

TEACHER + STUDENT RESOURCE

Grade 6 | The Number System

Decimal algorithms that make sense



NC.6.NS.3

Current North Carolina Standard Course of Study

Aligned for 2026-27 and 2027-28; 2026-adopted standards start in 2028-29.

Seven instructional sections • 30 multiple-choice tasks • 30 open / performance tasks •
Worked visual and algorithm keys • Reusable organizers and evidence records

Choose a short core across several sessions. This resource bank is not a 60-item test or a
timed-fluency requirement.

Free sample | Contents

NC.6.NS.3 | Sixth Grade mathematics

This sample contains 23 complete selected pages from the 111-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-18, 33-34, 63, 78-79

Representative activities

M01: sample PDF page(s) 19; original page(s) 18

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

O01: sample PDF page(s) 20; original page(s) 33

O02: sample PDF page(s) 21; original page(s) 34

Selected teacher prompts and keys: original page(s) 63, 78-79

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

Plan the learning

Navigation: exact standard and targets follow on page 3, access and prerequisites on page 4, then worked teaching models and seven lesson scripts. Student organizers come next, followed by the 30-item choice bank and the 30-item open/performance bank.

Teacher-only worked keys, evidence records, and source notes complete the packet. Each page is labelled by its function.

A flexible 4-session core

Session 1: warm-up and I Do, about 20 minutes. Session 2: We Do and collaborative practice, about 25 minutes. Session 3: independent work and a responsive small group, about 25 minutes. Session 4: exit conference and transfer, about 15 minutes. Adjust time and item selection to observed needs; these are planning estimates, not student speed cutoffs.

Each section offers M and O item ranges of 4 / 4 / 5 / 5 / 5 / 4 / 3. Begin with the selected pair in its script. Use the remaining items for later practice, alternate examples, or conferences. A coached response is not an independent assessment sample.

Materials: pencils, plain paper, ruler for organizing work, and optional full paper strips. All essential blank organizers and model examples appear here. Adults handle any cutting. Print selected student pages separately from teacher keys. Printed diagrams represent mathematical units and are not promised physical measurement scales.

Mathematical practices: MP2 (units and quantities), MP3 (justify and critique), MP4 (model situations), MP6 (precision), and MP7 (place-value or factor structure). Use an individual explanation and work sample as evidence.

TEACHER GUIDE

Exact standard and targets

Apply and extend previous understandings of decimals to develop and fluently use the standard algorithms for addition, subtraction, multiplication and division of decimals.

A | I can: Develop and fluently use the standard decimal addition algorithm.

B | I can: Develop and fluently use the standard decimal subtraction algorithm.

C | I can: Develop and fluently use the standard decimal multiplication algorithm.

D | I can: Develop and fluently use the standard decimal division algorithm.

Evidence: An individually executed standard algorithm for EACH operation, with a place-value explanation of carries, regrouping, decimal placement, or equivalent division. Choice recognition alone does not establish algorithm fluency.

TEACHER GUIDE

Access, prerequisites, response

Prerequisites: Base-ten place value through thousandths, equivalent decimals, whole-number algorithms, and inverse operations. More digits do not require a new kind of unit.

Access: read directions neutrally, enlarge print, allow a straightedge or place-value grid, or accept oral, signed, AAC, or dictated explanations. A learner can direct an adult to write exact algorithm steps or model partitions when motor access requires it. Do not supply the operation, calculation, quotient digit, factor, grouping, or partition being assessed.

Record access separately from answer-supplying help. Calculator use can verify completed work during teaching, but it cannot establish independent algorithm computation. For supported work, preserve the support record and collect a fresh independent example later.

Respond to a misconception: If digits are aligned by the last digit for addition, label ones/tenths/hundredths first. If a subtraction crosses zeros, exchange one unit successively through the intervening places. If decimal division shifts one operand only, compare the original and proposed ratios.

Fluency evidence: accuracy, sensible efficiency, and independent, reliable use across varied examples over time. Observe explanations and self-checks. No fixed timer, official cut score, or automatic mastery claim is introduced by this packet.

Essential question: Why do the standard algorithms preserve decimal place value?

