

Singapore Math at YHALE

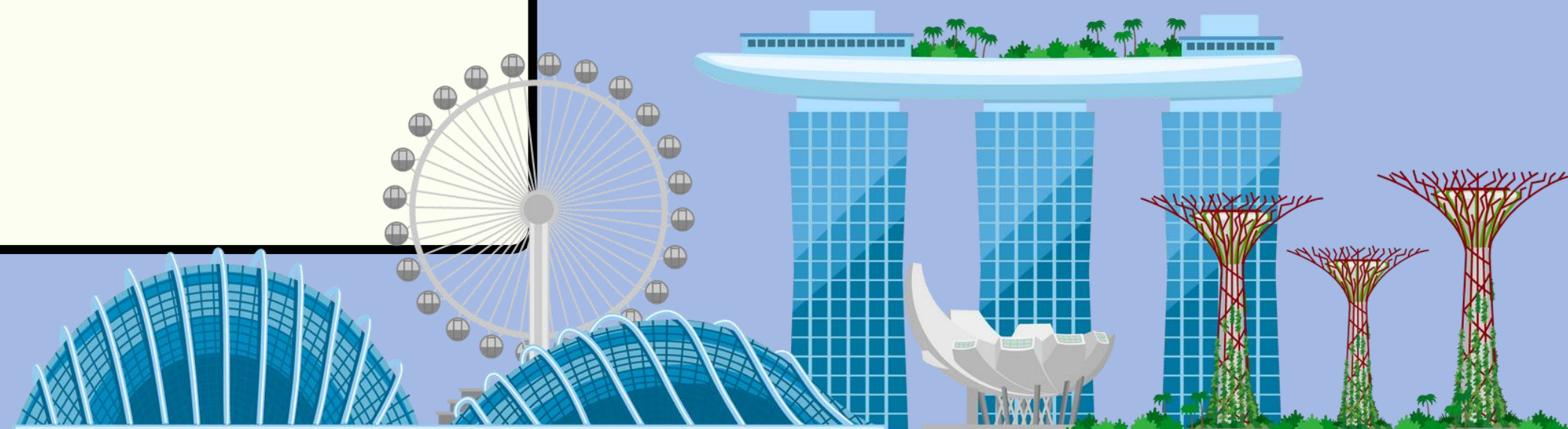
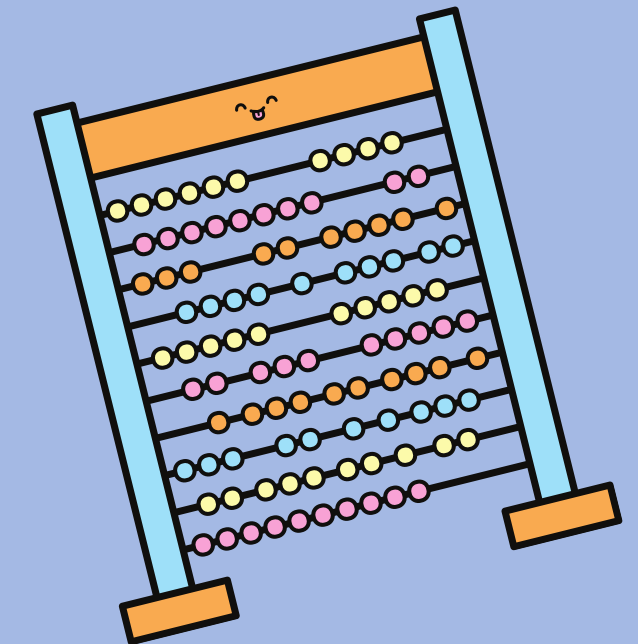
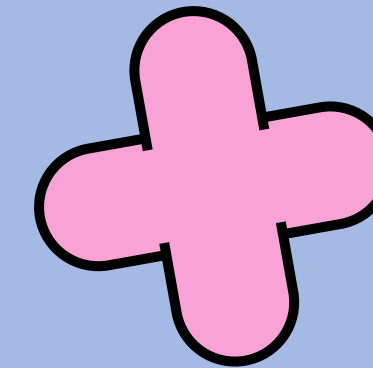
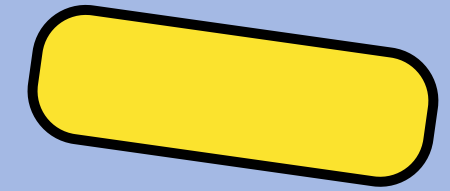
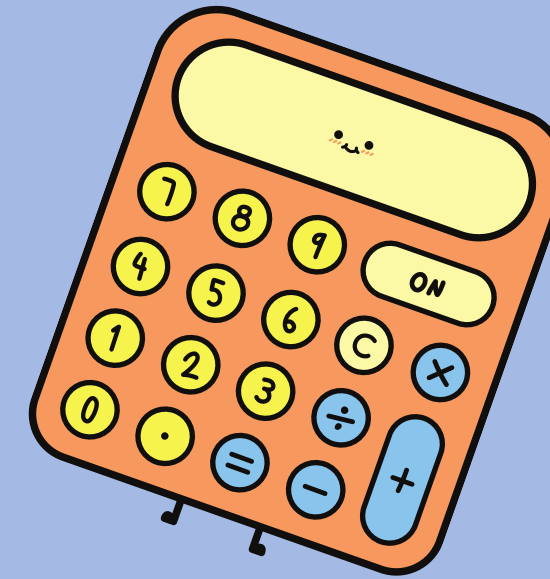


YI HWANG ACADEMY
of LANGUAGE EXCELLENCE

By: Haoran Yang
Math Coordinator

Topics

- Introduction
- What is Singapore Math/ Why did YHALE choose it
- Math Components
 - Using Mental Math, Bonds, and Ten Frames (K-2)
 - Using Mental Math Strategies and Modeling (3-5)
- Curriculum Map & Big Idea for each grade
- Parent Support/Homework/IXL
- Assessment



What is Singapore Math?

Singapore math refers to the teaching method and curriculum used in Singapore, a nation that consistently ranks at the top of international assessments of student achievement in math. It's based on a framework that emphasizes mastery of concepts through dynamic problem solving and communication.



Why Singapore Math

- Singapore math is a powerful method with proven results. It provides both instant improvement and long-term mastery. Singapore math teaches students the how and why of foundational math through the **steady build** of concepts and skills with the goal of preparing them for more advanced topics. The approach is known for its focus on **depth over memorization and drill work**.

- Singapore math is about drawing connections, supporting the thinking process, and instilling comprehensive understanding. It encourages **perseverance** and naturally gives students confidence as they become equipped to solve problems using many different tools.

What is the difference?

Traditional Math



I do



We



You do

Singapore Math



No simple
replication
Pictoria



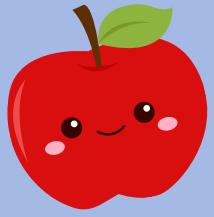
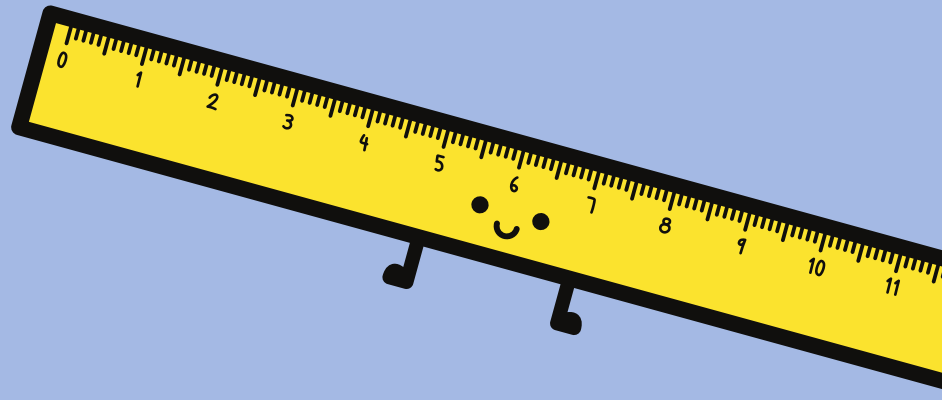
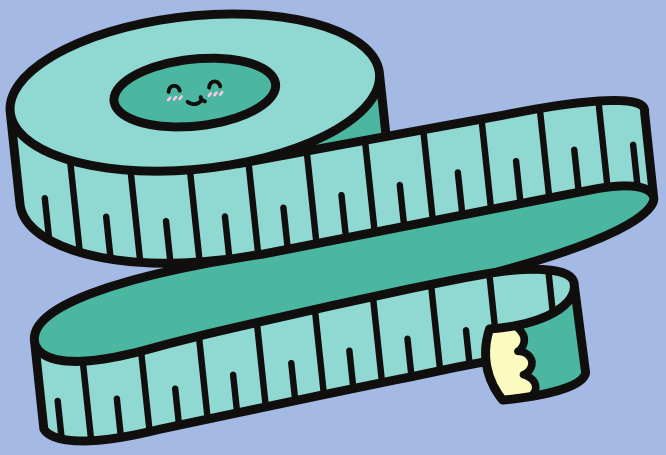
Mental

