

North Carolina mathematics

Grade 2 | Geometry

Equal shares, different shapes



NC.2.G.3

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

Current NC standards for 2026-27 and 2027-28. Adopted 2026 replacements begin 2028-29. Short sessions across days; print selected student pages.

Free sample | Contents

NC.2.G.3 | Second Grade mathematics

This sample contains 24 complete selected pages from the 99-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-23, 80

Representative activities

M01: sample PDF page(s) 21; original page(s) 20

M02: sample PDF page(s) 23; original page(s) 22

O01: sample PDF page(s) 22; original page(s) 21

O02: sample PDF page(s) 24; original page(s) 23

Selected teacher prompts and keys: original page(s) 80

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

Use the next useful task

Teacher guide: exact standard, targets, materials, access, selected-session plan and complete worked model. Seven instructional scripts follow. Original anchors and neutral student organizers precede the bank.

Student bank: M01-M30 choice tasks and O01-O30 open/performance tasks, each on its own labeled page. Teacher-only worked keys follow the student bank. Assessment pages include scoring, an observation form, coverage log and extension. Sources close the packet.

Use page footers and item IDs to select copies. Solved teacher models are for instruction, not independent assessment. All supplied graph data are instructional. No literary passage is needed.

Target key

A | Partition circles and rectangles into two, three and four equal shares.

B | Name shares and describe wholes with all required words.

C | Explain why equal shares of identical wholes can have different shapes.

Teacher guide

Exact standard and targets

NC.2.G.3 Partition circles and rectangles into two, three, or four equal shares.

- Describe the shares using the words halves, thirds, half of, a third of, fourths, fourth of, quarter of.
- Describe the whole as two halves, three thirds, four fourths.
- Explain that equal shares of identical wholes need not have the same shape.

Target A

Partition circles and rectangles into two, three and four equal shares.

Target B

Name shares and describe wholes with all required words.

Target C

Explain why equal shares of identical wholes can have different shapes.

Evidence to collect

Observe learner partitions for all six combinations: circles/rectangles and 2/3/4 equal shares. Record every required phrase and whole description. Collect a construction and explanation that equal shares of identical wholes can differ in shape.

Teacher guide

Prepare and preserve access

Prerequisites

Recognize rectangles and circles, count through four, compare covered amounts. Do not require fraction symbols, multiplication, area formulas or degree measures. Equality is about area rather than one length.

Materials and safety

Supplied fresh blank outlines, pencils, crayons, paper and adult scissors. Adult cuts only on learner-marked lines or exact directions. Use same-size wholes for comparisons; do not precrease or mark centers on independent tasks. Extra copies of blank masters support folding and overlay.

Vocabulary

Halves, thirds, half of, a third of, fourths, fourth of, quarter of; whole as two halves, three thirds, four fourths. Equal shares of identical wholes need not have the same shape.

Neutral access

Read directions and choices neutrally; accept pointing, AAC, sign, oral explanation or dictation. Adult drawing/cutting may follow exact learner directions for motor access. Record who made each mathematical decision. Do not score handwriting, spelling or accent. Larger outlines and tactile boundaries are allowed; supplied centers, counts, shape names or completed models are answer-supplying cues, not neutral access.

Teacher guide

Plan short sessions

Use 10-20 minute sessions across several days. Select one or two tasks at a time. This 60-item bank is not one sitting or a timed test. Repeat accessible fresh attempts until each required target has evidence. No official mastery threshold or speed cutoff is implied.

Warm-up: M01-M04 and O01-O04; 4 choice and 4 open/performance tasks.

I Do: M05-M08 and O05-O08; 4 choice and 4 open/performance tasks.

We Do: M09-M13 and O09-O13; 5 choice and 5 open/performance tasks.

Collaborative practice: M14-M18 and O14-O18; 5 choice and 5 open/performance tasks.

Independent practice: M19-M23 and O19-O23; 5 choice and 5 open/performance tasks.

Small-group reteach: M24-M27 and O24-O27; 4 choice and 4 open/performance tasks.

Exit ticket: M28-M30 and O28-O30; 3 choice and 3 open/performance tasks.

