

Math Curriculum  
Conversations  
K – 2<sup>nd</sup> Grades

February, 2014

# Process Standards

Standards of Mathematical Practice

# Content Standards

Domains:

Counting and Cardinality

Operations and Algebraic Thinking

Numbers and Operations in Base Ten

Numbers and Operations in Fractions

Measurement and Data

Geometry

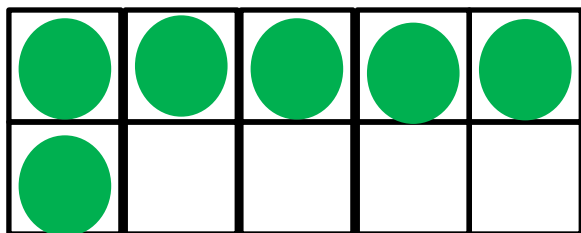
## Standards of Mathematical Practice:

- I can solve problems **without giving up**.
- I can **think** about numbers in many ways.
- I can **explain** my thinking and try to understand others.
- I can show my work in **many ways**.
- I can use math **tools** and explain why I used them.
- I can work **carefully** and check my work.
- I can use what I know to solve **new problems**.
- I can solve problems by looking for **rules and patterns**.

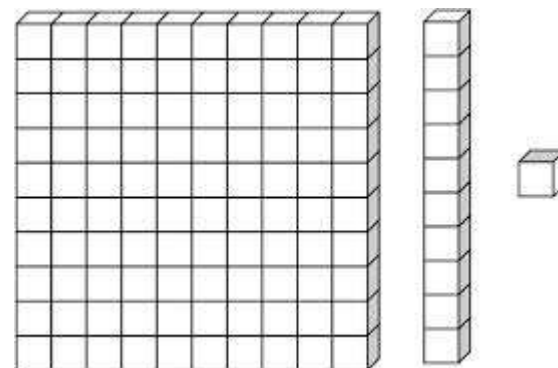
## Number Sense:

- A concrete understanding of quantities.
- An understanding of quantity and numbers.
- Ability to compare quantities.
- Flexibility, automaticity, and fluidity with numbers.
- Ability to perform mental math.
- Flexibility with problem solving.
- Automatic use of math information.
- Ability to determine reasonableness of an answer.
- Ability to decide on a strategy based on the numbers in the problem.

Ten Frames:



Base 10 blocks:



99 chart:

0	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

120 chart:

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
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

## Types of addition and subtraction problems:

**Result Unknown:**

I have 8 apples and 3 bananas. How many pieces of fruit do I have in all?

$$8 + 3 = ?$$

**Change Unknown:**

I have 8 apples and some bananas. I have 11 pieces of fruit in all. How many bananas do I have?

$$8 + ? = 11$$

**Start Unknown:**

There are some apples in a bowl. Then I get 3 bananas. I now have 11 pieces of fruit. How many apples did I begin with?

$$? + 3 = 11$$

[Illustrative Mathematics website](#)

[Math Coach's Corner](#)

[Academic Skill Builders](#)

[Youtube Learnzillion fractions on a number line](#)

[K-5 Math Teaching Resources](#)

[Math Solutions by Marilyn Burns](#)

Fluency:

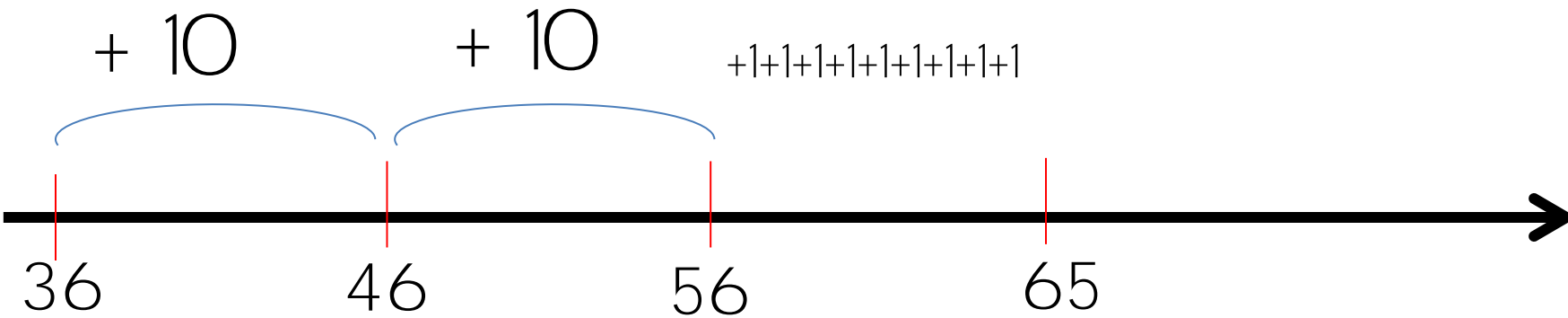
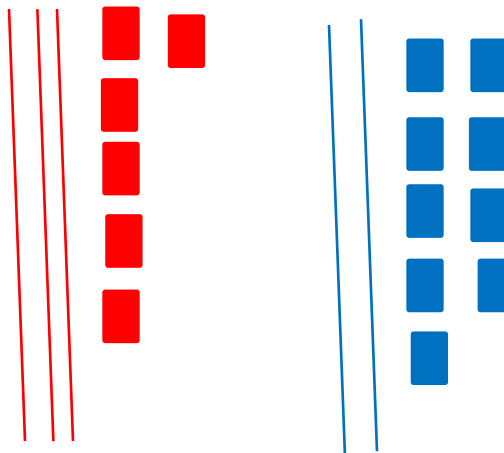
- Accurate – correct answer.
- Efficient – a reasonable amount of steps in about 3 seconds.
- Flexible – using multiple strategies.

