

NORTH CAROLINA MATHEMATICS

Grade 1 | Geometry

Shapes made of shapes



NC.1.G.2

Teaching scripts • construction and reasoning • reusable 60-item bank • worked keys • observation records

Current NC standards for 2026-27 and 2027-28. This packet does not use the newly adopted standards scheduled for 2028-29.

Short sessions across days. Print selected student pages. Read-aloud, AAC and child-directed construction supports are welcomed; preserve the learner's mathematical decisions.

Free sample | Contents

NC.1.G.2 | First Grade mathematics

This sample contains 26 complete selected pages from the 101-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-25, 82

Representative activities

M01: sample PDF page(s) 23; original page(s) 22

M02: sample PDF page(s) 25; original page(s) 24

O01: sample PDF page(s) 24; original page(s) 23

O02: sample PDF page(s) 26; original page(s) 25

Selected teacher prompts and keys: original page(s) 82

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.

CONTENTS

Choose the next useful page

Teacher guide: exact standard, targets, preparation, short-session sequence and worked model. Seven section scripts identify selected items and the complete bank ranges. Teacher anchors and actual materials follow.

Student bank: one multiple-choice check and one open/performance task per number, each on its own page. Every open task includes room to draw, record or document a physical construction. Use a table or mat when a model is too large for the page.

Teacher-only keys follow all student pages. Keys include exact choice letter, answer and explanation; open keys give sample constructions, valid alternatives and evidence. Assessment pages give a local rubric, blank observation form, coverage log and extension.

Start small

Choose a few items for one session; do not assign all 60 at once. Use the page footers, item IDs and section labels to select/copy pages. Completed anchors are for instruction, never hidden in independent work.

Target key

A | Make 2D composites and name rectangles, squares, trapezoids, triangles and half-circles used.

B | Make 3D composites and name cubes, rectangular prisms, cones and cylinders used.

C | Explain, revise and compare compositions while identifying the component shapes.

TEACHER GUIDE

Standard and evidence

Exact North Carolina standard

NC.1.G.2 Create composite shapes by:

- Making a two-dimensional composite shape using rectangles, squares, trapezoids, triangles, and half-circles naming the components of the new shape.
- Making a three-dimensional composite shape using cubes, rectangular prisms, cones, and cylinders, naming the components of the new shape.

Learning targets

A | Make 2D composites and name rectangles, squares, trapezoids, triangles and half-circles used.

B | Make 3D composites and name cubes, rectangular prisms, cones and cylinders used.

C | Explain, revise and compare compositions while identifying the component shapes.

Essential question

How can familiar shapes become parts of a new shape?

Evidence to collect

Each learner makes both flat and solid composites and names their components. Across observations include every required component type. Record inventory, how pieces meet, child explanation and a photo or sketch. Partnership does not replace individual evidence.

TEACHER GUIDE

Prepare for learning

Prerequisites

Recognize and name flat shapes and solids; turn and slide pieces; distinguish a full solid from a face or picture. No area formulas, fraction notation or formal volume is needed.

Materials and safety

Adult-cut printable 2D kit, two copies of square page for 4-square tasks, broad mat, reusable tape, large solid blocks or clay: 2 cubes, 1 broad rectangular prism, 1 cone and 2 short cylinders. Solid blocks are required; printed perspectives are not substitutes. Choose similar 4-6 cm cross-sections and low stable pieces; prism broad enough to support pieces. Avoid tiny pieces and tall towers. Adults cut; no sharp tools for children.

Language

Composite; component/part; join; edge; gap; overlap; rectangle; square; trapezoid; triangle; half-circle; cube; rectangular prism; cone; cylinder. A design nickname (house/rocket) is welcome but does not replace names of its geometric components.

Access without giving the answer

Read directions and all choices neutrally, repeat on request, allow pointing, sign, AAC, oral explanation or dictated recording. Offer larger materials, tactile boundaries and stable mats. An adult may follow the learner's exact construction or cutting directions for motor access; record who made each geometric decision. Do not score handwriting, accent or spelling.

Record neutral access supports separately from answer-supplying cues (naming the piece, locating the center, fixing a corner, showing the partition). Obtain a fresh attempt without the mathematical cue before treating evidence as independent.

TEACHER GUIDE

Short sessions, full coverage

Use 10-20 minute sessions over several days. The 60-item bank is reusable, not a single test. Choose 1-2 items per session. Continue until each required construction/partition and explanation has been observed; do not infer full coverage from a few chosen exit tasks.

Warm-up: M01-M04 and O01-O04 (4 choices + 4 open tasks). O01-O04; M01.

