

Divide, Model and Connect

Grade 5 | NC.5.NBT.6



Place value • models • meaningful computation

Seven teaching sections | 30 multiple-choice questions
30 open/performance tasks | Worked keys
Teacher scripts, visual organizers and evidence records

Current NC standards for 2026-27 and 2027-28. The 2026-adopted revisions begin in 2028-29 and are not substituted here. Use selected tasks across several lessons; this is not a 60-item test.

Free sample | Contents

NC.5.NBT.6 | Fifth Grade mathematics

This sample contains 14 complete selected pages from the 93-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-10, 12-13, 63, 78

Representative activities

M01: sample PDF page(s) 11; original page(s) 10

M02: sample PDF page(s) 11; original page(s) 10

O01: sample PDF page(s) 12; original page(s) 12

O02: sample PDF page(s) 13; original page(s) 13

Selected teacher prompts and keys: original page(s) 63, 78

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 selected route

Start with the exact standard and learning targets, then readiness/access guidance, worked teacher models and the reusable student organizer.

Each of seven sections contains one scripted mini-lesson, choice pages and individual open-performance pages. Worked keys follow all sections; sources and classroom-use notes are last.

Session 1: warm-up and I Do, about 20 minutes. Session 2: We Do and collaborative practice, about 25-30 minutes. Session 3: independent practice and exit, about 20-25 minutes. Small-group reteach is a separate responsive 10-minute lesson.

Suggested core: M01/O01, M05/O05, M09/O09, M14/O14, M19/O19, M24/O24 and M28/O28. Select fewer when explanations need more time. The rest are a reusable bank for later practice and evidence.

Allocation per response type: warm-up 4, I Do 4, We Do 5, collaborative 5, independent 5, reteach 4, exit 3. Each item has a specific learning target in its worked key.

Print only selected student pages. Keep teacher models and worked keys separate from independent work. Use blank organizers as optional access supports; record any added mathematical hint.

TEACHER GUIDE

Exact standard and targets

Find quotients with remainders when dividing whole numbers with up to four-digit dividends and two-digit divisors using rectangular arrays, area models, repeated subtraction, partial quotients, and/or the relationship between multiplication and division. Use models to make connections and develop the algorithm.

T1 | I can find whole-number quotients and remainders with dividends through four digits and two-digit divisors.

T2 | I can use a rectangular area model or array, repeated subtraction and partial quotients to develop written division.

T3 | I can check $\text{dividend} = \text{divisor} \times \text{quotient} + \text{remainder}$, with $0 \leq \text{remainder} < \text{divisor}$.

Essential question: How do the units in a model explain each written step?

TEACHER GUIDE

Readiness, materials and access

Prerequisites: identify whole-number and decimal place values; exchange ten equal units for one next-place unit; recall basic multiplication/division facts; interpret equal groups. Check these orally and with drawings before increasing numerical complexity.

Materials: pencils, erasers and the supplied blank organizers. Optional large base-ten blocks or teacher-drawn place-value disks may support instruction. All tasks can be completed with drawings; no cutouts or small objects are required.

Vocabulary: factor, product, quotient, remainder, regroup, exchange, partial product, partial quotient, dividend, divisor, thousandth and reasonable. Point to a unit or region while naming it; ask learners to explain in their own language.

Access: neutral reading of directions, enlarged pages, AAC, oral/signed explanations and a scribe recording dictated steps can preserve the construct. Do not supply a calculation, regrouping decision, model partition or answer. Record such cues separately from access support.

Collect actual models, calculations and explanations across fresh tasks over time. A correct choice alone cannot establish the required model-to-method connections. Record supports and independence separately.

Reduce number complexity to isolate an error, then return to the original range. Extensions compare valid methods and justify efficiency within the standard limits; they do not require more advanced numbers.

WORKED TEACHER MODEL

Division: area to algorithm

Teacher example: $1,573 \div 24 = 65 \text{ R}13$

Say: “The divisor gives 24 rows. I can cover a rectangle with 60 in each row, then 5 more in each row. Any units that cannot complete another column remain outside.”

Partial quotients / grouped repeated subtraction: $1573 - 24 \times 60 = 133$; $133 - 24 \times 5 = 13$. Sum widths $60 + 5 = 65$. Draw a rectangle of height 24 with these widths and areas 1440, 120; leave 13 units outside the complete rectangle. In a written algorithm these quotient chunks occupy the matching place-value columns. Check $24 \times 65 + 13 = 1573$; $0 \leq 13 < 24$. Quotient 65, remainder 13.

24 rows	60 per row 1,440 units	5 per row 120 units

13 units remain outside. Schematic partitions, not drawn to scale.

