Make a paper shape path

FAMILY PROJECT 02 · OFTEN AGES 5–7 · READINESS FIRST

Count it. Arrange it. Measure it.

Make a tabletop path from large paper cards. Practice matching one count to one card, saying how many altogether, repeating a pattern and measuring with equal card-widths.

PILOT — not physically tested with families. Preparation, timing, usability and learning outcomes are unverified. This is a free educational activity, not treatment or a tested toy.

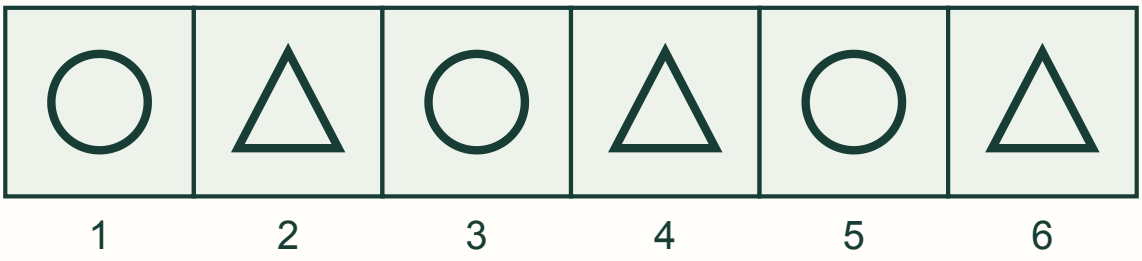
Parent preparation and materials

- Six equal, large square paper cards; draw three with circles and three with triangles. A convenient suggested size is about 10 cm across; exact size is not the learning goal.
- Two extra equal square cards, pencil or washable marker, paper for recording, and scissors for adult preparation only.
- Reuse plain paper. No purchase, glue, small counters, food, magnets, batteries or power tools needed.

Adult role: prepare eight equal square cards using one master card as a tracing pattern; draw symbols on six and leave two spare. Remove scissors before the activity. Keep the activity on a clear table; cards are not stepping stones. Supervise throughout, keep paper out of mouths, and stop if materials are being mouthed or the learner is distressed.

Start small: use just 1–3 cards if six feels like too much. No numeral recognition or independent reading is required. Stop after one idea if needed; there is no completion deadline.

Build together, one idea at a time



6 equal card-widths · schematic, not a cutting template

1. **Count:** start with three cards. Model sliding one card for each number word: “one, two, three; three cards altogether.” Ask the learner to try. Add cards up to six only when comfortable.
2. **Rearrange:** spread the same cards out. Ask “Did we add any or take any away?” Count again to check. Changing the spaces does not change how many cards you have.
3. **Make a repeating path:** place circle, triangle, circle, triangle. Say the repeating part aloud: “circle–triangle.” Ask what comes next and why. Complete six cards. Symbols, not color, carry the pattern.
4. **Measure:** line up all six equal square cards in one straight row with edges touching, no gaps or overlaps. Count card-widths from one end to the other. Ask “How long is our path in card-widths?” Say the unit with the number.
5. **Try a change:** add two equal spare cards at the end. Draw the next symbols together. Ask how the number and length changed.

> **Point → sketch → number:** point to the six cards, draw six boxes, then connect the group to the written numeral 6. Do not require the child to copy the numeral to show understanding.

Shape talk: compare the drawn circle’s curved edge with the triangle’s three straight sides and three corners. The square card has four equal sides and four corners. Turn the card; turning does not change the shape.

My shape-path sheet

A parent can read and record. Point, move cards, draw, or explain aloud. Use real cards alongside this sheet; these prompts are not a test.

1. My collection: draw or place your cards, then tell how many altogether.

We counted _____ cards. After spreading them out, we counted _____ cards.

2. Complete this pattern: circle, triangle, circle, triangle, _____, _____.

3. My straight path: make the equal cards touch, with no gaps or overlaps.

The path is _____ card-widths long.

4. Our change: begin with six cards and add two more. Show how many now.

5. Tell or show: why do we close the gaps before measuring?

Use fewer cards or skip a prompt as needed. No child name, account, upload or score is needed. Keep this page at home.

Parent answers and adaptations

1. **Collection:** answers depend on how many cards you chose. For six cards, the total remains six when spread out if none were added or removed. If counting breaks down, return to three and move each card as it is counted.
2. **Pattern:** circle, triangle. The repeating unit is circle–triangle. For eight cards, the seventh is a circle and the eighth a triangle.
3. **Length:** six equal square cards in one touching row measure six card-widths; eight measure eight card-widths. This is not automatically six or eight centimeters. Card size determines the length in centimeters.
4. **Add two:** 6 + 2 = 8. Model moving in one extra card at a time, or count the whole collection again. Both are ways to check.
5. **Gaps:** gaps add uncounted space; overlaps count some space twice. Equal units placed end to end make the comparison meaningful.

