

# That's Not How I Learned It!

## Addition & Subtraction

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Deep Run Elementary

# Outcomes

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By the end of the sessions, participants will have:

- Viewed and discussed the Progression of Addition and Subtraction
- Explored various strategies for multi-digit addition and subtraction
- Received Write & Wipe Board w/ 120 chart & open number lines for home use
- Received Visualize Math Board for home use

# Mental Math and Fluency Expectations

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GRADE	END-OF-YEAR EXPECTATION	EXAMPLES
K	fluently + and – within 5	$4 + 1$ $5 - 2$ $3 + 2$
1	fluently + and – within 10	$7 - 5$ $4 + 3$ $9 - 6$
	$\pm 10$ for any two-digit number	$26 + 10$ $84 - 10$
2	know from memory all sums of two one-digit addends	$6 + 7$ $8 + 3$ $7 + 8$ $2 + 7$ $9 + 5$ $4 + 9$
	$\pm 10$ 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

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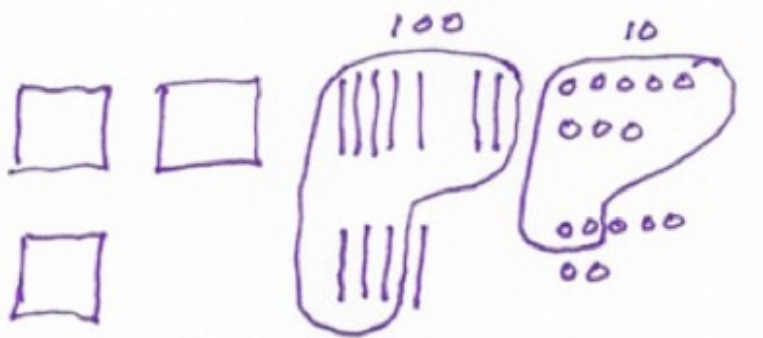
GRADE	END-OF-YEAR EXPECTATION
K	<ul style="list-style-type: none"><li>• add and subtract within 10</li></ul>
1	<ul style="list-style-type: none"><li>• add and subtract within 20</li><li>• add within 100</li><li>• subtract two-digit multiples of 10</li></ul>
2	<ul style="list-style-type: none"><li>• add 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>• divide: up to 4 by 2</li><li>• perform all operations on decimals</li></ul>

# Formal Algorithm Expectations by Grade

GRADE	END-OF-YEAR EXPECTATION
K	
1	
2	
3	

# Formal Algorithm Expectations by Grade

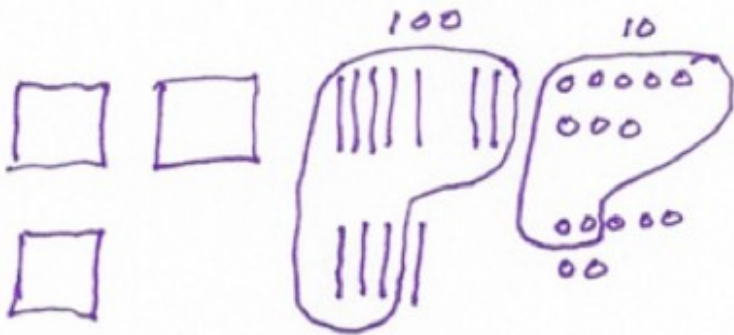
GRADE	END-OF-YEAR EXPECTATION
K	pictorial & concrete models



pictorial

# Formal Algorithm Expectations by Grade

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



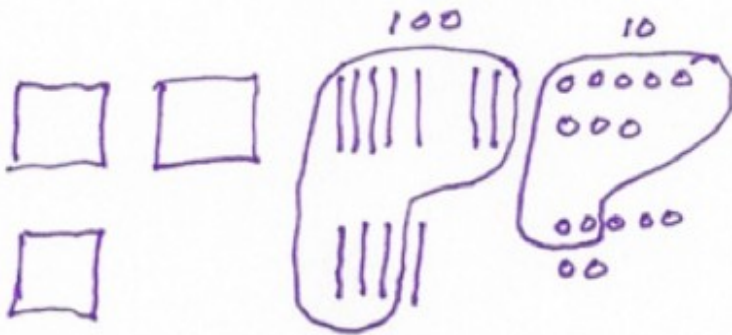
pictorial model

$$\begin{array}{r} 278 \\ +147 \\ \hline 300 \end{array} \quad \begin{array}{r} 278 \\ +147 \\ \hline 300 \\ 110 \end{array} \quad \begin{array}{r} 278 \\ +147 \\ \hline 300 \\ 110 \\ 15 \\ \hline 425 \end{array}$$

