Unit 2: Fractions & Decimals — The Kitchen Bakery, the Avian Lab & the 3D Print Shop

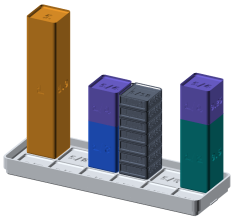
Equivalent Fractions, Multiplying & Dividing Fractions, and All Four Decimal Operations

If you spend an afternoon helping Elena in her family's bakery kitchen, volunteering with Zoe at the bird-rehab aviary, or watching Marcus run the school's desktop 3D printer, you quickly run into an annoying truth: real measurements almost never land on whole numbers. Elena's measuring scoops are stamped in halves, thirds, quarters, and eighths, and she used to dread fractions because every rule felt backward—why did a bigger number on the bottom mean a smaller scoop?

Next door at the wildlife center, Zoe watches New Caledonian crows bend hooked twigs to pull grubs out of logs and drop pebbles into water tubes, raising the water level by tiny fractions of a centimeter with each splash until a floating treat rises within reach. To know how many pebbles a crow needs, Zoe has to figure out how many 3/8-centimeter splashes fit inside a 4 1/2-centimeter rise.

Meanwhile, in the maker room, Marcus deals with decimals every time he prints a part: the 3D printer's 'slicer' software chops a 14.4-millimeter bracket into paper-thin horizontal layers, each just 0.20 millimeters thick, and melts corn-based plastic one layer at a time. Out on the track, the stopwatch times 100-meter sprints to the hundredth of a second, where 0.55 seconds is the gap between first and second place.

At first, Elena, Zoe, and Marcus all second-guessed themselves whenever fractions or decimals showed up. Across these lessons, they learn how to trade unequal fraction slices for matching pieces, why taking a 'part of a part' shrinks a fraction, how dividing fractions counts how many scoops fit inside a whole, and how to verify every fraction and decimal step on the SC-6 calculator.



Real-World Mathematical Context & Two-Method Mastery • Hands-On Models: Fraction Strips & Place Value Blocks

UNIT 2 LESSONS — LEARN TWO TEXTBOOK WAYS FIRST, THEN CHECK YOUR WORK ON THE SC-6 CALCULATOR

SEC 2.1 (pp.15-16) Equivalent Fractions, Mixed Numbers & LCD Addition

Textbook Ways: Way 1: Divide Once by GCF / Use LCD | Way 2: Step-by-Step Common Factors | Way 3: Fraction Strips Model

Learn by Hand: In Big Ideas Math, divide the numerator and denominator by their GCF to write a fraction in simplest form, and rewrite unlike fractions using their Least Common Denominator (LCD) to add or subtract. With Fraction Strips, equivalent fractions match in length, and trading 1/3 + 1/4 for twelfths shows 4/12 + 3/12 = 7/12.

Check Your Work on the SC-6 Calculator:

[.] [1] [2] [.] [1] [8] [ENTER] [g] [SIMP] [g] [SIMP]

Type [.] 12 [.] 18 [ENTER], then press [g][SIMP] to step through common factors to 2/3!

SEC 2.2 (pp.17-18) Multiplying Fractions and Mixed Numbers

Textbook Ways: Way 1: Multiply Straight Across | Way 2: Cross-Cancel Common Factors First | Way 3: Area Model / Distributive Split

Learn by Hand: In Big Ideas Math, multiply fractions by multiplying the numerators and multiplying the denominators: (a/b) × (c/d) = (ac)/(bd). For mixed numbers, write each mixed number as an improper fraction first, and divide out common factors before multiplying. Partitioning a 3/4 Fraction Strip in half visually shows why 1/2 of 3/4 is 3/8.

Check Your Work on the SC-6 Calculator:

[.] [1] [.] [2] [ENTER] [.] [3] [.] [4] [×]

Type [.] 1 [.] 2 [ENTER] [.] 3 [.] 4 [×] to verify 3/8 in simplest form.

SEC 2.3 (pp.19-20) Dividing Fractions and Mixed Numbers

Textbook Ways: Way 1: Multiply by the Reciprocal | Way 2: Common-Denominator Division | Way 3: Fraction Strip / Number-Line Model

Learn by Hand: In Big Ideas Math, you can divide fractions in two ways: (1) Multiply by the Reciprocal of the divisor: (a/b) ÷ (c/d) = (a/b) × (d/c), or (2) Rewrite both fractions with a Common Denominator and divide their numerators! Placing 1/8 Fraction Strips alongside a 3/4 strip shows why six 1/8s fit inside 3/4.

Check Your Work on the SC-6 Calculator:

[.] [3] [.] [4] [ENTER] [.] [1] [.] [8] [f] [1/x] [×]

Type [.] 3 [.] 4 [ENTER] [.] 1 [.] 8 [÷] (or press [f][1/x] [×] to flip 1/8 to 8/1 and multiply) to confirm 6!

SEC 2.4 (pp.21-22) Adding, Subtracting, and Multiplying Decimals

Textbook Ways: Way 1: Vertical Place-Value Algorithm | Way 2: Convert to Fractions/Hundredths | Way 3: Place-Value Split / Area Model

Learn by Hand: To add or subtract decimals, line up the decimal points vertically so ones, tenths, and hundredths align, and annex trailing zeros as needed. To multiply decimals, multiply as whole numbers and count the total number of decimal places in the factors—always checking with a whole-number front-end estimate.

Check Your Work on the SC-6 Calculator:

[1] [4] [.] [6] [ENTER] [3] [.] [8] [5] [+] [f] [LAST x] [-]

Line up the decimal points and add 14.60 + 3.85 by hand first. On your SC-6, check any place-value digit with [PV] (e.g., 14.6 [ENTER] 0.1 [PV]), then press 14.6 [ENTER] 3.85 [+] to confirm 18.45!

SEC 2.5 (pp.23-24) Dividing Whole Numbers and Decimals

Textbook Ways: Way 1: Power-of-10 Decimal Shift & Long Division | Way 2: Equivalent Fraction Scaling | Way 3: Reciprocal Fraction Division

Learn by Hand: When dividing by a decimal (such as 6.75 ÷ 0.25), multiply both the divisor and the dividend by the same power of 10 (shift both decimal points the same number of places to the right) so the divisor becomes a whole number (675 ÷ 25 = 27).

Check Your Work on the SC-6 Calculator:

[2] [3] [ENTER] [4] [÷] [FDISP] [f] [d/c]

Divide 23 ÷ 4 by hand first. On your SC-6, press 23 [ENTER] 4 [÷] and tap [FDISP], [a b/c], and [f][d/c] to cycle through 5.75, 5 3/4, and 23/4 (or use [f][0.3-rep] for repeating decimals)!

HANDS-ON MODEL: FRACTION STRIPS

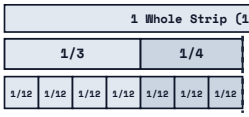
Section 2.1 — Practice A: Equivalent Fractions, Mixed Numbers & LCD Addition

Key Vocabulary: equivalent fractions • simplest form • least common denominator (LCD) • mixed number • improper fraction

Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & HANDS-ON MODEL (FRACTION STRIPS)

Fraction Strips: Trade 1/3 + 1/4 for LCD Twelfths (7/12)



4/12 + 3/12 = 7/12 (Exact Length Match!)

Simplify:
12/18 = 2/3

Mixed Number:
2 1/3 = 7/3
(3×2 + 1)/3

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Concept: Divide numerator and denominator by their GCF to simplify; use LCD = LCM of denominators to add or subtract fractions.

Textbook Mixed Numbers: Multiply Whole × Denominator + Numerator for improper fractions (a b/c = (ac+b)/c); divide to convert back.

WATCH OUT: Never add denominators directly (1/3 + 1/4 ≠ 2/7)! Rewrite with the Least Common Denominator (LCD) first, then add only the numerators.

WORKED EXAMPLE — 3 TEXTBOOK WAYS (ANY 2 WAYS = +20 PTS)

Problem: Write 12/18 in simplest form.

WAY 1: Divide by the GCF in One Step
Find GCF(12, 18) = 6. Divide numerator and denominator by 6: (12 ÷ 6) / (18 ÷ 6) = 2/3.

WAY 2: Divide Step-by-Step by Small Prime Factors
Divide top and bottom of 12/18 by 2 first → 6/9. Then divide top and bottom by 3 → 2/3.

WAY 3: Prime Factor Cancellation / Fraction Strips
Write 12/18 = (2 × 2 × 3) / (2 × 3 × 3). Cancel the shared (2 × 3) → 2/3.

Answer: 2/3 1 Way = +10 | 2 Ways = +20!

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.1 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

[•] [1] [2] [•] [1] [8] [ENTER] [g] [SIMP] [g] [SIMP]

Simplify 12/18 by hand first. On the SC-6 (like the HP-32), enter fractions with the Two-Dot [.] syntax ([.] n [.] d): Type [.] 12 [.] 18 [ENTER], then press [g][SIMP] to step through common factors to 2/3!

