

Larger units, smaller units



GRADE 4 | NC.4.MD.2

Seven teaching sections • 30 choice tasks • 30 open/performance tasks

Teacher scripts, original models, student workspaces, authentic performance records, worked keys and access supports.

Select tasks across several lessons. The 60-item bank is not a one-sitting test.

Current 2026-27 / 2027-28 NC standards.

Free sample | Contents

NC.4.MD.2 | Fourth Grade mathematics

This sample contains 20 complete selected pages from the 108-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-16, 45-46, 78, 93

Representative activities

M01: sample PDF page(s) 16; original page(s) 15

M02: sample PDF page(s) 17; original page(s) 16

O01: sample PDF page(s) 18; original page(s) 45

O02: sample PDF page(s) 19; original page(s) 46

Selected teacher prompts and keys: original page(s) 2, 78, 93

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

Teacher guide: exact standard and targets; preparation/access; worked model and anchor chart; seven section scripts; reusable organizers.

Student bank: M01-M30 choice practice, followed by O01-O30 open/performance tasks. Every task has a target and worked key in the teacher-only section. Print only selected pages.

Suggested sequence: Day 1 warm-up + I Do (20 minutes); Day 2 We Do + collaborative practice (28 minutes); Day 3 independent practice + exit (22 minutes). Add 10-minute small-group reteaching based on observed needs.

Reserve extra sessions for actual tool use or data collection. Return to all targets using fresh tasks. Supported teaching is not independent assessment.

After the bank: target coverage, instructional rubric, blank individual record, worked keys, sources and implementation notes.

Original visual models show equal units, timeline intervals, conversion segments or data frequencies. They support reasoning; they are not physical measuring instruments.

TEACHER GUIDE

The exact NC standard

NC.4.MD.2: Use multiplicative reasoning to convert metric measurements from a larger unit to a smaller unit using place value understanding, two-column tables, and length models.

Learning targets

A | Explain larger-to-smaller conversions using multiplication and place value.

B | Represent metric conversions in two-column tables.

C | Represent metric conversions with length models.

Essential question: How does a tool or representation help us justify a measurement or data conclusion?

TEACHER GUIDE

Prepare and include

Prerequisites: Multiply whole numbers by 100 and 1,000; understand place value and equal units.

Materials: Meter stick, metric reference chart, pencils and supplied table/model workspaces. The drawings are not physical measuring tools.

Access: neutral read-aloud, enlarged print, high contrast, pointing, speech, signed/AAC response or scribing. Students may direct an adult to manipulate a tool while controlling its setup and reading.

Do not perform the mathematical skill for the learner. Name and record any answer-supplying cue separately. If an inaccessible task does not show interpretable evidence, record N/O and arrange another valid opportunity.

What to keep: Collect a correct conversion, a place-value explanation, a completed two-column table and a labeled length model. Include m to cm, kg to g and L to mL.

Misconception response: If a learner divides, ask whether more or fewer smaller units cover the same amount. Build equal meter segments before connecting to multiplication.

TEACHER GUIDE

Worked teacher model

Convert 3 m to centimeters. Say: "Each meter contains 100 centimeters. Three equal meter lengths contain $3 \times 100 = 300$ centimeters." A two-column table has meters / centimeters: 1 / 100, 2 / 200, 3 / 300. Three hundreds are 300; the digit 3 has value 300 in the hundreds place.

1 m	1 m	1 m
100 cm	100 cm	100 cm

Each segment is equal. Whole length = ? cm

Model of equivalent quantities; not drawn to physical scale.

Say: "Show the unit, interval or group that supports each step. Then check against the original question."

TEACHER GUIDE

Anchor chart | reasoning tools

To convert a larger unit to a smaller unit, count how many smaller units are in each larger unit and multiply. Explain the change in place value; do not rely only on a rule about adding zeros.

1. Identify the quantity, question and unit.
2. Choose or build a representation with equal intervals or groups.
3. Keep the labels connected to their meaning.
4. Explain the calculation and check in context.