written method

# Formal Algorithm Expectations by Grade

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1	<b>pictorial &amp; concrete models</b> ; written methods
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pictorial model

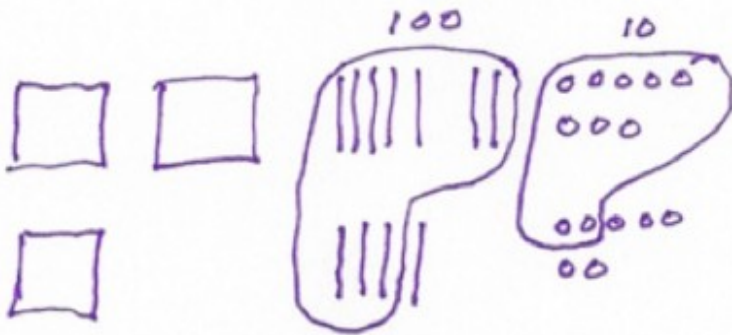
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pictorial model

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# Formal Algorithm Expectations by Grade

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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	whole number addition & subtraction (algorithm)
5	whole number multiplication (algorithm)
6	whole number division decimal computation: all operations

# The Progression of Addition and Subtraction Grades 1-4

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## **Making Sense Series**

the progression of addition AND subtraction  
the standard traditional algorithm

created by Graham Fletcher



@gfletchy

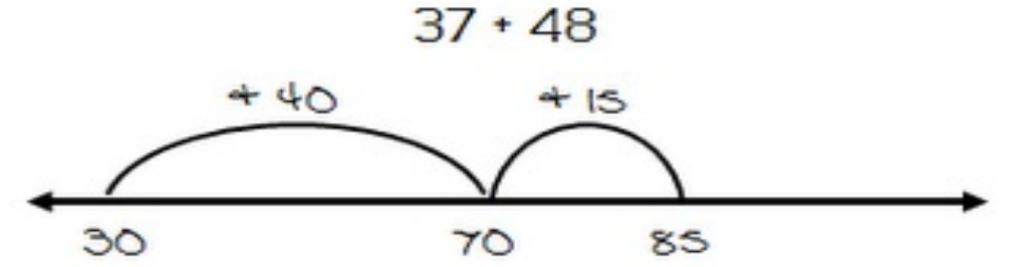
[www.gfletchy.com](http://www.gfletchy.com)