SECTION 2.1 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Write 8/12 in simplest form.**
Starter Step 1: Find the Greatest Common Factor (GCF) of numerator 8 and denominator 12, then divide both top and bottom by that GCF.

Way 1 (Paper Work):

Divide Top & Bottom by GCF:

(___ ÷ ___) / (___ ÷ ___) = ___/___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Championship Pizza Party: A team eats 48 slices from trays cut into 18ths (48/18). Write 48/18 in simplest form and as a mixed number.**
Starter Step 1: Simplify 48/18 by dividing top & bottom by their GCF, then divide numerator ÷ denominator for a mixed number.

Way 1 (Paper Work):

Whole × Denom + Num:

Improper = ___/___ Mixed = ___ ___/___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Write the mixed number 2 3/5 as an improper fraction and as a decimal.**

Way 1 (Paper Work):

Whole × Denom + Num:

Improper = ___/___ Mixed = ___ ___/___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Pizza Slice Inventory: After a festival, 23 sixth-slices (23/6) remain. How many whole pizzas and leftover sixth-slices can be boxed?**

Way 1 (Paper Work):

LCD = _____

___/___ ± ___/___ = ___/___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Add 1/2 + 1/3. Write the sum in simplest form.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Camp Lemonade Blend: Elena mixes 3/4 gallon of lemonade with 2/5 gallon of berry tea in a cooler. How many gallons of drink are in the cooler?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Lookout Balcony Rail: A carpenter welds a 1 1/2-foot bracket to a 2 1/3-foot rail. What is the combined length?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Sawing a Diagonal Cross-Brace: A timber frame carpenter trims 2 3/4 feet from a 5 1/3-foot cedar beam. How long is the remaining beam?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Climbing Wall Progress: Zoe climbs 1/2 of a rock wall in Minute 1, 1/4 in Minute 2, and 1/8 in Minute 3. What total fraction of the wall has she climbed, and what fraction remains?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Smoothie Pitcher Mix: Elena blends 3 1/2 pints of strawberry puree with 1 3/4 pints of peach juice. How many pints of smoothie does this make?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

HANDS-ON MODEL: FRACTION STRIPS

Section 2.1 — Practice B: Modeling Real Life (Equivalent Fractions, Mixed Numbers & LCD Addition)

Textbook Ways: Divide Once by GCF / Use LCD | Step-by-Step Common Factors | Fraction Strips Model Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — COMBINING TRAIL LENGTHS (3 TEXTBOOK WAYS • ANY 2 = +20 PTS)

Problem: A hiker walks a 1 2/3-mile ridge trail and a 1 1/4-mile creek trail. How many miles does the hiker walk in all?

WAY 1: Add Whole Numbers & LCD Fractions Separately
LCD(3, 4) = 12. Rename: 1 8/12 + 1 3/12. Add wholes (1 + 1 = 2) and twelfths (8/12 + 3/12 = 11/12) → 2 11/12 miles.

WAY 2: Convert Both to Improper Fractions First
1 2/3 = 5/3 = 20/12 and 1 1/4 = 5/4 = 15/12. Add: 20/12 + 15/12 = 35/12 = 2 11/12 miles.

WAY 3: Fraction Strips Trade (Twelfths)
Combine 2 whole bars, trade two 1/3 bars for eight 1/12 bars, and trade one 1/4 bar for three 1/12 bars → 2 11/12 miles.

WATCH OUT: Never add denominators directly (1/3 + 1/4 ≠ 2/7)! Rewrite with the Least Common Denominator (LCD) first, then add only the numerators.

Answer: 2 11/12 miles (35/12 miles)

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.1 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

`1` `•` `2` `•` `3` `ENTER` `1` `•` `1` `•` `4` `+`

Add 1 2/3 + 1 1/4 on paper first. On your SC-6, enter mixed numbers as w [.] n [.] d:
Type 1 [.] 2 [.] 3 [ENTER] 1 [.] 1 [.] 4 [+] to confirm 2 11/12 (press [f][d/c] for 35/12 or [a b/c] for mixed view).

In the bakery kitchen, Elena poured 3/8 cup of blueberries and 1/4 cup of strawberries into a blender and froze when she tried to write down the total. Part of her wanted to just add across the top and bottom to get 4/12, even though she had a nagging feeling that wasn't right—how could adding berries together give her less than she started with? Picking up the clear glass measuring cup, she looked closely at the etched lines and noticed that every 1/4-cup mark was the exact same height as two 1/8-cup marks. Once she traded 1/4 for 2/8 so all the scoops were the same size (eighths), adding 3/8 + 2/8 = 5/8 cup finally made complete sense.

SECTION 2.1 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Smoothie Recipe: You blend 3/8 cup of blueberries and 1/4 cup of strawberries. How many cups of berries did you use in all?**

Starter Step 1: Rewrite 1/4 as an equivalent fraction with denominator 8 so both fractions share LCD = 8, then add the numerators.

Way 1 (Paper Work):

LCD = _____

___/___ ± ___/___ = ___/___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

2 **3D Print Progress: A print is 18/24 complete. Write the completed fraction in simplest form, and find what fraction of the print remains.**

Starter Step 1: Simplify 18/24 by dividing top & bottom by their GCF, then subtract from 1 whole to find the fraction remaining.

Way 1 (Paper Work):

LCD = _____

___/___ ± ___/___ = ___/___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

3 **Skateboard Hardware: A bolt is 1 5/8 inches long. Write 1 5/8 as an improper fraction and as a decimal.**

Way 1 (Paper Work):

Whole × Denom + Num:

Improper = ___/___ Mixed = ___ ___/___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

4 **Crow Twig Tools: A New Caledonian crow bends a hooked twig 5/6 foot long to fish a grub from a log, while a second crow uses a 3/8-foot twig. How much longer is the first crow's tool?**

Way 1 (Paper Work):

LCD = _____

___/___ ± ___/___ = ___/___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

5 **Pizza Leftovers: After a party, there are 2 1/3 cheese pizzas and 1 1/2 pepperoni pizzas left. How many pizzas are left in all?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

6 **Carpentry Trim: You cut 1 3/4 feet off a 4 1/2-foot board. How many feet of board are left?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

7 **Free-Throw Practice: Maya made 15 out of 25 shots. Write the fraction of shots she made in simplest form and as a decimal.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

8 **Science Beaker Mix: A beaker holds 2/5 liter of water. You pour in 3/10 liter more, then pour out 1/2 liter. How much water is in the beaker now?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

9 **Ribbon Spool: You need 2 2/3 yards of blue ribbon and 1 3/4 yards of gold ribbon. If your spool holds 5 yards, how much ribbon do you use and how much is left?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

10 **Triathlon Training: You swim 3/8 mile, bike 2 1/2 miles, and run 1 3/4 miles. What is the total distance of your workout?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

HANDS-ON MODEL: FRACTION STRIPS

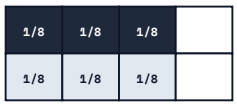
Section 2.2 — Practice A: Multiplying Fractions and Mixed Numbers

Key Vocabulary: product of fractions • area model • cross-canceling (dividing out common factors) • improper fraction

Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & HANDS-ON MODEL (FRACTION STRIPS)

Way 1: Area Model (1/2 of 3/4 = 3/8)



3/4 Shaded Columns → 3/8 Overlap

Way 2 & 3: Multiply or Cross-Cancel

Multiply Across: (1×3) / (2×4) = 3/8

Mixed Numbers: 2 2/3 × 1 1/2 = 8/3 × 3/2

Cross-Cancel Common Factors First:

(8÷2)/(3÷3) × (3÷3)/(2÷2) = 4/1 × 1/1 = 4

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Concept: Multiply numerators and multiply denominators: (a/b) × (c/d) = (a·c)/(b·d). Write mixed numbers as improper fractions first.

Textbook Shortcut (Cross-Canceling): Divide out common factors between any numerator and denominator BEFORE multiplying.

WATCH OUT: For mixed numbers, ALWAYS convert to improper fractions (a b/c = (ac+b)/c) BEFORE multiplying!

WORKED EXAMPLE — 3 TEXTBOOK WAYS (ANY 2 WAYS = +20 PTS)

Problem: Find 1/2 × 3/4.

WAY 1: Multiply Numerators & Multiply Denominators

Multiply numerators across (1 × 3 = 3) and denominators across (2 × 4 = 8) → (1 × 3) / (2 × 4) = 3/8.

WAY 2: 2D Area Model Grid (Shaded Overlap)

Draw a 4-column by 2-row grid (8 eighths). Shade 3 columns (3/4) and 1 row (1/2); the overlap is 3 of 8 boxes = 3/8.

