

DMT INSTITUTE

Developing Mathematical Thinking Institute (DMTI)



Professional
Development



Curricular
Resources



Assessment

Jonathan Brendefur, PhD

Grade 3 – Algebraic Reasoning 1

MODELS WITH EXPRESSIONS AND EQUATIONS

DMTI Varied Practice Worksheets

This PowerPoint or PDF displays the worksheets that have varied situations (context, visual, equations, and other mathematical models) for children to work on. By completing these worksheets, children increase their foundational skills in the topic, which will help them with these standards and future mathematical topics.

1. If using a journal, have children present the worksheet and complete all the problems.
2. Or print the 'Varied Practice Worksheet Slides' for them to work on. Then, you can return to the PowerPoint or PDF to look at the keys to check their work.

Grade 3: Algebraic Reasoning– Part 1

Materials Needed

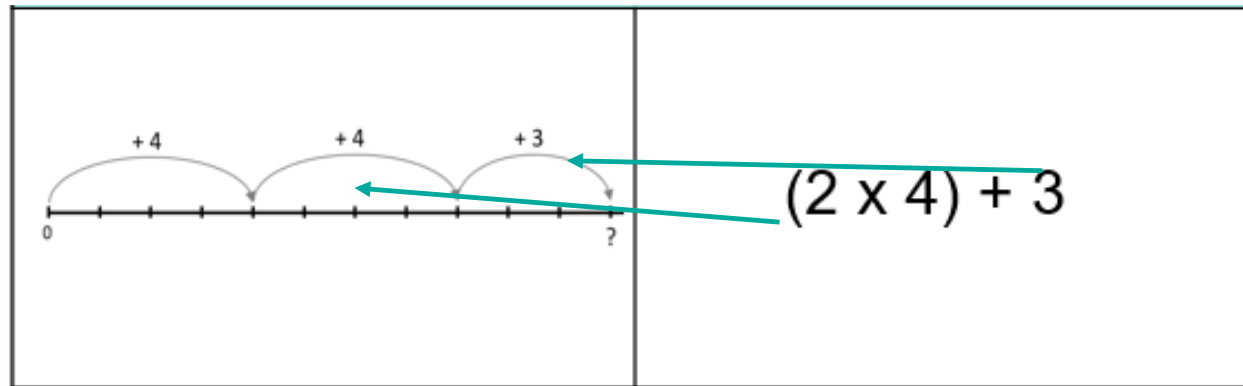
Printed copies of the Algebraic Reasoning Part 1 varied practice sheet

Scissors

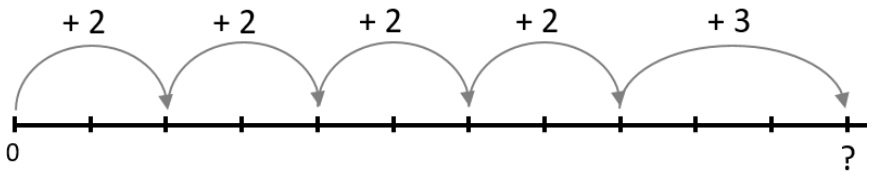
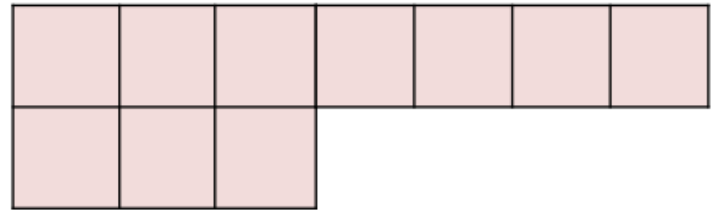
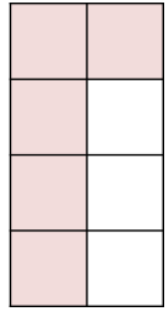
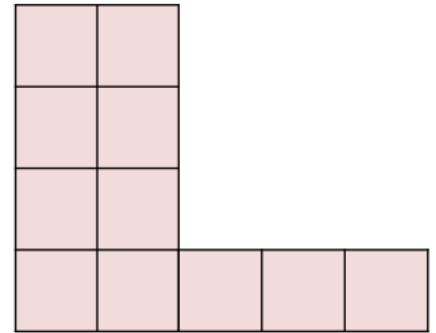
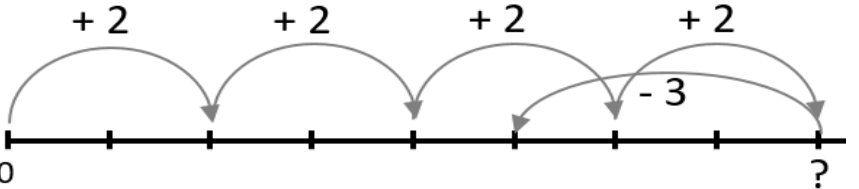
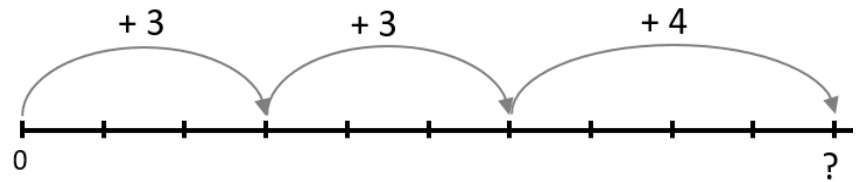
Instructions

1. Cut out the cards from the practice sheet and sort them into two categories, models and expressions.
2. Match the models to the expressions by looking for ways you could use expressions to describe the models. Notice that each expression will match two different models.