TEACHER MODEL | NOT ASSESSMENT

Think aloud: A

Say: “Addition/subtraction: align equal place values. Multiplication: multiply digits, then justify the product unit. Division: scale both numbers equally, long divide, and preserve the quotient decimal.”

Two measured lengths are 7.095 m and 3.87 m. Find their total length. Show the standard algorithm, with all carries, regrouping, partial products, or division steps that apply. Explain why the decimal point belongs where you placed it. Give an estimate or inverse check.

Model and explain: Align decimal points and equal place values. Use 7.095 and 3.870. thousandths place: $5 + 0 + \text{carry } 0 = 5$; write 5, carry 0. hundredths place: $9 + 7 + \text{carry } 0 = 16$; write 6, carry 1. tenths place: $0 + 8 + \text{carry } 1 = 9$; write 9, carry 0. ones place: $7 + 3 + \text{carry } 0 = 10$; write 0, carry 1. Write final carry 1 in the next place. Result: 10.965. Inverse check: $10.965 - 3.87 = 7.095$.

$$\begin{array}{r}
 \begin{array}{ccccccc}
 & & 1 & & & 1 & \\
 & & & & & & \\
 & 7 & . & 0 & 9 & 5 & \\
 + & 3 & . & 8 & 7 & 0 & \\
 \hline
 1 & 0 & . & 9 & 6 & 5 &
 \end{array}
 \end{array}$$

Small burgundy digits show incoming carries or regrouped values. Crossed digits are replaced by the values above them. The detailed place-by-place record is written above.

Ask: “Which unit or relationship justifies each step? How does the check connect to the original quantity?”

TEACHER MODEL | NOT ASSESSMENT

Think aloud: B

Say: “Addition/subtraction: align equal place values. Multiplication: multiply digits, then justify the product unit. Division: scale both numbers equally, long divide, and preserve the quotient decimal.”

A container starts with 30.05 L. Then 9.678 L is used. How much remains? Show the standard algorithm, with all carries, regrouping, partial products, or division steps that apply. Explain why the decimal point belongs where you placed it. Give an estimate or inverse check.

Model and explain: Align decimal points and equal place values. Use 30.050 and 9.678. Regroup from the hundredths place: 5 becomes 4; intervening zeros become 9 and the current digit becomes 10. thousandths place: 10 - 8 = 2. Regroup from the tens place: 3 becomes 2; intervening zeros become 9 and the current digit becomes 14. hundredths place: 14 - 7 = 7. tenths place: 9 - 6 = 3. ones place: 9 - 9 = 0. tens place: 2 - 0 = 2. Result: 20.372. Inverse check: $20.372 + 9.678 = 30.05$.

$$\begin{array}{r}
 \begin{array}{ccccccc}
 & 2 & 9 & & 9 & 14 & 10 \\
 \cancel{3} & \cancel{0} & . & \cancel{0} & \cancel{5} & \cancel{0} & \\
 - & 9 & . & 6 & 7 & 8 & \\
 \hline
 2 & 0 & . & 3 & 7 & 2 &
 \end{array}
 \end{array}$$

Small burgundy digits show incoming carries or regrouped values. Crossed digits are replaced by the values above them. The detailed place-by-place record is written above.

Ask: “Which unit or relationship justifies each step? How does the check connect to the original quantity?”

TEACHER MODEL | NOT ASSESSMENT

Think aloud: C

Say: “Addition/subtraction: align equal place values. Multiplication: multiply digits, then justify the product unit. Division: scale both numbers equally, long divide, and preserve the quotient decimal.”

Compute 1.25×0.36 . Show the standard algorithm, with all carries, regrouping, partial products, or division steps that apply. Explain why the decimal point belongs where you placed it. Give an estimate or inverse check.

Model and explain: Multiply whole-number digit strings: 125×36 . Place-value partial products: $750 + 3750 = 4500$. The factors have 2 and 2 decimal places, so divide the integer product by 10^4 : 0.45. This follows from multiplying units of $1/100$ by units of $1/100$. Inverse check: $0.45 \div 0.36 = 1.25$.

