

# Measure, estimate, solve



## GRADE 3 | NC.3.MD.2

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

Includes teacher scripts, models, student organizers, original visuals, worked keys and individual evidence records.

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

Aligned to the current 2026-27 / 2027-28 NC standards.

# Free sample | Contents

NC.3.MD.2 | Third Grade mathematics

This sample contains 22 complete selected pages from the 110-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-18, 47-48, 80, 95

Representative activities

M01: sample PDF page(s) 18; original page(s) 17

M02: sample PDF page(s) 19; original page(s) 18

O01: sample PDF page(s) 20; original page(s) 47

O02: sample PDF page(s) 21; original page(s) 48

Selected teacher prompts and keys: original page(s) 80, 95

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 reference: exact standard and targets; prerequisites and access; worked model; seven section scripts; reusable organizers.

Student bank: M01-M30 are choice practice, O01-O30 are open/performance tasks. Print only selected pages. Teacher-only keys and evidence records follow.

Suggested route: Day 1 warm-up + I Do (about 20 minutes); Day 2 We Do + collaborative practice (about 28 minutes); Day 3 independent practice + exit (about 22 minutes). Use a separate 10-minute reteach after interpreting evidence.

Physical measurement and survey collection need additional sessions. Select one or two stations/opportunities at a time, returning until every required quantity or representation is observed.

Worked examples and partner-supported responses are practice. Use fresh individual items to collect independent evidence. Recognition alone cannot establish the ability to build, measure, collect or explain.

Each item names its target in the teacher key. The standard-to-evidence page describes which observations complete the coverage.

## TEACHER GUIDE

# The exact NC standard

NC.3.MD.2: Solve problems involving customary measurement.

- Estimate and measure lengths in customary units to the quarter-inch and half-inch, and feet and yards to the whole unit.
- Estimate and measure capacity and weight in customary units to a whole number: cups, pints, quarts, gallons, ounces, and pounds.
- Add, subtract, multiply, or divide to solve one-step word problems involving whole number measurements of length, weight, and capacity in the same customary units.

## Learning targets

A | Estimate and measure to the quarter-inch and half-inch.

B | Estimate and measure feet and yards to whole units.

C | Estimate and measure capacity in whole cups, pints, quarts and gallons.

D | Estimate and measure weight in whole ounces and pounds.

E | Solve one-step whole-number measurement problems in the same customary unit with all four operations.

Essential question: How can a representation, tool or explanation show that an answer makes sense?

## TEACHER GUIDE

# Prepare, include, and notice

Prerequisites: Read zero-based rulers and scales; distinguish length, capacity and weight; use whole-number operations. Quarter/half inch are measurement partitions, not unit conversions.

Materials: A real inch ruler marked in quarters, tape measure in feet and yards, calibrated cups/pints/quarts/gallon containers, and scales reading ounces and pounds. Adult handles water, heavy containers, cutting and lifting. Use safe sealed objects; no tasting. Teacher measures station references privately before instruction.

Access: read directions neutrally; offer enlarged print, high contrast, speech, pointing, signed/AAC response or a scribe. Do not supply fraction-size reasoning, read the clock hands, name the operation, choose the graph scale or perform a measurement for the learner.

Record answer-supplying cues separately. Physical access may use child-directed tool manipulation when the learner controls placement and reading. If access prevents seeing the skill, record N/O and arrange a valid alternative.

Misconception response: If a student counts ruler ticks, ask them to identify one interval between marks. If a scale starts above zero, remove the object and zero it. If they add in an equal-groups problem, act out equal portions then relate repeated addition to multiplication.

What to keep: Observe all ten stations: quarter-inch, half-inch, whole feet, whole yards, whole cups, pints, quarts, gallons, ounces and pounds. A printed ruler-reading question is supported practice, not evidence of using a real tool. Also collect addition, subtraction, multiplication and division stories in same units.

