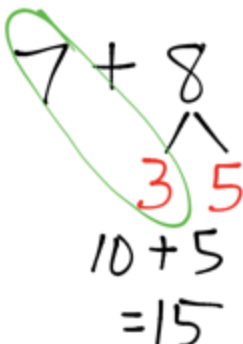
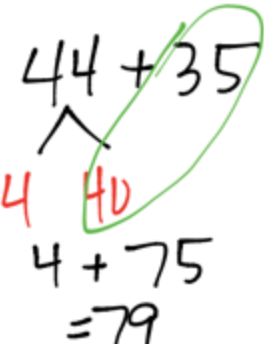
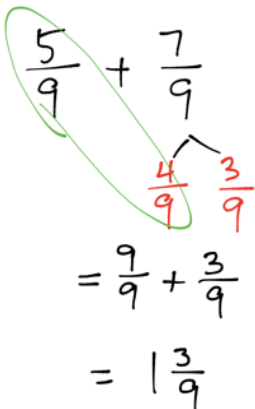
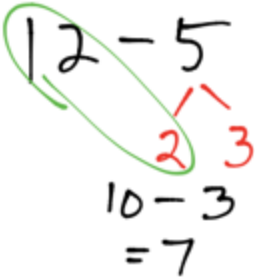
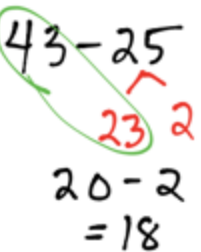
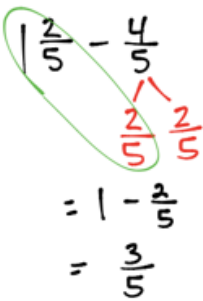
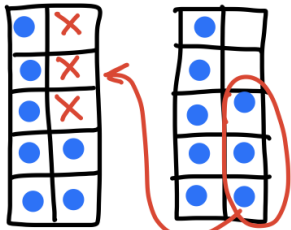
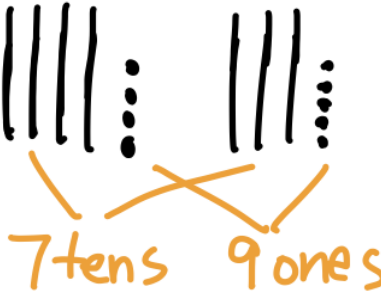
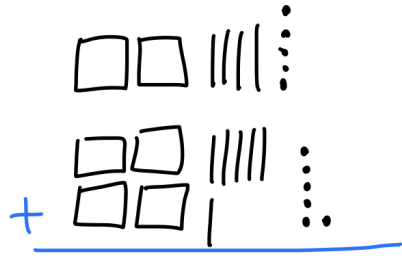
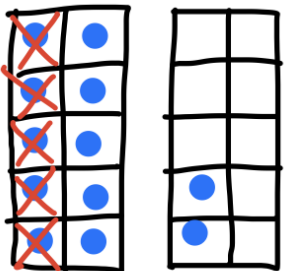
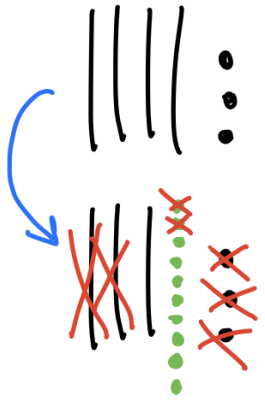
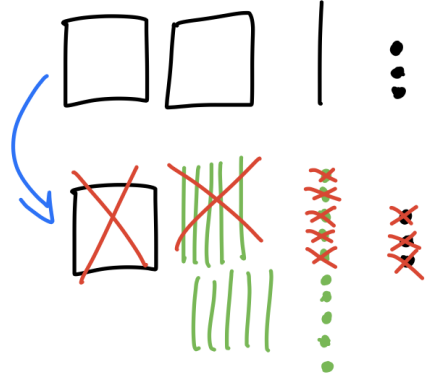