Fluency is developed by understanding and internalizing the relationships that exists between numbers as opposed to memorizing facts.



$36 + 29 = ?$

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
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## Focus on the Operations

- Commutative property
  - If  $6 + 4 = 10$ , then  $4 + 6 = 10$  – the order of the numbers does not matter.
- Associative property
  - If  $2 + 6 + 4 = 12$ ,  $2 + 10 = 12$  – the sum of the addends stays the same regardless of the grouping of the addends.
- Distributive property
  - .
- Zero property
- Addition and subtraction are inverse operations (fact families)

# 2 Digit Addition Strategies

## Adding by Place Value

**Add the tens**  $34 + 21 =$  **Add the ones**

$$30 + 20 = 50 \quad 4 + 1 = 5$$
$$50 + 5 = 55$$

## Incremental Addition

$$34 + 21 =$$
$$34 + 10 + 10 + 1 = 55$$

44    54    55

## Compensation Addition

Make a friendly number  
10, 20, 30, 40, 50,  
60, 70, 80, 90, 100...

$$34 + 21 =$$
$$(34 + 1) \quad (21 - 1)$$
$$35 + 20 = 55$$

# Think you don't need Math?

If you want to be a(n)...



\*Accountant \*Actuary \*Agricultural Technician \*Animal Care Technician  
\*Applied and Pure Mathematician \*Architect \*Astronomer \*Audiologist  
\*Baker \*Bank Teller \*Biologist \*Bookkeeper \*Bricklayer or Stone Mason  
\*Building and Construction Inspector \*Carpenter \*Cartographer or Map  
Maker \*Cashier \*Chef \*Chemist \*College Math Professor \*Commercial  
Driver \*Computer Programmer \*Computer Systems Analyst \*Computer  
Technologist \*Cost Estimator \*Data Processor \*Dental Hygienist  
\*Dentist \*Doctor \*Draftsman \*Economist \*Electrician \*Electronic  
Technician \*Elementary Teacher \*Engineer \*Forester or Conservation  
Specialist \*Geographer \*Geologist \*Graphic Artist \*Hair Stylist \*Health  
Record Administrator \*High School Teacher \*Insurance Claims or Policy  
Processing Clerk \*Interior Designer \*Jeweler \*Landscape Architect  
\*Lawyer \*Librarian \*Loan and Credit Checker \*Loan or Insurance  
Underwriter \*Machinist \*Mail Carrier \*Math Teacher \*Mechanic  
\*Medical Equipment Maintenance Technician \*Meteorologist \*Middle  
School Teacher \*Occupational and Physical Therapist \*Operations  
Research Analyst \*Optometrist \*Order Clerk \*Pharmacist \*Pharmacy  
Assistant \*Physician \*Physicist \*Pilot and Flight Engineer \*Plumber  
\*Professor \*Property Appraiser \*Psychologist \*Public Health Nurse  
\*Realtor \*Registered Nurse \*Respiratory Technologist \*Secretary  
\*Sociologist \*Speech Therapist \*Sportscaster \*Statistical Clerk  
\*Statistician \*Stay-at-home Parent \*Stock Broker \*Stock and Inventory  
Clerk \*Surveyor \*Travel Agent \*Tool and Die Maker \*Urban Planner  
\*Veterinarian \*Waitress \*Welder \*X-ray Technician

# Think again!