## TEACHER GUIDE

## Worked teacher model

Demonstrate a real paper strip about  $3\frac{1}{4}$  inches long. Say: "I estimate about 3 inches using an inch benchmark. I align zero, keep the ruler straight, and read the endpoint. Three whole inches and one quarter give  $3\frac{1}{4}$  inches. My estimate was  $\frac{1}{4}$  inch shorter." Then measure the capacity of an empty pitcher: pour equal full cup measures into it until the safe fill line is reached, counting the cups. Set measures level and read at eye level. Capacity is how much the container holds; it is not just the amount of water currently inside. On a scale, zero it before placing an object. Finally solve: 4 cups in each of 3 pitchers means  $3 \times 4 = 12$  cups; no conversion is needed.



Inches shown by labels; each small interval is  $\frac{1}{4}$  inch.

Illustrative ruler. Do not measure this drawing.

Teacher talk: Name the quantity and requested unit. Estimate with a benchmark before measuring. Choose the tool; start at zero or zero the scale. Measure at the stated precision. Record number + unit; compare with estimate. For a story, use the same unit throughout and choose the operation from the situation.

## REUSABLE TEACHING REFERENCE

# Anchor chart | make it make sense

Name the quantity and requested unit. Estimate with a benchmark before measuring. Choose the tool; start at zero or zero the scale. Measure at the stated precision. Record number + unit; compare with estimate. For a story, use the same unit throughout and choose the operation from the situation.

1. Name what the numbers, parts, marks or symbols represent.
2. Build or read a representation using equal units and the correct whole/scale.
3. Explain the mathematical decision, not only the final answer.
4. Check the result against the original situation.

Teaching prompt: "Show me the part of your model or tool that supports your claim." For independent evidence, ask this neutrally without pointing to the needed part.

## TEACHER GUIDE

# Warm-up | teaching script

Purpose: Activate the prerequisite with one familiar representation. Bank allocation: M01-M04 and O01-O04. These are choices across lessons, not a single sitting.

Selected core, about 8 minutes: first 2 minute(s) introduce the target and materials; next 3 minutes work with M01 and O01; last 3 minute(s) compare explanations and record evidence. Extend the physical measurement or survey task to a separate session when needed.

Say and do: Ask: "What quantity and unit do you need? What benchmark helps your estimate? How will you set up your tool?" Have the learner estimate before measuring. Observe zero alignment, level containers or zeroed scales; choose the operation from the story.

Begin with a neutral reading of the directions. Wait for the learner to choose a method; ask "How do you know?" without naming the answer or operation.

Listen/look for: Observe all ten stations: quarter-inch, half-inch, whole feet, whole yards, whole cups, pints, quarts, gallons, ounces and pounds. A printed ruler-reading question is supported practice, not evidence of using a real tool. Also collect addition, subtraction, multiplication and division stories in same units.

If an error appears: If a student counts ruler ticks, ask them to identify one interval between marks. If a scale starts above zero, remove the object and zero it. If they add in an equal-groups problem, act out equal portions then relate repeated addition to multiplication.

Access: allow pointing, speech, signed/AAC answers, dictation or child-directed manipulation. Record access separately from cues that name the operation, count marks, set the scale or select pieces.

Early finisher: construct a new example with the same constraints, solve it and explain why the representation is valid. Record item, actual words/actions, support and one fresh follow-up task.

## TEACHER GUIDE

# I Do | teaching script

Purpose: Make the reasoning visible; responses here are supported practice. Bank allocation: M05-M08 and O05-O08. These are choices across lessons, not a single sitting.

Selected core, about 12 minutes: first 2 minute(s) introduce the target and materials; next 7 minutes work with M05 and O05; last 3 minute(s) compare explanations and record evidence. Extend the physical measurement or survey task to a separate session when needed.

Say and do: Ask: "What quantity and unit do you need? What benchmark helps your estimate? How will you set up your tool?" Have the learner estimate before measuring. Observe zero alignment, level containers or zeroed scales; choose the operation from the story.

Use the complete worked model on the model page. Think aloud, point to each representation, then invite learners to restate the reasoning. Never score this demonstration as independent evidence.

Listen/look for: Observe all ten stations: quarter-inch, half-inch, whole feet, whole yards, whole cups, pints, quarts, gallons, ounces and pounds. A printed ruler-reading question is supported practice, not evidence of using a real tool. Also collect addition, subtraction, multiplication and division stories in same units.

