

Mathematics through play



CD-11 | Children compare, sort, group, organize, and measure objects and create patterns in their everyday environment.

Younger preschool: 36-48 months Older preschool: 48-60+ months

A complete developmental-goal resource: exact indicators, seven short-session teaching sections, original printable play tools, observation rubrics, evidence records and family extension.

Use across days in brief, flexible play opportunities. No independent reading or written test is required. Adult support and accessible ways to communicate are built in.

North Carolina Foundations for Early Learning and Development (2013). Preschool developmental expectations, not K-12 Standard Course of Study codes or fixed mastery deadlines.

Free sample | Contents

CD-11 | PreK mathematics

This sample contains 15 complete selected pages from the 24-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-11, 16-19

Representative activities

P01: sample PDF page(s) 10; original page(s) 9

P02: sample PDF page(s) 11; original page(s) 10

P03: sample PDF page(s) 12; original page(s) 11

Supporting printable materials: original page(s) 16-19

Using this sample

Read the preparation and access guidance before using a selected activity.
Keep teacher keys and private preparation pages separate from student copies.
Use the original resource contents to see the scope of the complete packet.

Complete paid download

The complete resource includes the full PDF task bank and teaching materials.

TEACHER GUIDE

Contents and teaching route

03 Exact goal and age-specific indicators

07 Preparation, access and safety

08 Coverage and selected-core route

09 Seven teaching sections

16 Four reusable printable play tools

20 Observation rubric and examples

22 Individual evidence record

23 Family extension and next steps

24 Sources and edition notes

Print the four play-tool pages and evidence record as needed. Keep teacher models and sample responses out of the child-facing materials. Adult prepares any pieces; children may use intact sheets with large classroom materials.

Suggested rhythm: days 1-2 invite, model and explore; days 3-4 centers and individual observation; later days targeted support and reflection. Each section is a 5-10 minute invitation, shorter if needed. Never combine this bank into prolonged seatwork.

YOUNGER PRESCHOOL | 36-48 MONTHS

Exact developmental indicators

CD-11: Children compare, sort, group, organize, and measure objects and create patterns in their everyday environment.

CD-11f

Use descriptive language for size, length, or weight (short, tall, long, heavy, big).

CD-11g

Use simple measurement tools with guidance and support to measure objects (a ruler, measuring cup, scale).

CD-11h

Compare the size or weight of two objects and identify which one is longer/taller/heavier than the other (“That rock is heavier than this one; I can’t lift it.” “A snake is longer than a worm.”).

CD-11i

Identify familiar objects as the same or different.

Use these indicators to plan responsive experiences and notice development over time. They are not a test, official score cutoff or deadline for every child.

YOUNGER PRESCHOOL | 36-48 MONTHS

Exact developmental indicators

CD-11: Children compare, sort, group, organize, and measure objects and create patterns in their everyday environment.

CD-11j

Sort familiar objects into categories with increasing accuracy (tools for woodworking and utensils for cooking; rectangle blocks on one shelf and square blocks on another shelf).

CD-11k

Recognize simple repeating patterns and attempt to create them during play (repeat a movement pattern during a song, make a line of blocks in alternating colors).

Use these indicators to plan responsive experiences and notice development over time. They are not a test, official score cutoff or deadline for every child.

OLDER PRESCHOOL | 48-60+ MONTHS

Exact developmental indicators

CD-11: Children compare, sort, group, organize, and measure objects and create patterns in their everyday environment.

CD-11l

Use descriptive language for size, length, or weight (short, tall, long, heavy, big).

CD-11m

Use simple measurement tools with guidance and support to measure objects (a ruler, measuring cup, scale).

CD-11n

Directly compare more than two objects by size, length, or weight (“That rock is heavier than these others; I can’t lift it.” Look at three strings that are different lengths and select the longest string).

CD-11o

Put a few objects in order by length (arrange a group of 3 blocks in order from the shortest to the longest).

Use these indicators to plan responsive experiences and notice development over time. They are not a test, official score cutoff or deadline for every child.