# Building Proficiency

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## Modeling

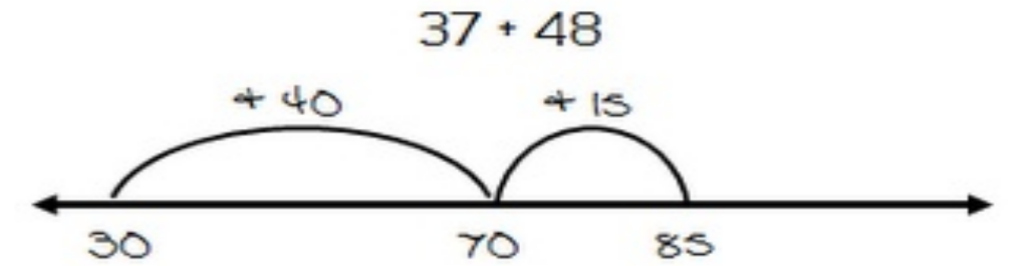
Number Line



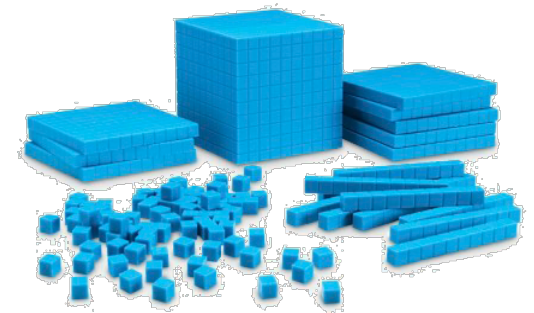
# Building Proficiency

## Modeling

Number Line



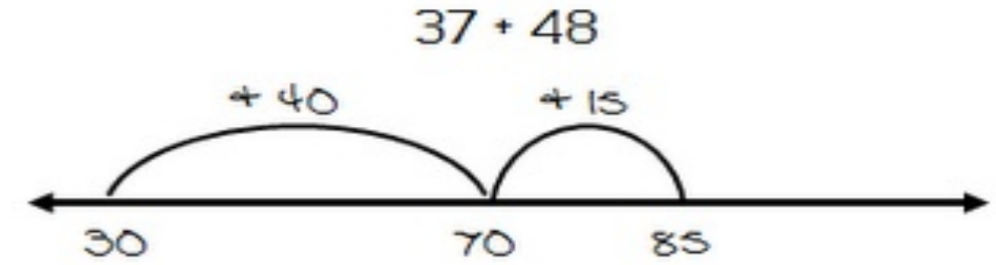
Concrete & Visual Models



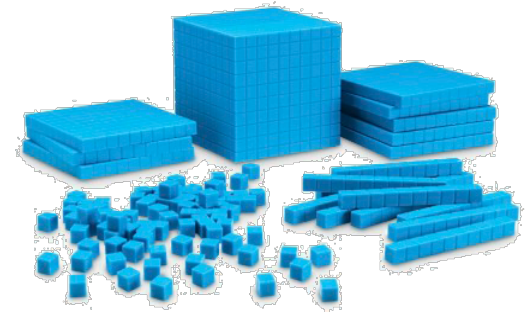
# Building Proficiency

## Modeling

Number Line



Concrete & Visual Models



Drawing Representations

100s Chart

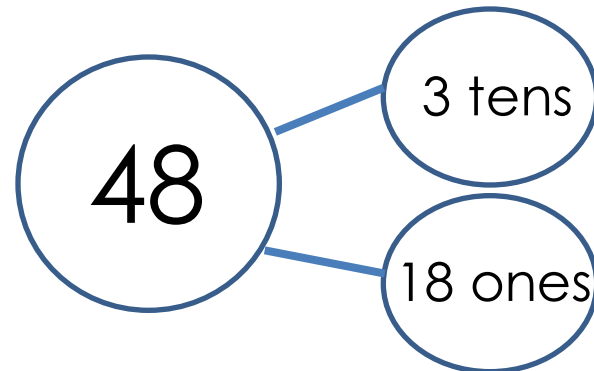
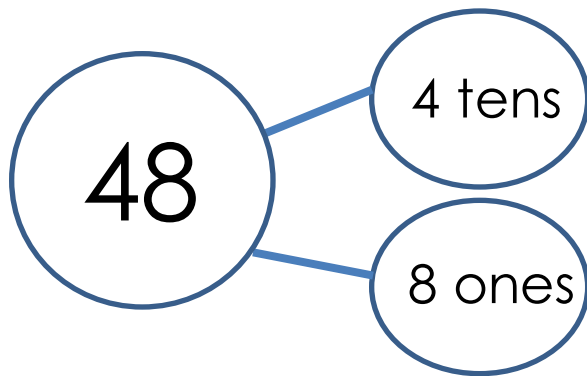
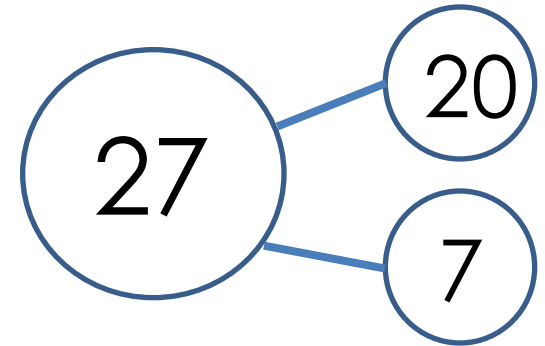
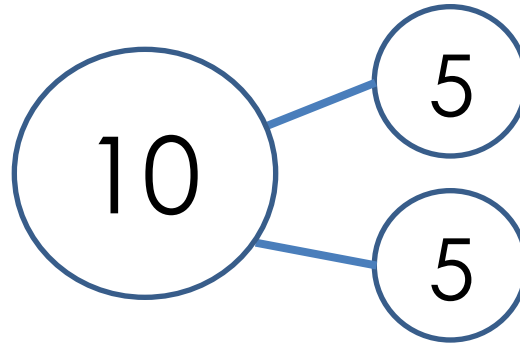
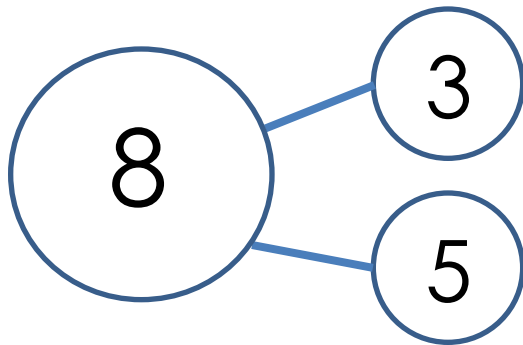
hundreds	tens	ones
(100) (100)	(10) (10)	(1) (1)
(100)	(10) (10)	(1) (1)
	(10) (10)	
	(10)	