Suggested sequence

Days 1-2 halves of both shapes; days 3-4 thirds; days 5-6 fourths and all language; days 7-8 compare equal shares of identical wholes and collect missing independent evidence.

Separate teaching from evidence

I Do and We Do are supported instruction. Independent practice and exit tasks use fresh materials without solved anchors in view. Collaborative work still requires each learner to act and explain individually.

Teacher model

Say, show, solve

Fold a rectangle into two matching pieces. Say: Each is half of the whole; the whole is two halves. Show three equal-width strips: each a third of; whole three thirds. Show four equal strips: each fourth of or quarter of; whole four fourths. Compare identical rectangles: center-line halves are rectangles, diagonal halves are triangles, yet both cover half. For circle thirds, show three matching sectors meeting at the center. Turn each sector to overlay the next. Their three equal turns fill the entire circle. Formal degrees are only a teacher check.

Respond to a misconception

If any four parts are called fourths, overlay cut shares from unequal strips and compare. If equal shares must be the same shape, cut diagonal and center-line halves from identical rectangles and rearrange. If circular thirds are made by parallel strips, compare covered amounts; equal spacing alone does not give equal circle areas.

Prompt for proof

Ask: How could you show that? Give wait time. Record the learner explanation before offering a model. Use a new example after teaching to check transfer.

Teacher script | Warm-up

Warm-up in action

Purpose and selected evidence

Bank: M01-M04, O01-O04. Choose 1-2 per meeting; the selections below may span days.

0-2 minutes | Invite

State the task, offer its materials and ask the learner to propose a first step. Do not preview an independent answer.

2-9 minutes | Exact teacher moves

Offer O01-O04 over several sessions as baseline. Ask for equal amounts, then listen for a share name. Save a circle-thirds attempt before teaching.

9-13 minutes | Check and respond

Ask: Show how you know. Listen for equal covered amounts, correct share and whole words, and same-whole reasoning even when share shapes differ.

If any four parts are called fourths, overlay cut shares from unequal strips and compare. If equal shares must be the same shape, cut diagonal and center-line halves from identical rectangles and rearrange. If circular thirds are made by parallel strips, compare covered amounts; equal spacing alone does not give equal circle areas.

Extend and record

Find another equal partition and show the proof by cut/overlay or rearrangement. Record item, exact action, response, access, answer-supplying cues and a next step. Timing is flexible.

Teacher script | I Do

I Do in action

Purpose and selected evidence

Bank: M05-M08, O05-O08. Choose 1-2 per meeting; the selections below may span days.

0-2 minutes | Invite

State the task, offer its materials and ask the learner to propose a first step. Do not preview an independent answer.

2-9 minutes | Exact teacher moves

Model halves, thirds and fourths with the exact worked language. Overlay the three circle sectors on the teaching anchor. O05-O08 connect partitions to different-shape comparisons.

9-13 minutes | Check and respond

Ask: Show how you know. Listen for equal covered amounts, correct share and whole words, and same-whole reasoning even when share shapes differ.

If any four parts are called fourths, overlay cut shares from unequal strips and compare. If equal shares must be the same shape, cut diagonal and center-line halves from identical rectangles and rearrange. If circular thirds are made by parallel strips, compare covered amounts; equal spacing alone does not give equal circle areas.

Extend and record

Find another equal partition and show the proof by cut/overlay or rearrangement. Record item, exact action, response, access, answer-supplying cues and a next step. Timing is flexible.

Teacher script | We Do

We Do in action

Purpose and selected evidence

Bank: M09-M13, O09-O13. Choose 1-2 per meeting; the selections below may span days.

0-2 minutes | Invite

State the task, offer its materials and ask the learner to propose a first step. Do not preview an independent answer.

2-9 minutes | Exact teacher moves

Use O09-O13. Let learners say a third of, fourth of and quarter of while pointing. Compare an unequal two-part example to true halves.

9-13 minutes | Check and respond

Ask: Show how you know. Listen for equal covered amounts, correct share and whole words, and same-whole reasoning even when share shapes differ.

If any four parts are called fourths, overlay cut shares from unequal strips and compare. If equal shares must be the same shape, cut diagonal and center-line halves from identical rectangles and rearrange. If circular thirds are made by parallel strips, compare covered amounts; equal spacing alone does not give equal circle areas.

