

Bring Joy Back to the Classroom with Games and Card Sorts

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1. Match and Compare Sort (Gr 6 version)
2. Slides and Jumps (Gr 8, but Gr 6,7 accessible)
3. Four in a Row (Gr 6 and Gr 7 options to play)
4. Why Doesn't it Belong (Gr 8 version, time permitting)
5. Pattern Talks (Gr 7, but Gr 6,8 accessible, time permitting)

NWMC, Oct 2023

MathLinks



MATCH AND COMPARE SORT

Work with a partner and two sets of cards.

One partner has the \triangle set,
the other has the \bigcirc set.

First match **your own** I-II-III-IV **word** cards
to **your** A-B-C-D **description** cards.

Discuss both sets of cards with your partner.
Be sure you agree the matches are correct.

Record the matching card numbers, words,
and card letters for each set in the table.

I have \triangle 's



I have \bigcirc 's

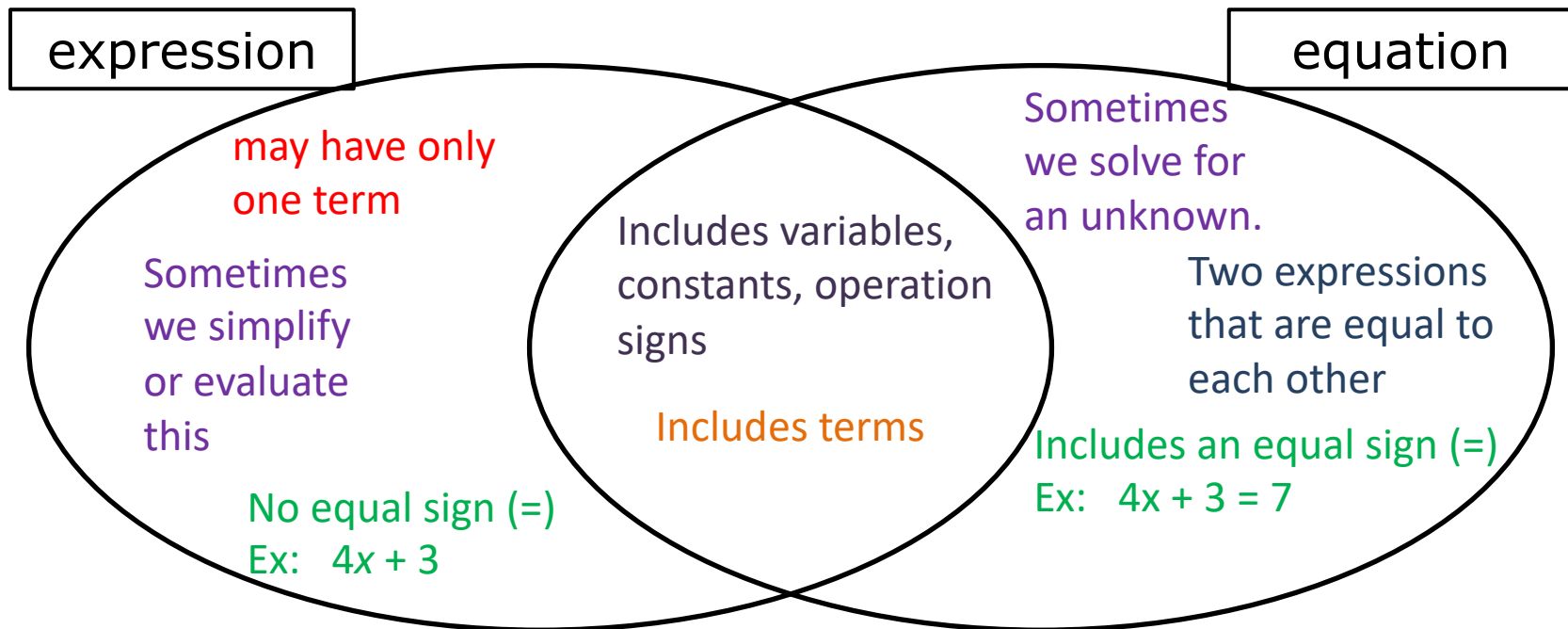


LET'S COMPARE

Here are the word cards for "I"

What is the SAME about them?

What is DIFFERENT about them?

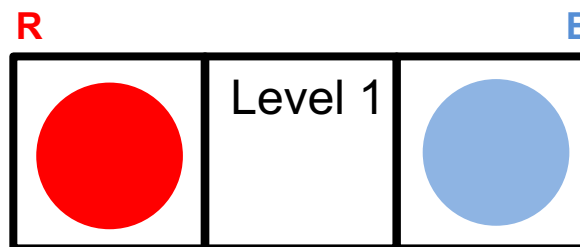


Choose another pair of number matched cards. Discuss and record what is the same and what is different about them.

SLIDES AND JUMPS



Here's the challenge:
By sliding and jumping, get the
colored markers to switch positions.