OLDER PRESCHOOL | 48-60+ MONTHS

Exact developmental indicators

CD-11: Children compare, sort, group, organize, and measure objects and create patterns in their everyday environment.

CD-11p

Sort a group of objects (0-10) using one attribute (color, size, shape, quantity) with increasing accuracy (sort blocks by shape and place like-shaped blocks on the shelf; sort beads by color).

CD-11q

Duplicate and extend simple patterns using concrete objects (look at a pattern of beads and tell what bead comes next in the pattern).

Use these indicators to plan responsive experiences and notice development over time. They are not a test, official score cutoff or deadline for every child.

TEACHER GUIDE

Prepare for purposeful play

Before the invitation

Observe how each child already communicates, explores materials and joins play. No prerequisite screening is required. Choose familiar objects and a meaningful problem. Keep number ranges and age-band expectations on the activity card.

Materials and safety

Use only large, age-appropriate, intact blocks, toys and paper cards. Avoid small counters, beads, coins and other choking hazards. Adult supervises and prepares pieces; keep scissors away unless separately supervised. Use lightweight stable structures and unobstructed accessible floor/table space. Never ask children to climb constructions.

Access and communication

Offer spoken language, home language, sign, gesture, AAC, pointing, eye-gaze, drawing or construction as valid responses when they show the target idea. Provide tactile boundaries and high-contrast materials as appropriate. Record adult positioning or motor assistance separately from mathematical decisions.

Teacher stance

Say: I wonder what you notice. Show me your idea. How could we check? Wait for a response before adding a prompt. Describe effort and strategy without ranking children. Follow the child interest and stop or switch when engagement ends.

Observation practice

Write what the child actually said or did, the materials and quantities, and the support offered. Keep observations private. Ask before taking or sharing photographs when permission is not already established. Never fill an evidence record with the hypothetical examples in this packet.

TEACHER GUIDE

Coverage and selected-core route

P01 | Invite and explore | page 9

Object detectives Indicators: CD-11f, CD-11i, CD-11l

P02 | Adult model | page 10

Measure with a helper Indicators: CD-11g, CD-11m

P03 | Shared exploration | page 11

Longer, taller, heavier Indicators: CD-11h, CD-11n, CD-11o

P04 | Partner and center play | page 12

Organize the workshop Indicators: CD-11j, CD-11p

P05 | Individual observation | page 13

Pattern play studio Indicators: CD-11k, CD-11q

P06 | Targeted support | page 14

Check and repair center Indicators: CD-11g, CD-11h, CD-11j, CD-11k, CD-11m, CD-11n, CD-11o, CD-11p, CD-11q

P07 | Reflect and revisit | page 15

Museum of our discoveries Indicators: CD-11f, CD-11g, CD-11h, CD-11i, CD-11j, CD-11k, CD-11l, CD-11m, CD-11n, CD-11o, CD-11p, CD-11q

Each indicator is explicitly taught or revisited above. Use the exact age-band pages to distinguish younger and older expectations; mixed-age play does not make older indicators requirements for younger children. Collect evidence over multiple contexts, with fresh individual opportunities.

P01 | INVITE AND EXPLORE | 5-10 FLEXIBLE MINUTES

Object detectives

Targets: CD-11f, CD-11i, CD-11l

Set up

Two familiar large blocks, two large spoons and a soft toy.

Invite | first minute

Say: “What do you notice? What is the same or different?”

Adult model | about 1-2 minutes

Say and do: “These spoons are the same kind of tool. This block is different. This tall block is taller than this short block; I use words to describe what I notice.”

Explore together, then play | about 2-4 minutes

Children select familiar objects and describe size, length or weight. Younger children explicitly identify same/different. Older children also use descriptive language, without being expected to know formal units.

Notice one child | about 1-2 minutes

Ask one child to describe a chosen object and compare two familiar objects. Record exact language or selected AAC words and the property referenced.

Respond and support

Offer two contrasting objects and paired words, tall/short or long/short. Accept a home-language description; do not score English vocabulary as mathematical understanding.