Extend and record

Find another equal partition and show the proof by cut/overlay or rearrangement. Record item, exact action, response, access, answer-supplying cues and a next step. Timing is flexible.

Teacher script | Collaborative practice

Collaborative practice in action

Purpose and selected evidence

Bank: M14-M18, O14-O18. Choose 1-2 per meeting; the selections below may span days.

0-2 minutes | Invite

State the task, offer its materials and ask the learner to propose a first step. Do not preview an independent answer.

2-9 minutes | Exact teacher moves

Pairs tackle O14-O18 over several days. Each learner partitions and explains equality; partner checks by overlay or rearranging. Same-size wholes stay paired.

9-13 minutes | Check and respond

Ask: Show how you know. Listen for equal covered amounts, correct share and whole words, and same-whole reasoning even when share shapes differ.

If any four parts are called fourths, overlay cut shares from unequal strips and compare. If equal shares must be the same shape, cut diagonal and center-line halves from identical rectangles and rearrange. If circular thirds are made by parallel strips, compare covered amounts; equal spacing alone does not give equal circle areas.

Extend and record

Find another equal partition and show the proof by cut/overlay or rearrangement. Record item, exact action, response, access, answer-supplying cues and a next step. Timing is flexible.

Teacher script | Independent practice

Independent practice in action

Purpose and selected evidence

Bank: M19-M23, O19-O23. Choose 1-2 per meeting; the selections below may span days.

0-2 minutes | Invite

State the task, offer its materials and ask the learner to propose a first step. Do not preview an independent answer.

2-9 minutes | Exact teacher moves

Use fresh blank O19-O23. Do not indicate the center, equal widths or line locations. Record equality separately from correct words.

9-13 minutes | Check and respond

Ask: Show how you know. Listen for equal covered amounts, correct share and whole words, and same-whole reasoning even when share shapes differ.

If any four parts are called fourths, overlay cut shares from unequal strips and compare. If equal shares must be the same shape, cut diagonal and center-line halves from identical rectangles and rearrange. If circular thirds are made by parallel strips, compare covered amounts; equal spacing alone does not give equal circle areas.

Extend and record

Find another equal partition and show the proof by cut/overlay or rearrangement. Record item, exact action, response, access, answer-supplying cues and a next step. Timing is flexible.

Teacher script | Small-group reteach

Small-group reteach in action

Purpose and selected evidence

Bank: M24-M27, O24-O27. Choose 1-2 per meeting; the selections below may span days.

0-2 minutes | Invite

State the task, offer its materials and ask the learner to propose a first step. Do not preview an independent answer.

2-9 minutes | Exact teacher moves

Teach using unequal and equal four-part rectangles. Overlay and discuss area. Give fresh O24-O27 after the completed model is removed.

9-13 minutes | Check and respond

Ask: Show how you know. Listen for equal covered amounts, correct share and whole words, and same-whole reasoning even when share shapes differ.

If any four parts are called fourths, overlay cut shares from unequal strips and compare. If equal shares must be the same shape, cut diagonal and center-line halves from identical rectangles and rearrange. If circular thirds are made by parallel strips, compare covered amounts; equal spacing alone does not give equal circle areas.

Extend and record

Find another equal partition and show the proof by cut/overlay or rearrangement. Record item, exact action, response, access, answer-supplying cues and a next step. Timing is flexible.

Teacher script | Exit ticket

Exit ticket in action

Purpose and selected evidence

Bank: M28-M30, O28-O30. Choose 1-2 per meeting; the selections below may span days.

0-2 minutes | Invite

State the task, offer its materials and ask the learner to propose a first step. Do not preview an independent answer.

2-9 minutes | Exact teacher moves

Collect O28 circle thirds and O29 rectangle comparison. Use O30 for a chosen share count, then complete any unobserved circle/rectangle and share-count combination.

9-13 minutes | Check and respond

Ask: Show how you know. Listen for equal covered amounts, correct share and whole words, and same-whole reasoning even when share shapes differ.

If any four parts are called fourths, overlay cut shares from unequal strips and compare. If equal shares must be the same shape, cut diagonal and center-line halves from identical rectangles and rearrange. If circular thirds are made by parallel strips, compare covered amounts; equal spacing alone does not give equal circle areas.