Match support to the task

Access: use bold symbols, a quiet surface, spoken directions, pointing and parent recording. These remove participation barriers; they are not evidence that a number skill has been learned.

Instruction: model one-to-one counting with three cards, name the total, and invite another try. If the goal is quantity, postpone patterning. If patterning is comfortable, ask the learner to invent a different repeating unit.

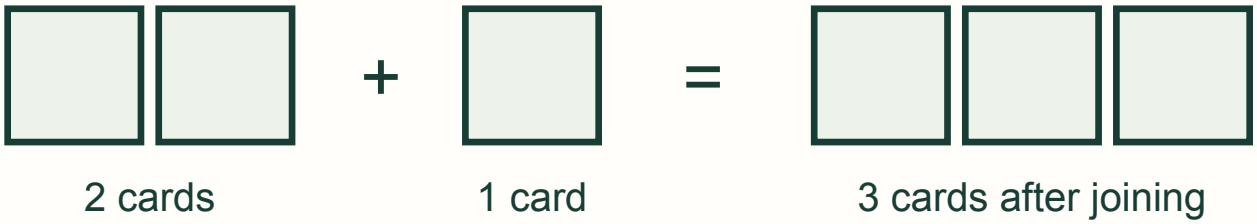
Observe, do not label: record what was modeled, prompted, independent or not tried. A successful activity is not a diagnosis, mastery certificate or proof of lasting improvement. Use the observation sheet.

Selected-source basis: Frye et al. (2013), Teaching Math to Young Children, recommendations 1–3. The guide addresses ages 3–6; use with age 7 is an editorial adaptation, not direct evidence for this pack. Number/operations recommendation: moderate evidence; pattern/measurement and progress-monitoring recommendations: minimal evidence. Original activity and diagrams by Shop Class Math. Read the evidence and limits.

Optional follow-up: join and take away

VISIBLE SMALL GROUPS · READINESS BEFORE AGE

Try this when the learner can count a small visible group and say how many altogether. Start with three cards, not all eight. Reuse the large cards from page 1; no extra cutting or small objects. Keep the adult supervision and tabletop safety rules.



1. **Model joining:** count two cards in one group and one in another. Slide them together. Touch each once: “One, two, three. Three altogether.” Sketch two boxes and one box; the adult writes **2 + 1 = 3**. Read: “Two plus one equals three.” The right side shows the total, not extra cards.
2. **Invite a try:** separate the same three into one card and two cards. Ask “How many altogether when we join these?” Allow counting all three; do not require counting on, memorization or numeral writing.
3. **Model taking away:** begin again with three together. Move one into a clearly separate “put aside” space. Ask “How many remain in our starting group?” Count the two remaining. Write **3 − 1 = 2**. All three still exist; only two remain in that group.
4. **Try another:** reset three cards, then move two aside. Ask how many remain. Keep every card visible. Skip this step if the first example needs more practice.

> **If the learner counts the put-aside cards too:** point out the starting group and the separate space; model which group the question asks about. Record that hint, then invite another try. A wrong answer is information for teaching, not a diagnosis.

Small-group sheet, answers and next step

Parent reads and records; learner moves cards, points, draws or speaks. These are practice prompts, not a timed test. Keep actual cards available.

Show with cards	Tell or draw what happened
Join 1 card and 2 cards.	Altogether: _____ cards.
Start with 3. Put 2 aside.	Remaining in the starting group: _____.
Later, if ready: join 2 and 2.	Altogether: _____ cards.
Start with 4. Put 1 aside.	Remaining in the starting group: _____.

Worked answers

1 + 2 = 3: count one group of three after joining. **3 − 2 = 1:** one remains in the starting group; two are aside. **2 + 2 = 4:** count all four after joining. **4 − 1 = 3:** three remain; one is aside. Reset the starting collection before each question. Accept a correct demonstration without written symbols.

A later example, not a mastery claim

On another occasion, try the two four-card questions above without first showing their answers. Do not require a fixed delay or advance just because of age. Record what the learner did and any hints; if needed, model again with three. Success on one example does not establish lasting learning or transfer.

Access support: bold card outlines, one spoken direction at a time, pointing, and parent recording. **Math instruction:** showing which cards to count, modeling the operation or giving the total. Record these separately on the observation sheet. Do not hide the cards to make this a memory challenge.

Selected-source teaching note: Frye, Baroody, Burchinal, Carver, Jordan & McDowell (November 2013), *Teaching Math to Young Children*, NCEE 2014-4005, recommendation 1, pp. 22–23, recommends manipulating small visible groups to explore combining and removing objects. Its **moderate** evidence rating applies to the broader number/operations recommendation, not this activity. The guide covers ages 3–6; supporting studies were in preschool, pre-K and kindergarten. Multicomponent studies do not isolate this prompt sequence or prove one developmental progression. Age 7 use is an editorial extension. This original selected-source adaptation is not a systematic review, home-project trial, dyscalculia treatment or evidence for teenagers. The pack remains an untested PILOT.