

Mathematics through play



CD-12 | Children identify and use common shapes and concepts about position during play and other activities.

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-12 | PreK mathematics

This sample contains 13 complete selected pages from the 22-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-9, 14-17

Representative activities

P01: sample PDF page(s) 8; original page(s) 7

P02: sample PDF page(s) 9; original page(s) 8

P03: sample PDF page(s) 10; original page(s) 9

Supporting printable materials: original page(s) 14-17

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

05 Preparation, access and safety

06 Coverage and selected-core route

07 Seven teaching sections

14 Four reusable printable play tools

18 Observation rubric and examples

20 Individual evidence record

21 Family extension and next steps

22 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-12: Children identify and use common shapes and concepts about position during play and other activities.

CD-12h

Show they understand positions in space by using position words during play and by following directions from an adult (say, “Stand behind the chair.” “Put the ball in the box.”).

CD-12i

Use 2- and 3-dimensional shapes to create pictures, designs, or structures.

CD-12j

Find shapes in the environment and describe them in their own words.

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-12: Children identify and use common shapes and concepts about position during play and other activities.

CD-12k

Consistently use a variety of words for positions in space, and follow directions using these words.

CD-12l

Use 2- and 3-dimensional shapes to represent real-world objects (say, “We are building a castle and we need a round block for the tunnel.” “I glued a circle and a square on my picture to make a house.”).

CD-12m

Name basic shapes and describe their characteristics using descriptive and geometric attributes (“That’s a triangle; it’s pointy.” “It’s a circle because it’s round.”).

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 7

Where is the bear? Indicators: CD-12h, CD-12k

P02 | Adult model | page 8

Shape detective model Indicators: CD-12j, CD-12m

P03 | Shared exploration | page 9

Build a picture and a place Indicators: CD-12i, CD-12l

P04 | Partner and center play | page 10

Partner design studio Indicators: CD-12h, CD-12i, CD-12j, CD-12k, CD-12l, CD-12m

P05 | Individual observation | page 11

My own shape story Indicators: CD-12i, CD-12j, CD-12l, CD-12m

P06 | Targeted support | page 12

Position and shape repair Indicators: CD-12h, CD-12j, CD-12k, CD-12m

P07 | Reflect and revisit | page 13

Revisit our neighborhood Indicators: CD-12h, CD-12i, CD-12j, CD-12k, CD-12l, CD-12m

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

Where is the bear?

Targets: CD-12h, CD-12k

Set up

Large soft toy, open box and stable chair.

Invite | first minute

Say: “The bear needs a place to rest. Where should it go?”

Adult model | about 1-2 minutes

Say and do: “I put the bear in the box. Now it is beside the box. I say the position word and point to both the bear and the box.”

Explore together, then play | about 2-4 minutes

Younger children follow simple position directions and use position words in play. Older children use varied words such as in, on, under, beside, behind and between across repeated opportunities. Move toys, not children under furniture.

Notice one child | about 1-2 minutes

Ask each child to place the toy, then direct the adult. Record understanding and expressive use separately; for older consistency, revisit on another day.

Respond and support

Use one relation at a time, gestures, tactile references and home-language words. If behind depends on viewpoint, identify the front of the reference object.

Reflect or extend | optional final minute

Give two different reference objects and discuss how the bear can be beside one and in front of another.

P02 | ADULT MODEL | 5-10 FLEXIBLE MINUTES

Shape detective model

Targets: CD-12j, CD-12m

Set up

Large circle, triangle, square and rectangle cards; safe classroom objects.

Invite | first minute

Say: “What shapes can we find nearby? How would you describe them?”

Adult model | about 1-2 minutes

Say and do: “This flat card is a triangle. I trace three straight sides and three corners. I turn it; it is still a triangle. A circle has a curved boundary and no corners.”

Explore together, then play | about 2-4 minutes

Younger children find familiar shapes and describe them in their own words. Older children name basic shapes and describe properties. Include a triangle turned sideways and rectangles of different proportions.

Notice one child | about 1-2 minutes

Record the actual object or card, name and description. A child calling a circle round provides descriptive evidence; older shape naming and attribute description are separate observations.