Math
Word

Problem



Main Components



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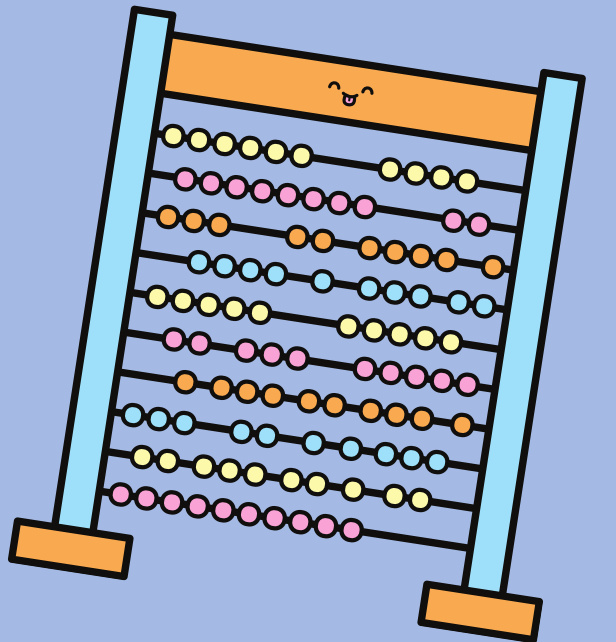
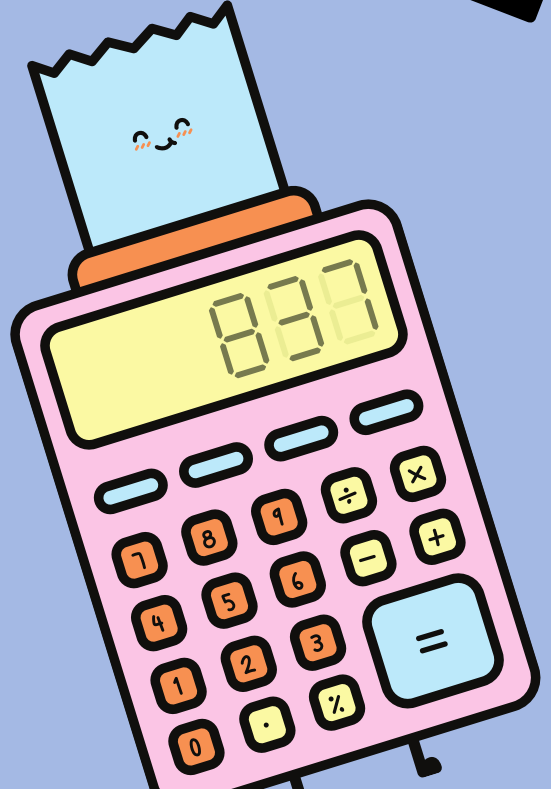
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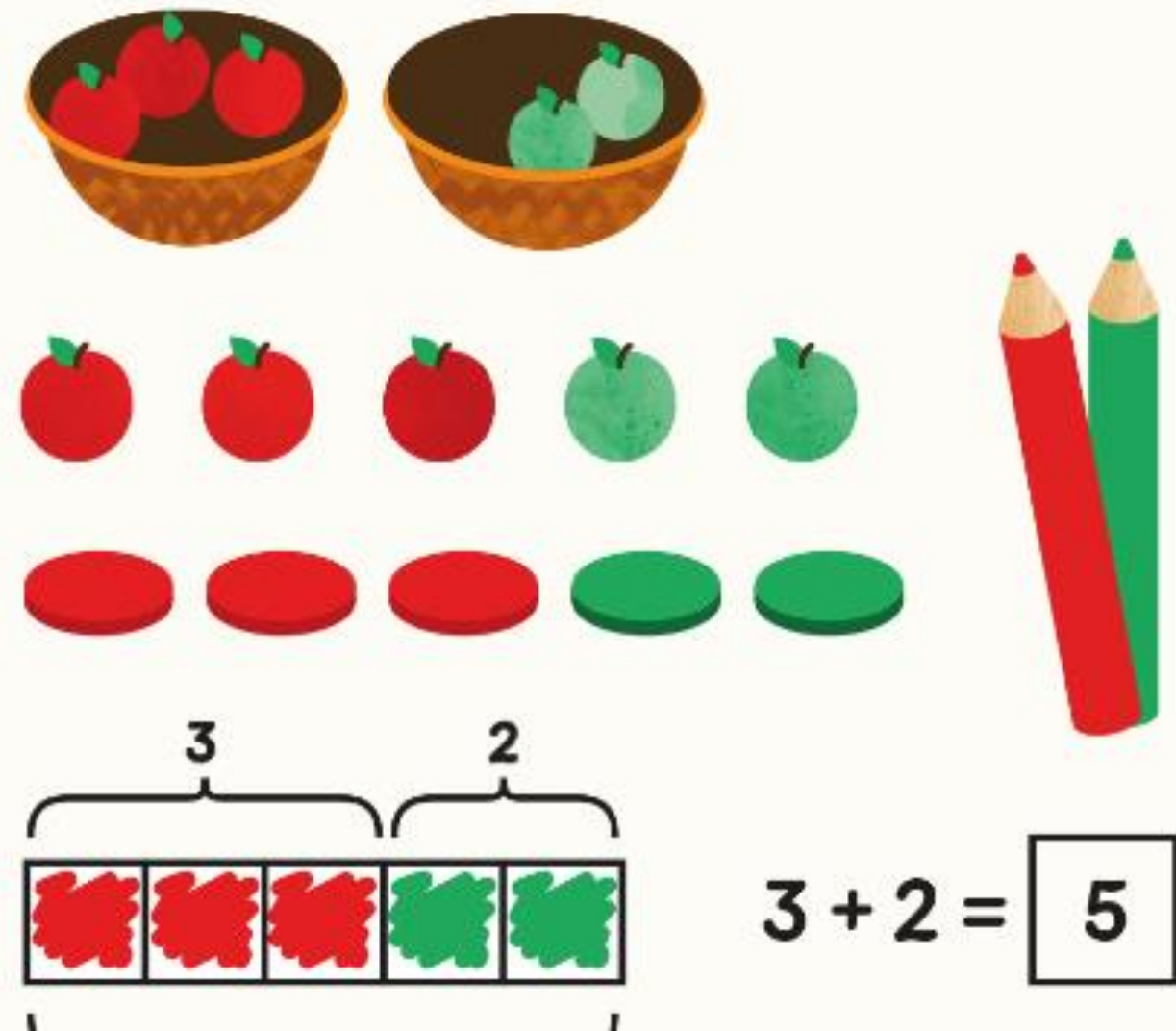


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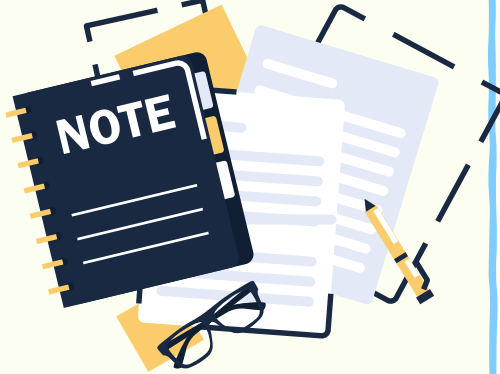

Concrete Pictorial Abstract

- In individual units and/or over multiple grade levels
- Heavy emphasis on concrete and pictorial, so a deeper understanding of abstract can be achieved



