

# Talbott Springs At Home Learning Family Math Series



## Strategies for Multi-Digit Addition & Subtraction

November 4, 2015

# Mental Math & Fluency Expectations

GRADE	END-OF-YEAR EXPECTATION	EXAMPLES
K	fluently + and – within 5	$4 + 1$ $5 - 2$ $3 + 2$
1	fluently + and – within 10	$7 - 5$ $4 + 3$ $9 - 6$
	mentally $\pm 10$ for a two-digit #	$26 + 10$ $84 - 10$
2	know from memory all sums of two one-digit addends	$6 + 7$ $8 + 3$ $7 + 8$ $2 + 7$ $9 + 5$ $4 + 9$
	mentally $\pm 10$ and $\pm 100$ for any three-digit number	$473 - 10$ $816 + 10$ $352 - 100$ $709 + 100$
3	know from memory all products of one-digit factors	$4 \times 9$ $8 \times 6$ $5 \times 7$ $7 \times 3$ $2 \times 9$ $4 \times 8$

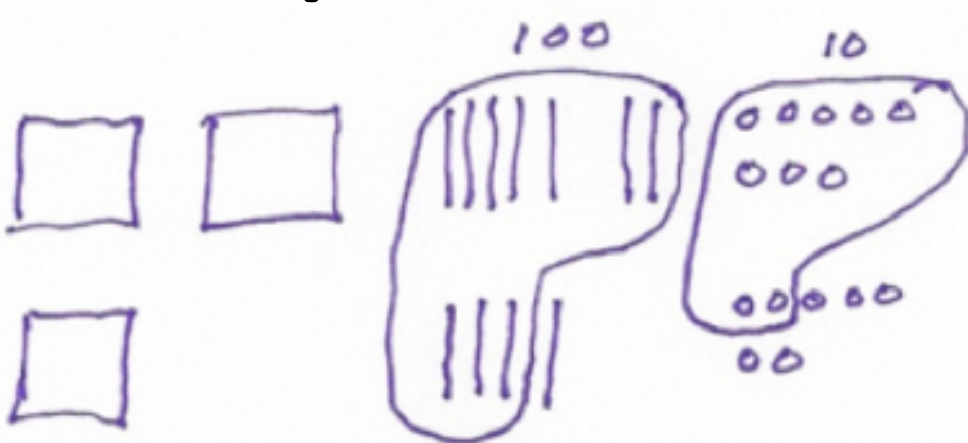
# Computation Expectations by Grade

GRADE	END-OF-YEAR EXPECTATION
K	<ul style="list-style-type: none"><li>• add and subtract within 10</li></ul>
1	<ul style="list-style-type: none"><li>• add and subtract within 20</li><li>• subtract two-digit multiples of 10</li><li>• add within 100</li></ul>
2	<ul style="list-style-type: none"><li>• add and subtract within 1,000</li></ul>
3	<ul style="list-style-type: none"><li>• add and subtract within 1,000</li><li>• multiply two one-digit factors</li><li>• multiply one-digit factors by a multiple of 10</li></ul>
4	<ul style="list-style-type: none"><li>• add and subtract within 1,000,000</li><li>• multiply: 1 by 4 and 2 by 2</li><li>• divide: up 4 by 1</li></ul>
5	<ul style="list-style-type: none"><li>• multiply multi-digit numbers</li><li>• perform all operations on decimals</li><li>• divide: up to 4 by 2</li></ul>

# Formal Algorithm Expectations by Grade

GRADE	END-OF-YEAR EXPECTATION
K	pictorial & concrete models
1	<b>pictorial &amp; concrete models, written methods</b>
2	pictorial & concrete models, <b>written methods</b>
3	pictorial & concrete models, <b>written methods</b>

**pictorial**



**written**

278	278	278	278
+147	+147	+147	+147
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
	300	300	300
		110	110
			15
			<u>          </u>
			425

# Formal Algorithm Expectations by Grade

GRADE	END-OF-YEAR EXPECTATION
K	pictorial & concrete models
1	<b>pictorial &amp; concrete models</b> , written methods
2	pictorial & concrete models, <b>written methods</b>
3	pictorial & concrete models, <b>written methods</b>
4	<ul style="list-style-type: none"><li>• whole number addition &amp; subtraction</li></ul>
5	<ul style="list-style-type: none"><li>• whole number multiplication</li></ul>
6	<ul style="list-style-type: none"><li>• whole number division</li><li>• decimal computation: all operations</li></ul>

# Math, Mindset, and Mistakes

Celebrate mistakes. Try asking every day:

- What's a mistake you made today?
- How did you handle the mistake?
- How did the mistake help you learn?



