DMT INSTITUTE

Developing Mathematical Thinking Institute (DMTI)

Professional Development

Curricular Resources

Assessment

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About the DMTI Targeted Activities

These DMTI Targeted Activities modules are designed to be played or completed with a partner or in small groups. These supplement the Primary Math Assessment and DMTI curricular materials.

The activities are intended for teachers or caregivers to play with children to build necessary math skills and math language. Each activity can be played for 10 to 20 minutes. And if there are additional activities in a module, they are built to be more advanced.

PMA – Grade 1

Relational Thinking

Relational Thinking

What's involved:

- Seeing the equal sign as a relational symbol rather than strictly computational
- Understanding different equations can be correct even if they are structured in non-conventional ways (e.g. 8=4+4; 9+2=12-1)
- Equivalence is not the same as congruence
  - Example: 4 + 1 = 1 + 4 = 2 + 3 = 5 + 0
  - The above examples are all *equal* but not *exactly the same*.

Why it matters:

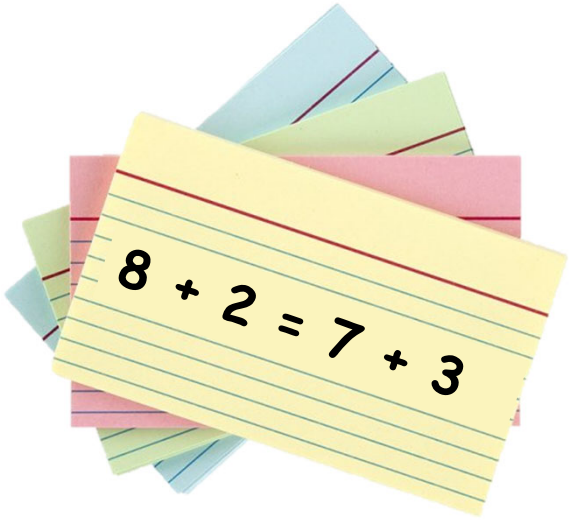
- Builds flexible thinking and decomposition of numbers
- Lays the foundation for algebraic thinking
- Broadens students' understanding of equivalence

Relational Thinking: True or False

Materials

Number Sentence Cards (Template)

Chips from the DMTI Math Pack or Cubes



Relational Thinking: True or False

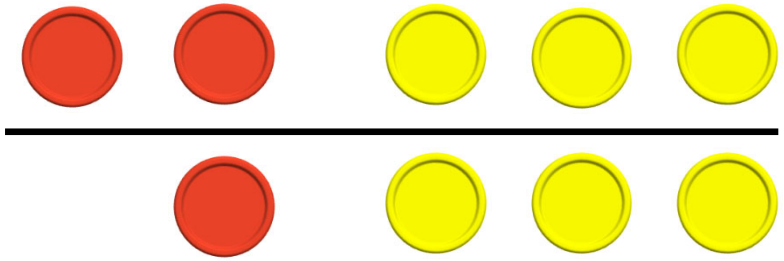
Activity I

1. Choose one of the equation cards.
2. Determine whether the equation is true or false.
3. Use the chips or cubes to justify your conclusion.
4. Use the following sentence frame:
   - I know that ___ and ___ is ___.
   - And I know ___ and ___ is ___.
   - And ___ is the same/or not the same as ___.

Relational Thinking: True or False

Example

2 + 3 = 3 + 1



I know that 2 and 3 is 5.

And I know 3 and 1 is 4.

And 5 is not the same as 4.

So, false.

