

NORTH CAROLINA MATHEMATICS

Same Length, Different Units



Grade 2 | NC.2.MD.2

Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Teacher scripts • Visual models • Measurement tools and organizers
30 choice tasks + 30 open / performance tasks • Worked keys
Observation records • Short multi-session learning sequence

Aligned to current NC standards used in 2026-27 and 2027-28.
Select a few tasks per session. This bank is not a single test.

Free sample | Contents

NC.2.MD.2 | Second Grade mathematics

This sample contains 18 complete selected pages from the 69-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-15, 30, 51, 57

Representative activities

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

M02: sample PDF page(s) 16; original page(s) 15

O01: sample PDF page(s) 17; original page(s) 30

O02: sample PDF page(s) 17; original page(s) 30

Selected teacher prompts and keys: original page(s) 51, 57

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

Start here

What is in this packet

Pages 3-7: exact standard, materials, models and access. Pages 8-14: seven teaching scripts. Pages 15-29: choice bank. Pages 30-44: performance bank. Later pages: reusable organizers, scale-checked targets, worked keys, records and sources. Teacher-only keys and preparation are separate from student tasks.

Plan across several days

Session 1: warm-up and I Do, select M01, O01, M05 and O05. Session 2: We Do and partners, select M09, O09, M14 and O14. Session 3: independent check, select M19 and O19. Session 4 if needed: reteach M24/O24, then fresh exit M28/O28. Use 15-25 minute sessions, with movement and tool handling; the rest is a reusable bank.

Print and prepare

Print only selected student pages, organizers and needed targets. Print scale-critical pages at 100% / Actual Size, never Fit or Shrink. Verify both checkbars with a trusted real ruler. If either is wrong, reprint before measuring. Adult handles cutting. Other pictures are schematic and are not real object lengths.

Collect actual performance

Choice tasks reveal reasoning but cannot replace physically measuring. Observe the child selecting or using the tool and identifying endpoints. Record exactly what the child does and says, the unit, the access support and any answer-supplying cue.

TEACHER GUIDE

Standard and learning targets

Exact current standard

Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Learning targets

1. Measure the same endpoints twice.
2. Use two different unit lengths correctly.
3. Explain why smaller units usually give a larger count.

Coverage and essential question

How can the same length have different counts? Children physically measure fixed endpoints with 1 cm and 2 cm blocks, then compare centimeters with inches on real objects. Exact unit conversions are not a prerequisite.

Evidence and mathematical practices

Ask students to use tools strategically, attend to endpoints and units, explain their reasoning, and critique a flawed measurement. Record observable actions and explanations, not a claimed mastery label. No official cut score or speed requirement is invented.

TEACHER GUIDE

Materials and preparation

Safe physical materials

Real centimeter/inch rulers, a meter stick, yardstick, and measuring tapes marked in needed units. Include a tape marked in feet and, if available, yards. If no yard scale is available, use a real yardstick end to end. Large paper blocks and supplied target sheets; pencils, books, shelves, desk edges, rugs and safe clear floor paths. No climbing or measuring another person.

Before students begin

Verify printed checkbars. Keep target labels visible but all dimensions and keys teacher-only. Prepare a separate benchmark of 1 inch, 1 foot, 1 yard, 1 centimeter and 1 meter using trusted real tools for estimation activities. Do not place repeated benchmarks along an estimate target until after the estimate is recorded.

Prerequisites and vocabulary

Count intervals rather than tick marks; compare lengths; count and subtract within 100 as needed. Teach endpoint, length, zero mark, unit, estimate, actual measurement, difference, centimeter, inch, foot, yard and meter. Read ft as feet, yd as yards, cm as centimeters, m as meters and in as inches.

Between marks

Do not pretend every object has a whole-number length. Allow "between 8 and 9 cm" or "about 9 cm" when supported by the scale. Differences of approximate measures are approximate. Choose whole-unit targets for a focused exact subtraction demonstration; the printed targets supply these.

Physical access

Use a stable nonslip surface, large high-contrast marks, tactile endpoint markers or an accessible digital display where appropriate. An adult may steady an object, not choose the answer. A student may direct an adult tool movement precisely when motor access is a barrier; record the route used.