WAY 3: Partition Fraction Strips

Trade three 1/4 strips for six 1/8 strips, then take half of those six strips → three 1/8 strips = 3/8.

Answer: 3/8

1 Way = +10 | 2 Ways = +20!

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.2 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

[•] [1] [•] [2] [ENTER] [•] [3] [•] [4] [×]

Multiply numerators and denominators (or cross-cancel) by hand first. Then check on your SC-6 using Two-Dot fraction entry: Type [.] 1 [.] 2 [ENTER] [.] 3 [.] 4 [×] to verify 3/8 in simplest form.

SECTION 2.2 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Find 1/2 × 2/3. Write the product in simplest form.**

Starter Step 1: Cross-cancel the common factor 2 on the diagonal (or multiply numerators and denominators and simplify).

Way 1 (Paper Work):

Setup: (___/___) × (___/___)

= (___ × ___) / (___ × ___) = ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Multiply 2/3 × 3/4. Divide out common factors before multiplying.**

Starter Step 1: Cross-cancel the common factors on the diagonals BEFORE multiplying the numerators and denominators.

Way 1 (Paper Work):

Setup: (___/___) × (___/___)

= (___ × ___) / (___ × ___) = ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Multiply 3/5 × 5/9.**

Way 1 (Paper Work):

Setup: (___/___) × (___/___)

= (___ × ___) / (___ × ___) = ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Cranberry Trail Mix: A recipe for 16 cups of trail mix is 3/8 dried cranberries. How many cups of cranberries are in the batch?**

Way 1 (Paper Work):

Setup: (___/___) × (___/___)

= (___ × ___) / (___ × ___) = ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Multiply 1 3/4 × 2 2/7.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Multiply 2 1/4 × 1 1/3.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **High-Energy Trail Cookies: One batch of trail cookies uses 2 1/4 cups of rolled oats. How many cups of oats are needed to bake 4 batches?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Without calculating, is 5 × 2/3 greater than 5 or less than 5? Explain why, then find the product.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Light-Rail Blueprint Scale: On an transit map, 1 inch represents 3 1/2 miles. If a proposed rail line measures 4 1/4 inches on the map, how many miles long is the actual line?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Robot Speed Gears: When a small gear turns a bigger gear, the spin slows down. In a LEGO robot, Gear 1 spins at 1/2 the motor's speed, Gear 2 at 2/3 of Gear 1, and Gear 3 at 3/4 of Gear 2. What fraction of the input speed comes out of Gear 3?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

HANDS-ON MODEL: FRACTION STRIPS

Section 2.2 — Practice B: Modeling Real Life (Multiplying Fractions and Mixed Numbers)

Textbook Ways: Multiply Straight Across | Cross-Cancel Common Factors First | Area Model / Distributive Split Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — SCALING A RECIPE (3 TEXTBOOK WAYS • ANY 2 = +20 PTS)

Problem: A batch of granola uses 1 1/2 cups of oats. You make 2 2/3 batches. How many cups of oats do you need?

WAY 1: Improper Fractions & Multiply Straight Across
Write 1 1/2 = 3/2 and 2 2/3 = 8/3. Multiply across: (3 × 8) / (2 × 3) = 24 / 6 = 4 cups.

WAY 2: Divide Out (Cross-Cancel) Common Factors First
In (3/2) × (8/3), divide both 3s by 3 (→ 1) and divide 8 and 2 by 2 (→ 4 and 1): (1/1) × (4/1) = 4 cups.

WAY 3: Distributive Property (2 Batches + 2/3 Batch)
2 batches use 2 × 1 1/2 = 3 cups. Two-thirds of a batch uses (2/3) × (3/2) = 1 cup. Total = 3 + 1 = 4 cups.

WATCH OUT: For mixed numbers, ALWAYS convert to improper fractions (a b/c = (ac+b)/c) BEFORE multiplying!

Answer: 4 cups

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.2 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

`1` `•` `1` `•` `2` `ENTER` `2` `•` `2` `•` `3` `×`

Convert mixed numbers to improper fractions and multiply on paper first. Then check on your SC-6:
Type 1 [.] 1 [.] 2 [ENTER] 2 [.] 2 [.] 3 [×] to confirm 4 cups.

Elena always assumed multiplying had to make a number get bigger, so when her phone battery was at 4/5 charge and a game used 1/2 of that charge, she was sure she needed to divide—and got a bigger number that made no sense. Discouraged, she sketched a bar split into fifths, shaded 4 of them, and sliced that shaded part in half. Seeing only 2/5 of the whole bar left, she realized that taking a 'fraction of a fraction' shrinks the piece because you are taking part of a part. Better yet, when scaling a 1 3/4-cup pancake recipe by 2 1/2 batches, dividing out matching factors on the diagonal kept the numbers small enough to multiply without getting lost.

SECTION 2.2 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Garden Herb Plot: Two-thirds of a garden is planted with vegetables, and 3/5 of the vegetables are tomatoes. What fraction of the whole garden is planted with tomatoes?**

Starter Step 1: '3/5 of 2/3' means multiply (2/3) × (3/5)—look for a common factor on the diagonal to cross-cancel first!

Way 1 (Paper Work):

Setup: (___/___) × (___/___)

= (___ × ___) / (___ × ___) = ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Phone Battery Drain: Your phone battery is at 4/5 charge. Playing a video game uses 1/2 of that charge. What fraction of a full battery did the game use?**

Starter Step 1: '1/2 of 4/5' means multiply (4/5) × (1/2)—cross-cancel the even numbers on the diagonal before multiplying.

Way 1 (Paper Work):

Setup: (___/___) × (___/___)

= (___ × ___) / (___ × ___) = ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Pancake Recipe Doubler: A pancake recipe calls for 1 3/4 cups of flour. You make 2 1/2 batches for a team breakfast. How many cups of flour do you need?**

Way 1 (Paper Work):

Improper: (___/___) × (___/___)

= (___ × ___) / (___ × ___) = ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Laptop Sticker Area: A rectangular laptop sticker measures 2 1/4 inches wide by 1 1/3 inches tall. What is its area?**

Way 1 (Paper Work):

Setup: (___/___) × (___/___)

= (___ × ___) / (___ × ___) = ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Trail Hike Distance: You hike at a pace of 3 1/5 miles per hour for 1 1/4 hours. How many miles do you hike?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Art Canvas Frame: A rectangular painting is 3/4 yard wide and 8/9 yard tall. What is the area of the painting in square yards?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Rain Barrel Water: A 24-gallon rain barrel is 5/8 full. You use 2/3 of the water in the barrel for the garden. How many gallons of water did you use?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Fractional Cube Volume: What is the volume of a cube whose edges are each 1/2 inch long?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Skate Ramp Plywood: A rectangular plywood sheet measures 3 1/2 feet by 2 2/7 feet. What is the area of the plywood sheet?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Sleeping in Flight: Migrating frigatebirds sleep 1/3 of each 24-hour day, and 1/4 of that sleep happens while flying with one brain hemisphere awake! What fraction of the day (and how many hours) do they sleep in flight?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

HANDS-ON MODEL: FRACTION STRIPS

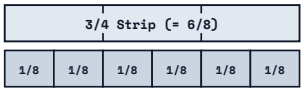
Section 2.3 — Practice A: Dividing Fractions and Mixed Numbers

Key Vocabulary: reciprocals • multiplicative inverses • common-denominator division • measurement division

Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & HANDS-ON MODEL (FRACTION STRIPS)

Way 1: Fraction Strips (How many 1/8s in 3/4?)



Six 1/8-strips fit inside 3/4!

Way 3 (LCD): 6/8 ÷ 1/8 = 6 ÷ 1 = 6

Way 2: Multiply by the Reciprocal

3/4 ÷ 1/8

Keep Change Flip!

= 3/4 × 8/1 = 24/4 = 6

Reciprocals: 1/8 × 8/1 = 1

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Method 1 (Multiply by the Reciprocal): Keep the first fraction, change ÷ to ×, and flip the divisor: (a/b) ÷ (c/d) = (a/b) × (d/c).

Textbook Method 2 (Common Denominators): Rewrite both fractions with the LCD and divide their numerators: (a/d) ÷ (b/d) = a ÷ b.

WATCH OUT: Keep the FIRST fraction as-is and flip ONLY the SECOND fraction (the divisor): a/b ÷ c/d = a/b × d/c.

WORKED EXAMPLE — 3 TEXTBOOK WAYS (ANY 2 WAYS = +20 PTS)

Problem: Find 3/4 ÷ 1/8.

WAY 1: Multiply by the Reciprocal

Keep 3/4, change ÷ to ×, and flip 1/8 to its reciprocal 8/1: (3/4) × (8/1) = 24/4 = 6.

WAY 2: Common Denominator Method

Rewrite both fractions with LCD = 8: 6/8 ÷ 1/8. Divide the numerators: 6 eighths ÷ 1 eighth = 6 ÷ 1 = 6.

