

Convert with a reason

Grade 5 • NC.5.MD.1



Detailed teaching guide and reusable practice bank

30 multiple-choice items + 30 open or performance tasks

Seven instructional sections • worked solutions • printable workspaces

Current NC standards for 2026-27 and 2027-28. Not the future 2028-29 implementation.

Free sample | Contents

NC.5.MD.1 | Fifth Grade mathematics

This sample contains 20 complete selected pages from the 95-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-16, 45-46, 75, 85

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) 75, 85

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

Inside this packet

Pages 1-7: orientation, exact standard, teaching models, materials, access, and assessment tools. Seven section guides follow, then student task pages, complete worked keys, and sources. Each student page names its M or O item for easy selection.

Print selected student pages only. This is a reusable bank, not a 60-item test. A suggested core spans three sessions: session 1 uses M01/O01, the teacher model, and O09; session 2 uses M14/O14 plus O19 individually; session 3 uses reteach as needed and O28 with M28. Use remaining items for additional practice and conferences.

The seven section allocations are 4, 4, 5, 5, 5, 4, 3 of each item type. Section time suggestions are flexible. Actual collection tasks require five observation times and follow-up graph work; allow a separate 15-20 minute activity.

Essential question: How can the same amount have different numerical measures?

Prerequisites: Multiply and divide whole numbers and simple decimals; recognize measurement attributes and unit names. Do not require memorized conversion facts: the chart is part of every task.

Materials: Supplied chart, pencil, optional large paper unit strips. No actual measuring instruments are required. Diagrams show relationships, not promised printed lengths.

TEACHER GUIDE

The standard and learning targets

Given a conversion chart, use multiplicative reasoning to solve one-step conversion problems within a given measurement system.

A | I can use a supplied conversion chart to identify the multiplicative unit relationship.

B | I can multiply or divide to convert within one measurement system.

C | I can explain why the numerical measure changes while the amount stays the same.

Evidence: Observe chart-row selection, multiplicative equation, numerical result with units, and explanation of count versus amount. Require an individual one-step conversion, not only matching a choice.

Practice connections: explain a representation, attend to units and scale, test a claim, and critique a partner's reasoning using mathematical evidence. Targets are instructional, not official cut scores.

TEACHER GUIDE

Anchor chart and worked model

1 large unit = k small units. Larger unit to smaller unit: number × k. Smaller unit to larger unit: number ÷ k. The amount stays the same. Select a chart row in the same measurement system; never use a metric-to-customary conversion here.

Say: "The chart says 1 yard equals 3 feet. For 4 yards I have four groups of 3 feet: $4 \times 3 = 12$ feet. For 12 feet I group by 3: $12 \div 3 = 4$ yards. Neither conversion makes the fabric longer. Smaller units require a larger count." Draw four equal adjacent boxes; label each 1 yd and divide each into three equal ft parts.

Supplied conversion chart | same-system conversions only

1 km = 1000 m	1 ft = 12 in
1 m = 100 cm	1 lb = 16 oz
1 cm = 10 mm	1 gal = 4 qt
1 L = 1000 mL	1 qt = 2 pt
1 kg = 1000 g	1 pt = 2 cups
1 yd = 3 ft	1 hr = 60 min

Capacity: US liquid units. oz means weight, not fluid ounces.



TEACHER GUIDE

Access and responsive teaching

Read directions neutrally; allow oral, signed, AAC, typed, or dictated explanations. Offer enlarged grids and high-contrast lines. A scribe may record a learner's stated coordinates or equation verbatim; record the support. When plotting is assessed, the learner must direct each point rather than the adult supplying locations.

Keep the conversion chart available for MD.1. For graph tasks, reading the axis labels aloud is access; telling the learner where a target point goes supplies the answer. Record any mathematical hint separately and collect a fresh independent response later.

Do not penalize spelling, handwriting, decoding, or accent. Mathematical quantities, units, scale and reasoning remain the evidence. Partner practice must end with an individual explanation.

Misconception response: If a learner always multiplies, ask which unit is larger and how many of the smaller fit one larger. Use $6 \text{ ft} = 2 \text{ yd}$ before returning to decimals. If they add the factor, compare one unit, two units and three units using equal groups.