If an error appears: If a student counts ruler ticks, ask them to identify one interval between marks. If a scale starts above zero, remove the object and zero it. If they add in an equal-groups problem, act out equal portions then relate repeated addition to multiplication.

Access: allow pointing, speech, signed/AAC answers, dictation or child-directed manipulation. Record access separately from cues that name the operation, count marks, set the scale or select pieces.

Early finisher: construct a new example with the same constraints, solve it and explain why the representation is valid. Record item, actual words/actions, support and one fresh follow-up task.

## TEACHER GUIDE

# We Do | teaching script

**Purpose:** Share the mathematical decisions, then ask each learner to explain. Bank allocation: M09-M13 and O09-O13. These are choices across lessons, not a single sitting.

**Selected core, about 15 minutes:** first 2 minute(s) introduce the target and materials; next 10 minutes work with M09 and O09; last 3 minute(s) compare explanations and record evidence. Extend the physical measurement or survey task to a separate session when needed.

**Say and do:** Ask: "What quantity and unit do you need? What benchmark helps your estimate? How will you set up your tool?" Have the learner estimate before measuring. Observe zero alignment, level containers or zeroed scales; choose the operation from the story.

**Begin with a neutral reading of the directions.** Wait for the learner to choose a method; ask "How do you know?" without naming the answer or operation.

**Listen/look for:** Observe all ten stations: quarter-inch, half-inch, whole feet, whole yards, whole cups, pints, quarts, gallons, ounces and pounds. A printed ruler-reading question is supported practice, not evidence of using a real tool. Also collect addition, subtraction, multiplication and division stories in same units.

**If an error appears:** If a student counts ruler ticks, ask them to identify one interval between marks. If a scale starts above zero, remove the object and zero it. If they add in an equal-groups problem, act out equal portions then relate repeated addition to multiplication.

**Access:** allow pointing, speech, signed/AAC answers, dictation or child-directed manipulation. Record access separately from cues that name the operation, count marks, set the scale or select pieces.

**Early finisher:** construct a new example with the same constraints, solve it and explain why the representation is valid. Record item, actual words/actions, support and one fresh follow-up task.

## TEACHER GUIDE

# Collaborative practice | teaching script

**Purpose:** Partners compare methods; each learner records an individual response. Bank allocation: M14-M18 and O14-O18. These are choices across lessons, not a single sitting.

**Selected core, about 13 minutes:** first 2 minute(s) introduce the target and materials; next 8 minutes work with M14 and O14; last 3 minute(s) compare explanations and record evidence. Extend the physical measurement or survey task to a separate session when needed.

**Say and do:** Ask: "What quantity and unit do you need? What benchmark helps your estimate? How will you set up your tool?" Have the learner estimate before measuring. Observe zero alignment, level containers or zeroed scales; choose the operation from the story.

Begin with a neutral reading of the directions. Wait for the learner to choose a method; ask "How do you know?" without naming the answer or operation.

**Listen/look for:** Observe all ten stations: quarter-inch, half-inch, whole feet, whole yards, whole cups, pints, quarts, gallons, ounces and pounds. A printed ruler-reading question is supported practice, not evidence of using a real tool. Also collect addition, subtraction, multiplication and division stories in same units.

**If an error appears:** If a student counts ruler ticks, ask them to identify one interval between marks. If a scale starts above zero, remove the object and zero it. If they add in an equal-groups problem, act out equal portions then relate repeated addition to multiplication.

**Access:** allow pointing, speech, signed/AAC answers, dictation or child-directed manipulation. Record access separately from cues that name the operation, count marks, set the scale or select pieces.

**Early finisher:** construct a new example with the same constraints, solve it and explain why the representation is valid. Record item, actual words/actions, support and one fresh follow-up task.

## TEACHER GUIDE

# Independent practice | teaching script

Purpose: Collect fresh evidence without supplying mathematical steps. Bank allocation: M19-M23 and O19-O23. These are choices across lessons, not a single sitting.

Selected core, about 17 minutes: first 2 minute(s) introduce the target and materials; next 12 minutes work with M19 and O19; last 3 minute(s) compare explanations and record evidence. Extend the physical measurement or survey task to a separate session when needed.