WAY 3: Fraction Strips / Number-Line Jumps (With Blocks)

Mark 0 to 3/4 (6/8) on a number line or fraction tray and count jumps of 1/8: it takes 6 jumps of 1/8 to reach 3/4.

Answer: 6 1 Way = +10 | 2 Ways = +20!

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.3 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

• 3 • 4 ENTER • 1 • 8 f 1/x ×

Multiply by the reciprocal on paper first. On your SC-6, check with Two-Dot fractions:
Type [.] 3 [.] 4 [ENTER] [.] 1 [.] 8 [÷] (or press [f][1/x] [×] to flip 1/8 to 8/1 and multiply) to confirm 6!

SECTION 2.3 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Divide 1/2 ÷ 1/4.**

Starter Step 1: Keep the first fraction (1/2), change ÷ to ×, and flip 1/4 to its reciprocal: (1/2) × (4/1).

Way 1 (Paper Work):

Keep × Flip (Reciprocal)

(___/___) × (___/___) = ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Divide 2/3 ÷ 1/6.**

Starter Step 1: Keep the first fraction (2/3), change ÷ to ×, and flip 1/6 to its reciprocal: (2/3) × (6/1).

Way 1 (Paper Work):

Keep × Flip (Reciprocal)

(___/___) × (___/___) = ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Divide 5/6 ÷ 5/12. Write the quotient in simplest form.**

Way 1 (Paper Work):

Keep × Flip (Reciprocal)

(___/___) × (___/___) = ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Divide 6 ÷ 3/4.**

Way 1 (Paper Work):

Keep × Flip (Reciprocal)

(___/___) × (___/___) = ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Divide 3/4 ÷ 2/5. Write the answer as a mixed number.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Quarter-Batch Polymer Clay: A sculpture recipe uses 3 1/2 cups of base clay. If you divide the recipe equally into 4 mini-batches, how much clay is in each mini-batch?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Ceramic Bike Frame Polish: A mechanic has 2/3 liter of polish. Each bike frame requires 1/4 liter. How many frames (including fraction of a frame) can be coated?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Divide 5 1/4 ÷ 1 3/4 and check your answer by multiplying.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Oak Crate Slats: A carpenter saws an 8-foot (96-inch) oak board into crate slats that are each 18 1/2 inches long. How many full slats can be sawed from the board?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Smoothie Pitcher Servings: A 3 3/4-cup pitcher of berry smoothie is poured into 5/8-cup glasses. How many glasses does it fill?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

HANDS-ON MODEL: FRACTION STRIPS

Section 2.3 — Practice B: Modeling Real Life (Dividing Fractions and Mixed Numbers)

Textbook Ways: Multiply by the Reciprocal | Common-Denominator Division | Fraction Strip / Number-Line Model Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — CUTTING WOOD PLANKS (3 TEXTBOOK WAYS • ANY 2 = +20 PTS)

Problem: A carpenter cuts a 6 3/4-foot cedar board into shelves that are each 1 1/8 feet long. How many shelves can be cut?

WAY 1: Improper Fractions & Multiply by the Reciprocal
Write 6 3/4 = 27/4 and 1 1/8 = 9/8. Multiply by the reciprocal: (27/4) × (8/9) = (3/1) × (2/1) = 6 shelves.

WAY 2: Common Denominator (Eighths)
Rewrite both in eighths: 6 3/4 = 54/8 and 1 1/8 = 9/8. Divide the numerators: 54 eighths ÷ 9 eighths = 54 ÷ 9 = 6 shelves.

WAY 3: Repeated Subtraction / Grouping
Two shelves use 2 × 1 1/8 = 2 1/4 ft; four shelves use 4 1/2 ft; six shelves use 6 3/4 ft → 6 shelves.

WATCH OUT: Keep the FIRST fraction as-is and flip ONLY the SECOND fraction (the divisor): a/b ÷ c/d = a/b × d/c.

Answer: 6 shelves

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.3 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:



Rewrite 6 3/4 ÷ 1 1/8 as improper fractions and multiply by the reciprocal by hand. Then check on your SC-6: Type 6 [.] 3 [.] 4 [ENTER] 1 [.] 1 [.] 8 [÷] to verify 6 shelves.

Whenever a teacher said 'keep, change, flip' for dividing fractions, Zoe followed the steps like a robot but secretly hated that she had no idea why flipping the second fraction worked. At the bird-rehab center, she watched a crow drop pebbles into a clear tube where each pebble pushed the water up by 3/8 centimeter until the water rose 4 1/2 centimeters. She asked herself a simpler question first: how many 3/8-cm splashes does it take to raise the water 1 full centimeter? Since 1 centimeter is 8/8, it takes 8/3 pebbles per centimeter—which is the flipped fraction (the reciprocal)! Multiplying 4 1/2 centimeters by 8/3 pebbles per centimeter gave 12 pebbles, and for the first time the flip rule wasn't magic anymore.

SECTION 2.3 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Pizza Slice Sharing: How many 1/8-size slices are in 3/4 of a pizza?**
Starter Step 1: Set up (3/4) ÷ (1/8), then multiply by the reciprocal of the slice size.

Way 1 (Paper Work):

Keep × Flip (Reciprocal)
(___/___) × (___/___) = ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Crow Water Puzzle: To reach a floating grub in a lab tube, a crow drops pebbles that each raise the water level by 3/8 cm. How many pebbles must the crow drop to raise the water by 4 1/2 cm?**
Starter Step 1: Convert 4 1/2 to an improper fraction FIRST, then multiply by the reciprocal of 3/8.

Way 1 (Paper Work):

Keep × Flip (Reciprocal)
(___/___) × (___/___) = ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Relay Race Legs: A 3 3/4-mile charity relay is split into equal legs of 5/8 mile each. How many runners are on each relay team?**

Way 1 (Paper Work):

Keep × Flip (Reciprocal)
(___/___) × (___/___) = ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **LED Strip Cutting: You have a 5 1/4-meter LED light strip and cut it into 3/4-meter segments for desk shelves. How many segments can you cut?**

Way 1 (Paper Work):

Keep × Flip (Reciprocal)
(___/___) × (___/___) = ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **3D Print Nozzle Layers: A 6-millimeter bracket is printed in layers that are 3/20 millimeter thick. How many layers tall is the bracket?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Garden Stepping Stones: A 7 1/2-foot garden path has stepping stones spaced every 1 1/4 feet. How many 1 1/4-foot sections are along the path?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Solar Panel Width: A rectangular solar panel has an area of 4 1/2 square meters and a length of 2 1/4 meters. What is its width?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Juice Pitcher Servings: A pitcher holds 2 2/3 quarts of lemonade. How many 1/3-quart cups can be filled from the pitcher?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Reciprocal Check: Write the reciprocal of 2 2/5, and show what happens when you multiply 2 2/5 by its reciprocal.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Lumber Yard Cuts: You have a 10 1/2-foot board. You cut off a 1 1/2-foot piece first, then cut the remaining board into 3/4-foot pieces. How many 3/4-foot pieces do you get?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 2.4 — Practice A: Adding, Subtracting, and Multiplying Decimals

Key Vocabulary: tenths • hundredths • thousandths • place-value alignment • trailing zeros • estimation Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & VISUAL DIAGRAM

Add/Subtract: Line Up Decimal Points

```
  14.60  ← Annex 0
+  3.85
-------
  18.45
```

Estimate: 15 + 4 = 19 (Close!)

Multiply: Count Total Decimal Places

```
  4.5    (1 decimal place)
× 1.80   (2 decimal places)
---------
= 8.100  (1 + 2 = 3 places)
```

= $8.10 (Check: 45×18 = 810)

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Addition/Subtraction: Line up the decimal points vertically and annex trailing zeros so both numbers have the same place values.

Textbook Multiplication: Multiply as whole numbers, then count the total decimal places in both factors to place the decimal point.

WATCH OUT: Line up decimal points for + and - (annex trailing 0s), but for × count the TOTAL decimal places in both factors!

WORKED EXAMPLE — 3 TEXTBOOK WAYS (ANY 2 WAYS = +20 PTS)

Problem: Find 14.6 + 3.85 and check by subtracting.

WAY 1: Line Up Decimal Points Vertically
Annex a zero to write 14.6 as 14.60. Add hundredths (0+5=5), tenths (6+8=14, carry 1), and ones (14+3+1=18) → 18.45.

WAY 2: Decompose by Place Value (Wholes + Hundredths)
Add whole numbers (14 + 3 = 17) and decimals (0.60 + 0.85 = 1.45) separately, then combine: 17 + 1.45 = 18.45.

WAY 3: Add as Mixed Numbers (Hundredths)
14 60/100 + 3 85/100 = 17 145/100 = 18 45/100 = 18.45.

Answer: 18.45 1 Way = +10 | 2 Ways = +20!