Extension: Create two same-system measurements that convert to the same amount. Explain why a different numerical measure does not imply a different physical amount.

Use short conferences and selected items. There are no official speed cutoffs or mastery claims in this packet. A blank page, inaccessible task, absence, or unclear response is N/O, not an observed incorrect answer.

TEACHER GUIDE

Performance evidence record

Observe chart-row selection, multiplicative equation, numerical result with units, and explanation of count versus amount. Require an individual one-step conversion, not only matching a choice.

Record an anonymous learner code, date, item, exact observable evidence, access support, mathematical cue (if any), score by dimension, and next teaching step. Do not collect children's personal information.

Anonymous code / date / item**Observed representation or equation****Observed reasoning and interpretation****Access support / mathematical cue****Next teaching step / fresh evidence needed**

TEACHER GUIDE

Scoring and reusable organizer

Score each dimension separately: representation, mathematical accuracy, and reasoning/context. 3 = accurate and explained independently; 2 = substantially correct with a minor interpretable error; 1 = partial relevant evidence; 0 = an interpretable observed incorrect attempt; N/O = unobserved, inaccessible, or insufficient evidence. These are local instructional descriptors, not official proficiency levels.

For collection, also record whether the learner asked the question and gathered actual observations. For plotting, record whether the learner placed or explicitly directed the points. Do not infer either from recognition alone.

Chart relationship / source and target units**Equation and model****Reasonableness: count changes, amount stays**

TEACHER GUIDE

Warm-up | teaching moves

Bank: M01-M04 and O01-O04. Suggested selected-core time: 8 minutes; use fewer items if needed.

Launch (first 2 minutes). Say: "Our goal is to explain how we know. Today we will use the conversion chart." Ask learners to name the information and what must be found.

Explore one item: M01. Read neutrally, allow thinking time, then ask: "Which information supports your choice? Show where you used it." Keep the key teacher-only. Do not show a solution before independent evidence.

Practice (remaining work time). Select O01. Invite a learner to explain a step, then have everyone represent it independently.

Listen and look for: Observe chart-row selection, multiplicative equation, numerical result with units, and explanation of count versus amount. Require an individual one-step conversion, not only matching a choice.

If the response reveals confusion: If a learner always multiplies, ask which unit is larger and how many of the smaller fit one larger. Use $6 \text{ ft} = 2 \text{ yd}$ before returning to decimals. If they add the factor, compare one unit, two units and three units using equal groups.

Close: ask "What does your answer mean? How could you check it?" Record the exact item, observed evidence, access supports, any mathematical hint, and the next step. An unanswered item stays N/O.

Early-finisher or next-session challenge: Create two same-system measurements that convert to the same amount. Explain why a different numerical measure does not imply a different physical amount.

TEACHER GUIDE

I Do | teaching moves

Bank: M05-M08 and O05-O08. Suggested selected-core time: 12 minutes; use fewer items if needed.

Launch (first 2 minutes). Say: "Our goal is to explain how we know. Today we will use the conversion chart." Ask learners to name the information and what must be found.

Model or confer (next 3-4 minutes). Say: "The chart says 1 yard equals 3 feet. For 4 yards I have four groups of 3 feet: $4 \times 3 = 12$ feet. For 12 feet I group by 3: $12 \div 3 = 4$ yards. Neither conversion makes the fabric longer. Smaller units require a larger count." Draw four equal adjacent boxes; label each 1 yd and divide each into three equal ft parts.

Practice (remaining work time). Select O05. Invite a learner to explain a step, then have everyone represent it independently.

Listen and look for: Observe chart-row selection, multiplicative equation, numerical result with units, and explanation of count versus amount. Require an individual one-step conversion, not only matching a choice.

If the response reveals confusion: If a learner always multiplies, ask which unit is larger and how many of the smaller fit one larger. Use $6 \text{ ft} = 2 \text{ yd}$ before returning to decimals. If they add the factor, compare one unit, two units and three units using equal groups.