Reflect or extend | optional final minute

Can two objects be the same color but different lengths? Invite multiple true descriptions.

P02 | ADULT MODEL | 5-10 FLEXIBLE MINUTES

Measure with a helper

Targets: CD-11g, CD-11m

Set up

Child-safe ruler, balance scale, measuring cup, large blocks, shallow water tray and towel.

Invite | first minute

Say: “Which tool could help us learn about this object?”

Adult model | about 1-2 minutes

Say and do: “I place the ruler start at one end of a block, not in the middle. I look at where the other end reaches. On the balance, the lower side holds the heavier load. A cup helps compare how much water fits.”

Explore together, then play | about 2-4 minutes

Adult supervises one tool at a time. Children help measure a block, compare safe light objects on the balance, or fill a cup over a shallow tray. Read markings together only as appropriate; exact conventional-unit reading is not a prerequisite.

Notice one child | about 1-2 minutes

Record tool choice, placement and use, plus guidance given. Ask What did the tool help you notice? An adult-read number alone is not child measurement evidence.

Respond and support

If objects start at different ruler points, line up the ends together. For balance misconceptions, let the child test two clearly different safe weights. Clean spills promptly; no drinking or heavy lifting.

Reflect or extend | optional final minute

Try a different appropriate tool and discuss what each can tell us.

P03 | SHARED EXPLORATION | 5-10 FLEXIBLE MINUTES

Longer, taller, heavier

Targets: CD-11h, CD-11n, CD-11o

Set up

Three large rigid cardboard strips of different lengths; three safe lightweight blocks; balance.

Invite | first minute

Say: “Which is longer? How can we check?”

Adult model | about 1-2 minutes

Say and do: “Align the ends of two strips; the one reaching farther is longer. With three strips I compare each and order short, middle, long. Weight needs lifting safely or a balance, not just looking.”

Explore together, then play | about 2-4 minutes

Younger: directly compare two objects for length, height or safe weight. Older: compare more than two and order three by length. Use equal-width strips to make length the changing attribute.

Notice one child | about 1-2 minutes

Younger: record which pair/property was compared. Older: record comparison of three and the ordered arrangement; ask the child to show how they checked endpoints.

Respond and support

If the child orders by position on the table, align starting ends. Do not expect a taller object always to be heavier; use a balance to resolve the claim.