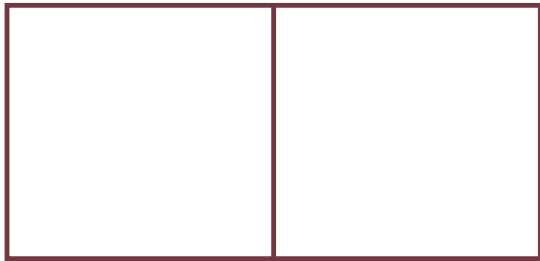
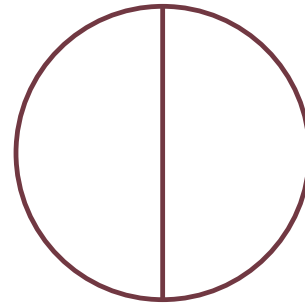
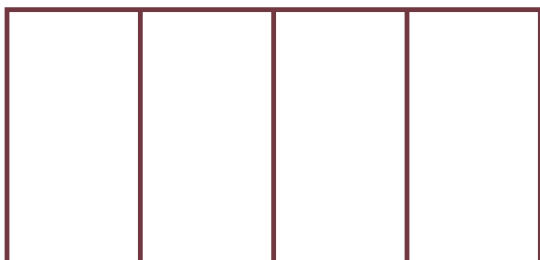
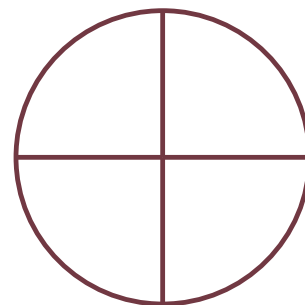
Extend and record

Find another equal partition and show the proof by cut/overlay or rearrangement. Record item, exact action, response, access, answer-supplying cues and a next step. Timing is flexible.

Teacher anchor | equal shares

Halves, thirds and fourths

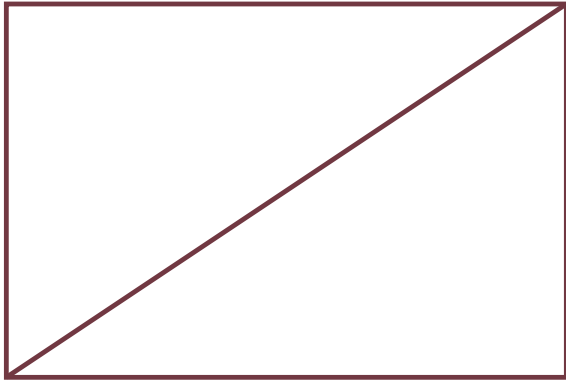
Completed examples for instruction only. Circle radii divide the full turn equally: 180° , 120° , 90° . Degrees are teacher verification, not a learner requirement.