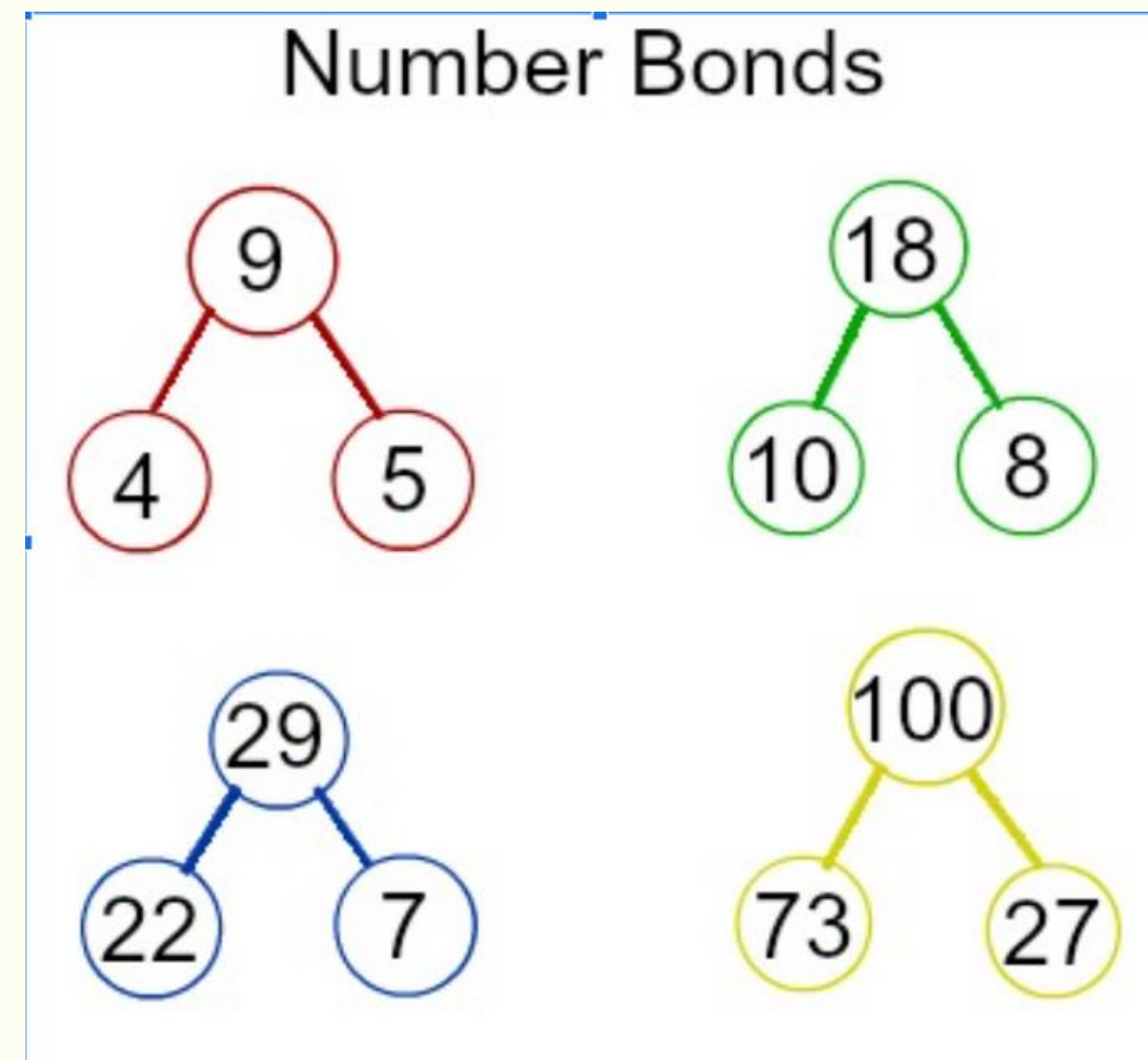
Metacognition

- Metacognition: training students to be able to **articulate their thinking**
 - Strategies include questioning, thinking aloud, and discussing with others
- Checking for reasonableness (number sense)

Think	Learn	Do
		

Number Bonds

- *A number bond is a mental picture of the relationship between a number and the parts that combine to make it. The concept of number bonds is very basic, an important foundation for understanding how numbers work. A whole thing is made up of parts.*
- Show the Part, Part, Whole relationship of numbers & builds number sense and fluency
 - Introduced in 1st grade
 - Used in many concepts throughout curriculum
 - Encourage fluency with common number like multiples of 10, 100, 1000 or 60 (time)



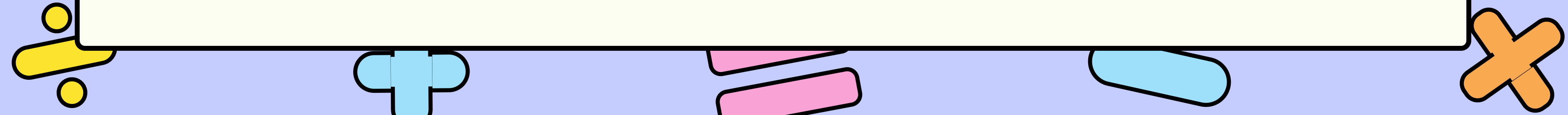


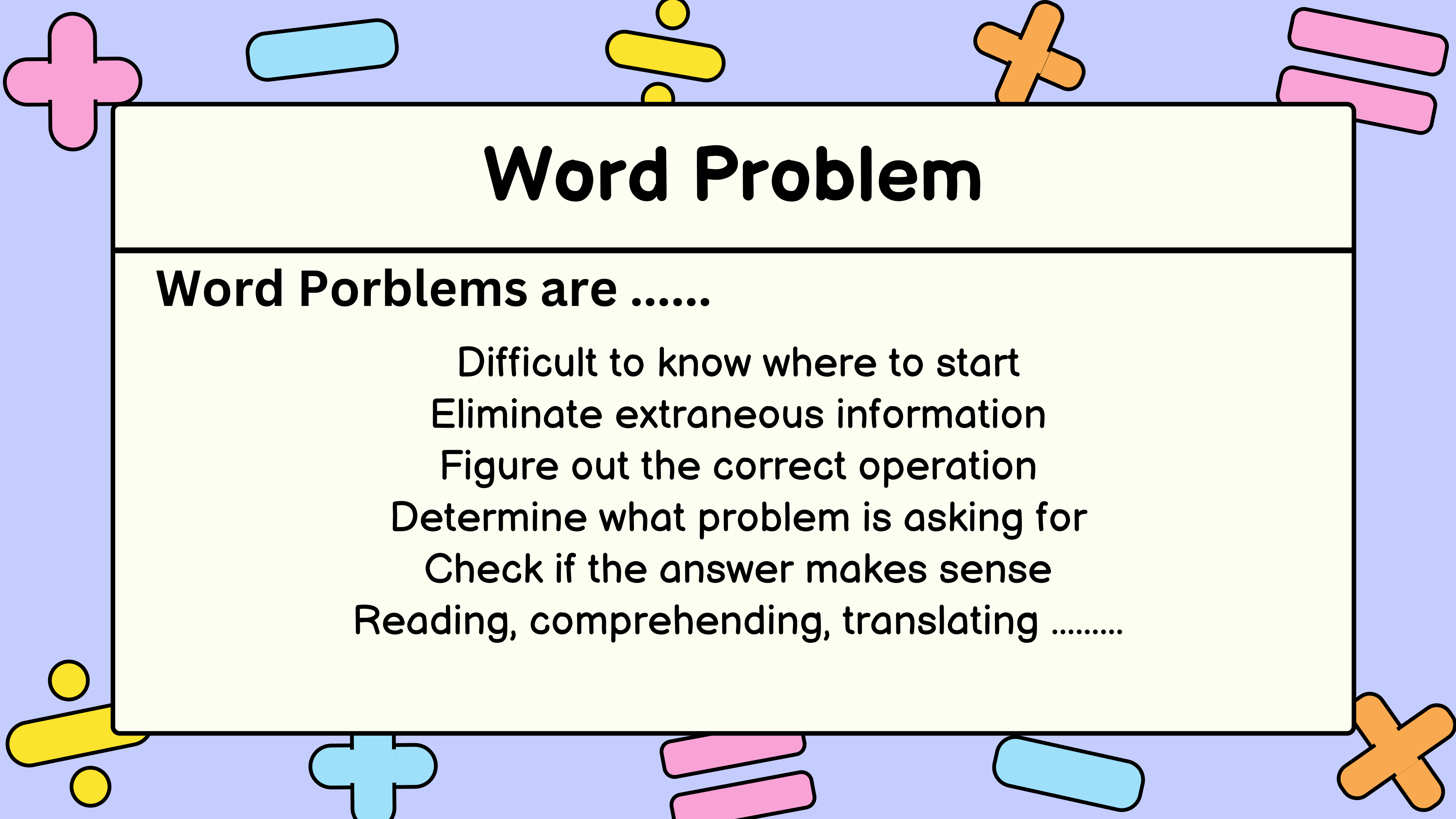
Mental Math

- Life skills
 - Leads to fluency and confidence
- Helps with number sense and deeper conceptual understanding
- Think aloud whenever possible and prompt students to use mental math when an opportunity presents itself.
 - Hard to assess

“Mental math means looking at two numbers and knowing how to manipulate them in order to make an equation easier to solve.”