TEACHER GUIDE

Teacher model: think aloud

Set up

Use strip J with six 1 cm blocks and three 2 cm blocks. Say: "I will not stretch, trim or move either endpoint of this strip."

Model

Lay six short blocks without gaps or overlaps. Say: "6 short blocks, each 1 cm." Remove them and lay three long blocks over the same endpoints. Say: "3 long blocks, each 2 cm. Each long block replaces two short ones. 3 groups of 2 cm make 6 cm."

Explain

"The strip did not become shorter. The larger unit covers more length, so fewer units are needed." Compare real inch and centimeter marks. Do not suggest the exact 2-to-1 block relation also applies to inches and centimeters.



Same strip



1 cm block



2 cm block

Schematic strip; units show relative sizes only.

TEACHER GUIDE

Anchor chart: a fair measurement

1. Name the job

What object or edge? Mark both endpoints. Say which unit you need.

2. Choose and use the tool

Choose a marked tool that fits the object and unit. Align zero, keep the tool along the measured path, and read the other endpoint. For repeated moves or blocks, leave no gaps and no overlaps.

3. Record meaningfully

Write the number AND unit. Keep separate rows for different objects or different unit sizes. If the endpoint lies between marks, report an interval or an honest approximation.

4. Think about the result

Same endpoints, different unit sizes: smaller units need more copies; larger units need fewer. The object length stays fixed. Compare physical unit sizes, not just the written counts.

Partner language

"I chose ___ because ___." "My endpoints are ___." "My measurement is ___ ___." "I checked by ___." Partners ask questions without supplying the count or pointing to the correct mark during individual evidence.

TEACHER GUIDE

Access, reteach and extension

Keep the mathematics visible

Read directions neutrally, define vocabulary before assessment, allow oral/AAC/signed/dictated responses, and provide larger tools or tactile marks. Do not count, choose a unit, move the ruler to the correct answer or name a benchmark count for the learner during independent evidence.

Respond to misconceptions

Counting tick marks: point out the space between two adjacent marks in teaching, then try a fresh object. Starting at the tool edge: compare edge and zero on a ruler with a margin. Gaps or overlaps: physically repair a practice row. Mixed units: remeasure with one shared unit. Comparing counts alone: place a long and short unit side by side.

Targeted support

Begin with a strip exactly covered by short and double-length blocks. Move to actual inch/cm measurements only after the child holds endpoints fixed.

Extension across sessions

Create a small classroom measurement exhibit. Choose three real objects, state the intended length, select units/tools, and gather measurements. Recheck one surprising result. Explain the change with evidence. For estimation, record estimates first. For unit comparison, measure each object twice. For differences, compare named pairs in one unit.

Scoring boundaries

Do not score handwriting, decoding, accent or speed. N/O means unobserved, inaccessible or insufficient evidence. A 0 requires an interpretable observed incorrect performance. Keep answer-supplying cues separate from allowed access. Use multiple observations, not a single choice response, to plan instruction.

TEACHER GUIDE

Warm-up teaching script

Purpose and selections

Focus: Explain why smaller units usually give a larger count. Bank allocation: M01-M04 and O01-O04. Select M01 and O01; reserve others for later conferences or fresh checks.

Launch | 2 minutes

Say: "Today we will explain why smaller units usually give a larger count." Invite the child to identify the object and endpoints. Ask what information a measurement needs. Do not announce the task answer.

Teach / work | 5-10 minutes

Ask the learner to act first, then explain. Read M01: "A strip is 4 cm long. Measure it with 2 cm blocks. How many blocks fit?" Use the illustrated model if present. Then read O01: "Measure strip J with 1 cm blocks. Measure the SAME strip with 2 cm blocks. Record both. Explain the counts. Check that the far endpoint matches your reading." Allow enough time for actual tool handling; stop before fatigue.

Listen and respond | 3 minutes

Ask: "How did you choose the unit? Show both endpoints. How can you check?" Listen for unit intervals rather than marks. If the result is unclear, ask for a demonstration. During independent or exit evidence, record the error before teaching; use a different item after support.