**Two halves****Three thirds****Four fourths**

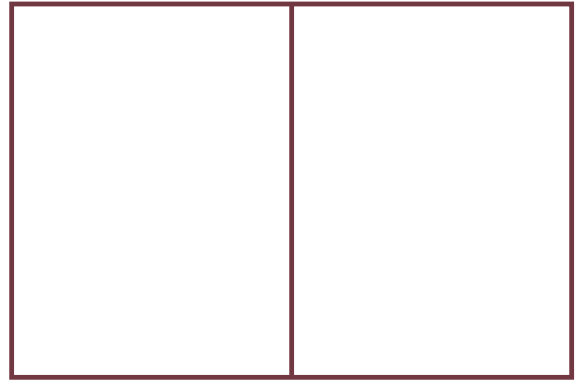
Teacher anchor | same-size wholes

Equal amount, different shape

Whole A

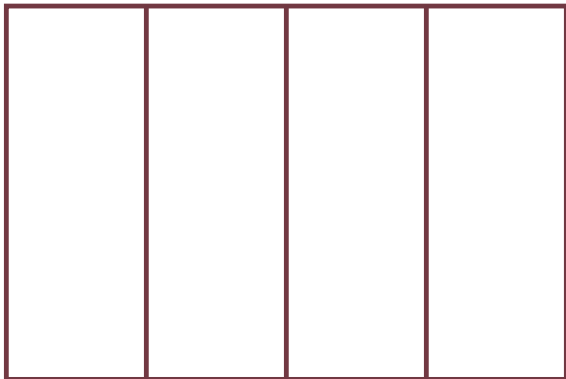


Whole B

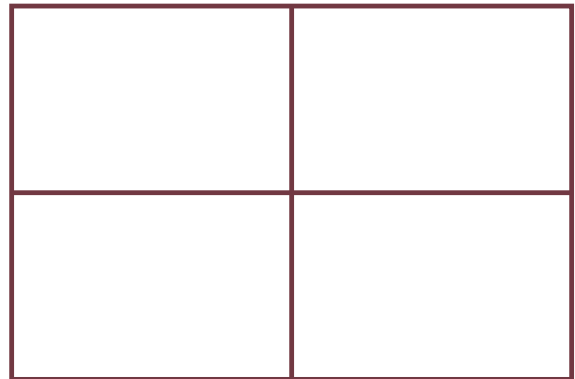


Each triangle in A is half of the rectangle. Each rectangle in B is half of an identical rectangle. Different shape, same amount. Cut a rectangular half across its middle height into two smaller rectangles; cut each small rectangle diagonally. Rearrange the four matching triangles to cover the diagonal half.

Whole A



Whole B



Each strip and each grid rectangle is a fourth of / quarter of an identical whole. Cut a grid quarter into two equal narrow rectangles; stack them end-to-end to match a strip quarter.

Equal sectors cover the circle

A circle split by three rays separated by equal turns has three congruent sectors. The full turn is 360 degrees; $360 \div 3 = 120$ degrees. Rotate a cut sector one third-turn to cover either other sector. Sector interiors do not overlap and their union covers the circle. The shared center and boundary rays are not additional pieces.



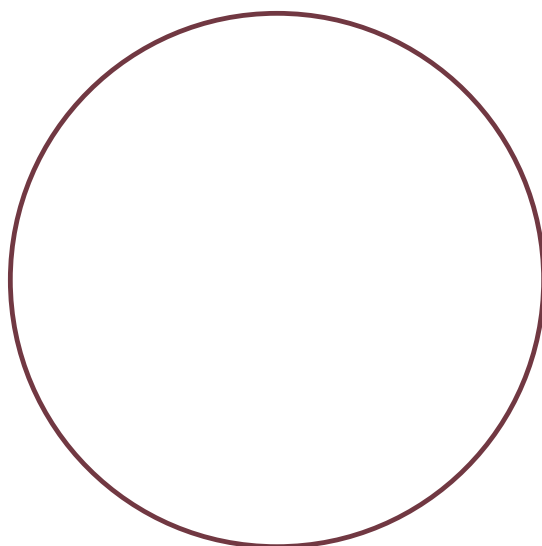
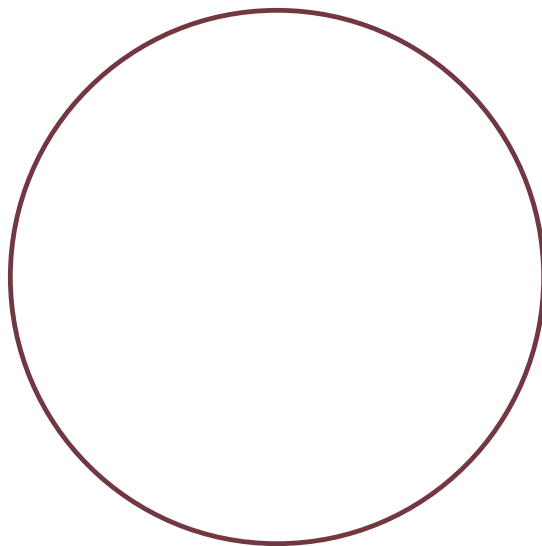
Teach with this model, then remove it. A learner can estimate equal thirds and verify by overlay; record intended equality separately from fine-motor precision. For an independent attempt do not supply the center or ray positions. Adults may carry out exact learner directions.