Digit-by-digit carry record (work right to left)

Row $\times 6$: $6 \times 5 + 0 = 30$: write 0, carry 3; $6 \times 2 + 3 = 15$: write 5, carry 1; $6 \times 1 + 1 = 7$: write 7, carry 0; no final carry. Shift 0 place(s): partial product 750.

Row $\times 3$: $3 \times 5 + 0 = 15$: write 5, carry 1; $3 \times 2 + 1 = 7$: write 7, carry 0; $3 \times 1 + 0 = 3$: write 3, carry 0; no final carry. Shift 1 place(s): partial product 3750.

Add partial products, right to left. ones: $0 + 0 + \text{carry } 0 = 0$; write 0, carry 0 | tens: $5 + 5 + \text{carry } 0 = 10$; write 0, carry 1 | hundreds: $7 + 7 + \text{carry } 1 = 15$; write 5, carry 1 | thousands: $0 + 3 + \text{carry } 1 = 4$; write 4, carry 0. No final carry.

$$\begin{array}{r}
 125 \\
 \times 36 \\
 \hline
 750 \\
 3750 \\
 \hline
 4500
 \end{array}$$

Rescale the integer product by 10^4 : 0.45.

Ask: “Which unit or relationship justifies each step? How does the check connect to the original quantity?”

TEACHER MODEL | NOT ASSESSMENT

Think aloud: D

Say: “Addition/subtraction: align equal place values. Multiplication: multiply digits, then justify the product unit. Division: scale both numbers equally, long divide, and preserve the quotient decimal.”

Compute $8.64 \div 0.24$. Show the standard algorithm, with all carries, regrouping, partial products, or division steps that apply. Explain why the decimal point belongs where you placed it. Give an estimate or inverse check.

Model and explain: Multiply BOTH dividend and divisor by 100: $8.64 \div 0.24 = 864 \div 24$. The quotient is unchanged because both quantities use the same new unit. Long divide, place the quotient decimal above the dividend decimal, and append zero placeholders only as needed. Result: 36. Check: $36 \times 0.24 = 8.64$. Inverse check: $36 \times 0.24 = 8.64$.

Equivalent division: $864.00 \div 24$. Append zero placeholders as needed; align the quotient decimal above the dividend decimal.

$$\begin{array}{r}
 36.00 \\
 24 \overline{) 864.00} \\
 \underline{- 72} \\
 144 \\
 \underline{- 144} \\
 0 \\
 \underline{- 0} \\
 0 \\
 \underline{- 0} \\
 0
 \end{array}$$

Ask: “Which unit or relationship justifies each step? How does the check connect to the original quantity?”

LESSON SCRIPT | Warm-up

Warm-up teaching moves

Optional bank: M01-M04 and O01-O04. Selected core: M01 and O01. Target B: Develop and fluently use the standard decimal subtraction algorithm.

0-3 minutes: Ask learners to name the units or factors before computing. Collect one estimate or factor relationship. Say, “What do you know before doing the algorithm?”

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Align decimal points and equal place values. Use 30.050 and 9.678. Regroup from the hundredths place: 5 becomes 4; intervening zeros become 9 and the current digit becomes 10. thousandths place: $10 - 8 = 2$. Regroup from the tens place: 3 becomes 2; intervening zeros become 9 and the current digit becomes 14. hundredths place: $14 - 7 = 7$. tenths place: $9 - 6 = 3$. ones place: $9 - 9 = 0$. tens place: $2 - 0 = 2$. Result: 20.372. Inverse check: $20.372 + 9.678 = 30.05$.

Final 3-5 minutes: discuss M01. Correct response: 20.372. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: equal place values, explicit carries or regrouping, correct partial products or equivalent division, and justified decimal placement.

If stuck: If digits are aligned by the last digit for addition, label ones/tenths/hundredths first. If a subtraction crosses zeros, exchange one unit successively through the intervening places. If decimal division shifts one operand only, compare the original and proposed ratios.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | I Do

I Do teaching moves

Optional bank: M05-M08 and O05-O08. Selected core: M05 and O05. Target A: Develop and fluently use the standard decimal addition algorithm.