Teaching prompt: "Where do you see your reasoning in the model?" During independent assessment, do not point to the part that supplies the answer.

TEACHER GUIDE

Warm-up | teaching script

Purpose and allocation: Warm-up; M01-M04 and O01-O04. Select tasks over several lessons; do not assign the complete bank at once.

About 8 minutes: open for 2 minute(s), explore selected M01 and O01 for 3 minutes, and record/reflect for 3 minute(s). Physical collection or measurement can take a separate session.

Say: "What is being measured or counted? What does each unit or mark mean? How could you check?" Invite a learner to explain a choice; ask others to show a second representation. Partners each record their own solution.

Listen/look for: Collect a correct conversion, a place-value explanation, a completed two-column table and a labeled length model. Include m to cm, kg to g and L to mL.

Respond to a misconception: If a learner divides, ask whether more or fewer smaller units cover the same amount. Build equal meter segments before connecting to multiplication.

Access: neutral read-aloud, enlarged diagrams, signed/AAC/oral responses, scribe or learner-directed tool manipulation are allowed. Record access separately from mathematical help.

Early finisher: create a new example with the same constraints, solve it and explain why your representation works.

Close: record exact words/actions, item, target, access, mathematical cues and one next teaching step. Use fresh independent evidence after reteaching.

TEACHER GUIDE

I Do | teaching script

Purpose and allocation: I Do; M05-M08 and O05-O08. Select tasks over several lessons; do not assign the complete bank at once.

About 12 minutes: open for 2 minute(s), explore selected M05 and O05 for 7 minutes, and record/reflect for 3 minute(s). Physical collection or measurement can take a separate session.

Say: "What is being measured or counted? What does each unit or mark mean? How could you check?" Demonstrate the complete worked model on the model page, saying each step aloud. Keep this supported example separate from assessment.

Listen/look for: Collect a correct conversion, a place-value explanation, a completed two-column table and a labeled length model. Include m to cm, kg to g and L to mL.

Respond to a misconception: If a learner divides, ask whether more or fewer smaller units cover the same amount. Build equal meter segments before connecting to multiplication.

Access: neutral read-aloud, enlarged diagrams, signed/AAC/oral responses, scribe or learner-directed tool manipulation are allowed. Record access separately from mathematical help.

Early finisher: create a new example with the same constraints, solve it and explain why your representation works.

Close: record exact words/actions, item, target, access, mathematical cues and one next teaching step. Use fresh independent evidence after reteaching.

TEACHER GUIDE

We Do | teaching script

Purpose and allocation: We Do; M09-M13 and O09-O13. Select tasks over several lessons; do not assign the complete bank at once.

About 15 minutes: open for 2 minute(s), explore selected M09 and O09 for 10 minutes, and record/reflect for 3 minute(s). Physical collection or measurement can take a separate session.

Say: "What is being measured or counted? What does each unit or mark mean? How could you check?" Invite a learner to explain a choice; ask others to show a second representation. Partners each record their own solution.

Listen/look for: Collect a correct conversion, a place-value explanation, a completed two-column table and a labeled length model. Include m to cm, kg to g and L to mL.

Respond to a misconception: If a learner divides, ask whether more or fewer smaller units cover the same amount. Build equal meter segments before connecting to multiplication.

Access: neutral read-aloud, enlarged diagrams, signed/AAC/oral responses, scribe or learner-directed tool manipulation are allowed. Record access separately from mathematical help.

Early finisher: create a new example with the same constraints, solve it and explain why your representation works.

Close: record exact words/actions, item, target, access, mathematical cues and one next teaching step. Use fresh independent evidence after reteaching.

TEACHER GUIDE

Collaborative practice | teaching script

Purpose and allocation: Collaborative practice; M14-M18 and O14-O18. Select tasks over several lessons; do not assign the complete bank at once.

About 13 minutes: open for 2 minute(s), explore selected M14 and O14 for 8 minutes, and record/reflect for 3 minute(s). Physical collection or measurement can take a separate session.