Rectangle proof: equal strips have width W/n and height H , so each area is WH/n . Diagonal halves each cover $WH/2$. Two diagonals make four triangles each covering $WH/4$. These formulas are teacher checks only.

Student master | copy as needed

Fresh circle wholes

Use for folding, cutting or a new attempt. Adults cut. Keep comparison wholes the same size.



Student master | copy as needed

Fresh rectangle wholes

Use for folding, cutting or a new attempt. Adults cut. Keep comparison wholes the same size.



Student organizer

Explain and check

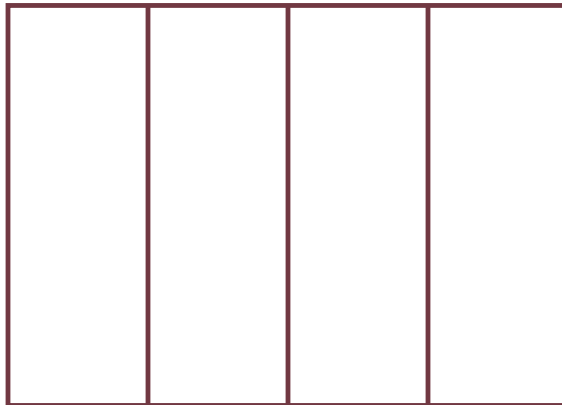
My task: _____

I know because: _____

Student | Warm-up

M01 | Choose and explain

Name: _____ Date: _____

How many fourths make this whole?

A. 2

B. 3

C. 1

D. 4

Tell or show how you know.

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Student | Warm-up

O01 | Make and explain

Name: _____ Date: _____

Make 2 equal shares in this rectangle. Name one share and the whole. Explain equality.



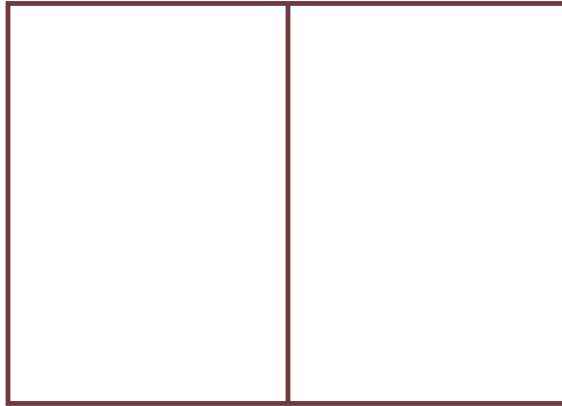
Tell or show how you know. An adult may record your words.

My explanation: _____

Student | Warm-up

M02 | Choose and explain

Name: _____ Date: _____

What are the equal shares called?

- A. thirds
- B. halves
- C. unequal parts
- D. fourths

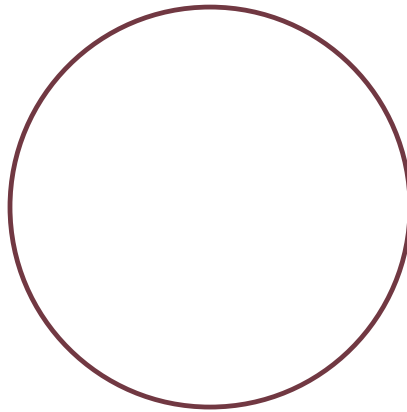
Tell or show how you know.

Student | Warm-up

002 | Make and explain

Name: _____ Date: _____

Make 2 equal shares in this circle. Name one share and the whole. Explain equality.



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

My explanation: _____

Teacher-only worked keys

Items 01-02

M01 | D - 4

Target B. The whole is 4 fourths.

001 | Accepted evidence

Target A. Example: equal-width strips. Each share is half of the rectangle; the whole is 2 halves. Check equal coverage using folding/overlay; for circle thirds use three matching sectors.

Accept mathematically equivalent explanations; record actual work and any mathematical cue separately.

M02 | B - halves

Target B. There are 2 equal shares, so they are halves.

002 | Accepted evidence

Target A. Example: 2 equal sectors through the center. Each share is half of the circle; the whole is 2 halves. Check equal coverage using folding/overlay; for circle thirds use three matching sectors.

Accept mathematically equivalent explanations; record actual work and any mathematical cue separately.