I Do: M05-M08 and O05-O08 (4 choices + 4 open tasks). O05-O08; M05.

We Do: M09-M13 and O09-O13 (5 choices + 5 open tasks). O09-O13; M09.

Collaborative practice: M14-M18 and O14-O18 (5 choices + 5 open tasks). O14-O18; M14.

Independent practice: M19-M23 and O19-O23 (5 choices + 5 open tasks). O19-O23; M20.

Small-group reteach: M24-M27 and O24-O27 (4 choices + 4 open tasks). O24-O27; M24.

Exit ticket: M28-M30 and O28-O30 (3 choices + 3 open tasks). O28-O30; M29.

Practical sequence

Days 1-3: flat pairs, arches and varied flat composites. Days 4-5: low solid composites with all four types. Days 6-8: partner redesign, independent all-type builds, repair and conferences.

Timing is a flexible teaching suggestion, never a speed criterion. M items are recognition checks; O items supply the required authentic performances.

TEACHER GUIDE

Worked model and response

Say and demonstrate

Place two kit right triangles with their slanted sides together. Say: These two triangles fit to make one square; I can still trace each triangle inside it. Separate them and rebuild. Then join rectangle and half-circle along matching short side and diameter. Say: My arch has a rectangle and a half-circle. For 3D, place a cube and cone together on a mat. Touch each whole solid while naming it; do not call the cone a triangle.

Listen for

Component names remain even when the outside shape changes.

Respond to a misconception

If a child names only the outside picture, separate the components, name them, and rebuild. If a cube is called square, handle the whole block and contrast its flat face with its 3D form. If pieces overlap unintentionally, trace each original boundary and slide them to a shared edge.

Fresh transfer

After demonstrating a two-triangle square, offer rectangle and half-circle with no outline. Ask for a new joined design and its components. Then transfer to real cube/cone pieces.

TEACHER SCRIPT | WARM-UP

Warm-up in action

Purpose and selected tasks

O01-O04; M01. Bank range: M01-M04; O01-O04.

0-2 minutes | Invite

Gather the specified safe materials. State the task in everyday language and ask the learner to predict a useful first move. Use the essential question to focus attention.

2-8 minutes | Teach, build, explain

Invite a two-square rectangle; separate, then rejoin. Ask: Which shapes did you use? Try triangle pair and half-circle pair on later warm-ups.

8-12 minutes | Check and respond

Ask: How can you show that? Listen without completing the response. Correct original piece names; fit without unintended gaps or overlaps.

If support is needed

If a child names only the outside picture, separate the components, name them, and rebuild. If a cube is called square, handle the whole block and contrast its flat face with its 3D form. If pieces overlap unintentionally, trace each original boundary and slide them to a shared edge.

Early finisher and record

Keep the same pieces, create a second arrangement, then explain which joins changed and which components stayed the same. Record item, actual action, exact explanation, support and next step. Stop or split the session when attention or motor demands require it.

TEACHER SCRIPT | I DO

I Do in action

Purpose and selected tasks

O05-O08; M05. Bank range: M05-M08; O05-O08.

0-2 minutes | Invite

Gather the specified safe materials. State the task in everyday language and ask the learner to predict a useful first move. Use the essential question to focus attention.

2-8 minutes | Teach, build, explain

Demonstrate the arch and two-triangle square. Trace the interior boundary before separating the parts. Children imitate then invent a different arrangement.

8-12 minutes | Check and respond

Ask: How can you show that? Listen without completing the response. Component names remain even when the outside shape changes.

If support is needed

If a child names only the outside picture, separate the components, name them, and rebuild. If a cube is called square, handle the whole block and contrast its flat face with its 3D form. If pieces overlap unintentionally, trace each original boundary and slide them to a shared edge.

Early finisher and record

Keep the same pieces, create a second arrangement, then explain which joins changed and which components stayed the same. Record item, actual action, exact explanation, support and next step. Stop or split the session when attention or motor demands require it.

TEACHER SCRIPT | WE DO

We Do in action

Purpose and selected tasks

O09-O13; M09. Bank range: M09-M13; O09-O13.

0-2 minutes | Invite

Gather the specified safe materials. State the task in everyday language and ask the learner to predict a useful first move. Use the essential question to focus attention.

2-8 minutes | Teach, build, explain

Use actual solids. Build low cube-cone tower; point to whole cone, then its circular base. Ask children to build a different solid composite and name each full solid.

8-12 minutes | Check and respond

Ask: How can you show that? Listen without completing the response. Cubes/prisms/cones/cylinders named as 3D components, not as faces.