- Mental Math Addition Strategies by Shelley Gray





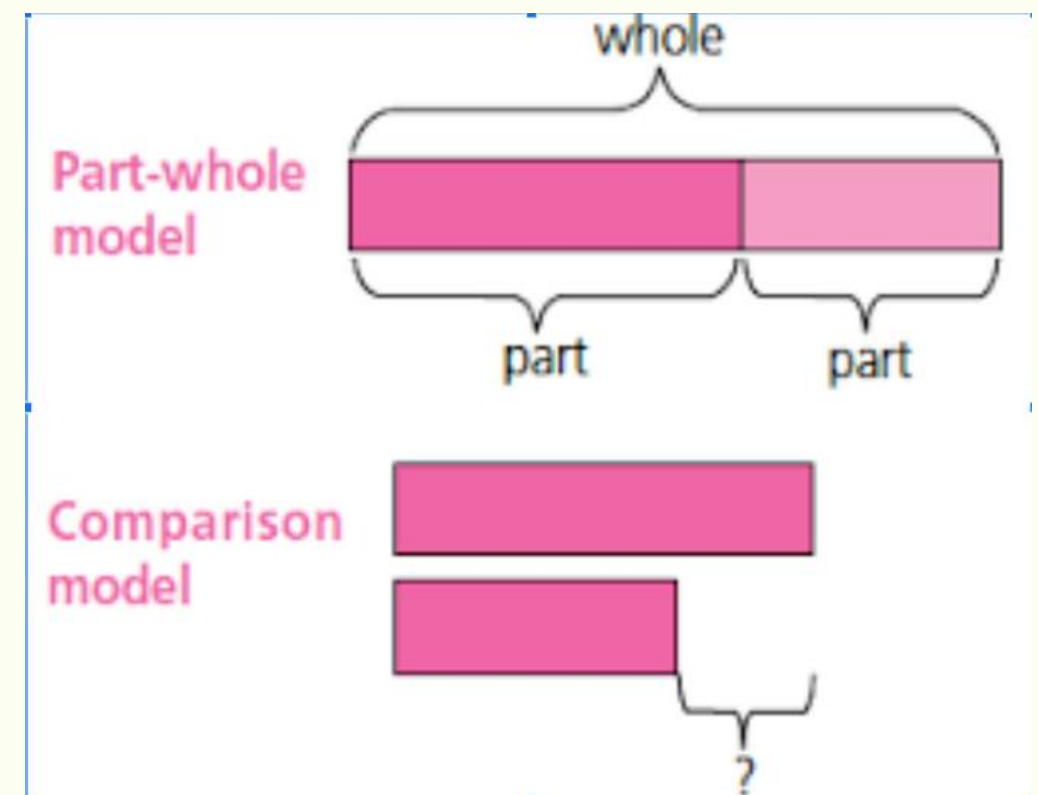
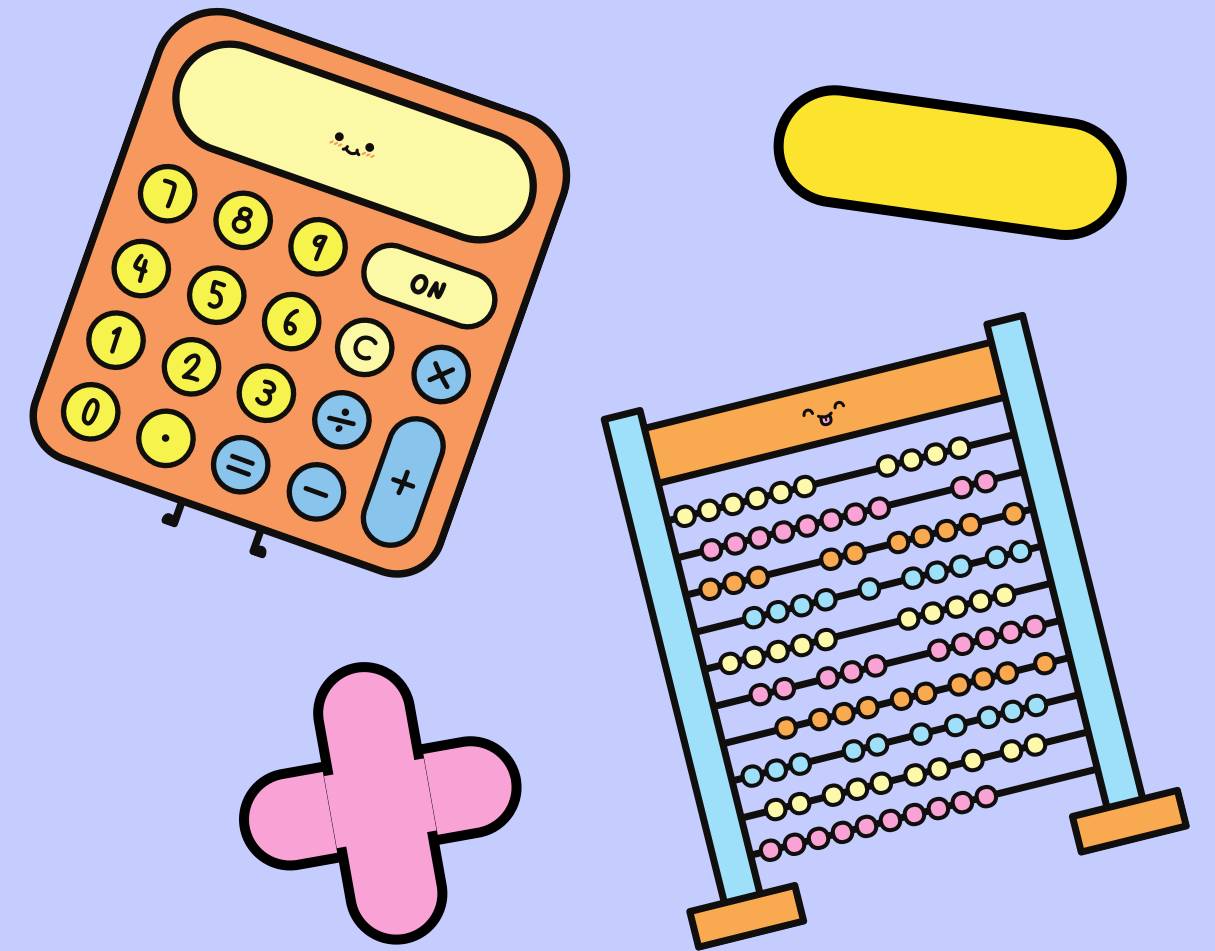
Word Problem

Word Problems are

Difficult to know where to start
Eliminate extraneous information
Figure out the correct operation
Determine what problem is asking for
Check if the answer makes sense
Reading, comprehending, translating

Bar Models

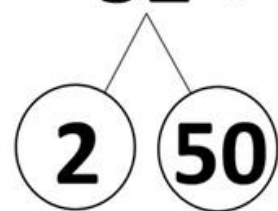
- Concrete \square Pictorial \square Abstract
- Used to represent word problems visually in order to make a plan to solve.
- Once mastered, bar models can be used across many math topics to solve difficult concepts beyond word problems like fractions, ratios, etc.
- Consistency is key!