Template: True or False Number Sentences

8 + 1 = 9 + 2
3 + 3 = 2 + 3
0 + 9 = 1 + 8
7 + 3 = 6 + 4
3 + 5 = 8 + 1
2 + 7 = 4 + 5

3 + 4 = 5 + 2
2 + 8 = 7 + 3
1 + 5 = 6 + 1
3 + 4 = 7 + 2
6 + 3 = 3 + 7
5 + 5 = 4 + 6

Template: True or False Number Sentences

12 + 3 = 15 + 2
2 + 13 = 12 + 3
0 + 14 = 11 + 4
11 + 3 = 2 + 12
13 + 4 = 16 + 1
12 + 2 = 14 + 1

13 + 4 = 5 + 10
2 + 11 = 13 + 3
3 + 15 = 6 + 12
18 + 1 = 5 + 14
6 + 13 = 12 + 7
7 + 15 = 14 + 6

Relational Thinking: Matching

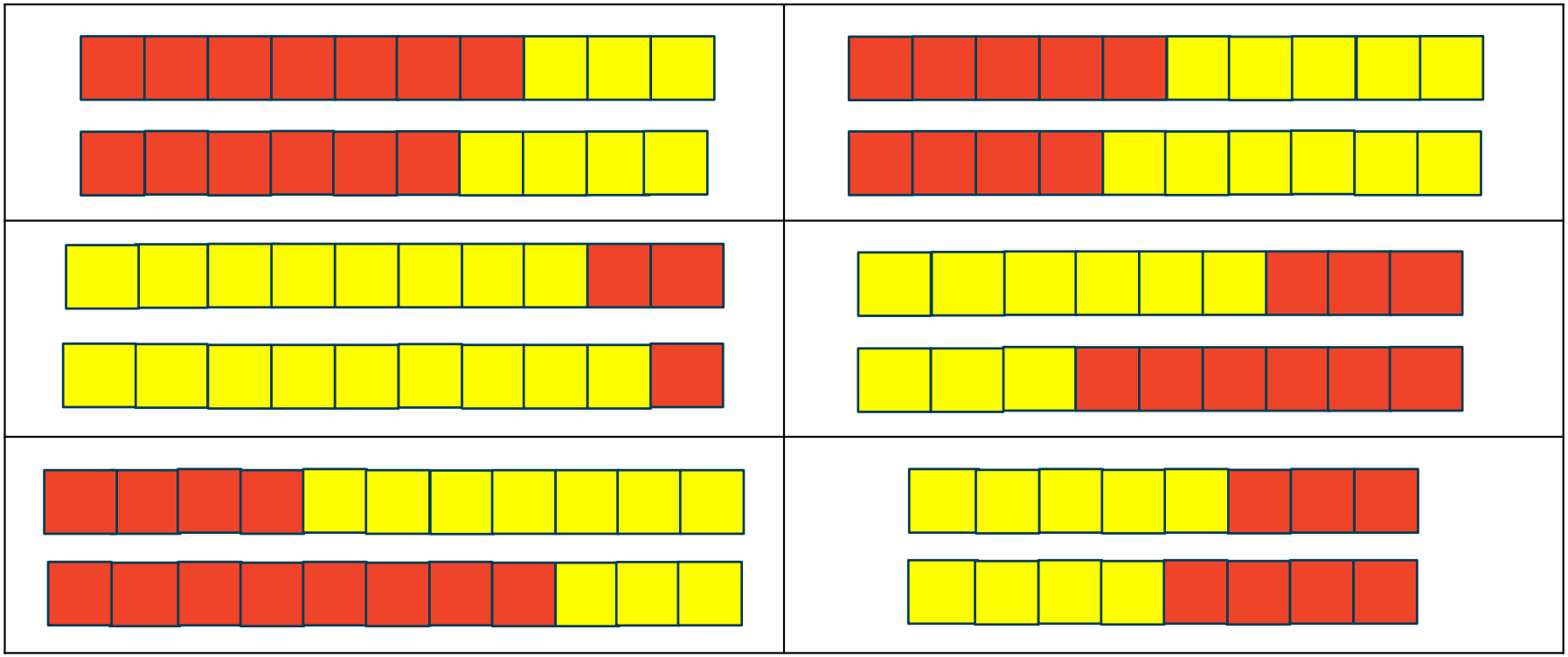
Activity II

1. Cut out the template cards.
2. Match the math model to the correct equation.

Relational Thinking: Matching Cards

$7 + 3 = 6 + 4$	$5 + 5 = 4 + 6$
$6 + 3 = 3 + 6$	$4 + 7 = 8 + 3$
$8 + 2 = 9 + 1$	$5 + 3 = 4 + 4$