Close: ask "What does your answer mean? How could you check it?" Record the exact item, observed evidence, access supports, any mathematical hint, and the next step. An unanswered item stays N/O.

Early-finisher or next-session challenge: Create two same-system measurements that convert to the same amount. Explain why a different numerical measure does not imply a different physical amount.

TEACHER GUIDE

We Do | teaching moves

Bank: M09-M13 and O09-O13. Suggested selected-core time: 15 minutes; use fewer items if needed.

Launch (first 2 minutes). Say: "Our goal is to explain how we know. Today we will use the conversion chart." Ask learners to name the information and what must be found.

Explore one item: M09. Read neutrally, allow thinking time, then ask: "Which information supports your choice? Show where you used it." Keep the key teacher-only. Do not show a solution before independent evidence.

Practice (remaining work time). Select O09. Invite a learner to explain a step, then have everyone represent it independently.

Listen and look for: Observe chart-row selection, multiplicative equation, numerical result with units, and explanation of count versus amount. Require an individual one-step conversion, not only matching a choice.

If the response reveals confusion: If a learner always multiplies, ask which unit is larger and how many of the smaller fit one larger. Use $6 \text{ ft} = 2 \text{ yd}$ before returning to decimals. If they add the factor, compare one unit, two units and three units using equal groups.

Close: ask "What does your answer mean? How could you check it?" Record the exact item, observed evidence, access supports, any mathematical hint, and the next step. An unanswered item stays N/O.

Early-finisher or next-session challenge: Create two same-system measurements that convert to the same amount. Explain why a different numerical measure does not imply a different physical amount.

TEACHER GUIDE

Collaborative practice | teaching moves

Bank: M14-M18 and O14-O18. Suggested selected-core time: 13 minutes; use fewer items if needed.

Launch (first 2 minutes). Say: "Our goal is to explain how we know. Today we will use the conversion chart." Ask learners to name the information and what must be found.

Explore one item: M14. Read neutrally, allow thinking time, then ask: "Which information supports your choice? Show where you used it." Keep the key teacher-only. Do not show a solution before independent evidence.

Practice (remaining work time). Select O14. Partners take turns explaining; each learner creates their own response.

Listen and look for: Observe chart-row selection, multiplicative equation, numerical result with units, and explanation of count versus amount. Require an individual one-step conversion, not only matching a choice.

If the response reveals confusion: If a learner always multiplies, ask which unit is larger and how many of the smaller fit one larger. Use $6 \text{ ft} = 2 \text{ yd}$ before returning to decimals. If they add the factor, compare one unit, two units and three units using equal groups.

Close: ask "What does your answer mean? How could you check it?" Record the exact item, observed evidence, access supports, any mathematical hint, and the next step. An unanswered item stays N/O.

Early-finisher or next-session challenge: Create two same-system measurements that convert to the same amount. Explain why a different numerical measure does not imply a different physical amount.

TEACHER GUIDE

Independent practice | teaching moves

Bank: M19-M23 and O19-O23. Suggested selected-core time: 17 minutes; use fewer items if needed.

Launch (first 2 minutes). Say: "Our goal is to explain how we know. Today we will use the conversion chart." Ask learners to name the information and what must be found.

Explore one item: M19. Read neutrally, allow thinking time, then ask: "Which information supports your choice? Show where you used it." Keep the key teacher-only. Do not show a solution before independent evidence.

Practice (remaining work time). Select O19. Complete the response individually, then explain a representation or equation.

Listen and look for: Observe chart-row selection, multiplicative equation, numerical result with units, and explanation of count versus amount. Require an individual one-step conversion, not only matching a choice.

If the response reveals confusion: If a learner always multiplies, ask which unit is larger and how many of the smaller fit one larger. Use $6 \text{ ft} = 2 \text{ yd}$ before returning to decimals. If they add the factor, compare one unit, two units and three units using equal groups.

Close: ask "What does your answer mean? How could you check it?" Record the exact item, observed evidence, access supports, any mathematical hint, and the next step. An unanswered item stays N/O.

Early-finisher or next-session challenge: Create two same-system measurements that convert to the same amount. Explain why a different numerical measure does not imply a different physical amount.