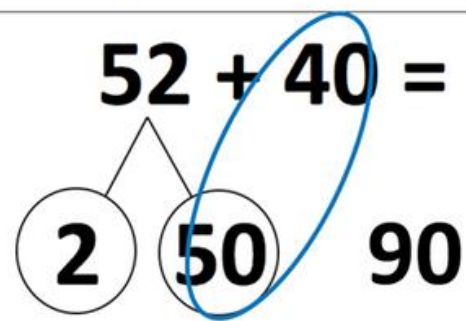
Examples

Addition Strategy without regrouping

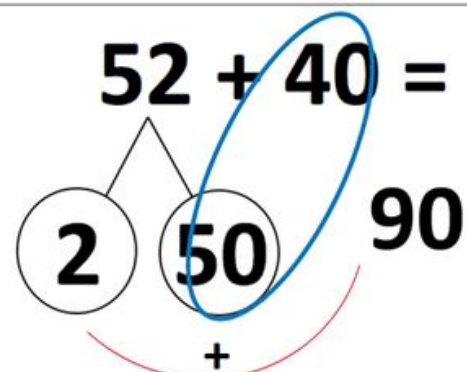
Step 1: Bond to Separate Tens and Ones

$$52 + 40 =$$


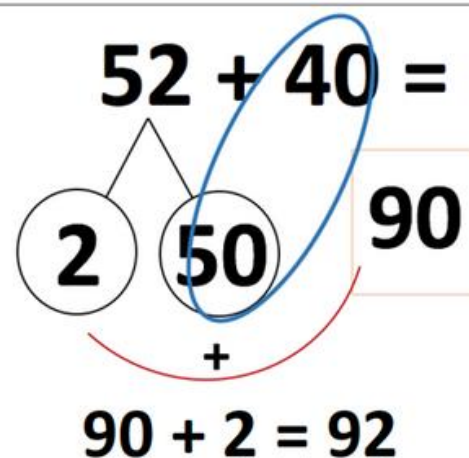
Step 2: Group the Tens

$$52 + 40 =$$


Step 3: Add Back

$$52 + 40 =$$


Step 4: Rewrite Number Sentence

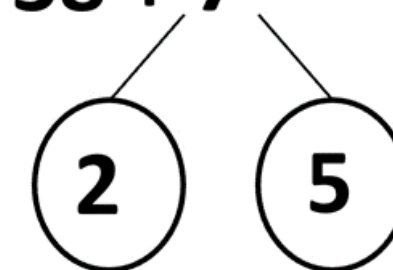
$$52 + 40 =$$


Addition Strategy with regrouping

Add Making Tens and Ones

Example: $38 + 7 = 45$

Step 1: $38 + 7$



Step 2: Add 2 to 38

$$2 + 38 = 40$$

Step 3: $40 + 5 = 45$

Step 4: $38 + 7 = 45$

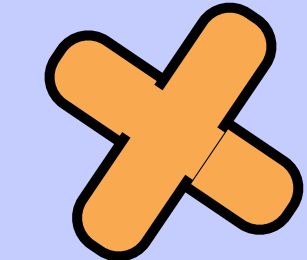
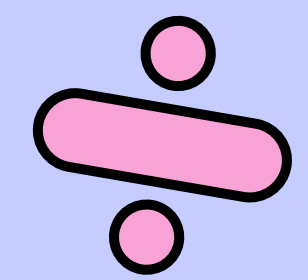
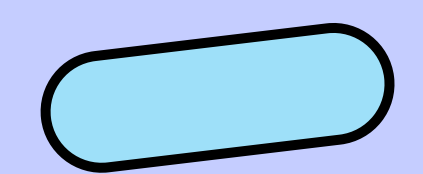
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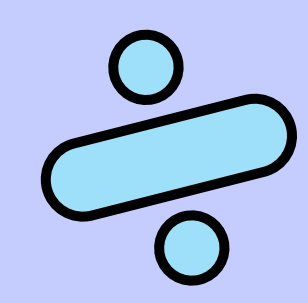
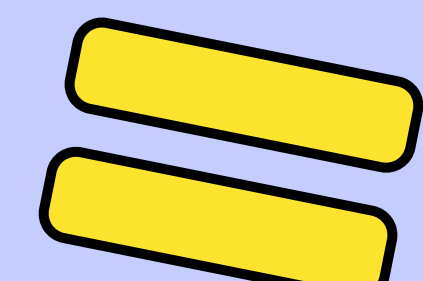
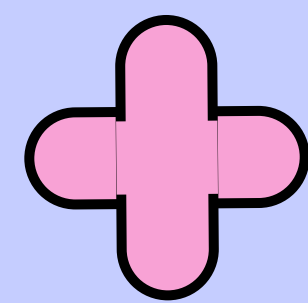
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Another Example

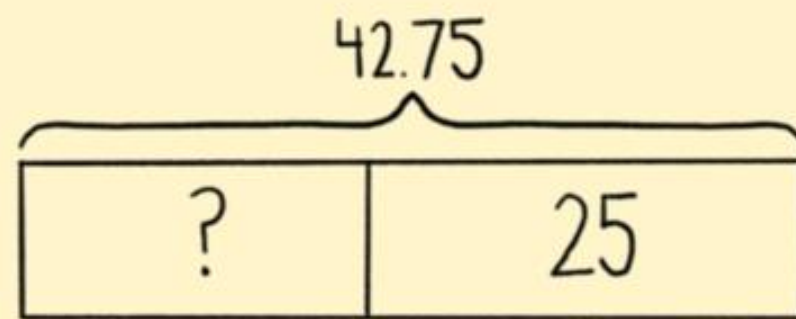
How do we model?



Word Problem 1

Draw a bar model and solve.

1. Elsa had some money before her birthday. As a birthday present her mother gave her \$25 and now she has \$42.75. How much money did she have before her birthday?

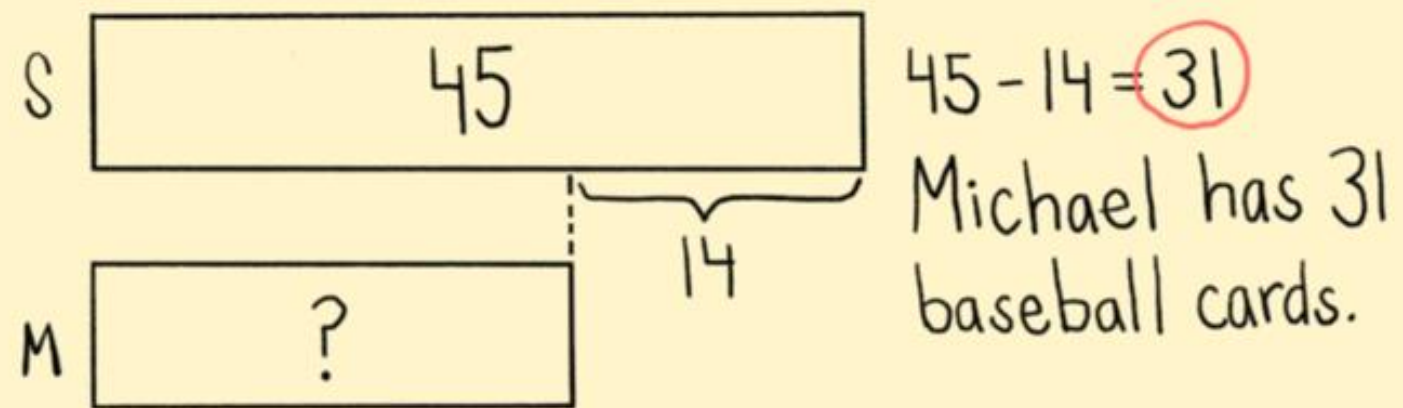


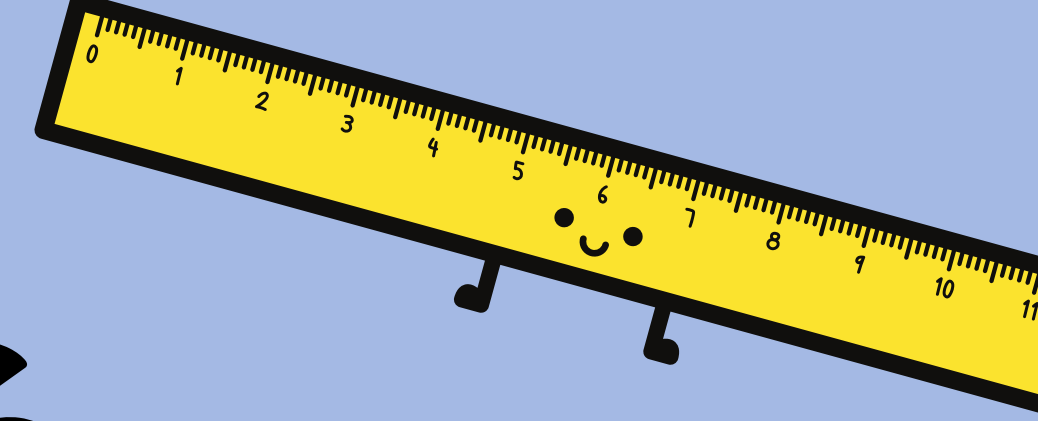
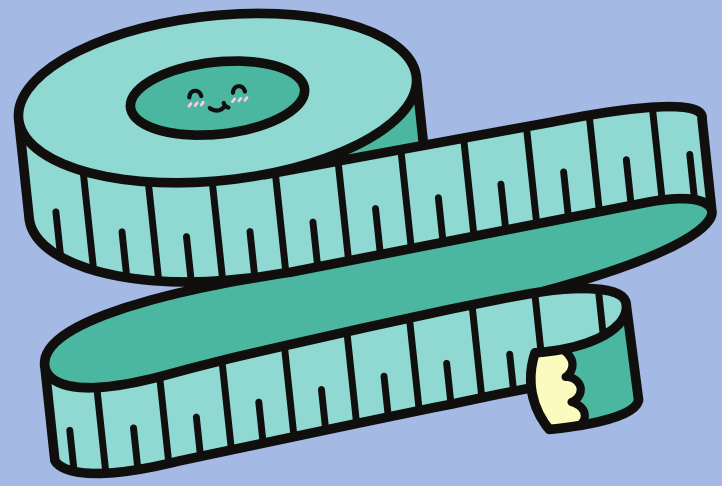
$$42.75 - 25 = 17.75$$

Elsa had \$17.75
before her birthday.