Say and do: Say: "Work on the selected task on your own. Show your thinking in a way that works for you." Read directions neutrally if needed. Do not point to a part, count ticks, name an operation, supply a scale or align the tool. Ask only "How do you know?" after the attempt.

Begin with a neutral reading of the directions. Wait for the learner to choose a method; ask "How do you know?" without naming the answer or operation.

Listen/look for: Observe all ten stations: quarter-inch, half-inch, whole feet, whole yards, whole cups, pints, quarts, gallons, ounces and pounds. A printed ruler-reading question is supported practice, not evidence of using a real tool. Also collect addition, subtraction, multiplication and division stories in same units.

If an error appears: If a student counts ruler ticks, ask them to identify one interval between marks. If a scale starts above zero, remove the object and zero it. If they add in an equal-groups problem, act out equal portions then relate repeated addition to multiplication.

Access: allow pointing, speech, signed/AAC answers, dictation or child-directed manipulation. Record access separately from cues that name the operation, count marks, set the scale or select pieces.

Early finisher: construct a new example with the same constraints, solve it and explain why the representation is valid. Record item, actual words/actions, support and one fresh follow-up task.

## TEACHER GUIDE

# Small-group reteach | teaching script

Purpose: Use the diagnosed misconception to rebuild the concept. Bank allocation: M24-M27 and O24-O27. These are choices across lessons, not a single sitting.

Selected core, about 10 minutes: first 2 minute(s) introduce the target and materials; next 5 minutes work with M24 and O24; last 3 minute(s) compare explanations and record evidence. Extend the physical measurement or survey task to a separate session when needed.

Say and do: Ask: "What quantity and unit do you need? What benchmark helps your estimate? How will you set up your tool?" Have the learner estimate before measuring. Observe zero alignment, level containers or zeroed scales; choose the operation from the story.

Begin with a neutral reading of the directions. Wait for the learner to choose a method; ask "How do you know?" without naming the answer or operation.

Listen/look for: Observe all ten stations: quarter-inch, half-inch, whole feet, whole yards, whole cups, pints, quarts, gallons, ounces and pounds. A printed ruler-reading question is supported practice, not evidence of using a real tool. Also collect addition, subtraction, multiplication and division stories in same units.

If an error appears: If a student counts ruler ticks, ask them to identify one interval between marks. If a scale starts above zero, remove the object and zero it. If they add in an equal-groups problem, act out equal portions then relate repeated addition to multiplication.

Access: allow pointing, speech, signed/AAC answers, dictation or child-directed manipulation. Record access separately from cues that name the operation, count marks, set the scale or select pieces.

Early finisher: construct a new example with the same constraints, solve it and explain why the representation is valid. Record item, actual words/actions, support and one fresh follow-up task.

## TEACHER GUIDE

# Exit ticket | teaching script

**Purpose:** Collect one brief fresh performance and select a next teaching step. Bank allocation: M28-M30 and O28-O30. These are choices across lessons, not a single sitting.

**Selected core, about 5 minutes:** first 1 minute(s) introduce the target and materials; next 3 minutes work with M28 and O28; last 1 minute(s) compare explanations and record evidence. Extend the physical measurement or survey task to a separate session when needed.

**Say and do:** Say: "Work on the selected task on your own. Show your thinking in a way that works for you." Read directions neutrally if needed. Do not point to a part, count ticks, name an operation, supply a scale or align the tool. Ask only "How do you know?" after the attempt.

**Begin with a neutral reading of the directions.** Wait for the learner to choose a method; ask "How do you know?" without naming the answer or operation.

**Listen/look for:** Observe all ten stations: quarter-inch, half-inch, whole feet, whole yards, whole cups, pints, quarts, gallons, ounces and pounds. A printed ruler-reading question is supported practice, not evidence of using a real tool. Also collect addition, subtraction, multiplication and division stories in same units.

**If an error appears:** If a student counts ruler ticks, ask them to identify one interval between marks. If a scale starts above zero, remove the object and zero it. If they add in an equal-groups problem, act out equal portions then relate repeated addition to multiplication.