TEACHER GUIDE

Small-group reteach | teaching moves

Bank: M24-M27 and O24-O27. Suggested selected-core time: 10 minutes; use fewer items if needed.

Launch (first 2 minutes). Say: "Our goal is to explain how we know. Today we will use the conversion chart." Ask learners to name the information and what must be found.

Explore one item: M24. Read neutrally, allow thinking time, then ask: "Which information supports your choice? Show where you used it." Keep the key teacher-only. Do not show a solution before independent evidence.

Practice (remaining work time). Select O24. Invite a learner to explain a step, then have everyone represent it independently.

Listen and look for: Observe chart-row selection, multiplicative equation, numerical result with units, and explanation of count versus amount. Require an individual one-step conversion, not only matching a choice.

If the response reveals confusion: If a learner always multiplies, ask which unit is larger and how many of the smaller fit one larger. Use $6 \text{ ft} = 2 \text{ yd}$ before returning to decimals. If they add the factor, compare one unit, two units and three units using equal groups.

Close: ask "What does your answer mean? How could you check it?" Record the exact item, observed evidence, access supports, any mathematical hint, and the next step. An unanswered item stays N/O.

Early-finisher or next-session challenge: Create two same-system measurements that convert to the same amount. Explain why a different numerical measure does not imply a different physical amount.

TEACHER GUIDE

Exit ticket | teaching moves

Bank: M28-M30 and O28-O30. Suggested selected-core time: 5 minutes; use fewer items if needed.

Launch (first 2 minutes). Say: "Our goal is to explain how we know. Today we will use the conversion chart." Ask learners to name the information and what must be found.

Explore one item: M28. Read neutrally, allow thinking time, then ask: "Which information supports your choice? Show where you used it." Keep the key teacher-only. Do not show a solution before independent evidence.

Practice (remaining work time). Select O28. Complete the response individually, then explain a representation or equation.

Listen and look for: Observe chart-row selection, multiplicative equation, numerical result with units, and explanation of count versus amount. Require an individual one-step conversion, not only matching a choice.

If the response reveals confusion: If a learner always multiplies, ask which unit is larger and how many of the smaller fit one larger. Use $6 \text{ ft} = 2 \text{ yd}$ before returning to decimals. If they add the factor, compare one unit, two units and three units using equal groups.

Close: ask "What does your answer mean? How could you check it?" Record the exact item, observed evidence, access supports, any mathematical hint, and the next step. An unanswered item stays N/O.

Early-finisher or next-session challenge: Create two same-system measurements that convert to the same amount. Explain why a different numerical measure does not imply a different physical amount.

STUDENT TASK • MULTIPLE CHOICE

M01 | Warm-up

Target: Multiply or divide to convert within one measurement system.

The cord length is 8.5 m. Use the supplied chart to convert to cm.

Supplied conversion chart | same-system conversions only

$1 \text{ km} = 1000 \text{ m}$

$1 \text{ ft} = 12 \text{ in}$

$1 \text{ m} = 100 \text{ cm}$

$1 \text{ lb} = 16 \text{ oz}$

$1 \text{ cm} = 10 \text{ mm}$

$1 \text{ gal} = 4 \text{ qt}$

$1 \text{ L} = 1000 \text{ mL}$

$1 \text{ qt} = 2 \text{ pt}$

$1 \text{ kg} = 1000 \text{ g}$

$1 \text{ pt} = 2 \text{ cups}$

$1 \text{ yd} = 3 \text{ ft}$

$1 \text{ hr} = 60 \text{ min}$

Capacity: US liquid units. oz means weight, not fluid ounces.

A. 850 cm

B. 1700 cm

C. 108.5 cm

D. 85 cm

Reason for my choice:

STUDENT TASK • MULTIPLE CHOICE

M02 | Warm-up

Target: Multiply or divide to convert within one measurement system.

The container capacity is 24 qt. Use the supplied chart to convert to gal.