If support is needed

If a child names only the outside picture, separate the components, name them, and rebuild. If a cube is called square, handle the whole block and contrast its flat face with its 3D form. If pieces overlap unintentionally, trace each original boundary and slide them to a shared edge.

Early finisher and record

Keep the same pieces, create a second arrangement, then explain which joins changed and which components stayed the same. Record item, actual action, exact explanation, support and next step. Stop or split the session when attention or motor demands require it.

TEACHER SCRIPT | COLLABORATIVE PRACTICE

Collaborative practice in action

Purpose and selected tasks

O14-O18; M14. Bank range: M14-M18; O14-O18.

0-2 minutes | Invite

Gather the specified safe materials. State the task in everyday language and ask the learner to predict a useful first move. Use the essential question to focus attention.

2-8 minutes | Teach, build, explain

Partners use identical inventories. Builder makes a model; checker names parts and describes joins. Swap roles; each rearranges and explains what remained.

8-12 minutes | Check and respond

Ask: How can you show that? Listen without completing the response. Each individual constructs and names; note partner-supplied words.

If support is needed

If a child names only the outside picture, separate the components, name them, and rebuild. If a cube is called square, handle the whole block and contrast its flat face with its 3D form. If pieces overlap unintentionally, trace each original boundary and slide them to a shared edge.

Early finisher and record

Keep the same pieces, create a second arrangement, then explain which joins changed and which components stayed the same. Record item, actual action, exact explanation, support and next step. Stop or split the session when attention or motor demands require it.

TEACHER SCRIPT | INDEPENDENT PRACTICE

Independent practice in action

Purpose and selected tasks

O19-O23; M20. Bank range: M19-M23; O19-O23.

0-2 minutes | Invite

Gather the specified safe materials. State the task in everyday language and ask the learner to predict a useful first move. Use the essential question to focus attention.

2-8 minutes | Teach, build, explain

Offer kit and solid tray separately. Read directions without naming offered pieces. Photograph or sketch completed model, then ask child to point to every component.

8-12 minutes | Check and respond

Ask: How can you show that? Listen without completing the response. All five 2D and four 3D types appear across actual builds.

If support is needed

If a child names only the outside picture, separate the components, name them, and rebuild. If a cube is called square, handle the whole block and contrast its flat face with its 3D form. If pieces overlap unintentionally, trace each original boundary and slide them to a shared edge.

Early finisher and record

Keep the same pieces, create a second arrangement, then explain which joins changed and which components stayed the same. Record item, actual action, exact explanation, support and next step. Stop or split the session when attention or motor demands require it.

TEACHER SCRIPT | SMALL-GROUP RETEACH

Small-group reteach in action

Purpose and selected tasks

O24-O27; M24. Bank range: M24-M27; O24-O27.

0-2 minutes | Invite

Gather the specified safe materials. State the task in everyday language and ask the learner to predict a useful first move. Use the essential question to focus attention.

2-8 minutes | Teach, build, explain

Model fixing a gap/overlap with one pair. Ask child to repair a fresh pair and describe components. For solid names, compare a real cone with a flat triangle.

8-12 minutes | Check and respond

Ask: How can you show that? Listen without completing the response. An accurate new construction and named components after scaffold removed.

If support is needed

If a child names only the outside picture, separate the components, name them, and rebuild. If a cube is called square, handle the whole block and contrast its flat face with its 3D form. If pieces overlap unintentionally, trace each original boundary and slide them to a shared edge.

Early finisher and record

Keep the same pieces, create a second arrangement, then explain which joins changed and which components stayed the same. Record item, actual action, exact explanation, support and next step. Stop or split the session when attention or motor demands require it.

TEACHER SCRIPT | EXIT TICKET

Exit ticket in action

Purpose and selected tasks

O28-O30; M29. Bank range: M28-M30; O28-O30.

0-2 minutes | Invite

Gather the specified safe materials. State the task in everyday language and ask the learner to predict a useful first move. Use the essential question to focus attention.

2-8 minutes | Teach, build, explain

On different days collect one independent flat build and one solid build. For a challenge, send a sketch/instructions to a partner and revise after comparison.

8-12 minutes | Check and respond

Ask: How can you show that? Listen without completing the response. Capture model, names and explanation of one join; check omitted types in coverage log.

If support is needed

If a child names only the outside picture, separate the components, name them, and rebuild. If a cube is called square, handle the whole block and contrast its flat face with its 3D form. If pieces overlap unintentionally, trace each original boundary and slide them to a shared edge.