**Access:** allow pointing, speech, signed/AAC answers, dictation or child-directed manipulation. Record access separately from cues that name the operation, count marks, set the scale or select pieces.

**Early finisher:** construct a new example with the same constraints, solve it and explain why the representation is valid. Record item, actual words/actions, support and one fresh follow-up task.

TEACHER ONLY | PREPARE PRIVATELY

# Physical measurement stations

Use real tools. The ruler drawings are illustrative and are not printed at physical-inch scale. No task depends on measuring the PDF.

For capacity stations, start with empty containers and measure what they hold to a marked safe fill line using the requested calibrated unit. Prepare strips with nonwhole endpoints for quarter-inch and half-inch work. Mark floor paths that can be read to whole feet and whole yards; use safe clear spaces. Provide calibrated containers for cups, pints, quarts and gallons. An adult moves full heavy containers; learners direct the measuring and read levels. Provide separate ounce and pound scales or a correctly set dual-unit scale.

Set quantity amounts near whole units so whole-number capacity and weight readings are unambiguous. Record the actual calibrated reference and acceptable rounding privately. Do not print reference values on student station cards.

For each station record: item/object, unit, tool and calibration check, actual reference, requested precision, learner estimate before measurement, learner setup and reading, comparison, access and mathematical cue.

An estimate is justified with a reasonable benchmark, not judged against an invented closeness cutoff. A measured answer is evaluated against the actual tool and stated precision. If the tool cannot support the requested precision, replace it or record N/O.

## TEACHER ONLY | ACTUAL LOCAL REFERENCE

# Station preparation record

1. quarter-inch: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

2. half-inch: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

3. feet: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

4. yards: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

5. cups: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

6. pints: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

7. quarts: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

8. gallons: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

9. ounces: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

10. pounds: object/tool \_\_\_\_\_ reference \_\_\_\_\_  
Calibration/zero and precision check \_\_\_\_\_

## STUDENT RESOURCE

# My reusable work organizer

Estimate and benchmark (before measuring)



Tool, measurement and unit



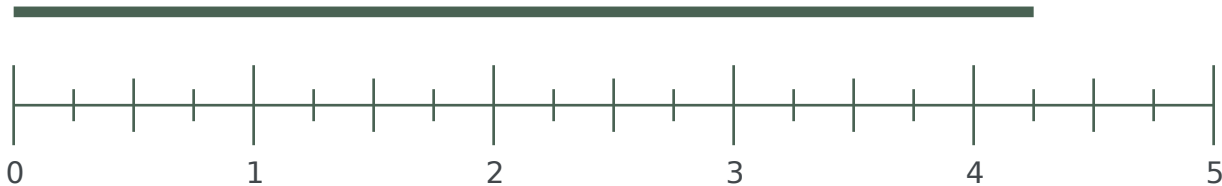
Compare estimate / explain and check



## STUDENT CHOICE PRACTICE

**M01 | Warm-up**

Read the illustrated ruler. What is the length of the thick segment from zero?



Inches shown by labels; each small interval is  $\frac{1}{4}$  inch.

Illustrative ruler. Do not measure this drawing.

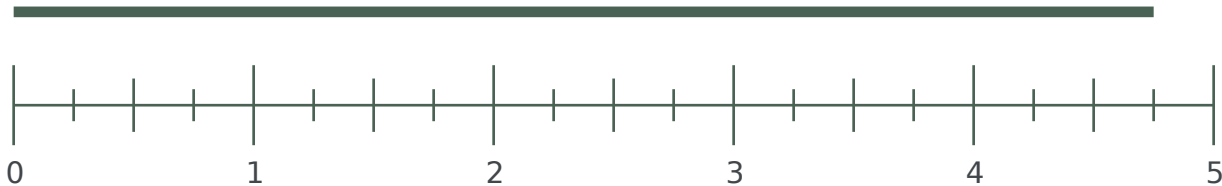
- A.  $4 \frac{1}{4}$  inches
- B.  $4 \frac{1}{2}$  inches
- C.  $3 \frac{1}{4}$  inches
- D.  $3 \frac{3}{4}$  inches

Show or explain how you decided.