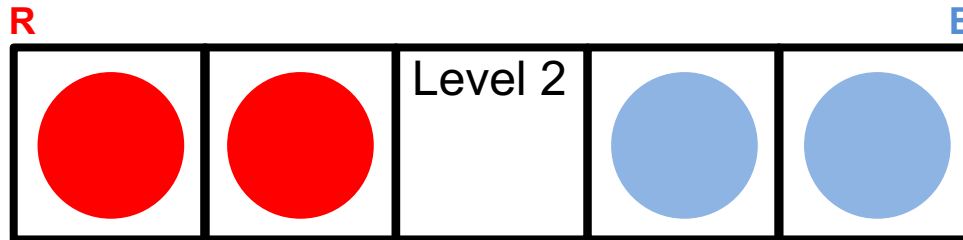


Almost done!
What now to complete Level 1?

NEXT LEVEL

A few things to know:

- You may slide only one space.
- You may jump over only one space with a counter in it.
- You may slide or jump backward to complete a level, but...
try to make the fewest moves possible.

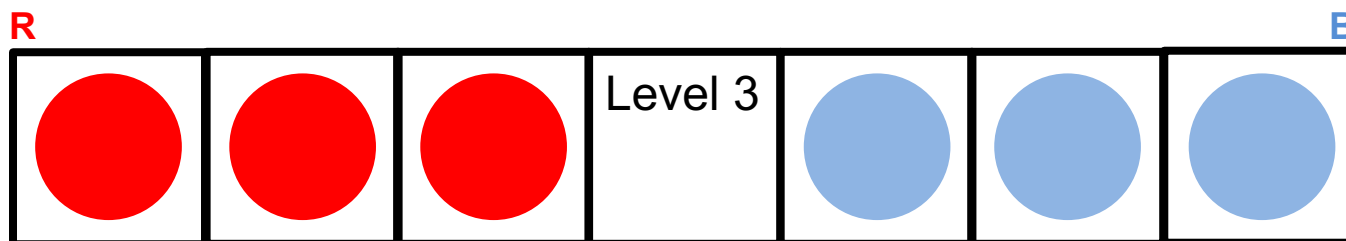


I'm stuck!

Try to complete Level 2.

MORE LEVELS

When ready, try to complete more levels.



What will Level 4 look like?

RECORDING SLIDES AND JUMPS

*How many moves does it take to complete ANY level?
Remember we're looking for the fewest moves per level.*

Let's start by recording slides and jumps move-by-move.

Remember Level 1?

S J S

(1) Record like this for each level you've done.

What pattern(s) do you notice?

Record more levels.

Remember, we did up through Level 4 at the most, so pattern recognition is important.

RECORDING SLIDES AND JUMPS

S J S

S J S J J S J S

S J S J J S J J J S J J S J S

S J S J J S J J J S J J J J S J J S J J S J S

SLIDES AND JUMPS TABLE

- (2) Record moves in a table.
Generalize for ANY level ("Level x ").

Level #	# of Slides	# of Jumps	Total # of Moves
1	2	1	3
2	4	4	8
3	6	9	15
4	8	16	24
5	10	25	35
x	$2x$	x^2	$2x + x^2$

FOUR IN A ROW

Choose the grade 6 or grade 7 version to play

Play one-on-one or two-on-two; if an odd number, then one student can be “referee”

Be the first player to claim 4 spaces in a row, column, or diagonal to win the game.

Players alternate turns

The FIRST player places the objects in both Box A and Box B, finds the result, and places their counter on the appropriate space.

From the 2nd move forward, players strategically move only one object, find the result, and place their counter on the appropriate space.

The first with 4 spaces in a row wins! (horizontal, vertical, or diagonal)

FOUR IN A ROW

FOUR IN A ROW: DISTRIBUTIVE PROPERTY II

Players: 2+

Objective: Be the first player to claim 4 spaces in a row, column, or diagonal to win the game.

Materials: Board game, 2 sets of colored counters (for the game board), 2 objects (e.g. cubes, paperclips, cut up paper) that will cover numbers in Box A and Box B

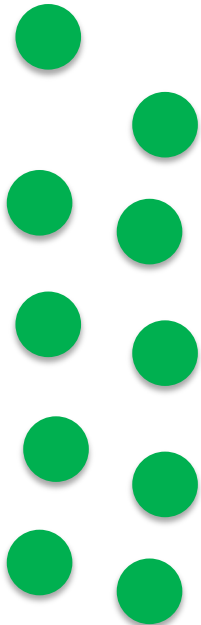
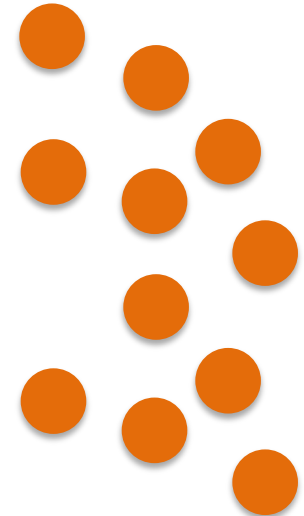
Rules: Two players alternate finding the product by choosing a constant from Box A and a variable expression from Box B. Players check the product and, if successful, place their colored counter on a space with the appropriate product. (Note: All products are in simplest form.)