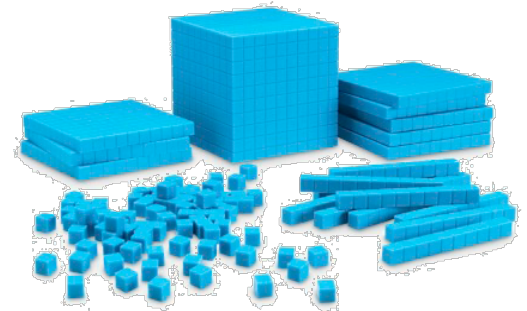
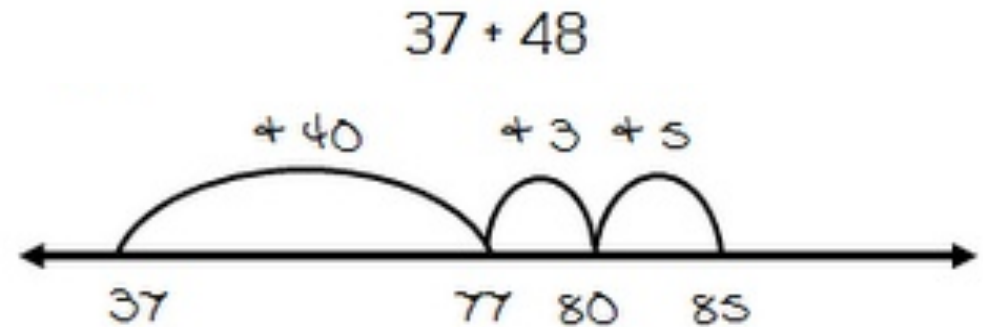
# Building + & - Proficiency

modeling

number lines

concrete &  
visual models

100s chart



hundreds	tens	ones
(100) (100)	(10) (10)	(1) (1)
(100)	(10) (10)	(1) (1)
	(10) (10)	
	(10)	

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

# Building Both Sides of the Brain

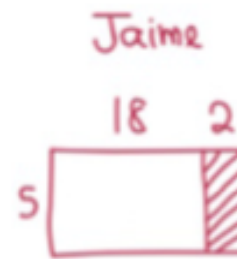
visual and spatial  
information

+

symbolic information



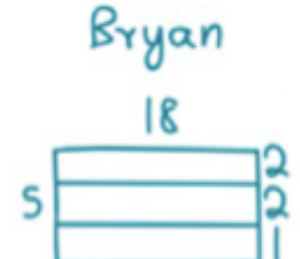
improved  
mathematics  
performance



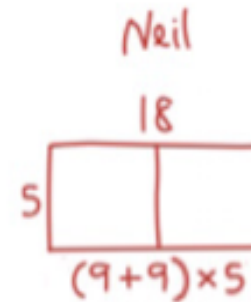
$$\begin{aligned}20 \times 5 &= 100 \\ 2 \times 5 &= 10 \\ 100 - 10 &= 90\end{aligned}$$



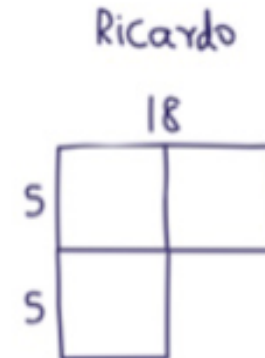
$$\begin{aligned}15 \times 5 &= 75 \\ 3 \times 5 &= 15 \\ 75 + 15 &= 90\end{aligned}$$



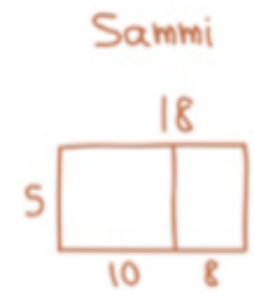
$$\begin{aligned}(18 \times 2) + (18 \times 2) + 18 \\ 36 + 36 + 18 &= 90\end{aligned}$$



