

North Carolina mathematics

Grade 3 | Geometry

Build and classify shapes



NC.3.G.1

Teacher scripts • visual models • 30 choice checks • 30 open/performance tasks • worked keys • observation records

Current North Carolina standards for 2026-27 and 2027-28. Adopted 2026 replacements begin 2028-29. Use short sessions across days; print selected student pages.

Free sample | Contents

NC.3.G.1 | Third Grade mathematics

This sample contains 22 complete selected pages from the 97-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-21, 78

Representative activities

M01: sample PDF page(s) 19; original page(s) 18

M02: sample PDF page(s) 21; original page(s) 20

O01: sample PDF page(s) 20; original page(s) 19

O02: sample PDF page(s) 22; original page(s) 21

Selected teacher prompts and keys: original page(s) 78

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 and planning

Print a useful selection

Guide and exact standard come first, followed by seven teaching scripts, anchors, reusable masters, student bank, worked keys, evidence records and sources. Every task has a stable item ID. Select pages by ID; the bank is reusable across lessons, not a 60-item test.

Short-session sequence

Session 1, about 20 minutes: warm-up M01/O01; model with M05/O05. Session 2, about 25 minutes: shared work M09/O09, partner investigation M14/O14. Session 3, about 20 minutes: individual M19/O19 and exit M28/O28. Use M24/O24 in a later short reteach group if needed. Times are flexible and never scoring cutoffs.

Each section contains 4/4/5/5/5/4/3 choice items and the same allocation of open tasks. Other items offer fresh practice, transfer and further observation. Construction and explanation must be observed individually even after partner work.

Purposeful visual supports

Original quadrilateral figures, diagonal cuts and reusable square/triangle pieces support classification and construction.

Teacher guide

Exact standard and targets

NC.3.G.1 | Reason with two-dimensional shapes and their attributes.

- Investigate, describe, and reason about composing triangles and quadrilaterals and decomposing quadrilaterals.
- Recognize and draw examples and non-examples of types of quadrilaterals including rhombuses, rectangles, squares, parallelograms, and trapezoids.

Observable targets

A | Compose triangles and quadrilaterals; describe the new boundary.

B | Decompose quadrilaterals and reason about the pieces.

C | Recognize and draw examples and nonexamples of the five quadrilateral families.

Collect the learner's drawing or construction, calculation when relevant, and explanation. Choice recognition alone is not evidence of the full standard. These targets are instructional, not official cut scores.

Teacher preparation

Materials and access

Prepare

Pencils, crayons, ruler/straightedge, large paper squares, supplied masters and blank paper. Adults handle cutting. Copy all matching masters at the same printer setting. One printed grid cell is a mathematical unit, not a promised centimeter or inch. Use large safe pieces; keep completed teacher models out of view during independent checks.

Prerequisites

Recognize a closed polygon, straight sides and square corners. Compare side lengths with strips; use informal opposite-side direction language. No angle-degree measurement is required.

Neutral access

Read directions and labels exactly; allow oral, signed, AAC, drawn or child-directed construction. An adult can cut or mark exactly where the child directs. Do not count cells, select sides, provide the needed split or name a category for the child. Record access separately from mathematical cues. Do not score handwriting, spelling or reading fluency.

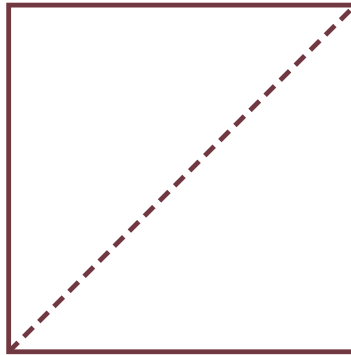
Vocabulary

triangle, quadrilateral, square corner, opposite sides, compose, decompose; five quadrilateral family names

Teacher-only worked model

Name the whole boundary

Use two matching square-corner triangles cut from a square. Join longest sides to rebuild the square: it is also a rectangle, rhombus and parallelogram. Next join short sides so the outside is a larger triangle. Trace only the outside; a seam is not an extra outside side. Have learners describe what changed and what stayed the same.



Inspect the sides and corners. Turning a shape does not change its attributes.

Ask and check

Ask: "What in your model proves your answer?" Listen for the target-specific relationship, not just a number or shape name. Ask for a second route or counterexample only after the first model is understood. Keep this completed page for instruction.

If a learner says a square is not a rectangle, compare the four-square-corner requirement with the actual square. If seams are counted as sides, trace only the outside boundary.

Teacher script | Warm-up

Warm-up | teach and observe

Select M01 and O01; bank range 01-04

Purpose: Activate relevant counting or shape knowledge and find the starting point.

0-2 minutes | launch

Say: "Look at the task. Tell me what you need to find or make. Which information matters?" Read only the printed information. Ask the learner to point to the surface, boundary or shape features that matter.