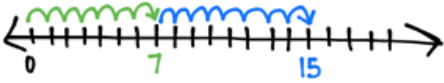
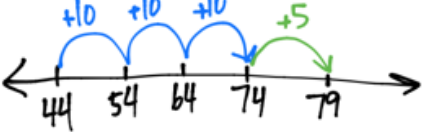
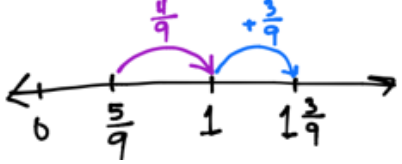
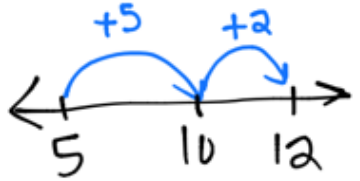
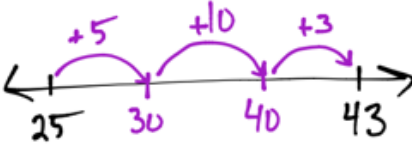
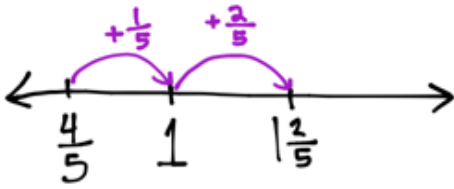
Making Math More Meaningful with Models (MMMMM)

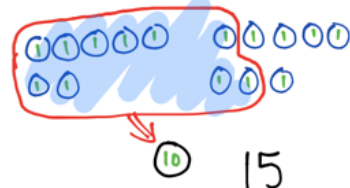
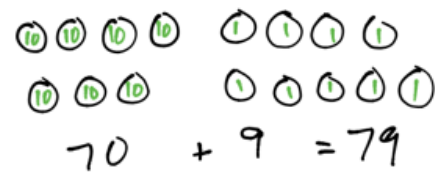
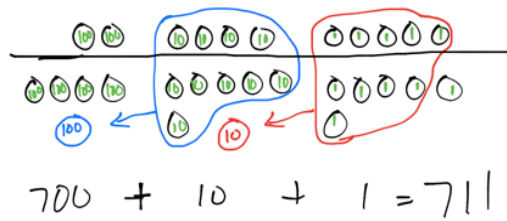
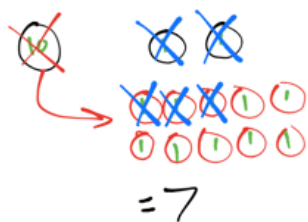
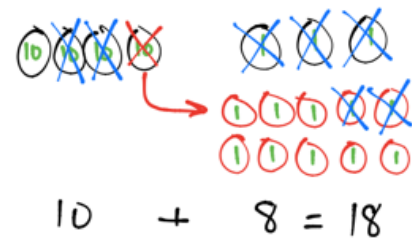
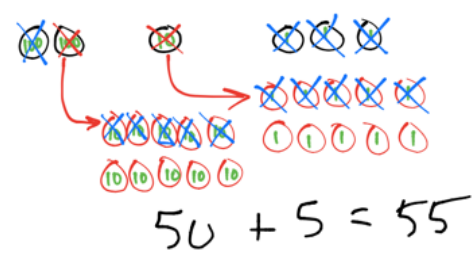
<http://bit.ly/MMMMMDuane>

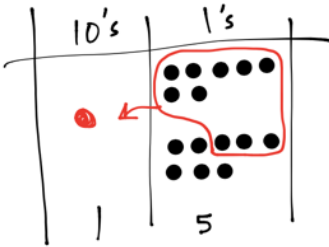
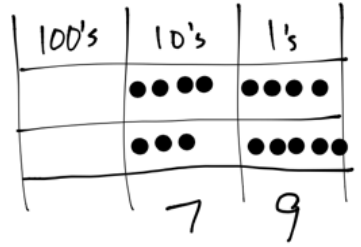
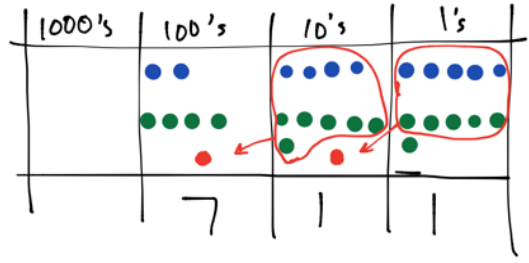
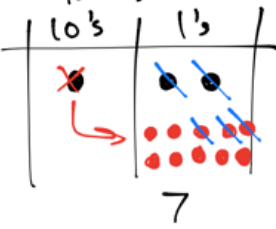
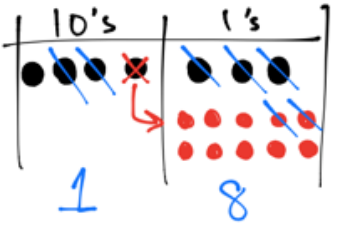
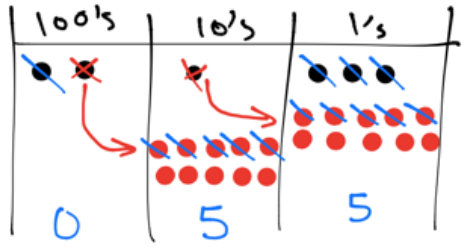
Too often we push our students directly to abstract algorithms without first giving students the prerequisite experience with models such as empty number lines, number bonds, arrow method, area model, etc. Perfect for addressing Common Core math standards.

