!  
But watch what happens when the categories appear...

**CHORUS**

Sort it out, sort it out — put it with its friends!  
Things that belong together get put together in the end.  
A group of things that go alike — "category" is its name,  
And when you organize your world, it's never quite the same!

**VERSE 2**

The grocery store keeps apples where the other apples stay,  
The library gives every book a shelf to spend the day.  
Your shirts live in the shirt drawer, your blocks live in the bin —  
The whole wide world is sorted; look close and you'll fit in!

**CHORUS****VERSE 3**

Now sort it all by color! Now sort it all by size!  
The stuff is still the same old stuff — surprise, surprise, surprise!  
There's no one way that's only right, so choose the way you need:  
The ATTRIBUTE's the thing you notice — yes indeed!

**CHORUS**

Bridge \*(slower, wondering)\*  
And inside every group... another group can hide

—  
The fruits live in the produce, with the veggies side by side.

A group inside a group? A SUBCATEGORY!  
That's how a scientist sorts the world — from acorn up to tree.

Final Chorus \*(big, with claps)\*

Sort it out, sort it out — put it with its friends!  
Things that belong together get put together in the end.

A category's things that go alike — now you know its name,

And now you've organized your world... you'll never see it the same!

**How to use it.** Play the recording once while everyone just listens. Play it again and join in on the chorus only — that is the part carrying the lesson. By the third time most children have the chorus. Then close the binder and ask what the words actually mean; a child who can sing it and explain it has the idea for good.