Word Problem 2

2. Seth has 45 baseball cards. Michael has 14 fewer cards than Seth. How many baseball cards does Michael have?





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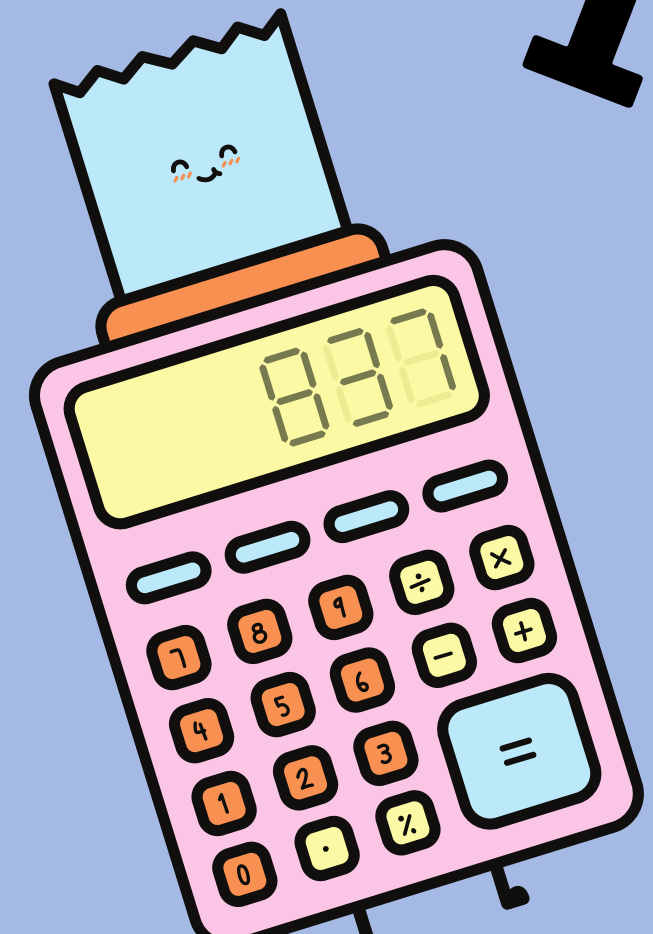
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Curriculum Map & Big Ideas

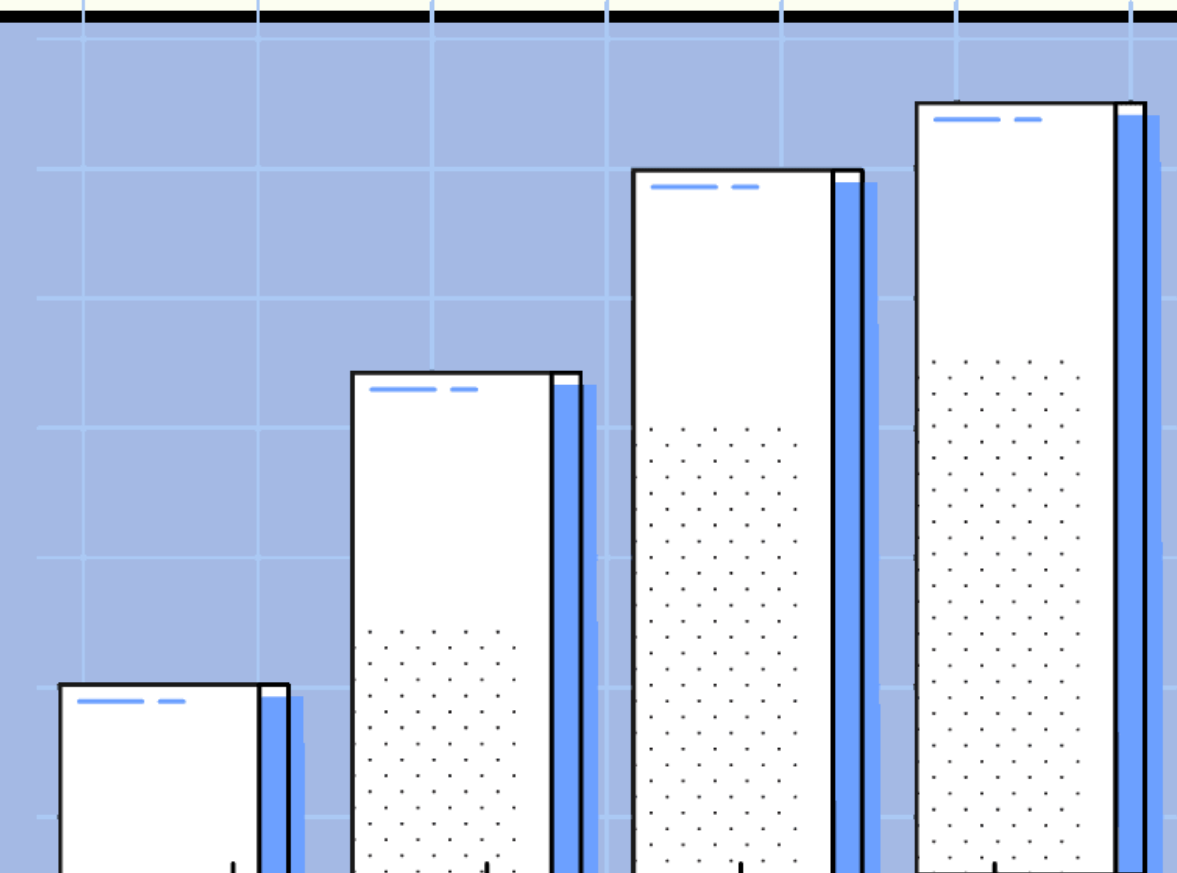
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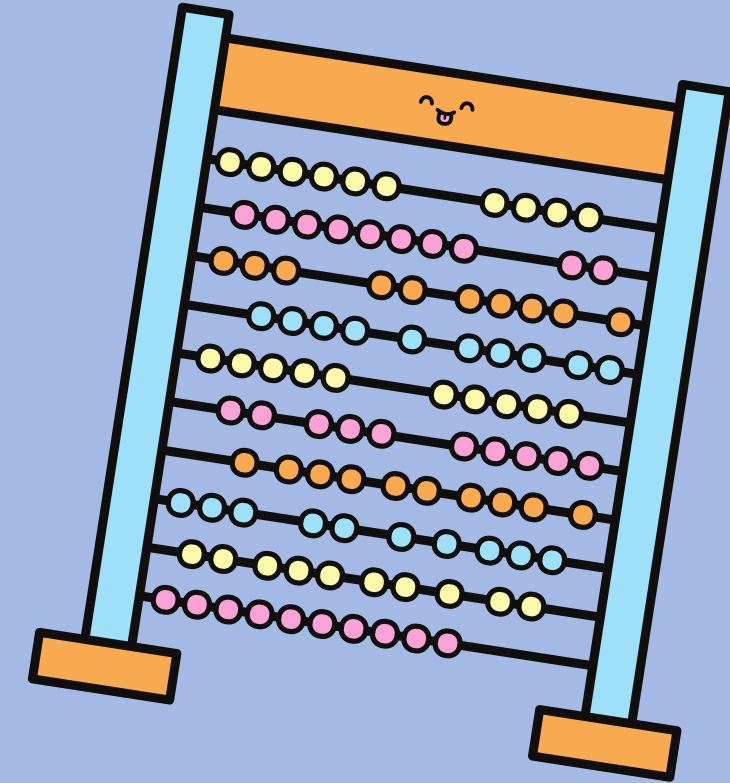
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Comparing to

CHINA

- Mastery Method

- Less Topics Covered/ More In Depth Teaching

- Total Mastery of Concept

- Emphasis on Problem Solving

CANADA

- Spiral Method

- More Topics Covered/ Surface Teaching

- Total Mastery Not Required to Move on

- Emphasis on Standardize Test Performance and Mental Arithmetic

SINGAPORE

- Mastery method + Spiral Method

- Less Topics Covered/ More In Depth Teaching

- Total Mastery of Concept

- Emphasis on Fundamentals and Problem Solving

Kinder



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Curriculum Map & Pacing

Kindergarten Curriculum Map

Big Ideas

Numbers
Shapes
Number
Bonds
Addition
Subtraction
Time
Money

QTR 1

Chapter 1
Match, Sort, and
Classify

2 weeks

K.GSR.8.2
CD-MA5.4a

Chapter 2
Numbers to 5

3 weeks

CD-MA1.4b
CD-MA2.4c
CDMA1.4e
CDMA2.4e

Chapter 3
Numbers to 10

3 weeks

CD-MA2.4b
K.NR.1.1
K.NR.1.2
K.NR.4.1
K.NR.4.2

QTR 2

Chapter 4
Shapes and
Solids

3 weeks

K.G.1
K.G.3
K.G.2
K.MD.1
K.G.5
K.CC.3

Chapter 5
Compare,
Height, Weight,
and Capacity

3 weeks

K.MD.1
K.MD.2

Chapter 6
Comparing
Numbers within
10

2 weeks

K.CC.6
K.CC.7

QTR 3

Chapter 7
Numbers to 20

2 weeks

K.CC.1
K.CC.3
K.CC.5
K.NBT.1

Chapter 8
Number Bonds

3 weeks

K.OA.1
K.OA.5

Chapter 9
Addition

2 weeks

K.OA.1
K.OA.2
K.OA.5

Chapter 10
Subtraction

2 weeks

K.OA.1
K.OA.2
K.OA.3

QTR 4

Chapter 11
Addition &
Subtraction

2 weeks

K.OA.1
K.OA.2
K.OA.5

Chapter 12
Numbers to 100

3 weeks

K.CC.1

Chapter 13
Time

2 weeks

1.MD.3

Chapter 14
Money

2 weeks

2.MD.8

1st



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Curriculum Map & Pacing

First Grade Curriculum Map

Big Ideas
Numbers
Shapes
Number Bonds
Addition
Subtraction
Mental Math
Grouping
Time
Money