Teacher-only check

The same 4 cm length contains 4 one-centimeter intervals or 2 intervals of 2 cm. 2 groups of 2 cm cover 4 cm. Answer: 2 blocks. Strip J: 6 short blocks of 1 cm; 3 long blocks of 2 cm. $3 \times 2 \text{ cm} = 6 \text{ cm}$. The longer unit covers twice as much, so half as many are needed. Observe both complete physical measurements, not just a memorized statement. For the additional check, preserve the same endpoints and unit; a reversal does not change length. Gaps omit length, overlaps count some length twice, and tick marks bound intervals rather than each being a unit.

Record / next step | 2 minutes

Record item ID, exact action or words, measurements, unit, access and any cue. Use the evidence record. If needed, reteach one misconception with the model, then use a fresh bank item. Early finishers explain a second valid tool or checking strategy.

TEACHER GUIDE

I Do teaching script

Purpose and selections

Focus: Explain why smaller units usually give a larger count. Bank allocation: M05-M08 and O05-O08. Select M05 and O05; reserve others for later conferences or fresh checks.

Launch | 2 minutes

Say: "Today we will explain why smaller units usually give a larger count." Invite the child to identify the object and endpoints. Ask what information a measurement needs. Do not announce the task answer.

Teach / work | 5-10 minutes

Model aloud, then pause for a prediction. Read M05: "A strip is 36 cm long. Measure it with 4 cm blocks. How many blocks fit?" Use the illustrated model if present. Then read O05: "Measure strip J with 1 cm blocks. Measure the SAME strip with 2 cm blocks. Record both. Explain the counts. Turn the target around and check again." Allow enough time for actual tool handling; stop before fatigue.

Listen and respond | 3 minutes

Ask: "How did you choose the unit? Show both endpoints. How can you check?" Listen for unit intervals rather than marks. If the result is unclear, ask for a demonstration. During independent or exit evidence, record the error before teaching; use a different item after support.

Teacher-only check

The same 36 cm length contains 36 one-centimeter intervals or 9 intervals of 4 cm. 9 groups of 4 cm cover 36 cm. Answer: 9 blocks. Strip J: 6 short blocks of 1 cm; 3 long blocks of 2 cm. $3 \times 2 \text{ cm} = 6 \text{ cm}$. The longer unit covers twice as much, so half as many are needed. Observe both complete physical measurements, not just a memorized statement. For the additional check, preserve the same endpoints and unit; a reversal does not change length. Gaps omit length, overlaps count some length twice, and tick marks bound intervals rather than each being a unit.

Record / next step | 2 minutes

Record item ID, exact action or words, measurements, unit, access and any cue. Use the evidence record. If needed, reteach one misconception with the model, then use a fresh bank item. Early finishers explain a second valid tool or checking strategy.

TEACHER GUIDE

We Do teaching script

Purpose and selections

Focus: Explain why smaller units usually give a larger count. Bank allocation: M09-M13 and O09-O13. Select M09 and O09; reserve others for later conferences or fresh checks.

Launch | 2 minutes

Say: "Today we will explain why smaller units usually give a larger count." Invite the child to identify the object and endpoints. Ask what information a measurement needs. Do not announce the task answer.

Teach / work | 5-10 minutes

Ask the learner to act first, then explain. Read M09: "A strip is 27 cm long. Measure it with 1 cm blocks. How many blocks fit?" Use the illustrated model if present. Then read O09: "Measure strip K with 1 cm blocks. Measure the SAME strip with 2 cm blocks. Record both. Explain the counts. Turn the target around and check again." Allow enough time for actual tool handling; stop before fatigue.

Listen and respond | 3 minutes

Ask: "How did you choose the unit? Show both endpoints. How can you check?" Listen for unit intervals rather than marks. If the result is unclear, ask for a demonstration. During independent or exit evidence, record the error before teaching; use a different item after support.