BOX A: CONSTANT		
$\begin{matrix} \square \\ -2 \end{matrix}$	3	-4
-6	$\begin{matrix} \square \\ 2 \end{matrix}$	-1

BOX B: EXPRESSION		
$\begin{matrix} \square \\ x-2 \end{matrix}$	$(-2x+4)$	$\left(2x-\frac{1}{3}\right)$
$\begin{matrix} \square \\ \frac{1}{2}x-1 \end{matrix}$	$(-0.4x+3)$	$(-x-2)$

GAME BOARD: DISTRIBUTIVE PROPERTY II (A(B))					
$0.8x-6$	$-6x+12$	\bullet	$3x-6$	$-4x+8$	$-2x-4$
$6x+12$	$-3x-6$	$-\bullet$	$2\bullet$	$-3x+6$	$-4x+\frac{2}{3}$
$2x-4$	$12x-24$	$-\frac{1}{2}x+1$	$8x-16$	$-4x+8$	$0.4x-3$
$-2x+4$	$-x+2$	$-6x+12$	$-12x+2$	$-x+2$	$-1.2x+9$
$6x-1$	$2x+4$	$1.6x-12$	$-2x+\frac{1}{3}$	$-0.8x+6$	$-8x+1\frac{1}{3}$
$4x-\frac{2}{3}$	$2.4x-18$	$\frac{3}{2}x-3$	$4x+8$	$x+2$	$4x-8$



WHY DOESN'T IT BELONG?

Choose one of the four representations and explain why it does not belong with the others. **Look for a mathematical reason.**

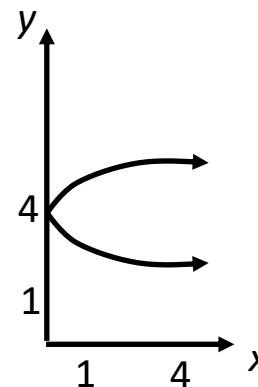
Table

Input (x)	Output (y)
0	0
1	1
2	4
3	9
4	16

Equation

$$y = -2x + 1$$

Graph

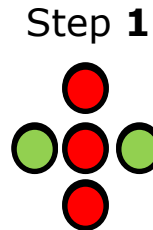


Context

Sal skateboards to and from work every day at an average rate of 6 miles per hour.

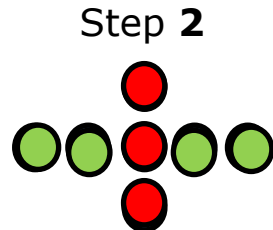
He uses this information to keep track of how far he travels after any number of hours.

PICTURE TALK A



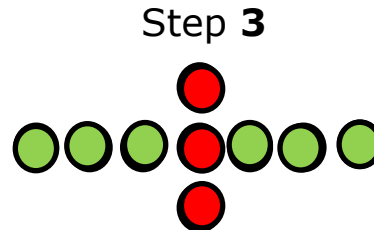
$$3 + 2$$

$$3 + \mathbf{1}(2)$$



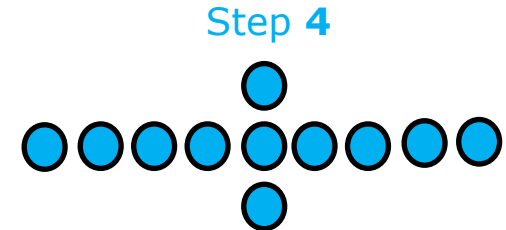
$$3 + 2 + 2$$

$$3 + \mathbf{2}(2)$$



$$3 + 2 + 2 + 2$$

$$3 + \mathbf{3}(2)$$



How is the pattern growing?

What will Step 4 look like?

How many objects are in Step 5? 13

Use words or algebraic symbols to represent the number of objects in ANY step (a rule for Step n).

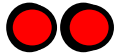
$$3 + n(2) = 2n + 3$$

How many circles are in Step 100? $2(100) + 3 = 203$

Which Step # has 43 circles? $43 = 2(20) + 3 \rightarrow$ step 20

PICTURE TALK B

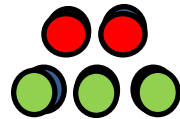
Step 1



$$2$$

$$2 + 0(3)$$

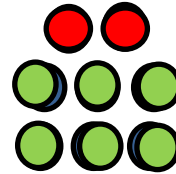
Step 2



$$2 + 3$$

$$2 + 1(3)$$

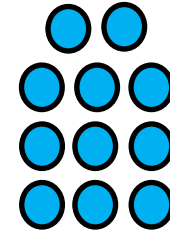
Step 3



$$2 + 3 + 3$$

$$2 + 2(3)$$

Step 4



How is the pattern growing?

Start with 2 and add 3 at each step

What will Step 4 look like?

How many objects are in Step 5? 14

Use words or algebraic symbols to represent the number of objects in ANY step (a rule for Step n).

$$2 + (n - 1)(3) = 3n - 1$$

How many circles are in Step 100? $3(100) - 1 = 299$

Which Step # has 89 circles? $89 = 3(30) - 1 \rightarrow$ step 30

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