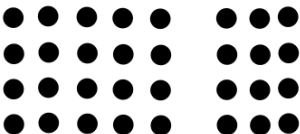
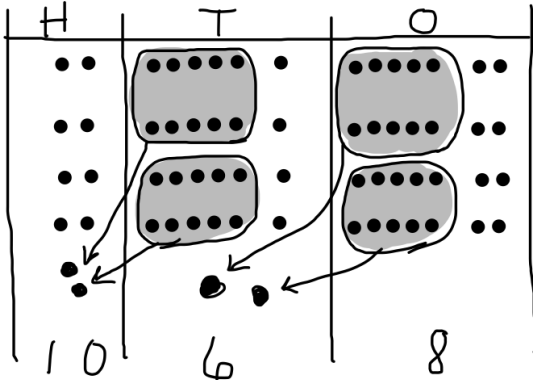
Number Bonds	K/1	2/3	4/5
Addition 	$7 + 8$ 	$44 + 35$ 	$5/9 + 7/9$ 
Subtraction 	$12 - 5$ 	$43 - 25$ 	$1 \frac{2}{5} - \frac{4}{5}$ 

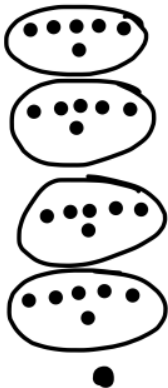
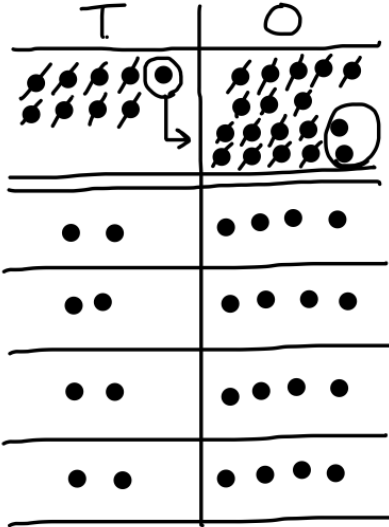
Base Ten Blocks	K/1	2/3	4/5
Addition 	7 + 8  7 + 8 10 + 5 = 15	44 + 35  7 tens 9 ones	245 + 466  6 hundreds 10 tens 11 ones 7 hundreds 1 tens 1 ones
Subtraction 	12 - 5  12 - 5 = 7	43 - 25  43 - 25 = 18	213 - 158  253 - 158 = 55

Number Line	K/1	2/3	4/5
<u>Addition</u> 	$7 + 8$ $7 + 8$ 	$44 + 35$ $44 + 35$ 	$5/9 + 7/9$ $\frac{5}{9} + \frac{7}{9}$ 
<u>Subtraction</u> 	$12 - 5$ $12 - 5 = 7$ 	$43 - 25$ $43 - 25 =$ $25 + \boxed{18} = 43$ 	$1 \frac{2}{5} - \frac{4}{5}$ $1 \frac{2}{5} - \frac{4}{5} = \frac{3}{5}$ 

Place Value Disks	K/1	2/3	4/5
<u>Addition</u> 	$7 + 8$ $7 + 8$ 	$44 + 35$ $44 + 35$ 	$245 + 466$ $245 + 466$ 
<u>Subtraction</u> 	$12 - 5$ $12 - 5$ 	$43 - 25$ $43 - 25$ 	$213 - 158$ $213 - 158$ 