## STUDENT CHOICE PRACTICE

**M02 | Warm-up**

Read the illustrated ruler. What is the length of the thick segment from zero?



Inches shown by labels; each small interval is  $\frac{1}{4}$  inch.

Illustrative ruler. Do not measure this drawing.

- A.  $4 \frac{3}{4}$  inches
- B.  $4 \frac{1}{4}$  inches
- C. 5 inches
- D.  $4 \frac{1}{2}$  inches

Show or explain how you decided.

## STUDENT INDIVIDUAL PERFORMANCE

## 001 | Warm-up

Station 1: paper strip. Before using a tool, estimate its measurement in inches. Then measure to the nearest quarter-inch. Record your estimate, measurement and how you used the tool. Compare the two.

Estimate and benchmark (before measuring)

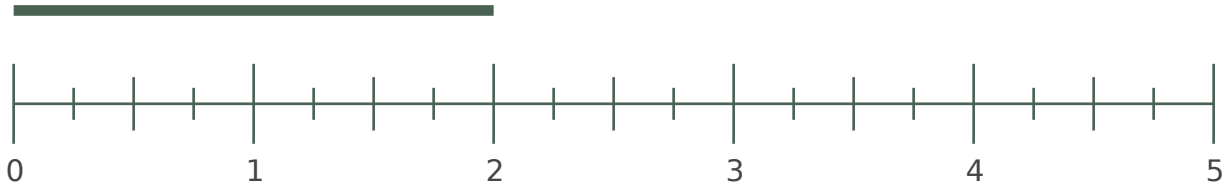
Measurement, unit and tool setup

Comparison and explanation

## STUDENT INDIVIDUAL PERFORMANCE

## 002 | Warm-up

Read the illustrated ruler. What is the length of the thick segment from zero? Write the length and explain how the quarter-inch marks show it.



Inches shown by labels; each small interval is  $\frac{1}{4}$  inch.

Illustrative ruler. Do not measure this drawing.

My representation / equation / answer

My explanation and check

TEACHER ONLY | DO NOT GIVE WITH TASKS

## M01-M02 | worked keys

### M01 | A. 4 $\frac{1}{4}$ inches

4  $\frac{1}{4}$  inches. Count 17 quarter-inch intervals from zero; four intervals make one inch. Read the endpoint, not the number of tick marks.

Other choices: B (4  $\frac{1}{2}$  inches): reads one quarter-inch mark late. Recheck the representation and original question. C (3  $\frac{1}{4}$  inches): drops one whole inch. Recheck the representation and original question. D (3  $\frac{3}{4}$  inches): reads one half-inch early. Recheck the representation and original question.

Target A: Estimate and measure to the quarter-inch and half-inch.

### M02 | A. 4 $\frac{3}{4}$ inches

4  $\frac{3}{4}$  inches. Count 19 quarter-inch intervals from zero; four intervals make one inch. Read the endpoint, not the number of tick marks.

Other choices: B (4  $\frac{1}{4}$  inches): reads one half-inch early. Recheck the representation and original question. C (5 inches): reads one quarter-inch mark late. Recheck the representation and original question. D (4  $\frac{1}{2}$  inches): reads one quarter-inch mark early. Recheck the representation and original question.

Target A: Estimate and measure to the quarter-inch and half-inch.

TEACHER ONLY | DO NOT GIVE WITH TASKS

## 001-002 | worked keys

### 001 | expected performance

Variable physical result. Beforehand, the teacher measures the actual paper strip with the same calibrated tool to the nearest quarter-inch; record that reference privately. A valid response includes an estimate made before measuring, a measured value and inches, correct tool use, and an estimate/measurement comparison. Accept correct rounding to the requested precision. Do not grade the estimate by closeness alone; ask for a relevant benchmark. Observe actual performance, not only a reported number.

Target A: Estimate and measure to the quarter-inch and half-inch.

### 002 | expected performance

2 inches. Count 8 quarter-inch intervals from zero; four intervals make one inch. Read the endpoint, not the number of tick marks.

Target A: Estimate and measure to the quarter-inch and half-inch.