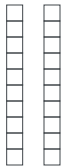
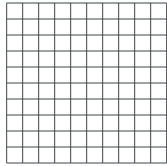
Written division: 24 goes into 157 tens 6 tens of times; subtract 144 tens, leaving 13 tens. Combine with 3 ones to get 133 ones. Take 5 groups of 24, leaving 13. The quotient digits 6 and 5 represent 60 and 5.

WORKED TEACHER MODEL

Block units and a valid remainder

124 = one hundred, two tens and four ones. Use it as a smaller bridge to a two-digit divisor.

Starting value: 124 units



Say: “How many groups of 12 fit in 124? Ten groups use 120 units, leaving 4. A new group needs 12 units, so I must stop.”

Draw a rectangular array of 12 rows and 10 columns, covering 120 units, with 4 leftovers outside. Connect $124 - 12 \times 10 = 4$ to the quotient 10 R4.

Check: $12 \times 10 + 4 = 124$ and $4 < 12$. If someone writes 9 R16, the reconstruction is 124 but the remainder is too large; one more group can be made. Both conditions must hold.

STUDENT RESOURCE

Reusable student organizer

Name: _____ Date: _____ Problem: _____

Estimate / name the units

Draw a model / explain a step

Check and interpret

TEACHER GUIDE

Evidence and responsive scoring

Collect individual work during partner tasks, then a fresh unaided performance later. A choice response is recognition evidence; it cannot establish algorithm fluency or model construction.

Score computation, method/model, explanation and reasonableness separately where requested. 3: accurate, independent and connected evidence; 2: mostly accurate with a minor error or incomplete connection; 1: relevant partial evidence with major gaps; 0: interpretable observed incorrect work. N/O: unobserved, inaccessible or insufficient evidence.

Record date/item, learner’s exact strategy, independence, consistency, access supports, answer-supplying cues and next step. Do not score handwriting or reading difficulty as mathematics. These instructional descriptors are not official mastery cutoffs.

Look for accurate model construction, value-preserving steps and a check connected to the original quantities. Collect fresh evidence after reteaching and compare the learner’s reasoning over time.

Learner / date / item	Evidence / dimension scores	Support / next step

TEACHER GUIDE

Warm-up: teaching moves

Selected core: M01 and O01. Bank: M01-M04 and O01-O04. Target: Find whole-number quotients and remainders with dividends through four digits and two-digit divisors. Use a rectangular area model or array, repeated subtraction and partial quotients to develop written division. Check dividend = divisor $\times$ quotient + remainder, with $0 \leq \text{remainder} < \text{divisor}$.

0-2 minutes | Say: “What does each number measure or count? What size answer would make sense?” Listen before suggesting a procedure.

2-5 minutes | Retrieve facts and place values before computing. Ask learners to explain the value of one digit and predict a reasonable magnitude.

5-8 minutes | Say: “Show why each written step preserves the quantity. Point to the matching unit, group or region.” Listen for quotient chunks matching removed rectangles and a remainder smaller than the divisor.

Close | Ask: “How does your check rule out a misplaced digit or an extra group?” Record the computation and explanation separately.

Misconception response: If the remainder is at least the divisor, build one more complete group. If reconstruction fails, locate the first subtraction or quotient-chunk error.

Early finisher: compare a second valid strategy and explain which is more efficient for these numbers. Record any mathematical hint separately and reassess with a fresh item.

STUDENT TASKS

Warm-up: choose a result

M01 A school shares 3980 pencils equally among 56 classes. How many pencils does each class get and how many remain?

A. 73 R2

B. 70 R4

C. 68 R5

D. 71 R4

Scratch work

M02 A school shares 8348 pencils equally among 77 classes. How many pencils does each class get and how many remain?

A. 109 R30

B. 110 R34

C. 108 R32

D. 108 R33

Scratch work

STUDENT PERFORMANCE

Warm-up: show your method

001 Find the quotient and remainder for $1516 \div 26$. Draw a labeled rectangular area model. Show partial quotients or grouped repeated subtraction, connect the chunks to written division, and check the remainder.

Draw and label your model; choose your own partitions

Written work / explanation

Check / estimate / interpretation

STUDENT PERFORMANCE

Warm-up: show your method

002 A school shares 3721 pencils equally among 51 classes. How many pencils does each class get and how many remain? Draw a labeled rectangular area model. Show partial quotients or grouped repeated subtraction, connect the chunks to written division, and check the remainder.