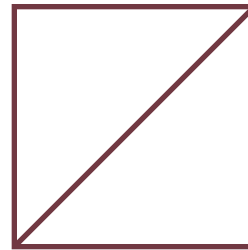
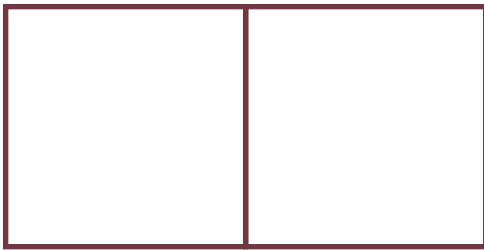
Early finisher and record

Keep the same pieces, create a second arrangement, then explain which joins changed and which components stayed the same. Record item, actual action, exact explanation, support and next step. Stop or split the session when attention or motor demands require it.

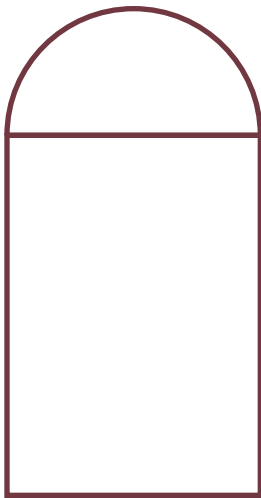
TEACHER WORKED CONSTRUCTIONS

Fit and name the parts

The kit uses a common edge length of 108 points (1.5 inches at 100%). Scale all pages together if enlarged. The examples below show joins; learners receive loose pieces, not these solved diagrams for independent assessment.



Left: two squares make a rectangle. Right: two matching right triangles make a square. The shared line is inside the new outside boundary.



Left: rectangle plus half-circle makes an arch. Right: real cube plus real cone makes a solid composite. Picture above is illustrative; use blocks or clay for the actual build.

ADULT PREPARATION

Printable 2D kit

Print all kit pages at 100% or at one shared scale. Cut on the dark boundaries; do not cut component interiors. Each child needs 2 squares (4 for O08/O21), 1 rectangle, 2 triangles, 2 trapezoids and 2 half-circles. Reuse the pieces. Adults handle scissors; supervise paper pieces. Keep teacher names off student pieces if naming is being assessed.

Geometric fit checks

Squares: 108 by 108 points. Rectangle: 108 by 216. Right-isosceles triangles: perpendicular legs 108, shared hypotenuse $108\sqrt{2}$. Half-circles: diameter 108. Trapezoids: parallel bases 108 and 216, height 108. Square sides, rectangle short sides, triangle legs, trapezoid short bases and half-circle diameters all match. Two identical triangles join on their hypotenuses to cover a square. Two half-circles join on diameters to cover a circle.

3D material tray

Supply actual large blocks or clay solids. Use two cubes, one broad rectangular prism, two short cylinders and one cone. Similar-size round bases help the cone/cylinder join; a broad prism supports a low assembly. Exact dimensions are not assessed. Place on a tray; keep assemblies low. Do not use sharp cones or unstable tall towers.

Scale check

The bar below must measure 1 inch at 100% print size. A uniformly scaled kit also fits; mixing scales does not.



STUDENT MATERIALS | ADULT CUTS

Reusable shape pieces

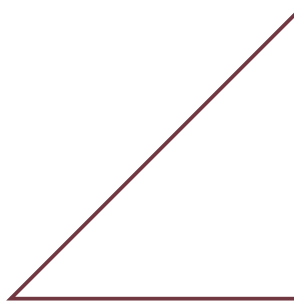
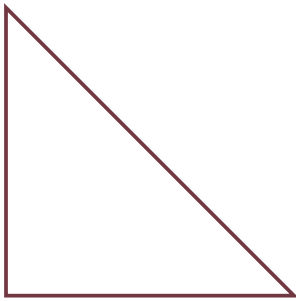
Adults cut the dark outlines. Keep every piece. Use on a clear table or the work mat.



STUDENT MATERIALS | ADULT CUTS

Reusable shape pieces

Adults cut the dark outlines. Keep every piece. Use on a clear table or the work mat.



STUDENT MATERIALS | ADULT CUTS

Reusable shape pieces

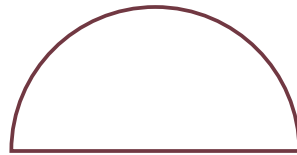
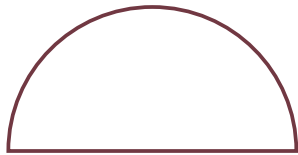
Adults cut the dark outlines. Keep every piece. Use on a clear table or the work mat.