Teacher-only check

The same 27 cm length contains 27 one-centimeter intervals or 9 intervals of 3 cm. 9 groups of 3 cm cover 27 cm. Answer: 27 blocks. Strip K: 8 short blocks of 1 cm; 4 long blocks of 2 cm. $4 \times 2 \text{ cm} = 8 \text{ cm}$. The longer unit covers twice as much, so half as many are needed. Observe both complete physical measurements, not just a memorized statement. For the additional check, preserve the same endpoints and unit; a reversal does not change length. Gaps omit length, overlaps count some length twice, and tick marks bound intervals rather than each being a unit.

Record / next step | 2 minutes

Record item ID, exact action or words, measurements, unit, access and any cue. Use the evidence record. If needed, reteach one misconception with the model, then use a fresh bank item. Early finishers explain a second valid tool or checking strategy.

TEACHER GUIDE

Collaborative practice teaching script

Purpose and selections

Focus: Explain why smaller units usually give a larger count. Bank allocation: M14-M18 and O14-O18. Select M14 and O14; reserve others for later conferences or fresh checks.

Launch | 2 minutes

Say: "Today we will explain why smaller units usually give a larger count." Invite the child to identify the object and endpoints. Ask what information a measurement needs. Do not announce the task answer.

Teach / work | 5-10 minutes

Ask the learner to act first, then explain. Read M14: "A strip is 28 cm long. Measure it with 4 cm blocks. How many blocks fit?" Use the illustrated model if present. Then read O14: "Measure strip N with 1 cm blocks. Measure the SAME strip with 2 cm blocks. Record both. Explain the counts. Turn the target around and check again." Partners alternate measurer and checker; each child completes a fresh individual measurement.

Listen and respond | 3 minutes

Ask: "How did you choose the unit? Show both endpoints. How can you check?" Listen for unit intervals rather than marks. If the result is unclear, ask for a demonstration. During independent or exit evidence, record the error before teaching; use a different item after support.

Teacher-only check

The same 28 cm length contains 28 one-centimeter intervals or 7 intervals of 4 cm. 7 groups of 4 cm cover 28 cm. Answer: 7 blocks. Strip N: 14 short blocks of 1 cm; 7 long blocks of 2 cm. $7 \times 2 \text{ cm} = 14 \text{ cm}$. The longer unit covers twice as much, so half as many are needed. Observe both complete physical measurements, not just a memorized statement. For the additional check, preserve the same endpoints and unit; a reversal does not change length. Gaps omit length, overlaps count some length twice, and tick marks bound intervals rather than each being a unit.

Record / next step | 2 minutes

Record item ID, exact action or words, measurements, unit, access and any cue. Use the evidence record. If needed, reteach one misconception with the model, then use a fresh bank item. Early finishers explain a second valid tool or checking strategy.

TEACHER GUIDE

Independent practice teaching script

Purpose and selections

Focus: Explain why smaller units usually give a larger count. Bank allocation: M19-M23 and O19-O23. Select M19 and O19; reserve others for later conferences or fresh checks.

Launch | 2 minutes

Say: "Today we will explain why smaller units usually give a larger count." Invite the child to identify the object and endpoints. Ask what information a measurement needs. Do not announce the task answer.

Teach / work | 5-10 minutes

Ask the learner to act first, then explain. Read M19: "A strip is 40 cm long. Measure it with 4 cm blocks. How many blocks fit?" Use the illustrated model if present. Then read O19: "Measure strip J with 1 cm blocks. Measure the SAME strip with 2 cm blocks. Record both. Explain the counts. Explain why the zero mark matters." Allow enough time for actual tool handling; stop before fatigue.

Listen and respond | 3 minutes

Ask: "How did you choose the unit? Show both endpoints. How can you check?" Listen for unit intervals rather than marks. If the result is unclear, ask for a demonstration. During independent or exit evidence, record the error before teaching; use a different item after support.

Teacher-only check

The same 40 cm length contains 40 one-centimeter intervals or 10 intervals of 4 cm. 10 groups of 4 cm cover 40 cm. Answer: 10 blocks. Strip J: 6 short blocks of 1 cm; 3 long blocks of 2 cm. $3 \times 2 \text{ cm} = 6 \text{ cm}$. The longer unit covers twice as much, so half as many are needed. Observe both complete physical measurements, not just a memorized statement. For the additional check, preserve the same endpoints and unit; a reversal does not change length. Gaps omit length, overlaps count some length twice, and tick marks bound intervals rather than each being a unit.