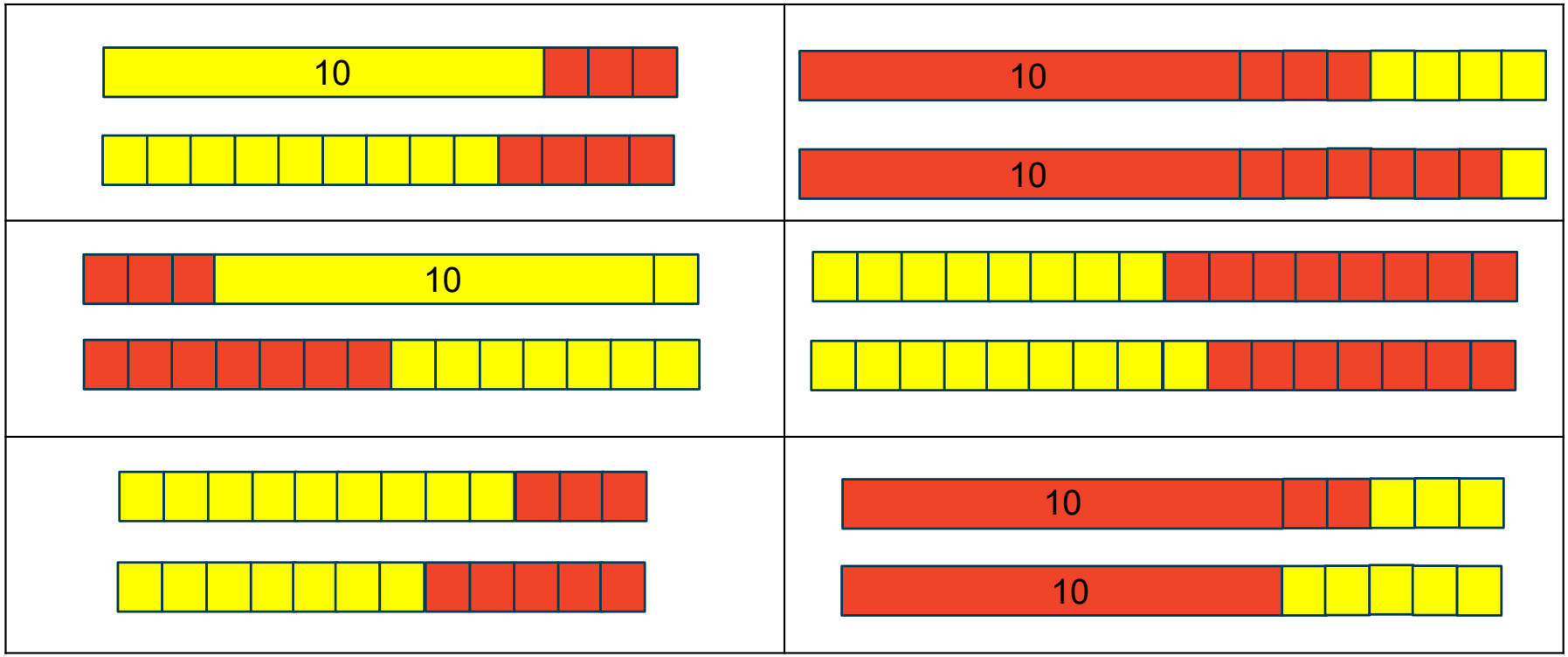
Relational Thinking: Matching Cards



Relational Thinking: Matching Cards

$12 + 3 = 10 + 5$	$10 + 3 = 9 + 4$
$13 + 4 = 16 + 1$	$3 + 11 = 7 + 7$
$9 + 3 = 7 + 5$	$8 + 8 = 9 + 7$

Relational Thinking: Matching Cards



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"The Developing Mathematical Thinking Institute (DMTI) is dedicated to enhancing students' learning of mathematics by supporting educators in the implementation of research-based instructional strategies through high-quality professional development, curricular resources and assessments."

For more information contact
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