Respond and support

If only upright triangles are recognized, rotate the same card and trace its unchanged sides. Accept tactile tracing, signing or AAC. Do not require formal definitions.

Reflect or extend | optional final minute

Compare a square and a non-square rectangle. Both have four straight sides; a square has four equal sides. Avoid saying a square is not a rectangle.

P03 | SHARED EXPLORATION | 5-10 FLEXIBLE MINUTES

Build a picture and a place

Targets: CD-12i, CD-12l

Set up

Large flat shape cards; large solid blocks with no detachable small parts; drawing mat.

Invite | first minute

Say: “What could these shapes become?”

Adult model | about 1-2 minutes

Say and do: “I arrange a square and triangle as a flat house picture. Then I use solid blocks to build a house that stands up. A flat picture and a solid construction are different ways to represent a place.”

Explore together, then play | about 2-4 minutes

Younger children make pictures/designs with 2D pieces and structures with 3D blocks. Older children represent a real-world object with each kind, explaining which features the parts stand for. Provide both experiences, not only flat cards.

Notice one child | about 1-2 minutes

Record evidence for 2D and 3D separately, including the child intention. Photograph only with existing permission or sketch the construction.

Respond and support

Offer broad stable blocks, non-slip mats and reachable materials. Adult may stabilize a structure without choosing its design. Do not call a solid sphere a circle; its flat outline may look circular.

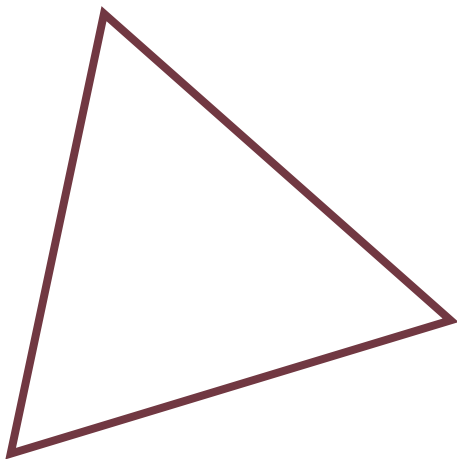
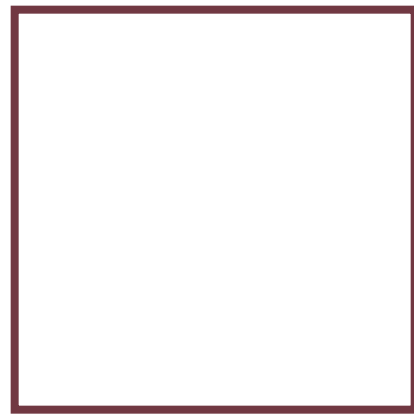
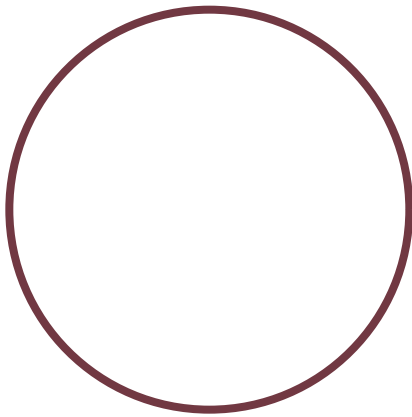
Reflect or extend | optional final minute

Ask what another shape could represent and let the child revise the design.

PLAY TOOL 1 | ADULT PREPARES IF CUTTING

Large shape collection

Find, turn and describe these flat shapes.



PLAY TOOL 2 | USE A LARGE TOY AND BOX

A place for the toy

Tell a partner where your toy belongs.



Try in, beside, behind or in front of your real box. Agree which side is its front. This mat is a play space, not a position-answer worksheet.

PLAY TOOL 3 | ARRANGE OR DRAW

My flat-shape design

What could your shapes become?



Tell about your design. Adult may write the child words on the back.

PLAY TOOL 4 | BUILD WITH LARGE 3D BLOCKS

My solid-block structure

Build first. Then show what you made.

Sketch or describe the construction

A shape or position I used