Say: "What is being measured or counted? What does each unit or mark mean? How could you check?" Invite a learner to explain a choice; ask others to show a second representation. Partners each record their own solution.

Listen/look for: Collect a correct conversion, a place-value explanation, a completed two-column table and a labeled length model. Include m to cm, kg to g and L to mL.

Respond to a misconception: If a learner divides, ask whether more or fewer smaller units cover the same amount. Build equal meter segments before connecting to multiplication.

Access: neutral read-aloud, enlarged diagrams, signed/AAC/oral responses, scribe or learner-directed tool manipulation are allowed. Record access separately from mathematical help.

Early finisher: create a new example with the same constraints, solve it and explain why your representation works.

Close: record exact words/actions, item, target, access, mathematical cues and one next teaching step. Use fresh independent evidence after reteaching.

TEACHER GUIDE

Independent practice | teaching script

Purpose and allocation: Independent practice; M19-M23 and O19-O23. Select tasks over several lessons; do not assign the complete bank at once.

About 17 minutes: open for 2 minute(s), explore selected M19 and O19 for 12 minutes, and record/reflect for 3 minute(s). Physical collection or measurement can take a separate session.

Say: "Show what you know. Choose your own method and explain how you checked." Read words neutrally. Do not name an operation, point to a graph value, align a tool, or supply a unit relationship.

Listen/look for: Collect a correct conversion, a place-value explanation, a completed two-column table and a labeled length model. Include m to cm, kg to g and L to mL.

Respond to a misconception: If a learner divides, ask whether more or fewer smaller units cover the same amount. Build equal meter segments before connecting to multiplication.

Access: neutral read-aloud, enlarged diagrams, signed/AAC/oral responses, scribe or learner-directed tool manipulation are allowed. Record access separately from mathematical help.

Early finisher: create a new example with the same constraints, solve it and explain why your representation works.

Close: record exact words/actions, item, target, access, mathematical cues and one next teaching step. Use fresh independent evidence after reteaching.

TEACHER GUIDE

Small-group reteach | teaching script

Purpose and allocation: Small-group reteach; M24-M27 and O24-O27. Select tasks over several lessons; do not assign the complete bank at once.

About 10 minutes: open for 2 minute(s), explore selected M24 and O24 for 5 minutes, and record/reflect for 3 minute(s). Physical collection or measurement can take a separate session.

Say: "What is being measured or counted? What does each unit or mark mean? How could you check?" Invite a learner to explain a choice; ask others to show a second representation. Partners each record their own solution.

Listen/look for: Collect a correct conversion, a place-value explanation, a completed two-column table and a labeled length model. Include m to cm, kg to g and L to mL.

Respond to a misconception: If a learner divides, ask whether more or fewer smaller units cover the same amount. Build equal meter segments before connecting to multiplication.

Access: neutral read-aloud, enlarged diagrams, signed/AAC/oral responses, scribe or learner-directed tool manipulation are allowed. Record access separately from mathematical help.

Early finisher: create a new example with the same constraints, solve it and explain why your representation works.

Close: record exact words/actions, item, target, access, mathematical cues and one next teaching step. Use fresh independent evidence after reteaching.

TEACHER GUIDE

Exit ticket | teaching script

Purpose and allocation: Exit ticket; M28-M30 and O28-O30. Select tasks over several lessons; do not assign the complete bank at once.

About 5 minutes: open for 1 minute(s), explore selected M28 and O28 for 3 minutes, and record/reflect for 1 minute(s). Physical collection or measurement can take a separate session.

Say: "Show what you know. Choose your own method and explain how you checked." Read words neutrally. Do not name an operation, point to a graph value, align a tool, or supply a unit relationship.

Listen/look for: Collect a correct conversion, a place-value explanation, a completed two-column table and a labeled length model. Include m to cm, kg to g and L to mL.

Respond to a misconception: If a learner divides, ask whether more or fewer smaller units cover the same amount. Build equal meter segments before connecting to multiplication.

Access: neutral read-aloud, enlarged diagrams, signed/AAC/oral responses, scribe or learner-directed tool manipulation are allowed. Record access separately from mathematical help.