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.4 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

1 4 • 6 ENTER 3 • 8 5 + f LAST*x* -

Line up the decimal points and add 14.60 + 3.85 by hand first. On your SC-6, check any place-value digit with [PV] (e.g., 14.6 [ENTER] 0.1 [PV]), then press 14.6 [ENTER] 3.85 [+] to confirm 18.45!

SECTION 2.4 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **3D Printer Calibration Shims: Marcus stacks a 345 mm base plate, a 0.6 mm spacer, and a 0.07 mm feeler shim. What is the combined thickness in millimeters?**

Starter Step 1: Line up the decimal points vertically (345.00 + 0.60 + 0.07) and add column by column from right to left.

Way 1 (Paper Work):

Line Up Decimals:

. ± . .

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Find 12.8 + 4.75 and check by subtracting.**

Starter Step 1: Annex a trailing zero (12.80 + 4.75), add vertically, and check by subtracting 4.75 from your sum.

Way 1 (Paper Work):

Line Up Decimals:

. ± . .

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Find 20 - 8.65.**

Way 1 (Paper Work):

Line Up Decimals:

. ± . .

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Multiply 4.5 × 0.6.**

Way 1 (Paper Work):

Multiply & Count Dec Places:

_____ × _____ = _____ (___ places)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Evaluate 25.4 - 9.86 + 3.2.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Multiply 3.6 × 2.25 and check that your answer is reasonable using a whole-number estimate.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Multiply 0.15 × 0.4. Write the product as a decimal and as a simplified fraction.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Bioplastic Funnel Mass: Every cubic centimeter of PLA bioplastic weighs 1.24 grams. If Marcus's 3D-printed funnel has a volume of 28.86 cm^3, what is its mass in grams (rounded to the nearest hundredth)?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **You pay with a $20 bill for an $8.75 burger and a $4.60 smoothie. How much change should you receive?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Greenhouse Strut Tubing: A camp greenhouse uses 30 struts of 1.20 m, 40 struts of 1.35 m, and 50 struts of 1.42 m. How many meters of aluminum tubing are required in all?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 2.4 — Practice B: Modeling Real Life (Adding, Subtracting, and Multiplying Decimals)

Textbook Ways: Vertical Place-Value Algorithm | Convert to Fractions/Hundredths | Place-Value Split / Area Model Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — BUYING BULK TRAIL MIX (3 TEXTBOOK WAYS • ANY 2 = +20 PTS)

Problem: You buy 3.6 pounds of trail mix at $2.25 per pound. What is the total cost of the trail mix?

WAY 1: Multiply Whole Numbers & Count Decimal Places
Multiply 225 × 36 = 8,100. Count decimal places (1 place in 3.6 + 2 places in 2.25 = 3 places) → 8.100 = $8.10.

WAY 2: Distributive Split (3 lb + 0.6 lb)
3 lb × $2.25 = $6.75, and 0.6 lb × $2.25 = $1.35. Add the partial products: $6.75 + $1.35 = $8.10.

WAY 3: Multiply as Fractions / Mixed Numbers
3.6 = 18/5 and 2.25 = 9/4. Multiply: (18/5) × (9/4) = 162/20 = 81/10 = $8.10.

WATCH OUT: Line up decimal points for + and - (annex trailing 0s), but for × count the TOTAL decimal places in both factors!

Answer: $8.10

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.4 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:
3 • 6 ENTER 2 • 2 5 × FDISP

Multiply 3.6 × 2.25 on paper and count decimal places first. Then check on your SC-6:
Press 3.6 [ENTER] 2.25 [×] (and press [$] for Currency Mode or [FDISP] for fraction/decimal view) to confirm $8.10.

Marcus used to panic when decimal problems had uneven lengths, like adding a 345-mm base plate, a 0.6-mm spacer, and a 0.07-mm feeler shim, because he wasn't sure whether to line up the right-hand digits or the decimal points. And when multiplying 3.25 pounds of apples by $2.40 per pound, the decimal alignment rules seemed to change completely! After accidentally getting $780 for a bag of apples, he realized he could use common-sense estimation as a safety net: when adding or subtracting, lining up the decimal points keeps tenths with tenths; when multiplying, about 3 pounds at $2.40 HAS to be near $7.80, and counting the total decimal places lands the point in that exact spot.

SECTION 2.4 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **3D Filament Order: You buy a spool of Matte Navy PLA for $18.75 and a spool of Silk Gold PLA for $22.49. What is the total cost?**
Starter Step 1: Line up the decimal points vertically ($18.75 + $22.49) and add hundredths first.

Way 1 (Paper Work):

Line Up Decimals:
.
± .
.

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Change at the Book Fair: You buy a graphic novel for $13.65 and pay with a $20 bill. How much change should you receive?**
Starter Step 1: Write $20 as $20.00, line up the decimal points ($20.00 - $13.65), and regroup across the zeros.

Way 1 (Paper Work):

Line Up Decimals:
.
± .
.

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Sprint Stopwatch: In the 100-meter dash, Maya ran 13.42 seconds and Leo ran 12.87 seconds. How much faster was Leo's time?**

Way 1 (Paper Work):

Line Up Decimals:
.
± .
.

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Bulk Honeycrisp Apples: Apples cost $2.40 per pound. How much does a 3.25-pound bag of apples cost?**

Way 1 (Paper Work):

Multiply & Count Dec Places:
_____ × _____ = _____ (___ places)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Microchip Dimensions: A silicon processor die measures 1.4 cm by 0.85 cm. What is its area in square centimeters?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Road Trip Fuel: Your family car takes 11.5 gallons of gas at $3.60 per gallon. How much does the fill-up cost?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Peregrine Falcon Thermal Climb: A falcon rises 24.8 meters on a thermal updraft, drops 6.35 meters, and climbs another 11.9 meters. What is its net altitude gain?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Skate Shop Receipt: You buy 2 sets of bearings at $14.50 each and grip tape for $6.75. How much do you spend in all?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Workshop Drawer Clearance: Four 42.0 mm storage boxes sit side-by-side in a drawer that is 170.5 mm wide. How much clearance width remains?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Snack Bar Profit: You make 25 smoothies for $1.80 each and sell all 25 for $3.20 each. What is your total profit?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 2.5 — Practice A: Dividing Whole Numbers and Decimals

Key Vocabulary: terminating decimal • power-of-10 shift • equivalent division expression • mixed number

Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & VISUAL DIAGRAM

Way 1: Annex Zeros (23 ÷ 4 = 5.75)

```
   5.75
4 ) 23.00
```

Way 2 (Mixed #): 23/4 = 5 3/4

Way 3 (÷100): 575/100 = 5.75

Decimal Divisor: Shift Both Points Right!

6.75 ÷ 0.25 (×100 both)

Shift 2 places right → 675 ÷ 25

675 ÷ 25 = 27

Check: 27 × 0.25 = 6.75

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Whole-Number Division: Annex a decimal point and zeros (23.00 ÷ 4) to continue dividing until the remainder is 0.

Textbook Decimal Divisor Rule: Multiply divisor and dividend by the same power of 10 (shift both decimal points right) to make the divisor a whole number.

WATCH OUT: When dividing by a decimal, shift the decimal point the SAME number of places right in BOTH the divisor and the dividend!

WORKED EXAMPLE — 3 TEXTBOOK WAYS (ANY 2 WAYS = +20 PTS)

Problem: Divide 23 ÷ 4. Write the quotient as a remainder, a mixed number, and an exact decimal.

WAY 1: Annex a Decimal Point & Zeros (Long Division)

Write 23 as 23.00 and divide by 4: 23 ÷ 4 = 5 (3 left) → 30 tenths ÷ 4 = 7 tenths (2 left) → 20 hundredths ÷ 4 = 5 → 5.75.

WAY 2: Write as a Mixed Number & Scale to Hundredths

23 ÷ 4 = 23/4 = 5 3/4. Scale 3/4 by ×25: (3×25)/(4×25) = 75/100 = 0.75 → 5.75.

WAY 3: Decompose Dividend into Friendly Parts

Split 23 = 20 + 2 + 1: (20 ÷ 4) + (2 ÷ 4) + (1 ÷ 4) = 5 + 0.50 + 0.25 = 5.75.

Answer: 5 R 3 = 5 3/4 = 5.75

1 Way = +10 | 2 Ways = +20!

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.5 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

2 3 ENTER 4 ÷ FDISP f d/c

Divide 23 ÷ 4 by hand first. On your SC-6, press 23 [ENTER] 4 [÷] and tap [FDISP], [a b/c], and [f][d/c] to cycle through 5.75, 5 3/4, and 23/4 (or use [f][0.3-rep] for repeating decimals)!

SECTION 2.5 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 Write 39 ÷ 8 as (a) a quotient with remainder, (b) a mixed number, and (c) a decimal.