STUDENT MATERIALS | ADULT CUTS

Reusable shape pieces

Adults cut the dark outlines. Keep every piece. Use on a clear table or the work mat.



STUDENT ORGANIZER

My construction mat

Build here or on a clear table. Point to each part and name it.
Sketch your design after you build.



My parts: _____

How they meet: _____

STUDENT ORGANIZER

Show, tell and check

Build your composite. Draw it here. Tell the name of every component.



I noticed: _____

My explanation: _____

STUDENT | WARM-UP

M01 | Choose and explain

Name: _____ Date: _____

Two equal square tiles share a full side. What is their outside shape?

- A. Triangle
- B. Circle
- C. Rectangle
- D. Hexagon

Tell or show how you know.

STUDENT | WARM-UP

001 | Make and explain

Name: _____ Date: _____

Join 2 square tiles to make a rectangle. Name the pieces.



Pictures remind you of the pieces; they are not to scale.

Use real pieces to build. Sketch your joined design here.

A large, empty rectangular box with a thin black border, intended for the student to sketch their joined design.

Tell or show how you know. An adult may record your words.

My explanation: _____

STUDENT | WARM-UP

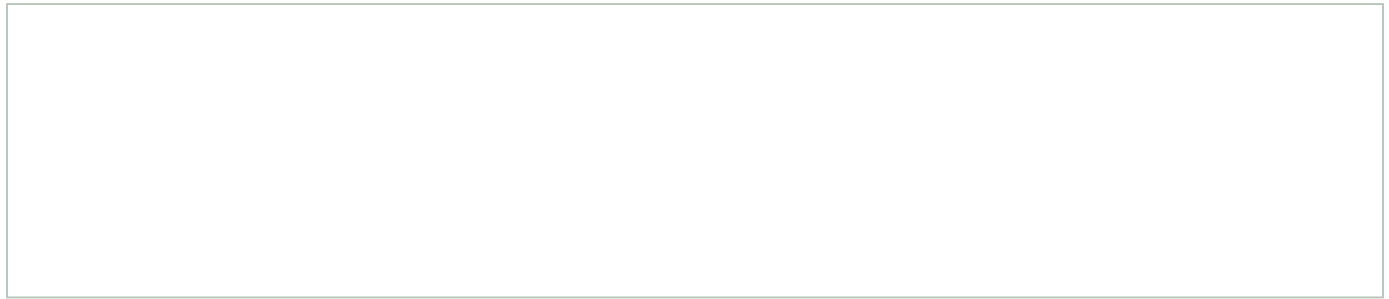
M02 | Choose and explain

Name: _____ Date: _____

Which pieces can make a square with no gaps?

- A. Two circles
- B. Two matching right triangles
- C. Two cones
- D. Two spheres

Tell or show how you know.

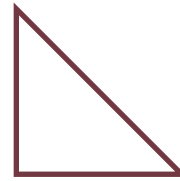
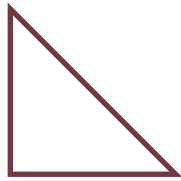


STUDENT | WARM-UP

002 | Make and explain

Name: _____ Date: _____

Join 2 matching triangle tiles to make a square. Name the pieces.



Pictures remind you of the pieces; they are not to scale.

Use real pieces to build. Sketch your joined design here.

Tell or show how you know. An adult may record your words.

My explanation: _____

TEACHER-ONLY WORKED KEYS

Items 01-02

M01 | C - Rectangle

Target A. Two unit squares side by side form a 2 by 1 rectangle.

Distractor check: Other choices change a required property, confuse the shape/share/component, or use an irrelevant feature. Ask the learner to demonstrate the deciding property; never infer construction from a correct choice.

001 | Sample / accepted evidence

Target A. Place two kit squares side by side, full sides touching. Outside boundary is a 2 by 1 rectangle; components: two squares.

Record actual work and explanation. Accept mathematically equivalent constructions or wording with the same meaning. Separate neutral access from supplied mathematical cues.

M02 | B - Two matching right triangles

Target A. Two triangles obtained by a square diagonal exactly cover that square.

Distractor check: Other choices change a required property, confuse the shape/share/component, or use an irrelevant feature. Ask the learner to demonstrate the deciding property; never infer construction from a correct choice.

002 | Sample / accepted evidence

Target A. Use the right-isosceles pair from the kit. Match their slanted edges; two triangles form one square with no gaps/overlap.

Record actual work and explanation. Accept mathematically equivalent constructions or wording with the same meaning. Separate neutral access from supplied mathematical cues.