Example:



NOTES: Parentheses are used to tell us to think about the operation inside the parentheses before other parts of the expression. Additionally, for this exercise 2×4 should be interpreted as $2 \times 4 = 4 + 4$. This is described as “2 iterations of 4.”

Models		Expressions
 <p>A number line starting at 0 with 11 tick marks. Four curved arrows labeled '+2' span from the 1st, 2nd, 3rd, and 4th tick marks to the 3rd, 4th, 5th, and 6th tick marks respectively. A fifth curved arrow labeled '+3' spans from the 6th tick mark to the 9th tick mark. A question mark '?' is at the end of the line.</p>	 <p>An area model consisting of two rows of rectangles. The top row has 7 rectangles, and the bottom row has 3 rectangles. The total width is 10 units and the height is 2 units.</p>	<p>$(4 \times 2) + 3$</p>
 <p>An area model consisting of a 4x2 grid of rectangles. The top-left 2x2 area is shaded, and the remaining 2x2 area is white.</p>	 <p>An area model consisting of a 4x2 grid of rectangles. The top-left 3x2 area is shaded, and the remaining 1x2 area is white.</p>	<p>$(2 \times 3) + 4$</p>
 <p>A number line starting at 0 with 11 tick marks. Four curved arrows labeled '+2' span from the 1st, 2nd, 3rd, and 4th tick marks to the 3rd, 4th, 5th, and 6th tick marks respectively. A fifth curved arrow labeled '-3' spans from the 6th tick mark to the 3rd tick mark. A question mark '?' is at the end of the line.</p>	 <p>A number line starting at 0 with 11 tick marks. Three curved arrows labeled '+3' span from the 1st, 2nd, and 3rd tick marks to the 4th, 5th, and 6th tick marks respectively. A fourth curved arrow labeled '+4' spans from the 6th tick mark to the 10th tick mark. A question mark '?' is at the end of the line.</p>	<p>$(4 \times 2) - 3$</p>

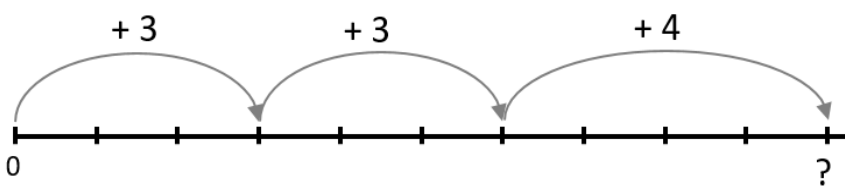
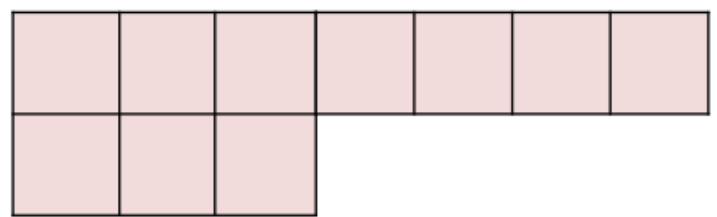
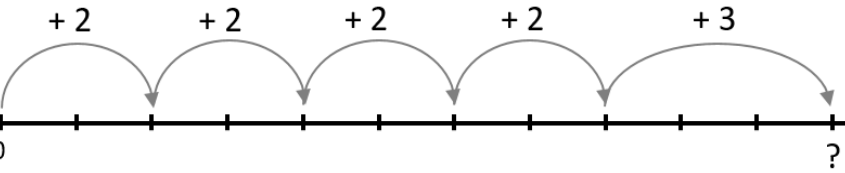
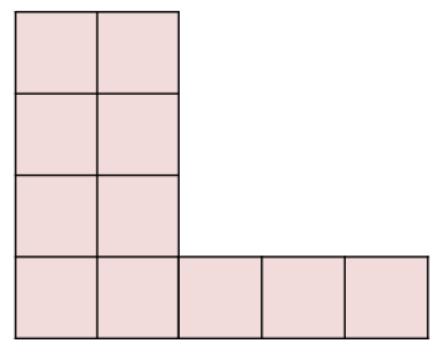
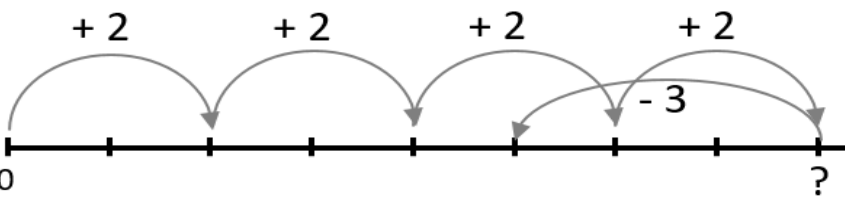
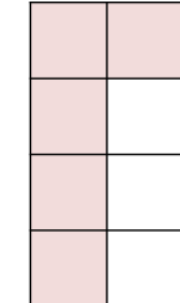


“The Developing Mathematical Thinking Institute (DMTI) is dedicated to enhancing students’ learning of mathematics by supporting educators in the implementation of research-based instructional strategies through high-quality professional development, curricular resources and assessments.”

For more information contact
Dr. Brendefur at jbrendefur@dmtinstitute.com



KEY

Models		Expressions
		$(2 \times 3) + 4$
		$(4 \times 2) + 3$
		$(4 \times 2) - 3$