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*Reflections*

*on*

Using Integers to Rethink the Role of  
Context in School Mathematics

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Vicki Jacobs

UNC – Greensboro

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## Role of Context in Integer Reasoning

- Map out how students use and make sense of integers
  - Challenges with context
    - Students did not make sense of contexts like they did
    - Students were not engaging with the target mathematics
  - Benefits of context
    - motivation
    - rich mathematics
    - connections with informal knowledge
    - accessibility
    - sense making
    - real-world problem solving
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## Role of Context in Integer Reasoning

- *Major Contribution:* map out how students think about about integer contexts
  - 3 Questions to Ponder...
    - What does it mean to solve story problems with integers?
    - How do number sentences relate to integer reasoning?
    - What supports might allow us to productively build on students' ways of thinking about context?
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## What does it mean to “solve story problems with integers”?

Yesterday you borrowed \$8 from a friend to buy a school t-shirt. Today you borrowed another \$5 from the same friend to buy lunch. What is the situation now?

- $8 + 5 = 13$  so I owe my friend \$13

*Is integer reasoning involved in knowing that \$13 is owed?*

*At least the beginnings of integer reasoning?*

- Many adults use whole number addition/subtraction when computing. Is integer reasoning involved?

$$-8 + -5 = ?$$

$$-8 + 6 + 3 + -5 + 4 = ?$$

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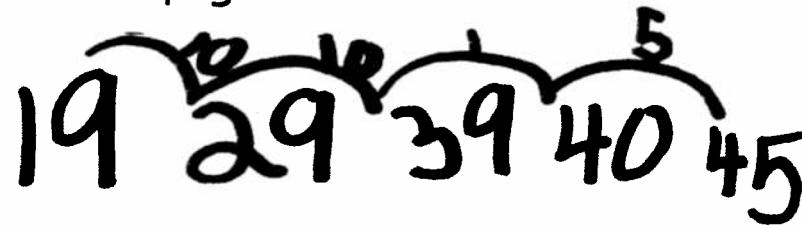
## How do number sentences relate to integer reasoning?

Yesterday you borrowed \$8 from a friend to buy a school t-shirt. Today you borrowed another \$5 from the same friend to buy lunch. What is the situation now?

- What did the data show?
    - Students often did not include negative integers in their number sentence
    - Students often argued that  $-8 + -5 = -13$  did not match the story
  - Perspective matters
  - Number sentence linked to strategy vs. context
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Jill

Mrs. Price has already read 19 pages in a book. How many more pages does she need to read to finish the book if the book has 45 pages?



26

$$20 + 6 = 26$$

$$19 + 26 = 45$$

Mrs. Price has already read 19 pages in a book. How many more pages does she need to read to finish the book if the book has 45

Jill

19 29 39 40 45

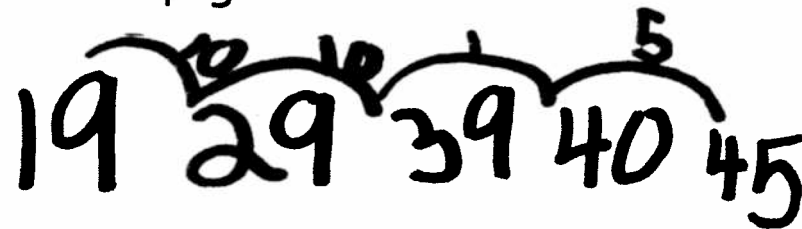
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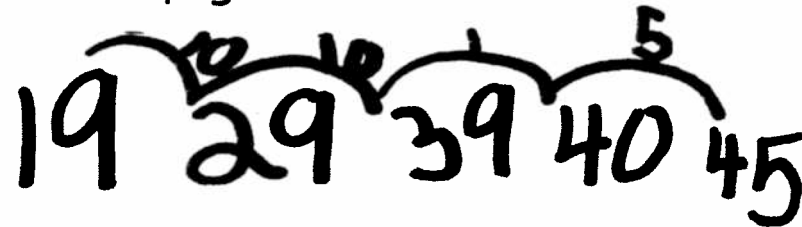
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## What supports might allow us to productively build on students' ways of thinking about context?

- Discuss different ways of thinking about the context.
  - Connect whole-number reasoning with integer reasoning.
  - Ask students to solve (and record) the problem from different perspectives.
  - Clarify what a number sentence is representing.
  - Ask questions related to quantity (vs. number sentence).  
*Money Problem:* How would you represent how much you have?  
How much your friend has?
  - Start with a number sentence and ask students to assign context to that number sentence (going backwards).
  - What else?
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