0-4 minutes: Use the worked teacher model. Point to each model unit or algorithm column. Say, “I will explain why each step keeps the quantity unchanged.”

Next 5-8 minutes: Teacher models the selected O item and explains each step; learners annotate a separate organizer.

Selected-task solution for the teacher: Align decimal points and equal place values. Use 7.095 and 3.870. thousandths place: $5 + 0 + \text{carry } 0 = 5$; write 5, carry 0. hundredths place: $9 + 7 + \text{carry } 0 = 16$; write 6, carry 1. tenths place: $0 + 8 + \text{carry } 1 = 9$; write 9, carry 0. ones place: $7 + 3 + \text{carry } 0 = 10$; write 0, carry 1. Write final carry 1 in the next place. Result: 10.965. Inverse check: $10.965 - 3.87 = 7.095$.

Final 3-5 minutes: discuss M05. Correct response: 10.965. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: equal place values, explicit carries or regrouping, correct partial products or equivalent division, and justified decimal placement.

If stuck: If digits are aligned by the last digit for addition, label ones/tenths/hundredths first. If a subtraction crosses zeros, exchange one unit successively through the intervening places. If decimal division shifts one operand only, compare the original and proposed ratios.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | We Do

We Do teaching moves

Optional bank: M09-M13 and O09-O13. Selected core: M12 and O12. Target D: Develop and fluently use the standard decimal division algorithm.

0-4 minutes: Start the selected O item together. Pause before a key grouping, regrouping, or factor decision. Say, “What would you write next, and what makes it valid?”

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Multiply BOTH dividend and divisor by 100: $12.6 \div 0.08 = 1260 \div 8$. The quotient is unchanged because both quantities use the same new unit. Long divide, place the quotient decimal above the dividend decimal, and append zero placeholders only as needed. Result: 157.5. Check: $157.5 \times 0.08 = 12.6$. Inverse check: $157.5 \times 0.08 = 12.6$.

Final 3-5 minutes: discuss M12. Correct response: 157.5. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: equal place values, explicit carries or regrouping, correct partial products or equivalent division, and justified decimal placement.

If stuck: If digits are aligned by the last digit for addition, label ones/tenths/hundredths first. If a subtraction crosses zeros, exchange one unit successively through the intervening places. If decimal division shifts one operand only, compare the original and proposed ratios.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | Collaborative practice

Collaborative practice teaching moves

Optional bank: M14-M18 and O14-O18. Selected core: M14 and O14. Target A: Develop and fluently use the standard decimal addition algorithm.

0-3 minutes: Partner A calculates and explains. Partner B checks units and one step without supplying the answer. Switch roles on the last O item in this section; each person records individual work.

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Align decimal points and equal place values. Use 0.875 and 2.650. thousandths place: $5 + 0 + \text{carry } 0 = 5$; write 5, carry 0. hundredths place: $7 + 5 + \text{carry } 0 = 12$; write 2, carry 1. tenths place: $8 + 6 + \text{carry } 1 = 15$; write 5, carry 1. ones place: $0 + 2 + \text{carry } 1 = 3$; write 3, carry 0. Result: 3.525. Inverse check: $3.525 - 2.65 = 0.875$.

Final 3-5 minutes: discuss M14. Correct response: 3.525. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: equal place values, explicit carries or regrouping, correct partial products or equivalent division, and justified decimal placement.

If stuck: If digits are aligned by the last digit for addition, label ones/tenths/hundredths first. If a subtraction crosses zeros, exchange one unit successively through the intervening places. If decimal division shifts one operand only, compare the original and proposed ratios.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | Independent practice

Independent practice teaching moves

Optional bank: M19-M23 and O19-O23. Selected core: M21 and O21. Target C: Develop and fluently use the standard decimal multiplication algorithm.

0-2 minutes: Read directions neutrally if needed. Say, “Show your steps and explain your check.” Provide no answer-supplying prompt; allow time for thought.

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Multiply whole-number digit strings: 48×35 . Place-value partial products: $240 + 1440 = 1680$. The factors have 2 and 2 decimal places, so divide the integer product by 10^4 : 0.168. This follows from multiplying units of $1/100$ by units of $1/100$. Inverse check: $0.168 \div 0.35 = 0.48$.