Record / next step | 2 minutes

Record item ID, exact action or words, measurements, unit, access and any cue. Use the evidence record. If needed, reteach one misconception with the model, then use a fresh bank item. Early finishers explain a second valid tool or checking strategy.

TEACHER GUIDE

Small-group reteach teaching script

Purpose and selections

Focus: Use two different unit lengths correctly. Bank allocation: M24-M27 and O24-O27. Select M24 and O24; reserve others for later conferences or fresh checks.

Launch | 2 minutes

Say: "Today we will use two different unit lengths correctly." Invite the child to identify the object and endpoints. Ask what information a measurement needs. Do not announce the task answer.

Teach / work | 5-10 minutes

Ask the learner to act first, then explain. Read M24: "A child says 6 inches is shorter than 12 centimeters because 6 is less than 12. What is missing?" Use the illustrated model if present. Then read O24: "Measure the width of the opening of a doorway in centimeters, then in inches. Use the SAME endpoints. Record both and explain what changed." Allow enough time for actual tool handling; stop before fatigue.

Listen and respond | 3 minutes

Ask: "How did you choose the unit? Show both endpoints. How can you check?" Listen for unit intervals rather than marks. If the result is unclear, ask for a demonstration. During independent or exit evidence, record the error before teaching; use a different item after support.

Teacher-only check

Different-unit numbers alone cannot compare lengths; an inch is longer than a centimeter. Actual values vary. Independently check both measures of the same endpoints. The centimeter count is larger because a centimeter is shorter than an inch; the object stays the same length. Example only: a 10 cm strip is between 3 and 4 inches. Accept approximate or between-mark reports supported by actual readings.

Record / next step | 2 minutes

Record item ID, exact action or words, measurements, unit, access and any cue. Use the evidence record. If needed, reteach one misconception with the model, then use a fresh bank item. Early finishers explain a second valid tool or checking strategy.

TEACHER GUIDE

Exit ticket teaching script

Purpose and selections

Focus: Use two different unit lengths correctly. Bank allocation: M28-M30 and O28-O30. Select M28 and O28; reserve others for later conferences or fresh checks.

Launch | 2 minutes

Say: "Today we will use two different unit lengths correctly." Invite the child to identify the object and endpoints. Ask what information a measurement needs. Do not announce the task answer.

Teach / work | 5-10 minutes

Ask the learner to act first, then explain. Read M28: "One unit is twice as long as another. Both fit a strip exactly. How do the counts relate?" Use the illustrated model if present. Then read O28: "Measure the longest straight edge of a eraser in centimeters, then in inches. Use the SAME endpoints. Record both and explain what changed." Allow enough time for actual tool handling; stop before fatigue.

Listen and respond | 3 minutes

Ask: "How did you choose the unit? Show both endpoints. How can you check?" Listen for unit intervals rather than marks. If the result is unclear, ask for a demonstration. During independent or exit evidence, record the error before teaching; use a different item after support.

Teacher-only check

Two short units replace one long unit, so the longer-unit count is half. Actual values vary. Independently check both measures of the same endpoints. The centimeter count is larger because a centimeter is shorter than an inch; the object stays the same length. Example only: a 10 cm strip is between 3 and 4 inches. Accept approximate or between-mark reports supported by actual readings.

Record / next step | 2 minutes

Record item ID, exact action or words, measurements, unit, access and any cue. Use the evidence record. If needed, reteach one misconception with the model, then use a fresh bank item. Early finishers explain a second valid tool or checking strategy.

STUDENT CHOICE BANK

Choose and explain | 1-2

M01 A strip is 4 cm long. Measure it with 2 cm blocks. How many blocks fit?



Same strip



1 cm block



2 cm block

Schematic strip; units show relative sizes only.

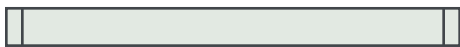
A. 2

B. 42

C. 22

D. 44

M02 A strip is 20 cm long. Measure it with 1 cm blocks. How many blocks fit?