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 Proficiency

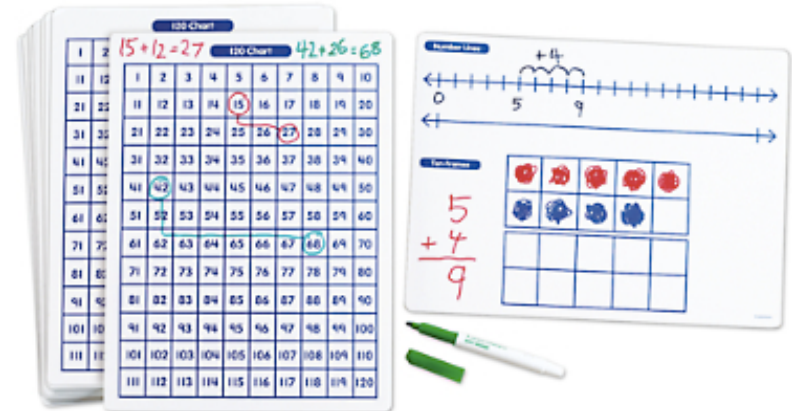
## decomposition

Number Bonds

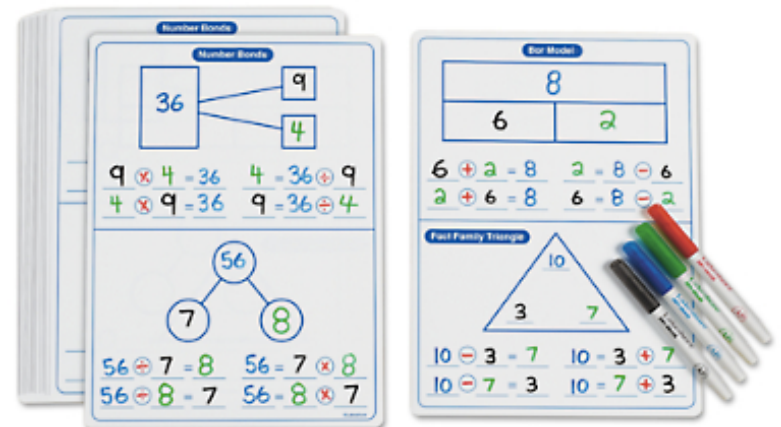


# Helpful Tools

- Base 10 Blocks
- 100s Chart
- Open Number Line
- Bar/Tape Diagram
- Number Bonds



Each board has a 120 chart, ten-frames and number lines!