QTR 1

Chapter 1
Numbers to 10

2 weeks

K.NR.1.1
K.NR.4.1
K.NR.4.2

Chapter 2
Number Bond

2 weeks

K.NR.5.1
1.NR.2.4
1.NR.2.2
CDMA1.4e

Chapter 3
Addition

2 weeks

1.NR.2.4
1.NR.2.6
1.NR.5.1

Chapter 4
Subtraction

3 weeks

1.NR.2.4
1.NR.2.6
1.NR.5.1

Chapter 5
Numbers to 20

2 weeks

1.NBT.1
1.NBT.2

Chapter 6
Addition to 20

1~2 weeks

1.OA.3
1.OA.6

Chapter 7
Subtraction within 20

1~2 weeks

1.OA.3
1.OA.6

Chapter 8
Shapes

1 week

1.G.1

Chapter 9
Ordinal Numbers

1 week

1.OA.1

QTR 2

QTR 3

Chapter 10
Length

1 week

1.MD.1
1.MD.2

Chapter 11
Comparing

1 week

1.OA.1
1.MD.4

Chapter 12
Numbers to 40

1 week

1.OA.4
1.NBT.1
1.NBT.2
1.NBT.4

Chapter 13
Addition &
Subtraction within 40

2 weeks

1.NBT.4

Chapter 14
Grouping &
Sharing

1 week

2.OA.4

Chapter 15
Fractions

1 weeks

1.G.3

Chapter 16
Number to 100

1~2 weeks

1.NBT.1
1.NBT.2

Chapter 17
Addition &
Subtraction within 100

3 weeks

1.NBT.4
1.NBT.5

Chapter 18
Time

1 weeks

1.MD.3

Chapter 19
Money

2 weeks

2.MD.8

QTR 4

2nd



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Curriculum Map & Pacing

Second Grade Curriculum Map

Big Ideas
 Numbers
 Shapes
 Number Bonds
 Mental Math
 Multiplication
 Division
 Fractions
 Time
 Money

QTR 1				QTR 2			
Chapter 1 Numbers to 1,000	Chapter 2 Addition & Subtraction Part 1	Chapter 3 Addition & Subtraction Part 2	Chapter 4 Length	Chapter 5 Weight	Chapter 6 Multiplication & Division	Chapter 7 Multiplication & Division of 2, 5, & 10	
2 weeks	2 weeks	3 weeks	2 weeks	1~2 weeks	2~3 weeks	2~3 weeks	
2.NR.1.1 K.NR.4.1 2.NR.1.2	2.NR.2.1	2.NR.2.1 2.NR.2.3 2.NR.3.2	2.MDR.5.1 2.MDR.5.2 2.MDR.5.3	3.MD.2	2.OA.4 3.OA.1 3.OA.3	3.OA.1 3.OA.3 2.NBT.2	
QTR 3				QTR 4			
Chapter 8 Mental Calculation	Chapter 9 Multiplication & Division of 3 & 4	Chapter 10 Money	Chapter 11 Fractions	Chapter 12 Time	Chapter 13 Capacity	Chapter 14 Graphs	Chapter 15 Shapes
3 weeks	3 weeks	2 weeks	2 weeks	2 weeks	1 weeks	1 weeks	2~3 weeks
2.NBT.5 2.NBT.7 2.NBT.9	3.OA.1 3.OA.3 3.OA.5	2.MD.8	2.G.3 4.NF.3b 3.NF.3d	2.MD.7 3.MD.1	3.MD.2	2.MD.10	2.G.1 4.OA.5

3rd

Curriculum Map & Pacing

Third Grade Curriculum Map

QTR 1				QTR 2			
Chapter 1 Numbers to 10,000	Chapter 2 Addition & Subtraction Part 1	Chapter 3 Addition & Subtraction Part 2	Chapter 4 Multiplication & Division	Chapter 5 Multiplication	Chapter 6 Division	Chapter 7 Graphs & Tables	
3 weeks	3 weeks	2 weeks	3 weeks	3 weeks	2 weeks	1 week	
3.NR.1.1 3.NR.1.2 3.NR.1.3	3.PAR.2.1 3.PAR.2.2 3.PAR.2.2	3.PAR.2.1 3.PAR.2.2 3.PAR.2.1 3.PAR.2.2	3.OA.1 3.OA.5 3.OA.7 3.MD.7c	3.OA.3 3.OA.5 3.OA.7 3.OA.8 3.NBT.3 4.NBT.5	3.OA.3 3.OA.4 3.OA.6 3.OA.7 4.NBT.6	3.MD.3	
QTR 3				QTR 4			
Chapter 8 Multiplying & Dividing with 6,7,8 & 9	Chapter 9 Fractions Part 1	Chapter 10 Fractions Part 2	Chapter 11 Measurement	Chapter 12 Geometry	Chapter 13 Area & Perimeter	Chapter 14 Time	Chapter 15 Money
2 weeks	1~2 weeks	2~3 weeks	2 weeks	2 weeks	2~3 weeks	2 weeks	2 weeks
3.OA.7 4.OA.3 4.OA.2 4.NBT.5	3.OA.7 4.OA.3 4.OA.2 4.NBT.5	3.NF.2 3.NF.3a 3.NF.3b 4.NF.3a	4.MD.1	4.MD.5 4.G.1	3.MD.5 3.MD.6 3.G.2	3.MD.1	2.MD.8

Big Ideas

Numbers
Geometry
Mental Math
Multiplication
Division
Fractions
Bar Models
Measurement
Graph
Table
Time

4th

Curriculum Map & Pacing

Fourth Grade Curriculum Map

Big Ideas
Numbers
3-D
Geometry
Mental Math
Fractions
Decimals
Bar Models
Measurement
Statistic

QTR 1

Chapter 1
Numbers to One Million

2 weeks

4.NR.1.1
4.NR.1.2
4.NR.1.3
4.NR.1.4

Chapter 2
Addition & Subtraction

2 weeks

4.NR.2.1
4.NR.2.5

Chapter 3
Multiples & Factors

2 weeks

3.PAR.3.5
4.NR.2.2
4.PAR.3.3
4.PAR.3.4

Chapter 4
Multiplication

2 weeks

4.NR.2.2
4.NR.2.5

Chapter 5
Division

2 weeks

4.NBT.6
4.OA.3
4.OA.2

Chapter 6
Fractions

2 weeks

4.NF.1
4.OA.1
4.OA.4

Chapter 7
Adding & Subtracting Fractions

2 weeks

4.NF.3A
4.NF.3
4.NF.3D
5.NF.1

Chapter 8
Multiplying a Fraction & a Whole Number

2 weeks

4.NF.4B
4.NF.4C
5.NF.4

Chapter 9
Line Graphs & Line Plots

1 weeks

4.MD.4

QTR 3

Chapter 10
Measurement

2 weeks

4.MD.A1
4.MD.A2

Chapter 11
Area & Perimeter

1~2 weeks

4.MD.A1
4.MD.A2
4.MD.A3

Chapter 12
Decimals

2~3 weeks

4.NF.5
4.NF.6

Chapter 13
Addition & Subtraction of Decimals

2 weeks

4.MD.2
5.NBT.7

Chapter 14
Multiplication & Division of Decimals

2~3 weeks

5.NBT.5

Chapter 15
Angles

1~2 weeks

4.MD.5
4.MD.5A
4.MD.5B

Chapter 16
Lines & Shapes

1~2 weeks

4.G.1
4.G.2

Chapter 17
Properties of Cuboids

1~2 weeks

6.G.4

QTR 4

5th

Curriculum Map & Pacing

Fifth Grade Curriculum Map

Big Ideas
Numbers
3-D
Geometry
Mental Math
Fractions
Decimals
Bar Models
Ratio & Rates
Measurement
Statistic

QTR 1

Chapter 1 Whole Numbers	Chapter 2 Writing & Evaluating Expressions	Chapter 3 Multiplication & Division	Chapter 4 Addition & Subtraction of Fractions
2 weeks	2 weeks	2 weeks	2 weeks
4.NR.1.1 4.NR.1.2 5.NR.1.2	5.NR.5.1	5.NR.2.1 5.NR.2.2	5.NR.2.1 5.NR.2.2 5.NR.3.1 5.NR.3.3

QTR 2

Chapter 5 Multiplication of Fractions	Chapter 6 Division of Fractions	Chapter 7 Measurement	Chapter 8 Volume of Solid Figures
2~3 weeks	2 weeks	2 weeks	2 weeks
5.NFB.4 5.NFB.4A 5.NF.B.6	5.NFB.7	5.MD.A.1 5.NF.4.B 6.GA.1	5.MD.3.A 5.MD.3B 5.MD.4

