Overview of Session 2

- Introducing the importance of representation in mathematics and mathematics teaching

- Exploring and explaining representations of ¾

- Considering types of connections with representations

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Representations matter in mathematics

In mathematics, representations:

- <u>Are </u>mathematics
- Provide tools for working on mathematics through modeling and interpreting phenomena
- Contribute to the development of new knowledge
- Supply ways of documenting, organizing, and communicating with others

(NCTM, 2000; Carpenter & Lehrer, 1999)

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Using representations in teaching mathematics

In mathematics teaching, skill in using representations:

- Enhances the detail, precision, and range of what can be communicated mathematically
- Explicitly represents a key mathematical practice for students to learn
- Provides alternate modes of communication to support the learning needs of an array of students
- Supports students in developing new ways to communicate about mathematics
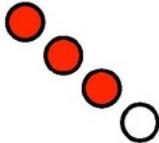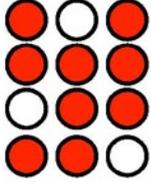
3

Examining representations

For each representation on the following slide think:

a. Could this be interpreted as a representation of ¾?

b. If yes, explain how it could represent ¾. If no, explain why it could not be interpreted to represent ¾.
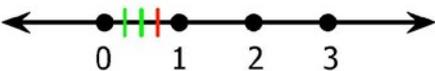
4

a)

b)

c)

d) How many 4's are there in 3?

e) 18 crayons out of a box of 24

f) .75

g) I want to share 3 bottles of soda equally among 4 people. How much will each person get?

h)

i)

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Making connections

- Between student thinking and a representation
  - Explanation related to a particular aspect of a diagram
- Within representations of the same type
  - Rectangular area models
- Across representations of the same type
  - Rectangular area and circular area
- Across representations of different types
  - Measurement model and area model
- Between representation and the problem statement
  - Checking on the correspondence of what a problem asks and features of a representation

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Summary

In this session, you examined:

- Why representations matter in mathematics and in mathematics teaching
- Central ideas about fractions including the importance of:
  - Identifying the whole
  - Equality of parts
- Types of connections with representations

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