Starter Step 1: Divide 39 ÷ 8 for Quotient & Remainder, write Remainder/8 for the mixed number, and annex .000 for the decimal.

Way 1 (Paper Work):

Shift Decimal Equally →

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 Divide 18.4 ÷ 8.

Starter Step 1: Bring the decimal point straight up into the quotient above 18.4, then divide 18.4 ÷ 8.

Way 1 (Paper Work):

Shift Decimal Equally →

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 How many quarters ($0.25) are in $11.25?

Way 1 (Paper Work):

Shift Decimal Equally →

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 Divide 7.2 ÷ 0.9 and check by multiplying.

Way 1 (Paper Work):

Shift Decimal Equally →

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 Divide 15.6 ÷ 0.12.

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 Divide 9.45 ÷ 1.5. Write the answer as a decimal and as a mixed number in simplest form.

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 Team Material Budget Split: Six engineering students split a $124.80 hardware store bill equally. How much does each student pay?

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 Error Analysis: Leo says 4.8 ÷ 0.2 = 0.24. Use estimation or multiplication to explain and correct his error.

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 Track Race Laps: A runner completes a 4.5-mile race on a track where each lap is 0.75 mile. How many laps is the race?

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 Sports Drink Case: A 6-pack of sports drinks costs $7.50. What is the price of 1 bottle, and how many bottles can you buy with $20.00?

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 2.5 — Practice B: Modeling Real Life (Dividing Whole Numbers and Decimals)

Textbook Ways: Power-of-10 Decimal Shift & Long Division | Equivalent Fraction Scaling | Reciprocal Fraction Division

Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — ARCADE TOKEN MACHINE (3 TEXTBOOK WAYS • ANY 2 = +20 PTS)

Problem: An arcade token machine takes quarters ($0.25). A player inserts $6.75. How many quarters did the player insert?

WAY 1: Multiply Divisor & Dividend by 100 (Decimal Shift)
Move both decimal points 2 places right (× 100) so the divisor is a whole number: 6.75 ÷ 0.25 = 675 ÷ 25 = 27 quarters.

WAY 2: Convert to Fractions & Multiply by Reciprocal
$6.75 = 6 3/4 = 27/4 and $0.25 = 1/4. Divide: (27/4) ÷ (1/4) = (27/4) × (4/1) = 27 quarters.

WAY 3: Count Quarters per Dollar
Each $1.00 is 4 quarters: $6.00 = 6 × 4 = 24 quarters, plus $0.75 = 3 quarters → 24 + 3 = 27 quarters.

WATCH OUT: When dividing by a decimal, shift the decimal point the SAME number of places right in BOTH the divisor and the dividend!

Answer: 27 quarters

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 2.5 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

6 • 7 5 ENTER 0 • 2 5 ÷ f LAST*x* ×

Shift the decimal point 2 places right (675 ÷ 25) and divide on paper first. Then check on your SC-6:
Press 6.75 [ENTER] 0.25 [÷] to confirm 27 quarters, and [f][LASTx] [×] to verify 27 × 0.25 = 6.75.

Looking at the 3D-printer screen, Marcus needed to find how many 0.20-millimeter plastic layers it would take to build a 14.4-millimeter tall bracket, and how many 1.75-millimeter quarters were in a 28-millimeter stack. Long division was hard enough with whole numbers; dividing by 1.75 made him want to close his notebook. Then he thought about changing millimeters into hundredths of a millimeter: multiplying both 28 and 1.75 by 100 slid both decimal points two places right, turning 28 ÷ 1.75 into 2,800 ÷ 175. Because both numbers scaled by the same factor, the answer (16 quarters) stayed identical—and the scary decimal divisor disappeared.

SECTION 2.5 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Four-Way Representation: Express 35 ÷ 8 as (a) a quotient with remainder, (b) a mixed number, (c) an improper fraction, and (d) an exact decimal.**

Starter Step 1: Divide 35 ÷ 8 to find the whole-number quotient and remainder, then express the remainder as eighths and as a decimal.

Way 1 (Paper Work):

Shift Decimal Equally →

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Quarter Stack Height: A stack of quarters is 28.0 mm tall. If each quarter is 1.75 mm thick, how many quarters are in the stack?**

Starter Step 1: Shift the decimal point 2 places right in BOTH numbers so the divisor 1.75 becomes the whole number 175.

Way 1 (Paper Work):

Shift Decimal Equally →

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Splitting the Pizza Bill: Four friends split a $34.60 pizza order equally. How much does each friend pay?**

Way 1 (Paper Work):

Shift Decimal Equally →

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **3D Print Layer Slicer: A 14.4 mm tall model is sliced into layers that are each 0.20 mm thick. How many layers are in the print?**

Way 1 (Paper Work):

Shift Decimal Equally →

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Hummingbird Nectar: A ruby-throated hummingbird drinks 5.25 milliliters of nectar by visiting flowers that hold 0.35 mL each. How many flowers did it visit?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Track Lap Pace: A runner completes 4.5 miles in 0.75 hours. What is her average speed in miles per hour?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Garden Fence Posts: A 22.5-meter garden wall is divided into equal sections that are 1.25 meters long. How many sections are there?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Lemonade Stand Cups: A cooler holds 13.5 liters of lemonade. How many 0.45-liter cups can be filled?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Movie Ticket Group: A group of friends spent $87.50 on movie tickets that cost $12.50 each. How many tickets did they buy?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Evaluate 10.5 ÷ 1.75 in two ways: by dividing decimals and by converting both numbers to mixed numbers.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

SUMMATIVE QUIZ: 10 ITEMS × 10 PTS = 100

Unit 2 Mastery Quiz: Fractions & Decimals

Directions: Show all paper steps in each box (+6 pts work, +4 pts answer). Name: _____ Date: _____ Score: ____ / 100

ASSESSMENT BREAKDOWN: #1–#6 CORE FLUENCY (60 PTS) • #7–#9 REAL-LIFE APPLICATIONS (30 PTS) • #10 ERROR ANALYSIS (10 PTS)

Standards Assessed: CCSS 6.NS.A.1, 6.NS.B.3 • TEKS 6.3E • FL MA.6.NSO.2.1–2 • UIL Number Sense & Calculator Fractions/Decimals

1 CORE FLUENCY (SEC 2.1) • 10 PTS

Multiply and write in simplest form: $(3/4) \times (8/9)$.

[ ] Work (+6) [ ] Ans (+4) Ans: _____

2 CORE FLUENCY (SEC 2.1) • 10 PTS

Multiply the mixed numbers: $2\ 1/4 \times 1\ 1/3$.

[ ] Work (+6) [ ] Ans (+4) Ans: _____

3 CORE FLUENCY (SEC 2.2) • 10 PTS

Divide and write in simplest form: $(5/6) \div (5/12)$.

[ ] Work (+6) [ ] Ans (+4) Ans: _____

4 CORE FLUENCY (SEC 2.3) • 10 PTS

Divide the mixed numbers: $3\ 3/4 \div 1\ 1/4$.

[ ] Work (+6) [ ] Ans (+4) Ans: _____

5 CORE FLUENCY (SEC 2.4) • 10 PTS

Evaluate the decimal expression: $24.8 + 7.65 - 9.4$.

[ ] Work (+6) [ ] Ans (+4) Ans: _____

6 CORE FLUENCY (SEC 2.5) • 10 PTS

Multiply and divide: (a) 4.5×0.24 (b) $15.6 \div 0.6$.

[ ] Work (+6) [ ] Ans (+4) Ans: _____

7 REAL LIFE (SEC 2.2) • 10 PTS

A carpenter has a cedar board $7/8$ meter long and cuts it into pieces each $1/16$ meter long. How many pieces does she get?

[ ] Work (+6) [ ] Ans (+4) Ans: _____

8 REAL LIFE (SEC 2.5) • 10 PTS

Trail mix costs $4.80 per pound. How much does 2.25 pounds of trail mix cost?

[ ] Work (+6) [ ] Ans (+4) Ans: _____

9 REAL LIFE (SEC 2.3) • 10 PTS

A $6\ 1/2$-quart jug of sports drink is poured equally into $1/2$-quart bottles. How many bottles are filled?

[ ] Work (+6) [ ] Ans (+4) Ans: _____

10 ERROR ANALYSIS (SEC 2.2) • 10 PTS

To solve $(2/3) \div (1/6)$, Maya flipped the first fraction and multiplied $(3/2) \times (1/6) = 1/4$. Explain her error and find the true quotient.

[ ] Work (+6) [ ] Ans (+4) Ans: _____

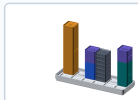
Unit 2: Fractions & Decimals — Practice A & B Complete Key

Big Ideas Math Grade 6 — Chapter 2 • Concept → Blocks (When Applicable: Fraction Strips & Place Value Blocks) → Calculator

1. **Concept (Stack Approach): Rational operations require common units before adding/subtracting and multiplicative inverses (reciprocals) when dividing, holding the first operand on Y while transforming X.**

2. Blocks (Fraction & Place Value): Compare 84 mm Fraction Strips side-by-side to see common denominators and 'how many fit' division; align tenths and hundredths on the Decimal Tray.