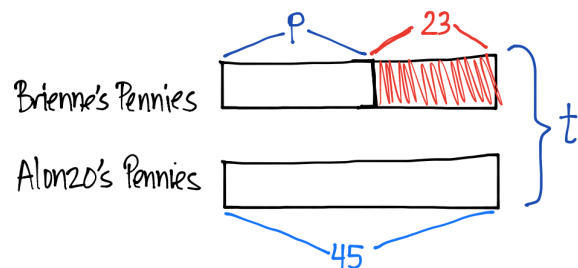
Chip Model with Place Value Chart	K/1	2/3	4/5
Addition 	$7 + 8$ $\overline{7} + \overline{8}$ 	$44 + 35$ $\overline{44} + \overline{35}$ 	$245 + 466$ $\overline{245} + \overline{466}$ 
Subtraction 	$12 - 5$ $\overline{12} - \overline{5}$ 	$43 - 25$ $\overline{43} - \overline{25}$ 	$213 - 158$ $\overline{213} - \overline{158}$ 

Number Disks with Place Value Chart	Grade 3	Grade 4												
Multiplication 	4 groups of 8  $\begin{array}{r} 4 \times 5 + 4 \times 3 \\ 20 + 12 \\ \hline 32 \end{array}$ $4 \times 8 = 32$	4 groups of 267  $\begin{array}{r} 200 + 60 + 7 \\ \times \quad 4 \\ \hline 800 + 240 + 28 \\ \hline 1,068 \end{array}$ $4 \times 267 = 1,068$												
Grade 5	<table><tr><th></th><th>200</th><th>60</th><th>7</th></tr><tr><td>4</td><td>$4 \times 200 = 800$</td><td>$4 \times 60 = 240$</td><td>$4 \times 7 = 28$</td></tr><tr><td>10</td><td>$10 \times 200 = 2000$</td><td>$10 \times 60 = 600$</td><td>$10 \times 7 = 70$</td></tr></table>$2800 + 840 + 98 = 3,738$ $\begin{array}{r} 200 + 60 + 7 \\ \times \quad 10 + 4 \\ \hline 800 + 240 + 28 \\ + 2000 + 600 + 70 \\ \hline 2800 + 840 + 98 \\ \hline 3,738 \end{array}$			200	60	7	4	$4 \times 200 = 800$	$4 \times 60 = 240$	$4 \times 7 = 28$	10	$10 \times 200 = 2000$	$10 \times 60 = 600$	$10 \times 7 = 70$
	200	60	7											
4	$4 \times 200 = 800$	$4 \times 60 = 240$	$4 \times 7 = 28$											
10	$10 \times 200 = 2000$	$10 \times 60 = 600$	$10 \times 7 = 70$											

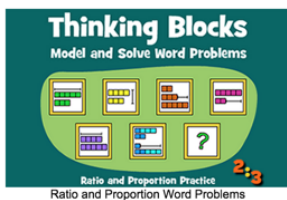
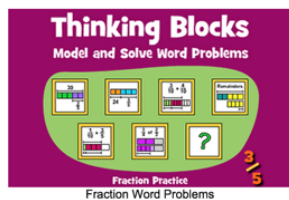
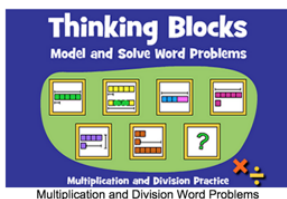
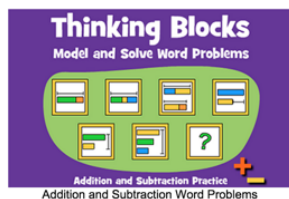
Number Disks with Place Value Chart	Grade 3	Grade 4 and Grade 5
Division 	 $25 \div 4 = 6 R1$	 $\begin{array}{r} 24 R2 \\ 4 \overline{)98} \\ \underline{-8} \\ 18 \\ \underline{-16} \\ 2 \end{array}$

Tape Diagrams (Singapore Bar Model) - Awesome for grades 2 through 8!

Brienne has 23 fewer pennies than Alonzo. Alonzo has 45 pennies. How many pennies do Alonzo and Brienne have altogether?



Videos for how to use tape diagrams to model (and solve) word problems:



<http://www.mathplayground.com/thinkingblocks.html>

Web tools to creating tape diagrams:

- [Addition Problems with Tape Diagrams](#)
- [Multiplication Problems with Tape Diagrams](#)
- [Fraction Problems with Tape Diagrams](#)
- [Ratios and Proportions with Tape Diagrams](#)
- [A generic tool for practicing tape diagrams](#)

[8-Step Method for Solving Word Problems](#)