

Grade 3 • Unit 3 • Assessment Guide

Wrapping Up Addition and Subtraction within 1,000

For the Parent or Teacher — What to look for

Unit 3 cements fluent addition and subtraction within 1,000 using algorithms based on place value. The key diagnostic is whether the student understands WHY the algorithm works (decomposing/composing tens and hundreds) — not just that they can perform it. Watch the decomposition step on subtraction problems.

Part A — Mental math

- $350+250=600$, $600-100=500$, $470+30=500$, $905-5=900$.
- Watch: $470+30$ requires composing a hundred. $905-5$ should drop the ones cleanly without changing other digits.
- Weak students may write $470+30=400$ (forgetting the new hundred) or $905-5=000$ (overcorrecting).

Problem 1 — $348+276$ two ways

- Answer: 624.
- Strong: one way uses expanded form ($300+200=500$; $40+70=110$; $8+6=14$; $500+110+14=624$). Other way could be algorithm, compensation ($350+278$ or $350+274+2$), or counting up.
- ★ Real diagnostic: do both ways actually agree? If they don't, where did the error appear?
- Common error in expanded form: $348+276 \rightarrow 500 + 110 + 14 \rightarrow$ forgets to compose 110 into 100+10 — answers 51014 or some malformed sum.

Problem 2 — $612-348$ with self-check

- Answer: 264. Yes, decomposes a ten (need 12 ones from 2). Yes, decomposes a hundred (need 11 tens from 1 ten).
- ★ The self-check is the diagnostic. A strong student knows BOTH decompositions are needed.
- Classic error: subtracting smaller from larger column-wise ($8>2$ 'can't' so $8-2=6$; $6-1=5$; $6-3=3 \rightarrow 356$ — wrong by a lot).

Problem 3 — Lin's expanded algorithm + apply to $256+168$

- Lin adds hundreds first, then tens, then ones, then composes the result.
- Strong explanation: 'She added each place separately, then combined them — and she had to compose new tens or hundreds when totals went over.'
- Apply: $256+168 = (200+100) + (50+60) + (6+8) = 300 + 110 + 14 = 424$.
- ★ A student who can ONLY do the standard algorithm without understanding expanded form may struggle to apply Lin's method.

Problem 4 — Round to nearest 10 and 100

- 168: ten = 170, hundred = 200.
- 245: ten = 250 (5 rounds up), hundred = 200.
- 650: ten = 650 (already a multiple of 10), hundred = 700 (50 rounds up).
- ★ Watch the convention: $245 \rightarrow 250$ (up), but the hundred is still 200 (closer to 200 than 300 since 245 is below 250).
- ★ Common error: rounds 245 to 300 by 'rounding up because of the 5 in tens.' Reveals failure to think about which multiple is closer.

Problem 5 — A number rounds to 400 (to nearest 100)

- Smallest: 350 (rounds up). Largest: 449 (rounds down).
- Strong: 'Anything from 350 to 449 rounds to 400 because halfway from 400 is 450 (rounds up to 500) and 349 is closer to 300.'
- ★ This is a deep rounding question — tests whether they understand rounding as a RANGE concept.

Problem 6 — Library: 524–187+94

- Estimate (nearest 100): $500 - 200 + 100 = 400$.
- Exact: $524 - 187 = 337$; $337 + 94 = 431$.
- ★ Reasonableness check: 431 is within ~30 of the estimate 400 → answer is reasonable.
- Weak: only does one step (gives 337 or 618); OR adds 187 instead of subtracting; OR no reasonableness check.

Problem 7 — Maya: Sat 138, Sun 138–56, total?

- Sunday: $138 - 56 = 82$. Total: $138 + 82 = 220$ pages.
- ★ Two-step Compare structure. Tape diagram is the strong signal — should show two bars (Saturday longer than Sunday by 56).
- Weak: stops after one step (gives 82); OR adds $138 + 56$ (misreads 'fewer').

Problem 8 — Han's 503–247 error

- Han subtracted smaller from larger digit-wise (classic mistake). Also missed the borrow across the zero.
- Correct answer: 256.
- ★ Strong: identifies the mistake AS the small-from-large subtraction. Best answers note that since $3 < 7$ in ones, you need to decompose from a ten — but the tens is 0, so you need to decompose from the hundreds first.
- ★ This is the EXACT problem the unit's expanded subtraction algorithm is designed to prevent. If they can't catch this error, they don't yet understand decomposing across a zero.

Problem 9 — 802–597: which strategy?

- Answer: 205.
- ★ 'Count up from 597' is much easier: $597 + 3 = 600$; $+200 = 800$; $+2 = 802$. So the difference is 205.
- Strong: chooses count-up because the two numbers are close (only 205 apart, and 597 is close to 600).
- Weak: forces the standard algorithm and decomposes everything (works but inefficient — and prone to errors with the zeros).
- Reveals strategic flexibility — choosing the tool that fits the numbers.

Problem 10 — Write your own two-step story

- Should use all three numbers (235, 148, 79) in a coherent situation.
- Strong: real-world setting (books in library, pages read, etc.), two operations needed.
- ★ Most diagnostic: does their answer match their story? They have to think through both directions — composition and decomposition of the problem.
- Weak: vague, only uses two numbers; OR the answer doesn't match the work.