

# Which Model Should I Use? Choosing and Using a Variety of Representations

Sara Delano Moore, Ph.D.  
Director of Professional Learning  
ORIGO Education  
@saradelanomoore

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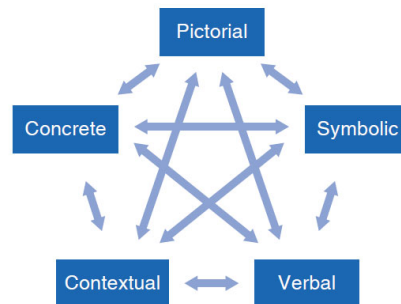
## Session Goals

- ▶ Distinguish between mathematizing a problem and finding an answer to the problem.
- ▶ Identify advantages and disadvantages of using a variety of representations to model various problem situations.
  - ▶ How can we represent action?
  - ▶ How can we represent relationships?
  - ▶ How can we represent equal groups?
  - ▶ How can we represent proportionality or scale?
- ▶ Recognize key attributes of a variety of problem situations.

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## Use and Connect a Variety of Representations

FIGURE 1.1 FIVE REPRESENTATIONS: A TRANSLATION MODEL



Source: Adapted from Lesh, Post, and Behr (1987).

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## This is not about computation

### Computational Strategies

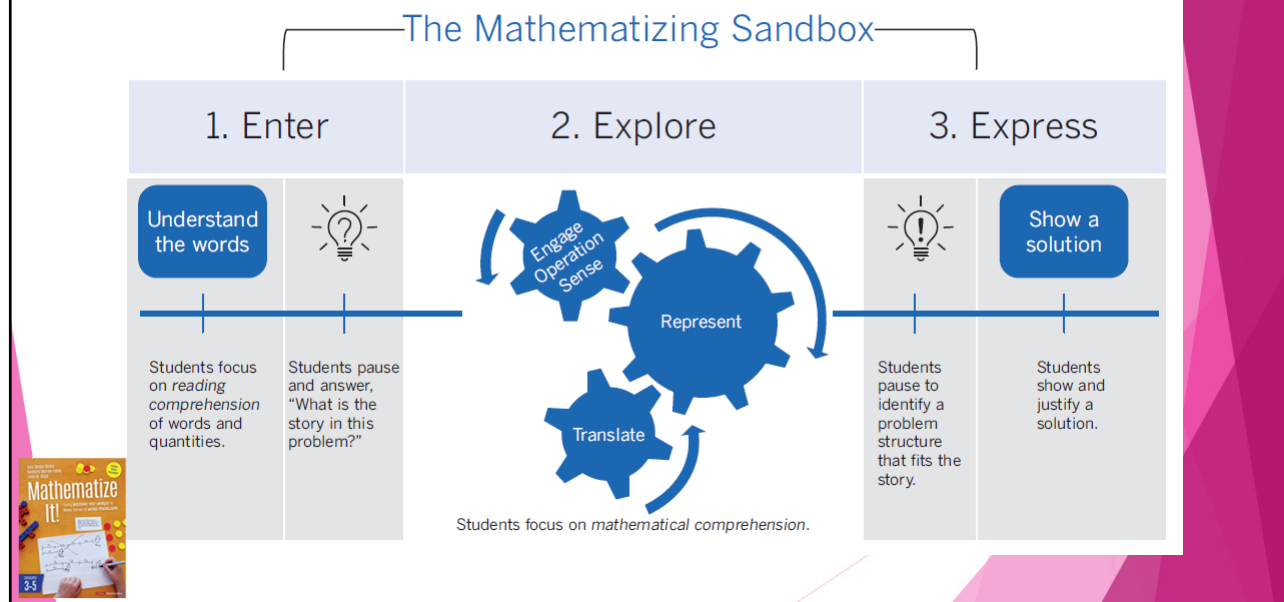
- ▶ Counting on or back
- ▶ Doubles
- ▶ Bridging ten
- ▶ Known related facts
  
- ▶ These are strategies students use to compute the answer, **AFTER** students understand the situation.

### Models of Operations

- ▶ Operation Sense is about describing what is happening in the situation. What models and representations show the action or relationships in the problem?
  
- ▶ Operation sense comes **BEFORE** students select a computation strategy to find the solution.

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**FIGURE 1.4 A MODEL FOR MATHEMATIZING WORD PROBLEMS**



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## Counters and Sketches

- ▶ They show action easily.
- ▶ One-to-one correspondence helps with additive comparison.
- ▶ They can show equal groups with containers.

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## Cuisenaire Rods & Bar Models

- ▶ They can show part/whole relationships clearly.
- ▶ They show additive comparisons clearly.
- ▶ They can show multiplicative comparison.

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## Number Lines

- ▶ Arrows can indicate action.
- ▶ Comparisons can be hard to show.
- ▶ Repeated addition is easier to see than area.

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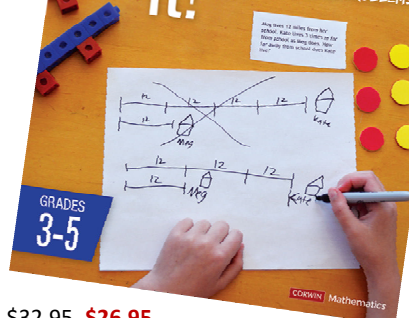
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