Same strip



1 cm block



2 cm block

Schematic strip; units show relative sizes only.

A. 20

B. 11

C. 27

D. 33

STUDENT PERFORMANCE BANK

Measure and explain | 1-2

O01 Measure strip J with 1 cm blocks. Measure the SAME strip with 2 cm blocks. Record both. Explain the counts. Check that the far endpoint matches your reading.

First unit: ____ **Count:** ____

Second unit: ____ **Count:** ____

Why the counts differ:

O02 Measure strip J with 1 cm blocks. Measure the SAME strip with 2 cm blocks. Record both. Explain the counts. Explain how a gap would change the result.

First unit: ____ **Count:** ____

Second unit: ____ **Count:** ____

Why the counts differ:

TEACHER ONLY

Choice keys | 1-5

M01: A. 2

The same 4 cm length contains 4 one-centimeter intervals or 2 intervals of 2 cm. 2 groups of 2 cm cover 4 cm. Answer: 2 blocks.

Target: Measure the same endpoints twice.

M02: A. 20

The same 20 cm length contains 20 one-centimeter intervals or 10 intervals of 2 cm. 10 groups of 2 cm cover 20 cm. Answer: 20 blocks.

Target: Measure the same endpoints twice.

M03: A. 7

The same 14 cm length contains 14 one-centimeter intervals or 7 intervals of 2 cm. 7 groups of 2 cm cover 14 cm. Answer: 7 blocks.

Target: Measure the same endpoints twice.

M04: B. 9

The same 9 cm length contains 9 one-centimeter intervals or 3 intervals of 3 cm. 3 groups of 3 cm cover 9 cm. Answer: 9 blocks.

Target: Measure the same endpoints twice.

M05: B. 9

The same 36 cm length contains 36 one-centimeter intervals or 9 intervals of 4 cm. 9 groups of 4 cm cover 36 cm. Answer: 9 blocks.

Target: Measure the same endpoints twice.

TEACHER ONLY

Performance keys | 1-3

001 | Explain why smaller units usually give a larger count.

Prepare: Adult supplies checked strip J, at least 14 short blocks and 7 long blocks from the repeated template. Adult cuts. Keep length 6 cm hidden. Both rows must cover the same endpoints.

Evidence / worked response: Strip J: 6 short blocks of 1 cm; 3 long blocks of 2 cm. $3 \times 2 \text{ cm} = 6 \text{ cm}$. The longer unit covers twice as much, so half as many are needed. Observe both complete physical measurements, not just a memorized statement. For the additional check, preserve the same endpoints and unit; a reversal does not change length. Gaps omit length, overlaps count some length twice, and tick marks bound intervals rather than each being a unit.

002 | Explain why smaller units usually give a larger count.

Prepare: Adult supplies checked strip J, at least 14 short blocks and 7 long blocks from the repeated template. Adult cuts. Keep length 6 cm hidden. Both rows must cover the same endpoints.

Evidence / worked response: Strip J: 6 short blocks of 1 cm; 3 long blocks of 2 cm. $3 \times 2 \text{ cm} = 6 \text{ cm}$. The longer unit covers twice as much, so half as many are needed. Observe both complete physical measurements, not just a memorized statement. For the additional check, preserve the same endpoints and unit; a reversal does not change length. Gaps omit length, overlaps count some length twice, and tick marks bound intervals rather than each being a unit.

003 | Explain why smaller units usually give a larger count.

Prepare: Adult supplies checked strip L, at least 14 short blocks and 7 long blocks from the repeated template. Adult cuts. Keep length 10 cm hidden. Both rows must cover the same endpoints.

Evidence / worked response: Strip L: 10 short blocks of 1 cm; 5 long blocks of 2 cm. $5 \times 2 \text{ cm} = 10 \text{ cm}$. The longer unit covers twice as much, so half as many are needed. Observe both complete physical measurements, not just a memorized statement. For the additional check, preserve the same endpoints and unit; a reversal does not change length. Gaps omit length, overlaps count some length twice, and tick marks bound intervals rather than each being a unit.