Final 3-5 minutes: discuss M21. Correct response: 0.168. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: equal place values, explicit carries or regrouping, correct partial products or equivalent division, and justified decimal placement.

If stuck: If digits are aligned by the last digit for addition, label ones/tenths/hundredths first. If a subtraction crosses zeros, exchange one unit successively through the intervening places. If decimal division shifts one operand only, compare the original and proposed ratios.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | Small-group reteach

Small-group reteach teaching moves

Optional bank: M24-M27 and O24-O27. Selected core: M24 and O24. Target C: Develop and fluently use the standard decimal multiplication algorithm.

0-4 minutes: Ask the learner to show a previously difficult step. Locate the precise error; use the anchor to rebuild that step. Do not substitute a recognition item for the performance.

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Multiply whole-number digit strings: 324×15 . Place-value partial products: $1620 + 3240 = 4860$. The factors have 2 and 1 decimal places, so divide the integer product by 10^3 : 4.86. This follows from multiplying units of $1/100$ by units of $1/10$. Inverse check: $4.86 \div 1.5 = 3.24$.

Final 3-5 minutes: discuss M24. Correct response: 4.86. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: equal place values, explicit carries or regrouping, correct partial products or equivalent division, and justified decimal placement.

If stuck: If digits are aligned by the last digit for addition, label ones/tenths/hundredths first. If a subtraction crosses zeros, exchange one unit successively through the intervening places. If decimal division shifts one operand only, compare the original and proposed ratios.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | Exit ticket

Exit ticket teaching moves

Optional bank: M28-M30 and O28-O30. Selected core: M29 and O29. Target D: Develop and fluently use the standard decimal division algorithm.

0-2 minutes: Ask for one fresh independent explanation. Say, “Show what your answer means, and one check that convinces you.”

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Multiply BOTH dividend and divisor by 10: $6.825 \div 1.5 = 68.25 \div 15$. The quotient is unchanged because both quantities use the same new unit. Long divide, place the quotient decimal above the dividend decimal, and append zero placeholders only as needed. Result: 4.55. Check: $4.55 \times 1.5 = 6.825$. Inverse check: $4.55 \times 1.5 = 6.825$.

Final 3-5 minutes: discuss M29. Correct response: 4.55. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: equal place values, explicit carries or regrouping, correct partial products or equivalent division, and justified decimal placement.

If stuck: If digits are aligned by the last digit for addition, label ones/tenths/hundredths first. If a subtraction crosses zeros, exchange one unit successively through the intervening places. If decimal division shifts one operand only, compare the original and proposed ratios.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

REUSABLE STUDENT ORGANIZER

Make the structure visible

Name: _____ Date: _____

Addition/subtraction: align equal place values. Multiplication: multiply digits, then justify the product unit. Division: scale both numbers equally, long divide, and preserve the quotient decimal.

A. Quantities, units, estimate / factor relationships**B. My labelled model / algorithm / factor work****C. Check, explanation, and interpretation**

REUSABLE STUDENT ORGANIZER

Align decimal place values

Write one digit per column. Add zero placeholders only when they preserve value. Use the wide space below for multiplication or division.

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths	Next place

Burgundy boundary separates ones and tenths. Record regrouping above a digit or in a side note; never hide a changed value.

Algorithm and decimal-place explanation

STUDENT CHOICE BANK

M01 and M02

M01 | Warm-up

What is $30.05 - 9.678$? Use place value to check the decimal placement.

A. 21.372

B. 203.72

C. 20.372

D. 39.728

My check / reasoning: _____

M02 | Warm-up

What is $8.64 \div 0.24$? Use place value to check the decimal placement.

A. 3.6

B. 35.99

C. 360

D. 36

My check / reasoning: _____

STUDENT OPEN / PERFORMANCE BANK

001 | Warm-up

Name: _____ Date: _____

A container starts with 30.05 L. Then 9.678 L is used. How much remains? Show the standard algorithm, with all carries, regrouping, partial products, or division steps that apply. Explain why the decimal point belongs where you placed it. Give an estimate or inverse check.