Supplied conversion chart | same-system conversions only

1 km = 1000 m	1 ft = 12 in
1 m = 100 cm	1 lb = 16 oz
1 cm = 10 mm	1 gal = 4 qt
1 L = 1000 mL	1 qt = 2 pt
1 kg = 1000 g	1 pt = 2 cups
1 yd = 3 ft	1 hr = 60 min

Capacity: US liquid units. oz means weight, not fluid ounces.

Unit relationship model: 1 gal

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Each equal part represents 1 qt. Use this relationship for your amount.

- A. 5 gal
- B. 28 gal
- C. 6 gal
- D. 3 gal

Reason for my choice:

STUDENT TASK • OPEN / PERFORMANCE

001 | Warm-up

Target: Multiply or divide to convert within one measurement system.

The container capacity is 30 qt. Use the supplied chart to convert to gal. Write an equation, show your reasoning, and explain whether the numerical measure grows or shrinks.

Supplied conversion chart | same-system conversions only

1 km = 1000 m	1 ft = 12 in
1 m = 100 cm	1 lb = 16 oz
1 cm = 10 mm	1 gal = 4 qt
1 L = 1000 mL	1 qt = 2 pt
1 kg = 1000 g	1 pt = 2 cups
1 yd = 3 ft	1 hr = 60 min

Capacity: US liquid units. oz means weight, not fluid ounces.

Unit relationship model: 1 gal

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Each equal part represents 1 qt. Use this relationship for your amount.

My reasoning / work / interpretation:

STUDENT TASK • OPEN / PERFORMANCE

002 | Warm-up

Target: Multiply or divide to convert within one measurement system.

The trail distance is 7000 m. Use the supplied chart to convert to km. Write an equation, show your reasoning, and explain whether the numerical measure grows or shrinks.

Supplied conversion chart | same-system conversions only

1 km = 1000 m	1 ft = 12 in
1 m = 100 cm	1 lb = 16 oz
1 cm = 10 mm	1 gal = 4 qt
1 L = 1000 mL	1 qt = 2 pt
1 kg = 1000 g	1 pt = 2 cups
1 yd = 3 ft	1 hr = 60 min

Capacity: US liquid units. oz means weight, not fluid ounces.

My reasoning / work / interpretation:

TEACHER ONLY • KEEP SEPARATE FROM STUDENT PAGES

M worked keys 01-03

M01 | A. 850 cm

1 m = 100 cm. $8.5 \times 100 = 850$ cm. There are 100 smaller units in each larger unit, so multiply. The numerical measure grows. The measured amount is unchanged.

Diagnostic check: ask the learner to reconstruct the answer before assigning a misconception. An incorrect option can reflect a scale/order/unit error, arithmetic slip, or incomplete reading; the choice alone does not identify the cause.

M02 | C. 6 gal

1 gal = 4 qt. $24 \div 4 = 6$ gal. Group the smaller units into sets of 4, so divide. The numerical measure shrinks. The measured amount is unchanged.

Diagnostic check: ask the learner to reconstruct the answer before assigning a misconception. An incorrect option can reflect a scale/order/unit error, arithmetic slip, or incomplete reading; the choice alone does not identify the cause.

M03 | D. 9 kg

1 kg = 1000 g. $9000 \div 1000 = 9$ kg. Group the smaller units into sets of 1000, so divide. The numerical measure shrinks. The measured amount is unchanged.

Diagnostic check: ask the learner to reconstruct the answer before assigning a misconception. An incorrect option can reflect a scale/order/unit error, arithmetic slip, or incomplete reading; the choice alone does not identify the cause.

TEACHER ONLY • KEEP SEPARATE FROM STUDENT PAGES

O worked keys 01-03

001 | Sample / criteria

1 gal = 4 qt. $30 \div 4 = 7.5$ gal. Group the smaller units into sets of 4, so divide. The numerical measure shrinks. The measured amount is unchanged.

002 | Sample / criteria

1 km = 1000 m. $7000 \div 1000 = 7$ km. Group the smaller units into sets of 1000, so divide. The numerical measure shrinks. The measured amount is unchanged.

003 | Sample / criteria

1 pt = 2 cups. $3 \times 2 = 6$ cups. There are 2 smaller units in each larger unit, so multiply. The numerical measure grows. The measured amount is unchanged.