3. **Calculator (SC-6): Enter fractions with Two-Dot notation ([.] n [.] d), flip only the divisor in X with |f|[1/x] before |×|, and split decimals with |f|[IP] and |g|[FP].**



SEC 2.1 (pp.15-16): EQUIVALENT FRACTIONS, MIXED NUMBERS & LCD ADDITION

Methods: W1: Divide Once by GCF / Use LCD | W2: Step-by-Step Common Factors | W3: Fraction Strips Model

PRACTICE A (p.15): KEY IDEAS (#1-#10) — ExA: 2/3

A1: 2/3 (Simp(8/12)×2)
Check: [.] 8 [.] 12 [ENT] [g][SIMP]×2

A2: 8/3 = 2 2/3 trays (Simp(48/18))
Check: [.] 48 [.] 18 [ENT] [g][SIMP]

A3: 13/5 and 2.6 (Improper(2 3/5))
Check: 2 [.] 3 [.] 5 [ENT] [f][d/c]

A4: 3 5/6 pizzas (3 whole, 5 sixths) (23/6)
Check: [.] 23 [.] 6 [ENT]

A5: 5/6 (1/2 + 1/3)
Check: [.] 1 [.] 2 [ENT] [.] 1 [.] 3 [+]

A6: 1 3/20 gallons (23/20) (3/4 + 2/5)
Check: [.] 3 [.] 4 [ENT] [.] 2 [.] 5 [+]

A7: 3 5/6 feet (1 1/2 + 2 1/3)
Check: 1 [.] 1 [.] 2 [ENT] 2 [.] 1 [.] 3 [+]

A8: 2 7/12 feet (5 1/3 - 2 3/4)
Check: 5 [.] 1 [.] 3 [ENT] 2 [.] 3 [.] 4 [-]

A9: 7/8 climbed; 1/8 remains ((1/2 + 1/4) + 1/8)
Check: [.] 1 [.] 2 [ENT] [.] 1 [.] 4 [+] [.] 1 [.] 8 [+]

A10: 5 1/4 pints (3 1/2 + 1 3/4)
Check: 3 [.] 1 [.] 2 [ENT] 1 [.] 3 [.] 4 [+]

PRACTICE B (p.16): REAL LIFE (#1-#10) — ExB: 2 11/12 miles (35/12 miles)

B1: 5/8 cup (3/8 + 1/4)
Check: [.] 3 [.] 8 [ENT] [.] 1 [.] 4 [+]

B2: 3/4 complete; 1/4 remains (Simp(18/24))
Check: [.] 18 [.] 24 [g][SIMP]

B3: 13/8 and 1.625 in (Improper(1 5/8))
Check: 1 [.] 5 [.] 8 [ENT] [f][d/c] [FDISP]

B4: 11/24 foot (5/6 - 3/8)
Check: [.] 5 [.] 6 [ENT] [.] 3 [.] 8 [-]

B5: 3 5/6 pizzas (23/6) (2 1/3 + 1 1/2)
Check: 2 [.] 1 [.] 3 [ENT] 1 [.] 1 [.] 2 [+]

B6: 2 3/4 feet (11/4) (4 1/2 - 1 3/4)
Check: 4 [.] 1 [.] 2 [ENT] 1 [.] 3 [.] 4 [-]

B7: 3/5 = 0.6 (Simp(15/25))
Check: [.] 15 [.] 25 [g][SIMP] [FDISP]

B8: 1/5 liter (0.2 L) ((2/5 + 3/10) - 1/2)
Check: [.] 2 [.] 5 [ENT] [.] 3 [.] 10 [+] [.] 1 [.] 2 [-]

B9: 4 5/12 yd used; 7/12 yd left (2 2/3 + 1 3/4)
Check: 2 [.] 2 [.] 3 [ENT] 1 [.] 3 [.] 4 [+]

B10: 4 5/8 miles ((3/8 + 2 1/2) + 1 3/4)
Check: [.] 3 [.] 8 [ENT] 2 [.] 1 [.] 2 [+] 1 [.] 3 [.] 4 [+]

SEC 2.2 (pp.17-18): MULTIPLYING FRACTIONS AND MIXED NUMBERS

Methods: W1: Multiply Straight Across | W2: Cross-Cancel Common Factors First | W3: Area Model / Distributive Split

PRACTICE A (p.17): KEY IDEAS (#1-#10) — ExA: 3/8

A1: 1/3 (1/2 × 2/3)
Check: [.] 1 [.] 2 [ENT] [.] 2 [.] 3 [×]

A2: 1/2 (2/3 × 3/4)
Check: [.] 2 [.] 3 [ENT] [.] 3 [.] 4 [×]

A3: 1/3 (3/5 × 5/9)
Check: [.] 3 [.] 5 [ENT] [.] 5 [.] 9 [×]

A4: 6 cups (16 × 3/8)
Check: 16 [ENT] [.] 3 [.] 8 [×]

A5: 4 (1 3/4 × 2 2/7)
Check: 1 [.] 3 [.] 4 [ENT] 2 [.] 2 [.] 7 [×]

A6: 3 (2 1/4 × 1 1/3)
Check: 2 [.] 1 [.] 4 [ENT] 1 [.] 1 [.] 3 [×]

A7: 9 cups (2 1/4 × 4)
Check: 2 [.] 1 [.] 4 [ENT] 4 [×]

A8: 3 1/3 (Less than 5 because 2/3 < 1) (5 × 2/3)
Check: 5 [ENT] [.] 2 [.] 3 [×]

A9: 14 7/8 miles (119/8) (3 1/2 × 4 1/4)
Check: 3 [.] 1 [.] 2 [ENT] 4 [.] 1 [.] 4 [×]

A10: 1/4 of the input speed ((1/2 × 2/3) × 3/4)
Check: [.] 1 [.] 2 [ENT] [.] 2 [.] 3 [×] [.] 3 [.] 4 [×]

PRACTICE B (p.18): REAL LIFE (#1-#10) — ExB: 4 cups

B1: 2/5 of the garden (2/3 × 3/5)
Check: [.] 2 [.] 3 [ENT] [.] 3 [.] 5 [×]

B2: 2/5 of a full battery (4/5 × 1/2)
Check: [.] 4 [.] 5 [ENT] [.] 1 [.] 2 [×]

B3: 4 3/8 cups (35/8) (1 3/4 × 2 1/2)
Check: 1 [.] 3 [.] 4 [ENT] 2 [.] 1 [.] 2 [×]

B4: 3 in² (2 1/4 × 1 1/3)
Check: 2 [.] 1 [.] 4 [ENT] 1 [.] 1 [.] 3 [×]

B5: 4 miles (3 1/5 × 1 1/4)
Check: 3 [.] 1 [.] 5 [ENT] 1 [.] 1 [.] 4 [×]

B6: 2/3 yd² (3/4 × 8/9)
Check: [.] 3 [.] 4 [ENT] [.] 8 [.] 9 [×]

B7: 10 gallons ((24 × 5/8) × 2/3)
Check: 24 [ENT] [.] 5 [.] 8 [×] [.] 2 [.] 3 [×]

B8: 1/8 in³ (1/2³)
Check: [.] 1 [.] 2 [x³]

B9: 8 ft² (3 1/2 × 2 2/7)
Check: 3 [.] 1 [.] 2 [ENT] 2 [.] 2 [.] 7 [×]

B10: 1/12 of the day (2 hours) (1/3 × 1/4)
Check: [.] 1 [.] 3 [ENT] [.] 1 [.] 4 [×]

SEC 2.3 (pp.19-20): DIVIDING FRACTIONS AND MIXED NUMBERS

Methods: W1: Multiply by the Reciprocal | W2: Common-Denominator Division | W3: Fraction Strip / Number-Line Model

PRACTICE A (p.19): KEY IDEAS (#1-#10) — ExA: 6

A1: 2 (1/2 ÷ 1/4)
Check: [.] 1 [.] 2 [ENT] [.] 1 [.] 4 [÷]

A2: 4 (2/3 ÷ 1/6)
Check: [.] 2 [.] 3 [ENT] [.] 1 [.] 6 [÷]

A3: 2 (5/6 × 1/(5/12))
Check: [.] 5 [.] 6 [ENT] [.] 5 [.] 12 [f][1/x] [×]

A4: 8 (6 ÷ 3/4)
Check: 6 [ENT] [.] 3 [.] 4 [÷]

A5: 1 7/8 (15/8) (3/4 ÷ 2/5)
Check: [.] 3 [.] 4 [ENT] [.] 2 [.] 5 [÷]