Draw and label your model; choose your own partitions

Written work / explanation

Check / estimate / interpretation

TEACHER KEY

Worked keys and learning targets

M01 | Warm-up | Answer: D 71 R4

Find whole-number quotients and remainders with dividends through four digits and two-digit divisors. Use a rectangular area model or array, repeated subtraction and partial quotients to develop written division. Check $\text{dividend} = \text{divisor} \times \text{quotient} + \text{remainder}$, with $0 \leq \text{remainder} < \text{divisor}$.

Partial quotients / grouped repeated subtraction: $3980 - 56 \times 70 = 60$; $60 - 56 \times 1 = 4$. Sum widths $70 + 1 = 71$. Draw a rectangle of height 56 with these widths and areas 3920, 56; leave 4 units outside the complete rectangle. In a written algorithm these quotient chunks occupy the matching place-value columns. Check $56 \times 71 + 4 = 3980$; $0 \leq 4 < 56$. Quotient 71, remainder 4. Context answer: 71 pencils per class, with 4 pencils remaining.

Distractor 68 R5: Reconstructs 3813, not 3980: $56 \times 68 + 5$. Remainder alone cannot establish a correct quotient.

Distractor 70 R4: Reconstructs 3924, not 3980: $56 \times 70 + 4$. Remainder alone cannot establish a correct quotient.

Distractor 73 R2: Reconstructs 4090, not 3980: $56 \times 73 + 2$. Remainder alone cannot establish a correct quotient.

M02 | Warm-up | Answer: C 108 R32

Find whole-number quotients and remainders with dividends through four digits and two-digit divisors. Use a rectangular area model or array, repeated subtraction and partial quotients to develop written division. Check $\text{dividend} = \text{divisor} \times \text{quotient} + \text{remainder}$, with $0 \leq \text{remainder} < \text{divisor}$.

Partial quotients / grouped repeated subtraction: $8348 - 77 \times 100 = 648$; $648 - 77 \times 8 = 32$. Sum widths $100 + 8 = 108$. Draw a rectangle of height 77 with these widths and areas 7700, 616; leave 32 units outside the complete rectangle. In a written algorithm these quotient chunks occupy the matching place-value columns. Check $77 \times 108 + 32 = 8348$; $0 \leq 32 < 77$. Quotient 108, remainder 32. Context answer: 108 pencils per class, with 32 pencils remaining.

Distractor 110 R34: Reconstructs 8504, not 8348: $77 \times 110 + 34$. Remainder alone cannot establish a correct quotient.

Distractor 108 R33: Reconstructs 8349, not 8348: $77 \times 108 + 33$. Remainder alone cannot establish a correct quotient.

Distractor 109 R30: Reconstructs 8423, not 8348: $77 \times 109 + 30$. Remainder alone cannot establish a correct quotient.

TEACHER KEY

Worked keys and learning targets

001 | Warm-up | Answer: 58 R8

Find whole-number quotients and remainders with dividends through four digits and two-digit divisors. Use a rectangular area model or array, repeated subtraction and partial quotients to develop written division. Check $\text{dividend} = \text{divisor} \times \text{quotient} + \text{remainder}$, with $0 \leq \text{remainder} < \text{divisor}$.

Partial quotients / grouped repeated subtraction: $1516 - 26 \times 50 = 216$; $216 - 26 \times 8 = 8$. Sum widths $50 + 8 = 58$. Draw a rectangle of height 26 with these widths and areas 1300, 208; leave 8 units outside the complete rectangle. In a written algorithm these quotient chunks occupy the matching place-value columns. Check $26 \times 58 + 8 = 1516$; $0 \leq 8 < 26$. Quotient 58, remainder 8.

Evidence: require the requested model or strategy, named units, explanation and check. Accept mathematically equivalent model partitions and explanations.

002 | Warm-up | Answer: 72 R49

Find whole-number quotients and remainders with dividends through four digits and two-digit divisors. Use a rectangular area model or array, repeated subtraction and partial quotients to develop written division. Check $\text{dividend} = \text{divisor} \times \text{quotient} + \text{remainder}$, with $0 \leq \text{remainder} < \text{divisor}$.

Partial quotients / grouped repeated subtraction: $3721 - 51 \times 70 = 151$; $151 - 51 \times 2 = 49$. Sum widths $70 + 2 = 72$. Draw a rectangle of height 51 with these widths and areas 3570, 102; leave 49 units outside the complete rectangle. In a written algorithm these quotient chunks occupy the matching place-value columns. Check $51 \times 72 + 49 = 3721$; $0 \leq 49 < 51$. Quotient 72, remainder 49. Context answer: 72 pencils per class, with 49 pencils remaining.

Evidence: require the requested model or strategy, named units, explanation and check. Accept mathematically equivalent model partitions and explanations.