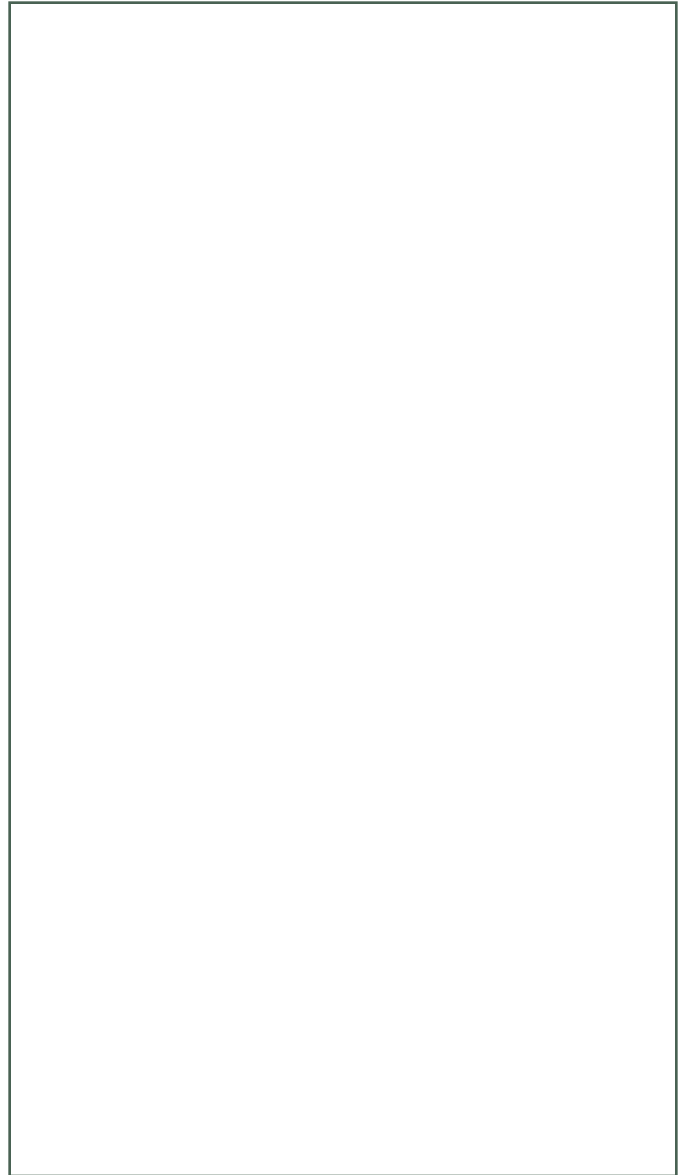
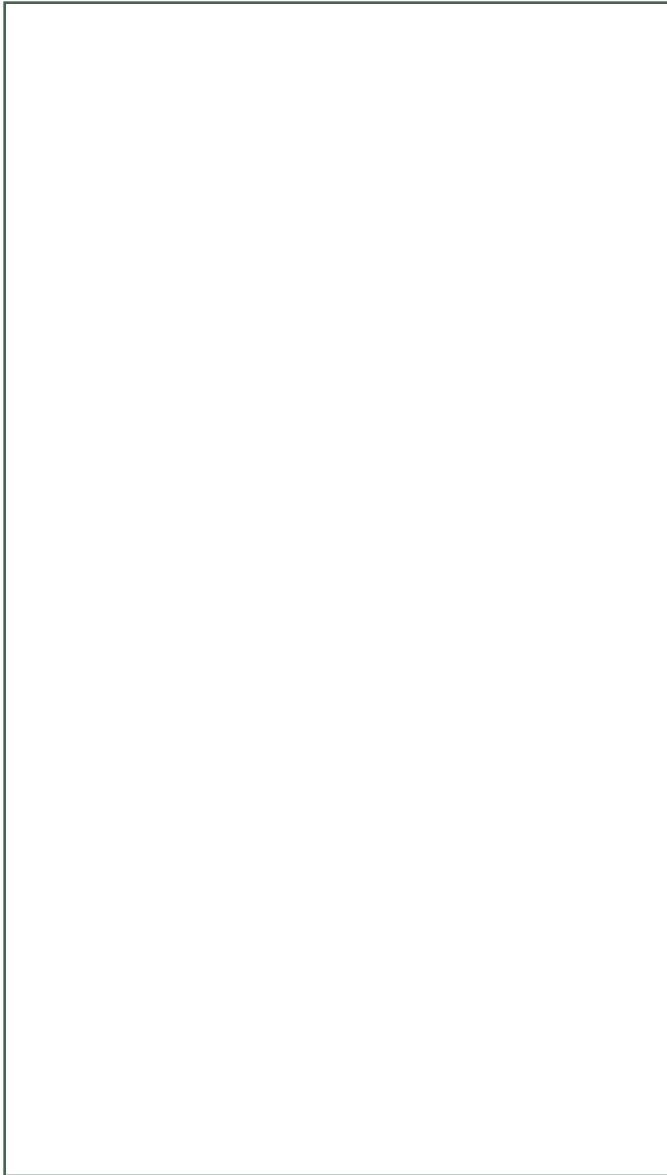
Reflect or extend | optional final minute

Turn the strips around or move them apart and ask whether their lengths changed.

PLAY TOOL 1 | CHILD CHOOSES ONE RULE

Our sorting places

What belongs together?

