

Grade 2 • Unit 4 • Assessment Guide

Addition and Subtraction on the Number Line

For the Parent or Teacher — What to look for

Unit 4 introduces the number line as a tool. The key is whether the student sees the number line as a representation of length / distance from 0, not just a row of numbers.

Problem 1 — Place 23 and 87

- 23 should be roughly between 20 and 30, closer to 20.
- 87 should be between 80 and 90, closer to 90.
- ★ The explanation reveals understanding: "23 is 3 past 20" = good. "23 is in the middle" = weak.

Problem 2 — Estimate point past middle of 30-60 line

- Reasonable answers: 46, 47, 48 (just past middle, which is 45).
- Strong: explains by reasoning about halfway (45) and beyond.
- Weak: just guesses a number; says "50" without justification.

Problem 3 — Show $35 + 28$ two ways

- Examples: (1) $+10+10+8$ = three jumps; (2) $+30$ then back -2 ; (3) jump to next ten ($35+5=40$) then $+23$.
- Strong: two distinct strategies, both arriving at 63.
- Weak: same strategy twice; arithmetic errors that suggest they're not tracking position.

Problem 4 — $64 - 27$ on number line

- Answer: 37.
- Strong jumps: -20 (to 44), then -7 (to 37). OR -27 in one big jump. OR count up from 27 to 64.
- Watch: directional errors — jumping right instead of left for subtraction.

Problem 5 — Count back vs count up for $53 - 48$

- Count UP from 48 is easier (just 5 jumps), since 48 is close to 53.
- Strong: "Count UP — they're really close together, only 5 apart."
- Weak: "both work" without reasoning about which is more efficient.

Problem 6 — Han runs $38 + 25 = 63$ m

- Should show $0 \rightarrow 38$, then $+25$ to 63 (often as $+20$ then $+5$, or as $38+2$ to 40, then $+23$).
- Watch: a student who just writes " $38 + 25 = 63$ " without using the number line missed the point of the exercise.

Problem 7 — Three jumps of 10 vs one of 30

- Both are correct ($3 \times 10 = 30$, lands in same spot).
- Strong: "Yes — they both add 30 total, just in different sized jumps."
- Reveals whether the student sees the jumps as ADDITIVE.

Problem 8 — 50 placed too close to 0

- Strong: "50 is HALFWAY between 0 and 100 — it should be in the middle."
- This tests whether they understand the number line as evenly spaced (proportional).

Problem 9 — Match equations to arrows

- Arrow C (start 5, jump right 8 to 13): matches A ($5+8=13$). Also matches B? Yes — same fact pair. Accept A and B.
- Arrow D (start 13, jump left 8 to 5): also describes $13-8=5$ (B) and $5+8=13$ (A) — same relationship!
- ★ Strong: realizes BOTH equations match both arrows (because addition and subtraction express the same relationship).
- Weak: only matches A to C and B to D (keyword: jump right = +, jump left = -).

Problem 10 — When is number line more/less helpful?

- Strong: "More helpful for big numbers or comparing. Less helpful for facts I know by heart."
- Reveals whether they see the number line as a TOOL chosen for a purpose, vs. a procedure to always follow.

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