A. Model / algorithm / factor work**B. Check, units, and explanation**

STUDENT OPEN / PERFORMANCE BANK

002 | Warm-up

Name: _____ Date: _____

Compute $8.64 \div 0.24$. Show the standard algorithm, with all carries, regrouping, partial products, or division steps that apply. Explain why the decimal point belongs where you placed it. Give an estimate or inverse check.

A. Model / algorithm / factor work**B. Check, units, and explanation**

TEACHER-ONLY CHOICE KEYS

M01 and M02

M01 | target B | C. 20.372

Align decimal points and equal place values. Use 30.050 and 9.678. Regroup from the hundredths place: 5 becomes 4; intervening zeros become 9 and the current digit becomes 10. thousandths place: $10 - 8 = 2$. Regroup from the tens place: 3 becomes 2; intervening zeros become 9 and the current digit becomes 14. hundredths place: $14 - 7 = 7$. tenths place: $9 - 6 = 3$. ones place: $9 - 9 = 0$. tens place: $2 - 0 = 2$. Result: 20.372.

Possible reasoning behind each distractor (confirm with the learner):

21.372: adds a whole unit in a carrying or grouping step.

203.72: shifts the result one place too far left.

39.728: uses addition in place of the required operation.

M02 | target D | D. 36

Multiply BOTH dividend and divisor by 100: $8.64 \div 0.24 = 864 \div 24$. The quotient is unchanged because both quantities use the same new unit. Long divide, place the quotient decimal above the dividend decimal, and append zero placeholders only as needed. Result: 36. Check: $36 \times 0.24 = 8.64$.

Possible reasoning behind each distractor (confirm with the learner):

3.6: shifts the result one place too far right.

35.99: loses one hundredth.

360: shifts the result one place too far left.

TEACHER-ONLY PERFORMANCE KEY

001 | target B

Align decimal points and equal place values. Use 30.050 and 9.678. Regroup from the hundredths place: 5 becomes 4; intervening zeros become 9 and the current digit becomes 10. thousandths place: 10 - 8 = 2. Regroup from the tens place: 3 becomes 2; intervening zeros become 9 and the current digit becomes 14. hundredths place: 14 - 7 = 7. tenths place: 9 - 6 = 3. ones place: 9 - 9 = 0. tens place: 2 - 0 = 2. Result: 20.372. Inverse check: $20.372 + 9.678 = 30.05$.

$$\begin{array}{r}
 \begin{array}{cccccc}
 2 & 9 & & 9 & 14 & 10 \\
 \cancel{3} & \cancel{0} & . & \cancel{0} & \cancel{5} & \cancel{0} \\
 - & 9 & . & 6 & 7 & 8 \\
 \hline
 2 & 0 & . & 3 & 7 & 2
 \end{array}
 \end{array}$$

Small burgundy digits show incoming carries or regrouped values. Crossed digits are replaced by the values above them. The detailed place-by-place record is written above.

Accept mathematically equivalent notation and valid alternate models or factor trees. Require the representation / algorithm named in the task. Record computation, reasoning, and interpretation separately; a bare correct answer is incomplete evidence.

TEACHER-ONLY PERFORMANCE KEY

002 | target D

Multiply BOTH dividend and divisor by 100: $8.64 \div 0.24 = 864 \div 24$. The quotient is unchanged because both quantities use the same new unit. Long divide, place the quotient decimal above the dividend decimal, and append zero placeholders only as needed. Result: 36. Check: $36 \times 0.24 = 8.64$. Inverse check: $36 \times 0.24 = 8.64$.

Equivalent division: $864.00 \div 24$. Append zero placeholders as needed; align the quotient decimal above the dividend decimal.

$$\begin{array}{r}
 36.00 \\
 24 \overline{) 864.00} \\
 \underline{- 72} \\
 144 \\
 \underline{- 144} \\
 0 \\
 \underline{- 0} \\
 0 \\
 \underline{- 0} \\
 0
 \end{array}$$

Accept mathematically equivalent notation and valid alternate models or factor trees. Require the representation / algorithm named in the task. Record computation, reasoning, and interpretation separately; a bare correct answer is incomplete evidence.