# Subtraction

$83 - 29$

need 6 more

Separate!

Place of 20

$83 = 80 + 3$

$-29 = 20 + 9$

$50 + 4$

Place Value

$423 - 185$

$$83 - 29 = ?$$

- concrete models
- partial sums

# Goal is Flexible, Efficient Strategies

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## Same-Change/Making Friendly Numbers

$$83 - 27 = ? \quad (\text{Add } 3)$$

$$86 - 30 = 56$$

\*No regrouping necessary now

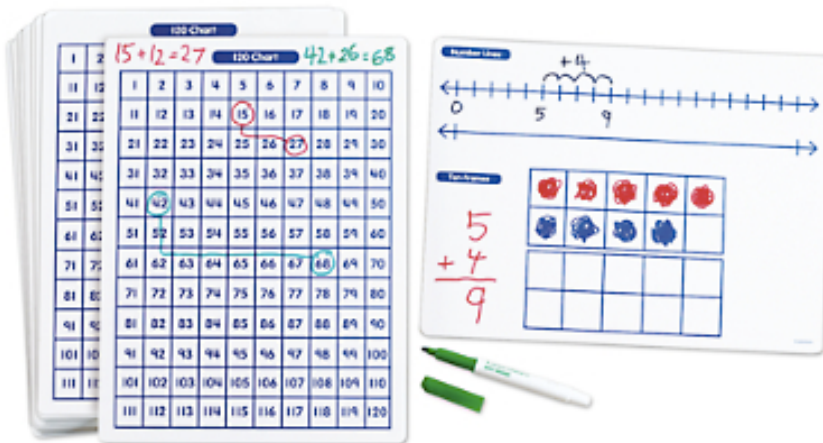
$$500 - 257 = ? \quad (\text{subtract } 1)$$

$$499$$

\*No regrouping necessary now

$$\begin{array}{r} 499 \\ - 256 \\ \hline 243 \end{array}$$

# 72 - 38



*Each board has a 120 chart,  
ten-frames and number lines!*

- Using 100s chart.
- Counting up or counting back on open number line
- Concrete model
- tape diagram

# Working Together to Build Mathematical Thinkers

## **The school's role...**

- offer rich, purposeful mathematical experiences
- provide number strategy instruction & practice

## **The families' role...**

- ask your child to show you what he or she has learned
- look for ways to apply the learning in real-life situations

## **Our shared role...**

- highlight and build on the students' strengths
- celebrate questions, mistakes, growth, effort, and struggle

# Additional Resources

## GRADE 3 FAMILY AND COMMUNITY RESOURCES OVERVIEW

RELATED ARTS   MATHEMATICS   LANGUAGE ARTS   SCIENCE   SOCIAL STUDIES   HEALTH

The Howard County Public Schools (HCPSS) is nationally recognized for its rigorous learning. Our rigorous curriculum is based on classroom experience and is designed to provide students a thorough grounding in essential knowledge and skills that will give them a leading edge in tomorrow's global environment. Our curriculum challenges students to think strategically, solve problems, innovate, collaborate, communicate effectively, and achieve goals.

Overview

What Your Child Will Learn

How to Support Your Child

Additional Resources



The HCPSS curriculum is aligned to the Common Core State Standards. These standards for literacy and mathematics education resulted from a state-led effort coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO). The Standards were developed in collaboration with teachers, school administrators, and experts, to provide a clear and consistent framework to prepare our children for college and the workforce. [Additional information about the Common Core State Standards](#) .

**HCPSS Curriculum is:**

- 1. Deep:** Mastery of essential skills is emphasized at each level, so students build the skills and confidence to tackle more advanced concepts.
- 2. Broad:** Instruction crosses content areas – for example, science and social studies curriculum incorporates reading, math, and writing skills
- 3. Relevant:** Classroom lessons are reinforced through hands-on activities and real-world experiences.