2-6 minutes | act and reason

Use the selected open task. Give quiet time for the child's own construction. Say: "Show each step. How can another person check it?" In partner work, one learner builds while the other checks, then switch with a new item.

6-9 minutes | check and respond

Use the exact item key. Ask: "What proves that?" If a misconception appears, use the specific repair from the model page. For independent/exit work, record the uncued attempt before teaching. Do not convert a prompted repair into independent evidence.

9-12 minutes | transfer and record

Offer another item in this section if time and attention allow. Extend by asking for a second valid representation or a counterexample. Record item, actual action, explanation, neutral access, mathematical cues and next step. End early if the evidence is sufficient; time is not part of the score.

Teacher script | I Do

I Do | teach and observe

Select M05 and O05; bank range 05-08

Purpose: Make the representation and reasoning visible with a complete model.

0-2 minutes | launch

Say: "Look at the task. Tell me what you need to find or make. Which information matters?" Read only the printed information. Ask the learner to point to the surface, boundary or shape features that matter.

2-6 minutes | act and reason

Show the worked model above first. Think aloud using its complete calculation or construction. Then hide it and invite a fresh attempt. Say: "Show each step. How can another person check it?" In partner work, one learner builds while the other checks, then switch with a new item.

6-9 minutes | check and respond

Use the exact item key. Ask: "What proves that?" If a misconception appears, use the specific repair from the model page. For independent/exit work, record the uncued attempt before teaching. Do not convert a prompted repair into independent evidence.

9-12 minutes | transfer and record

Offer another item in this section if time and attention allow. Extend by asking for a second valid representation or a counterexample. Record item, actual action, explanation, neutral access, mathematical cues and next step. End early if the evidence is sufficient; time is not part of the score.

Teacher script | We Do

We Do | teach and observe

Select M09 and O09; bank range 09-13

Purpose: Connect learner actions to the mathematical claim together.

0-2 minutes | launch

Say: "Look at the task. Tell me what you need to find or make. Which information matters?" Read only the printed information. Ask the learner to point to the surface, boundary or shape features that matter.

2-6 minutes | act and reason

Use the selected open task. Give quiet time for the child's own construction. Say: "Show each step. How can another person check it?" In partner work, one learner builds while the other checks, then switch with a new item.

6-9 minutes | check and respond

Use the exact item key. Ask: "What proves that?" If a misconception appears, use the specific repair from the model page. For independent/exit work, record the uncued attempt before teaching. Do not convert a prompted repair into independent evidence.

9-12 minutes | transfer and record

Offer another item in this section if time and attention allow. Extend by asking for a second valid representation or a counterexample. Record item, actual action, explanation, neutral access, mathematical cues and next step. End early if the evidence is sufficient; time is not part of the score.

Teacher script | Collaborative practice

Collaborative practice | teach and observe

Select M14 and O14; bank range 14-18

Purpose: Compare constructions and require each learner to justify a decision.

0-2 minutes | launch

Say: "Look at the task. Tell me what you need to find or make. Which information matters?" Read only the printed information. Ask the learner to point to the surface, boundary or shape features that matter.

2-6 minutes | act and reason

Use the selected open task. Give quiet time for the child's own construction. Say: "Show each step. How can another person check it?" In partner work, one learner builds while the other checks, then switch with a new item.

6-9 minutes | check and respond

Use the exact item key. Ask: "What proves that?" If a misconception appears, use the specific repair from the model page. For independent/exit work, record the uncued attempt before teaching. Do not convert a prompted repair into independent evidence.

9-12 minutes | transfer and record

Offer another item in this section if time and attention allow. Extend by asking for a second valid representation or a counterexample. Record item, actual action, explanation, neutral access, mathematical cues and next step. End early if the evidence is sufficient; time is not part of the score.

Teacher script | Independent practice

Independent practice | teach and observe

Select M19 and O19; bank range 19-23

Purpose: Collect an uncued construction and explanation.

0-2 minutes | launch

Say: "Look at the task. Tell me what you need to find or make. Which information matters?" Read only the printed information. Ask the learner to point to the surface, boundary or shape features that matter.

2-6 minutes | act and reason

Use the selected open task. Give quiet time for the child's own construction. Say: "Show each step. How can another person check it?" In partner work, one learner builds while the other checks, then switch with a new item.

6-9 minutes | check and respond

Use the exact item key. Ask: "What proves that?" If a misconception appears, use the specific repair from the model page. For independent/exit work, record the uncued attempt before teaching. Do not convert a prompted repair into independent evidence.

9-12 minutes | transfer and record

Offer another item in this section if time and attention allow. Extend by asking for a second valid representation or a counterexample. Record item, actual action, explanation, neutral access, mathematical cues and next step. End early if the evidence is sufficient; time is not part of the score.