A6: 7/8 cup (3 1/2 ÷ 4)
Check: 3 [.] 1 [.] 2 [ENT] 4 [÷]

A7: 2 2/3 bike frames (2/3 ÷ 1/4)
Check: [.] 2 [.] 3 [ENT] [.] 1 [.] 4 [÷]

A8: 3 (5 1/4 ÷ 1 3/4)
Check: 5 [.] 1 [.] 4 [ENT] 1 [.] 3 [.] 4 [÷]

A9: 5 full slats (5 7/37 → 3 1/2 in left) (96 ÷ 18 1/2)
Check: 96 [ENT] 18 [.] 1 [.] 2 [÷]

A10: 6 glasses (3 3/4 ÷ 5/8)
Check: 3 [.] 3 [.] 4 [ENT] [.] 5 [.] 8 [÷]

PRACTICE B (p.20): REAL LIFE (#1-#10) — ExB: 6 shelves

B1: 6 slices (3/4 ÷ 1/8)
Check: [.] 3 [.] 4 [ENT] [.] 1 [.] 8 [÷]

B2: 12 pebbles (4 1/2 ÷ 3/8)
Check: 4 [.] 1 [.] 2 [ENT] [.] 3 [.] 8 [÷]

B3: 6 runners (3 3/4 ÷ 5/8)
Check: 3 [.] 3 [.] 4 [ENT] [.] 5 [.] 8 [÷]

B4: 7 segments (5 1/4 ÷ 3/4)
Check: 5 [.] 1 [.] 4 [ENT] [.] 3 [.] 4 [÷]

B5: 40 layers (6 ÷ 3/20)
Check: 6 [ENT] [.] 3 [.] 20 [÷]

B6: 6 sections (7 1/2 ÷ 1 1/4)
Check: 7 [.] 1 [.] 2 [ENT] 1 [.] 1 [.] 4 [÷]

B7: 2 meters (4 1/2 ÷ 2 1/4)
Check: 4 [.] 1 [.] 2 [ENT] 2 [.] 1 [.] 4 [÷]

B8: 8 cups (2 2/3 ÷ 1/3)
Check: 2 [.] 2 [.] 3 [ENT] [.] 1 [.] 3 [÷]

B9: 5/12 (12/5 × 5/12 = 1) (1/(2 2/5))
Check: 2 [.] 2 [.] 5 [f][1/x]

B10: 12 pieces ((10 1/2 - 1 1/2) ÷ 3/4)
Check: 10 [.] 1 [.] 2 [ENT] 1 [.] 1 [.] 2 [-] [.] 3 [.] 4 [÷]

SEC 2.4 (pp.21-22): ADDING, SUBTRACTING, AND MULTIPLYING DECIMALS

Methods: W1: Vertical Place-Value Algorithm | W2: Convert to Fractions/Hundredths | W3: Place-Value Split / Area Model

PRACTICE A (p.21): KEY IDEAS (#1-#10) — ExA: 18.45

A1: 345.67 mm ((345 + 0.6) + 0.07)
Check: 345 [ENT] 0.6 [+] 0.07 [+]

A2: 17.55 (12.8 + 4.75)
Check: 12.8 [ENT] 4.75 [+]

A3: 11.35 (20 - 8.65)
Check: 20 [ENT] 8.65 [-]

A4: 2.7 (4.5 × 0.6)
Check: 4.5 [ENT] 0.6 [×]

A5: 18.74 ((25.4 - 9.86) + 3.2)
Check: 25.4 [ENT] 9.86 [-] 3.2 [+]

A6: 8.1 (Estimate: 4 × 2 = 8) (3.6 × 2.25)
Check: 3.6 [ENT] 2.25 [×]

A7: 0.06 (3/50) (0.15 × 0.4)
Check: 0.15 [ENT] 0.4 [×] [FDISP]

A8: 35.79 g (35.7864) (28.86 × 1.24)
Check: 28.86 [ENT] 1.24 [×]

A9: $6.65 (20 - (8.75 + 4.60))
Check: 20 [ENT] 8.75 [ENT] 4.60 [+] [-]

A10: 161 meters (((30 × 1.20) + (40 × 1.35)) + (50 × 1.42))
Check: 30 [ENT] 1.20 [×] 40 [ENT] 1.35 [×] [+] 50 [ENT] 1.42 [×] [+]

PRACTICE B (p.22): REAL LIFE (#1-#10) — ExB: $8.10

B1: $41.24 (18.75 + 22.49)
Check: 18.75 [ENT] 22.49 [+]

B2: $6.35 (20 - 13.65)
Check: 20 [ENT] 13.65 [-]

B3: 0.55 seconds faster (13.42 - 12.87)
Check: 13.42 [ENT] 12.87 [-]

B4: $7.80 (2.40 × 3.25)
Check: 2.40 [ENT] 3.25 [×]

B5: 1.19 cm² (1.4 × 0.85)
Check: 1.4 [ENT] 0.85 [×]

B6: $41.40 (11.5 × 3.60)
Check: 11.5 [ENT] 3.60 [×]

B7: 30.35 meters ((24.8 - 6.35) + 11.9)
Check: 24.8 [ENT] 6.35 [-] 11.9 [+]

B8: $35.75 ((2 × 14.50) + 6.75)
Check: 2 [ENT] 14.50 [×] 6.75 [+]

B9: 2.5 mm gap (170.5 - (4 × 42))
Check: 170.5 [ENT] 4 [ENT] 42 [×] [-]

B10: $35.00 profit ((3.20 - 1.80) × 25)
Check: 3.20 [ENT] 1.80 [-] 25 [×]

SEC 2.5 (pp.23-24): DIVIDING WHOLE NUMBERS AND DECIMALS

Methods: W1: Power-of-10 Decimal Shift & Long Division | W2: Equivalent Fraction Scaling | W3: Reciprocal Fraction Division

PRACTICE A (p.23): KEY IDEAS (#1-#10) — ExA: 5 R 3 = 5 3/4 = 5.75

A1: 4 R 7, 4 7/8, and 4.875 (39 ÷ 8)
Check: 39 [ENT] 8 [÷] [FDISP]

A2: 2.3 (18.4 ÷ 8)
Check: 18.4 [ENT] 8 [÷]

A3: 45 quarters (11.25 ÷ 0.25)
Check: 11.25 [ENT] 0.25 [÷]

A4: 8 (7.2 ÷ 0.9)
Check: 7.2 [ENT] 0.9 [÷]

A5: 130 (15.6 ÷ 0.12)
Check: 15.6 [ENT] 0.12 [÷]

A6: 6.3 (6 3/10) (9.45 ÷ 1.5)
Check: 9.45 [ENT] 1.5 [÷] [FDISP]

A7: $20.80 (124.80 ÷ 6)
Check: 124.80 [ENT] 6 [÷]

A8: 24 (24 × 0.2 = 4.8) (4.8 ÷ 0.2)
Check: 4.8 [ENT] 0.2 [÷]

A9: 6 laps (4.5 ÷ 0.75)
Check: 4.5 [ENT] 0.75 [÷]

A10: $1.25 per bottle; 16 bottles (7.50 ÷ 6; 20 ÷ 1.25)
Check: 7.50 [ENT] 6 [÷] → 1.25; 20 [ENT] 1.25 [÷]

PRACTICE B (p.24): REAL LIFE (#1-#10) — ExB: 27 quarters

B1: 4 R 3 = 4 3/8 = 35/8 = 4.375 (35 ÷ 8)
Check: 35 [ENT] 8 [÷] [FDISP]

B2: 16 quarters (28 ÷ 1.75)
Check: 28 [ENT] 1.75 [÷]

B3: $8.65 each (34.60 ÷ 4)
Check: 34.60 [ENT] 4 [÷]

B4: 72 layers (14.4 ÷ 0.20)
Check: 14.4 [ENT] 0.20 [÷]

B5: 15 flowers (5.25 ÷ 0.35)
Check: 5.25 [ENT] 0.35 [÷]

B6: 6 miles per hour (4.5 ÷ 0.75)
Check: 4.5 [ENT] 0.75 [÷]

B7: 18 sections (22.5 ÷ 1.25)
Check: 22.5 [ENT] 1.25 [÷]

B8: 30 cups (13.5 ÷ 0.45)
Check: 13.5 [ENT] 0.45 [÷]

B9: 7 tickets (87.50 ÷ 12.50)
Check: 87.50 [ENT] 12.50 [÷]

B10: 6 (10.5 ÷ 1.75)
Check: 10.5 [ENT] 1.75 [÷]

UNIT 02 MASTERY QUIZ KEY (p.113 • TEKS 6.3E): Q1: 2/3 Q2: 3 Q3: 2 Q4: 3 Q5: 23.05

Quiz Q6–Q10 Answers: Q6: (a) 1.08 (b) 26 Q7: 14 pieces Q8: $10.80 Q9: 13 bottles Q10: Flip divisor (6/1): 4