$$(9 + 9) \times 5$$
$$45 + 45 = 90$$



$$18 \times 5 = 9 \times 10$$



$$(10 \times 5) + (8 \times 5)$$
$$50 + 40 = 90$$



# Building + & – Proficiency

modeling

number lines

concrete &  
visual models

100s chart

decomposition

$$8 \rightarrow 5 \ \& \ 3$$

$$10 \rightarrow 5 \ \& \ 5$$

$$14 \rightarrow 10 \ \& \ 4$$

$$27 \rightarrow 20 \ \& \ 7$$

$$48 \rightarrow 4 \text{ tens} \ \& \ 8 \text{ ones}$$

$$48 \rightarrow 3 \text{ tens} \ \& \ 18 \text{ ones}$$

# Building + & – Proficiency

modeling

number lines

concrete &

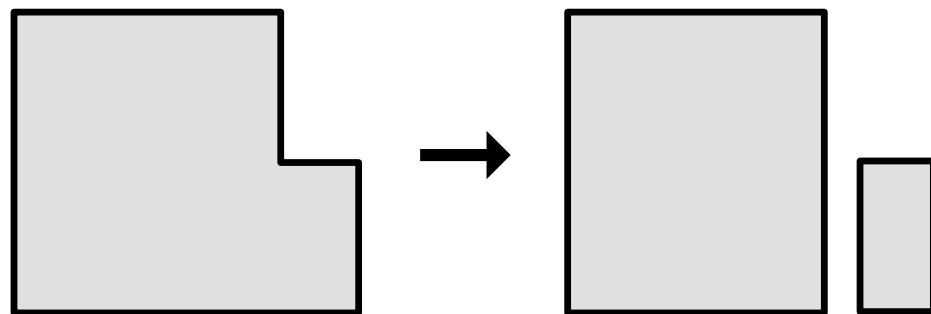
visual models

100s chart

decomposition

$$\frac{3}{4} \rightarrow \frac{1}{4} \& \frac{1}{4} \& \frac{1}{4}$$

$$4.96 \rightarrow 4 \& 0.96$$



# Taking a Closer Look

The screenshot shows the LearnZillion website interface. At the top, there is a search bar with the text "Search or enter LZ Code..." and a user profile for "Dennis McDonald". Below the search bar is a navigation menu with links for "Math", "ELA", "Common Core Navigator", "Assignments", "My classes", and "Mobile app". The main content area is titled "LESSON PLAN" and features the lesson title "8. Decomposing to add on a number line (FP)" with an "Assign" button. Below the title, it says "Created by: Joe Ratasky" and "Standards: 3.NBT.A.2". There are three tabs: "Lesson plan" (selected), "Additional materials", and "About this lesson". The lesson content is labeled "Card 1 of 6" and includes a "Begin lesson" button. The main visual is a cartoon illustration of two children, a boy and a girl, standing in front of a large number line. The number line has the numbers 376 and 249. A blue button with the text "Begin lesson >" is overlaid on the illustration. To the right of the illustration is a "Teaching notes" section with a "Print all" button and a paragraph of text: "Click the 'Begin lesson' button to view this lesson plan. Teaching notes for each slide will appear in this box." At the bottom of the lesson content, there are "Previous" and "Next" navigation buttons.

Compatible with:



computers

tablets



phones



# Taking a Closer Look

URL: **learnzillion.com**



LearnZillion

Search or enter LZ Code...



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Log into your account

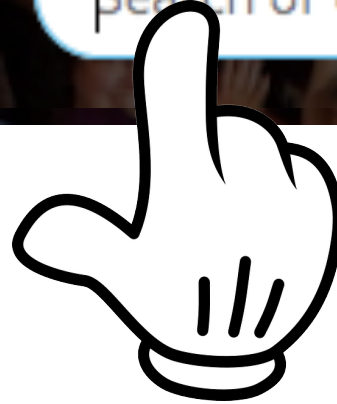
Does your district have an account? [Log in here](#) »

# Taking a Closer Look



LearnZillion

Search or enter LZ Code...



35 + 58 = **2<sup>nd</sup> grade**

**7B8RE9D**

100s chart

**2<sup>nd</sup> grade**

Decompose the smaller number to help you find the difference.

**BN34MF5**

decomposing

How can Clea and Helen decompose their number to find their sum? **3<sup>rd</sup> grade**

376 + 24 = ?

**UZ68RN8**

decomposing

# Building on Talents & Strengths

- Which of these talents do you most see in your child?
- How do you help your child showcase his or her talents and build them into strengths?
- How can building these strengths in non-academic areas help them academically?

ACHIEVING

Students especially talented in this theme like to achieve and have a great deal of energy.

CRINGING

Students especially talented in this theme enjoy helping others.

COMPETING

Students especially talented in this theme enjoy measuring their performance against that of others and

CONFIDENCE

Students especially talented in this theme believe in themselves and their ability to be successful in everything they do.

DISCOVERER

Students especially talented in this theme keep the promises and responsibilities of

Students especially talented in this theme tend to be very curious and like to ask "why?" and "how?"

FUTURIST

Students especially talented in this theme tend to think about what's possible

ORGANIZER

Students especially talented in this theme are good at scheduling, planning, and organizing.

PRESENCE

Students especially talented in this theme like to tell stories and be at the center of attention.

RELATING

Students especially talented in this theme are good at establishing meaningful friendships and maintaining them



# Talbott Springs At Home Learning Family Math Series



11/18

**Night 4: Strategies for Multi-Digit Multiplication & Division**