Teacher script | Small-group reteach

Small-group reteach | teach and observe

Select M24 and O24; bank range 24-27

Purpose: Repair the observed misconception with a simpler model, then transfer.

0-2 minutes | launch

Say: "Look at the task. Tell me what you need to find or make. Which information matters?" Read only the printed information. Ask the learner to point to the surface, boundary or shape features that matter.

2-6 minutes | act and reason

Use the selected open task. Give quiet time for the child's own construction. Say: "Show each step. How can another person check it?" In partner work, one learner builds while the other checks, then switch with a new item.

6-9 minutes | check and respond

Use the exact item key. Ask: "What proves that?" If a misconception appears, use the specific repair from the model page. For independent/exit work, record the uncued attempt before teaching. Do not convert a prompted repair into independent evidence.

9-12 minutes | transfer and record

Offer another item in this section if time and attention allow. Extend by asking for a second valid representation or a counterexample. Record item, actual action, explanation, neutral access, mathematical cues and next step. End early if the evidence is sufficient; time is not part of the score.

Teacher script | Exit ticket

Exit ticket | teach and observe

Select M28 and O28; bank range 28-30

Purpose: Check one fresh response and identify the next useful lesson.

0-2 minutes | launch

Say: "Look at the task. Tell me what you need to find or make. Which information matters?" Read only the printed information. Ask the learner to point to the surface, boundary or shape features that matter.

2-6 minutes | act and reason

Use the selected open task. Give quiet time for the child's own construction. Say: "Show each step. How can another person check it?" In partner work, one learner builds while the other checks, then switch with a new item.

6-9 minutes | check and respond

Use the exact item key. Ask: "What proves that?" If a misconception appears, use the specific repair from the model page. For independent/exit work, record the uncued attempt before teaching. Do not convert a prompted repair into independent evidence.

9-12 minutes | transfer and record

Offer another item in this section if time and attention allow. Extend by asking for a second valid representation or a counterexample. Record item, actual action, explanation, neutral access, mathematical cues and next step. End early if the evidence is sufficient; time is not part of the score.

Teacher anchor

A family can overlap

Quadrilateral: closed, four straight sides. Rectangle: four square corners. Rhombus: four equal sides. Square: four equal sides AND four square corners. Parallelogram: two pairs of opposite sides moving in the same direction.



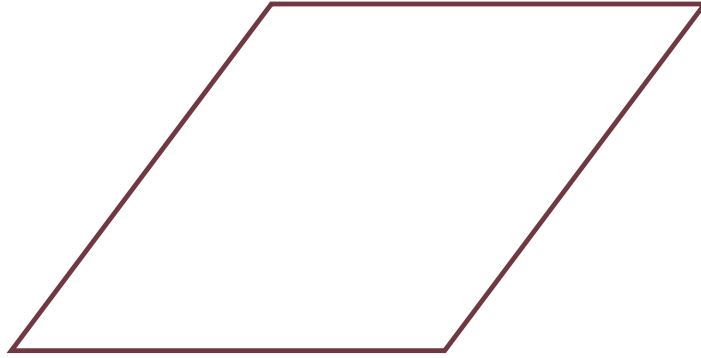
Inspect the sides and corners. Turning a shape does not change its attributes.

Every square is a rectangle, a rhombus and a parallelogram. A non-square rectangle is not a rhombus. A non-square rhombus is not a rectangle. Color, size and turning do not decide the family.

NC uses trapezoid to mean exactly one pair of opposite sides moving in the same direction. Therefore a parallelogram, rectangle, rhombus or square is not a trapezoid. The teacher term for matching opposite-side directions is parallel.

Teacher anchor

Compare precise attributes



Inspect the sides and corners. Turning a shape does not change its attributes.

This non-square rhombus has four equal sides, no square corners and two matching opposite-side direction pairs. It is also a parallelogram.



Inspect the sides and corners. Turning a shape does not change its attributes.

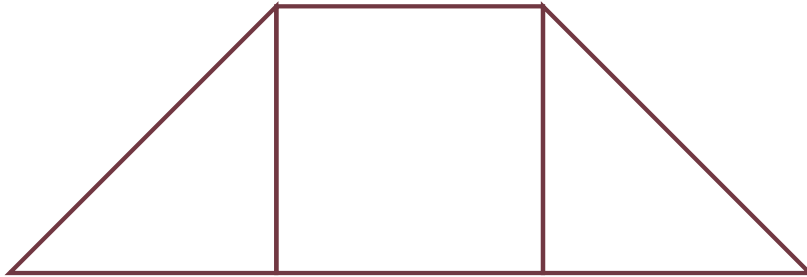
This trapezoid has one matching opposite-side direction pair and two square corners. It is a quadrilateral, but not a parallelogram.