Early finisher: create a new example with the same constraints, solve it and explain why your representation works.

Close: record exact words/actions, item, target, access, mathematical cues and one next teaching step. Use fresh independent evidence after reteaching.

STUDENT RESOURCE

Reusable representation organizer

Two-column table: larger unit / smaller unit

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Length model: equal larger-unit segments

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Multiplication and place-value explanation

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STUDENT CHOICE PRACTICE

M01 | Warm-up

Convert 2 m to cm.

m	cm
1	100
2	?

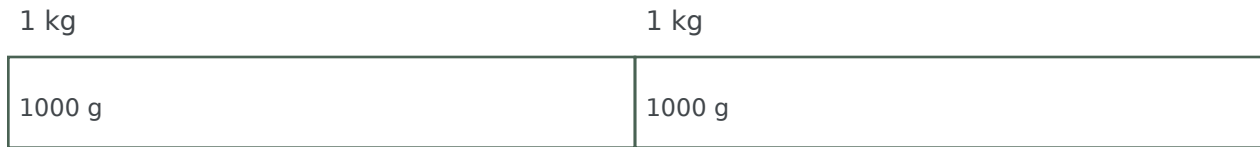
- A. 200 cm
- B. 400 cm
- C. 300 cm
- D. 500 cm

Explain or show how you decided.

STUDENT CHOICE PRACTICE

M02 | Warm-up

Convert 2 kg to g.



Each segment is equal. Whole length = ? g

Model of equivalent quantities; not drawn to physical scale.

- A. 2,000 g
- B. 1,000 g
- C. 4,000 g
- D. 0 g

Explain or show how you decided.

STUDENT INDIVIDUAL PERFORMANCE

001 | Warm-up

Convert 5 kg to g. Explain the multiplication using place value. Show a two-column table and a length model.

Two-column table

Length model

Multiplication and place value

STUDENT INDIVIDUAL PERFORMANCE

002 | Warm-up

Convert 3 m to cm. Explain the multiplication using place value. Show a two-column table and a length model.

Two-column table

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Length model

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Multiplication and place value

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TEACHER ONLY | KEEP SEPARATE FROM STUDENT PAGES

M01-M02 | worked keys

M01 | A. 200 cm

$2 \times 100 = 200$ cm. Each m contains 100 cm. The digit 2 represents 2 hundreds, giving 200. The same quantity uses more smaller units. Two-column table: 1 / 100; 2 / 200.

Distractor checks: B (400 cm): Uses 2 conversion group(s) too many. C (300 cm): Uses 1 conversion group(s) too many. D (500 cm): Uses 3 conversion group(s) too many.

Target B: Represent metric conversions in two-column tables.

M02 | A. 2,000 g

$2 \times 1,000 = 2,000$ g. Each kg contains 1,000 g. The digit 2 represents 2 thousands, giving 2,000. The same quantity uses more smaller units. The model contains 2 equal segments; together they show 2,000 g.

Distractor checks: B (1,000 g): Uses 1 conversion group(s) too few. C (4,000 g): Uses 2 conversion group(s) too many. D (0 g): Uses 2 conversion group(s) too few.

Target C: Represent metric conversions with length models.

TEACHER ONLY | KEEP SEPARATE FROM STUDENT PAGES

001-002 | worked keys

001 | Expected performance

$5 \times 1,000 = 5,000$ g. Each kg contains 1,000 g. The digit 5 represents 5 thousands, giving 5,000. The same quantity uses more smaller units. Table: 1 / 1,000, 5 / 5,000. Model: 5 equal segments labeled 1,000 g each.

Target A: Explain larger-to-smaller conversions using multiplication and place value.

002 | Expected performance

$3 \times 100 = 300$ cm. Each m contains 100 cm. The digit 3 represents 3 hundreds, giving 300. The same quantity uses more smaller units. Table: 1 / 100, 3 / 300. Model: 3 equal segments labeled 100 cm each.

Target A: Explain larger-to-smaller conversions using multiplication and place value.