

Grade Level: Fourth Grade

Standard: NS 1.8 Use concepts of negative numbers (e.g. on a number line, in counting, in temperature, in “owing”).

In a “perfect” program I should see:

- A Balanced Program
  - Conceptual Knowledge
  - Procedures & Computation
  - Problem Solving
- Number lines
  - Conceptual understanding (increase in value, left to right or bottom to top)
  - Kinesthetic number lines (students out of their seats, standing “in order”)
  - Student-created number lines
  - Identifying values from a number line in print
  - Vertical, as well as horizontal
  - Some emphasis on zero
    - Neither positive nor negative
    - Placement on the number line
  - Various intervals (-10 to 10, -100 to -70, etc.)
  - All of the above to mastery
  - Comparing and ordering
- Counting
  - Patterns (e.g. -30, -25, -20, \_\_\_\_, \_\_\_\_)
  - Comparing and ordering
- Temperature
  - Explicit instruction for reading thermometers
  - Visuals
  - Scaffolding of academic vocabulary (e.g. “temperature dropped...”)
  - Celsius vs. Fahrenheit
  - Reading symbolic notation (e.g.  $26^{\circ}$  F)
  - Meaningful scenarios
  - Comparing and ordering
- Owing
- Other meaningful contexts (e.g. football yards, golf par, etc.)
- Observations by students of the meaning of negative numbers as they relate to positives/ as opposites of each other (e.g. gained 3 yds. lost 3 yds.)
- Manipulatives (e.g. thermometers, two-color counters, play money, etc.)
- Higher level problem solving
- Mathematical reasoning embedded in all of the above (with specific questioning to help students gain a true understanding of the “why”)

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In a “perfect” program I should see:

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