Teacher-only construction models

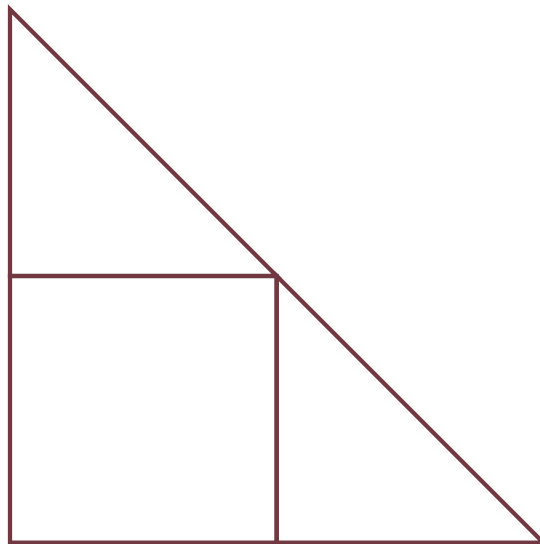
Same pieces, new boundaries

Use the square and both triangles. Shared seams are inside. Trace the outside to classify the whole; pieces meet without gaps or overlapping interiors.

Trapezoid



Triangle



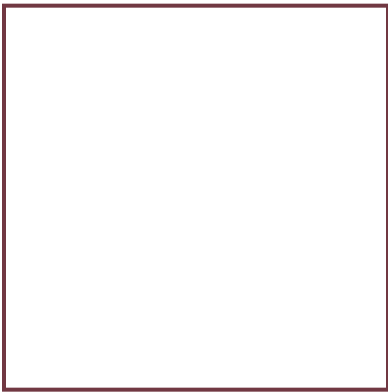
Both builds use one square and two matching triangles. The outside is different; the combined amount of paper stays the same.

Student master | adult cuts

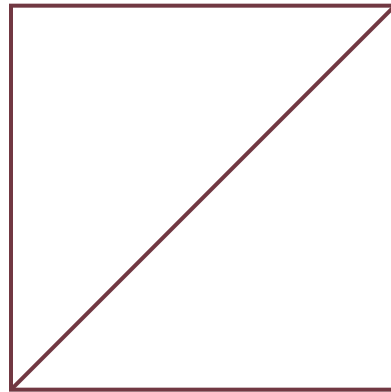
A square and two triangles

Adults cut the left square out whole. Cut the right square out, then along its diagonal to make two matching triangles. Keep the same print scale for both.

Square piece



Two triangle pieces



Rotate or flip pieces. Use the pieces named in the task. Edges may touch, but interiors must not overlap. Trace the outside and the seams to keep evidence of your construction.

Student organizer | copy as needed

Model, explain, verify

Task ID: _____ Name: _____

My explanation: _____

My check or revision: _____

Student | Warm-up

M01 | Choose and explain

Name: _____ Date: _____

Which property must EVERY trapezoid have?

- A. four equal side lengths
- B. four square corners
- C. exactly one pair of opposite sides moving in the same direction
- D. two matching opposite-side direction pairs

Tell or show how you know.

Student | Warm-up

001 | Make and explain

Name: _____ Date: _____

Draw an example of a square and a quadrilateral that is NOT a square. Describe the property that separates them.

Example**Nonexample**

Explain your model and check. You may tell an adult.

Student | Warm-up

M02 | Choose and explain

Name: _____ Date: _____

A rectangle is cut from the midpoint of its top side to the midpoint of its bottom side. What pieces result?

- A. two triangles
- B. a triangle and a square
- C. two circles
- D. two rectangles

Tell or show how you know.

Student | Warm-up

002 | Make and explain

Name: _____ Date: _____

Draw a square, turn the paper, and draw it in the new position. Explain why its name still applies.

Original position**Turned position**

Explain your model and check. You may tell an adult.

Teacher-only worked keys

Items 01-02

M01 | C - exactly one pair of opposite sides moving in the same direction

Target C. The defining property is exactly one pair of opposite sides moving in the same direction.

001 | Accepted evidence

Target C. Example coordinates for teacher check: [(0, 0), (4, 0), (4, 4), (0, 4)]; nonexample: a non-square 6-by-3 rectangle. Check the defining attribute: four equal sides and four square corners. Accept other valid examples.

Accept equivalent correct reasoning. Record the actual action and any supplied mathematical cue.

M02 | D - two rectangles

Target A. The cut is perpendicular to the horizontal sides, so each piece has four square corners.

002 | Accepted evidence

Target C. Both drawings preserve four equal sides and four square corners. Rotation changes position, not side lengths, square corners, or opposite-side directions.

Accept equivalent correct reasoning. Record the actual action and any supplied mathematical cue.