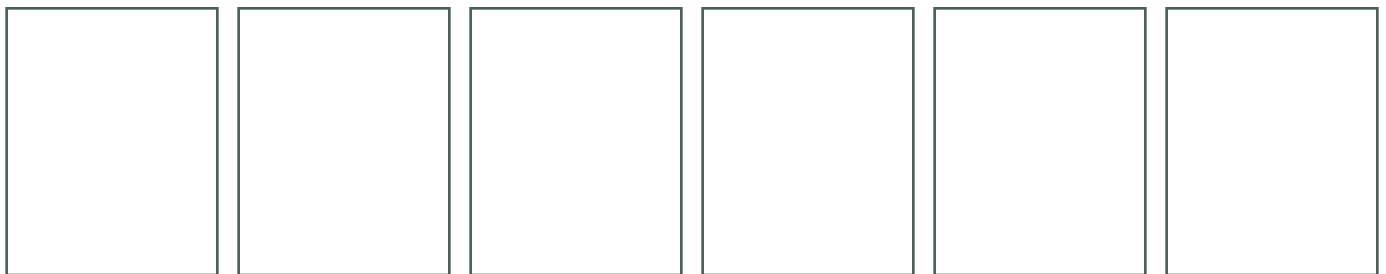
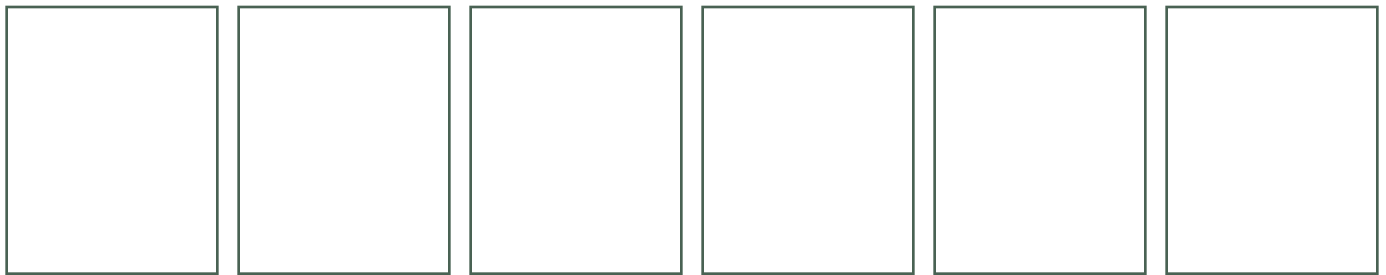


Adult records the rule after the child explains: _____

PLAY TOOL 2 | LARGE CONCRETE SHAPES

Copy and continue

Make the pattern with large objects.

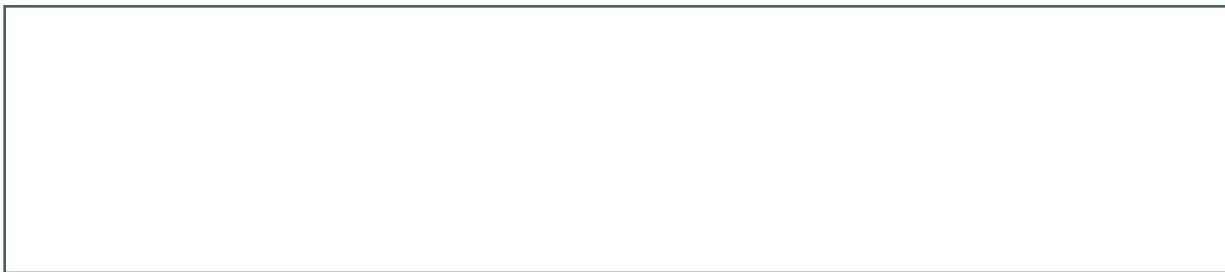


Copy in one row. Continue with another repeating pair.

PLAY TOOL 3 | ADULT CUTS OR CHILD POINTS

Compare these lengths

Line up the starting ends. What do you notice?



Adult: cut the three large strips if useful. Use two for younger comparisons; all three for older comparison and ordering. These are relative-length tools, not calibrated rulers.

PLAY TOOL 4 | DRAW OR DICTATE

Our measurement discovery

What did you measure? How did you check?

My object and tool

What I noticed