QTR 3

Chapter 9 Decimals	Chapter 10 The Four Operations of Decimals	Chapter 11 Geometry
2~3 weeks	2~3 weeks	2~3 weeks
5.NBT.3A 5.NBT.3B	5.NBT.7 6.NS.B3	4.MD.5 7.G.5 5.G.3 8.G.5

QTR 4

Chapter 12 Data Analysis & Graphs	Chapter 13 Ratio	Chapter 14 Rate	Chapter 15 Percentage
1~2 weeks	2 weeks	1~2 weeks	3 weeks
6.SP.3 5.MD.2	6.RP.1 6.RP.3 6.RP.3D	6.RP.1 6.RP.2 6.RP.3B	6.RP.3C

6th

Big Ideas

Integers

Algebra

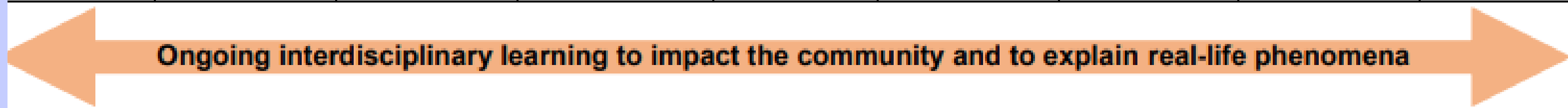
Expressions

Rational

Numbers

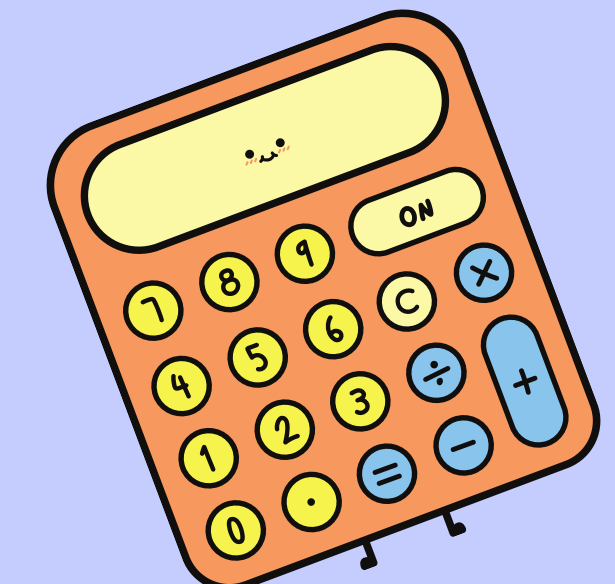
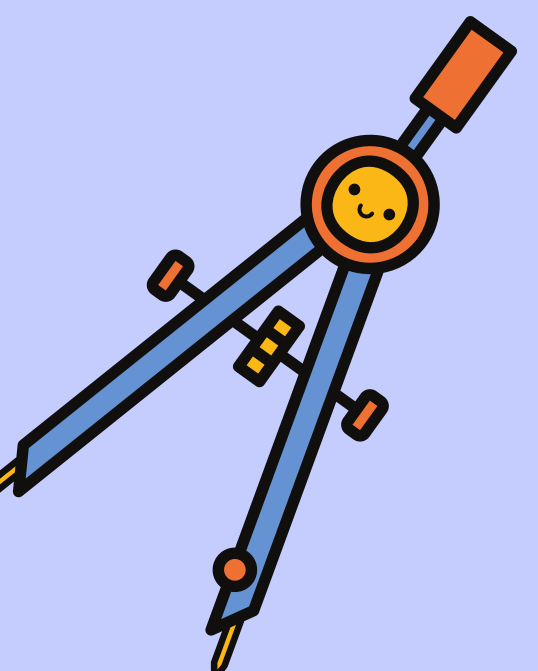
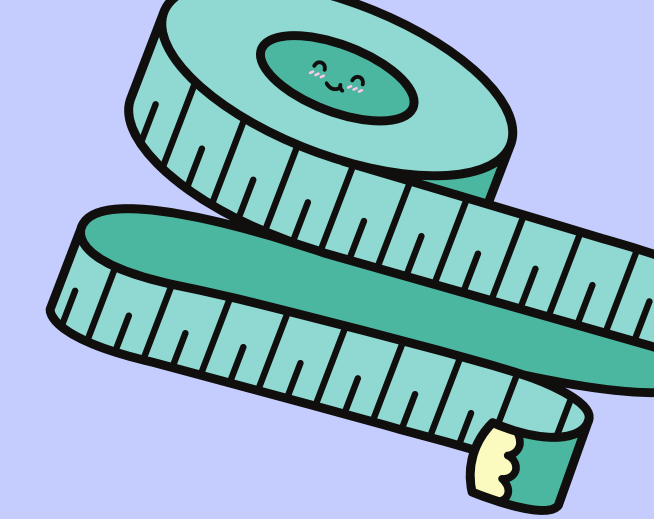
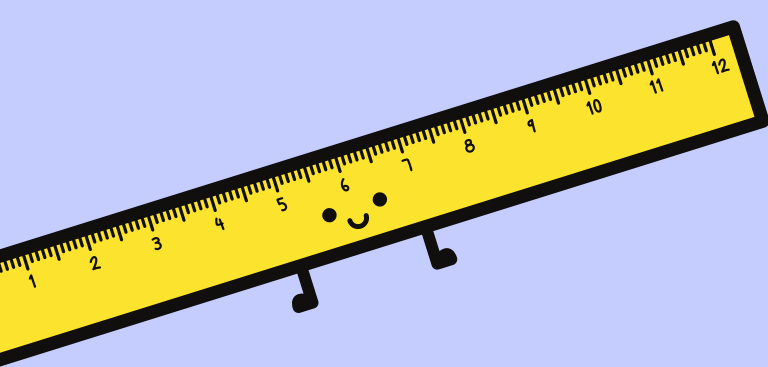
Statistic

SEMESTER 1				SEMESTER 2				
Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9
Exploring Real-life Phenomena through Statistics	Making Relevant Connections through Number System Fluency	Investigating Rate, Ratio and Proportional Reasoning	Building a Conceptual Understanding of Expressions	Exploring Real-life Phenomena through One-Step Equations and Inequalities	Exploring Area and Volume	Rational Exploration: Numbers and their Opposites	Graphing Rational Numbers	Culminating Capstone Unit
Interdisciplinary Connections	Interdisciplinary Connections	Interdisciplinary Connections	Interdisciplinary Connections	Interdisciplinary Connections	Interdisciplinary Connections	Interdisciplinary Connections	Interdisciplinary Connections	
4 – 5 weeks	3 – 4 weeks	3 – 4 weeks	2 – 3 weeks	4 – 5 weeks	2 – 3 weeks	3 – 4 weeks	2 – 3 weeks	1 – 2 weeks
6.NR.2 6.MP.1-8	6.NR.1 6.NR.2 6.MP.1-8	6.NR.4 6.MP.1-8	6.PAR.6 6.MP.1-8	6.PAR.7 6.MP.1-8	6.GSR.5 6.MP.1-8	6.NR.3 6.NR.2 6.MP.1-8	6.PAR.8 6.MP.1-8	ALL STANDARDS 6.MP.1-8

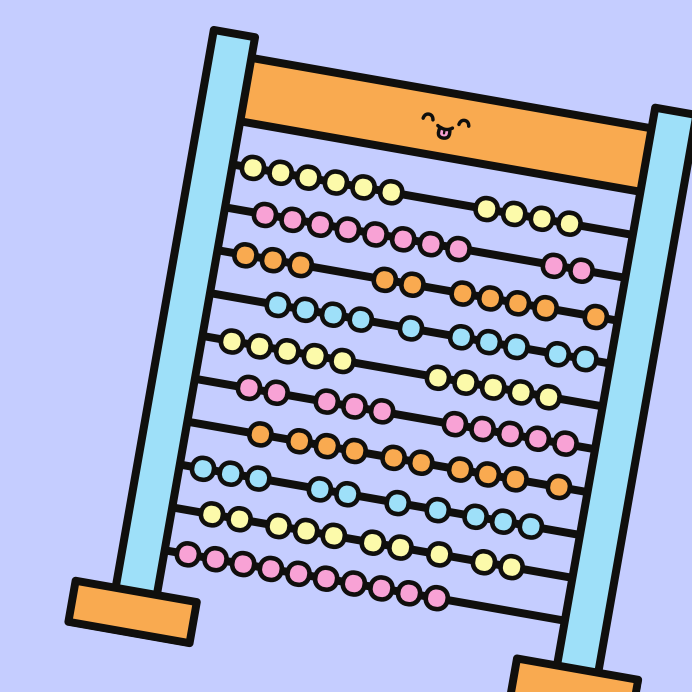
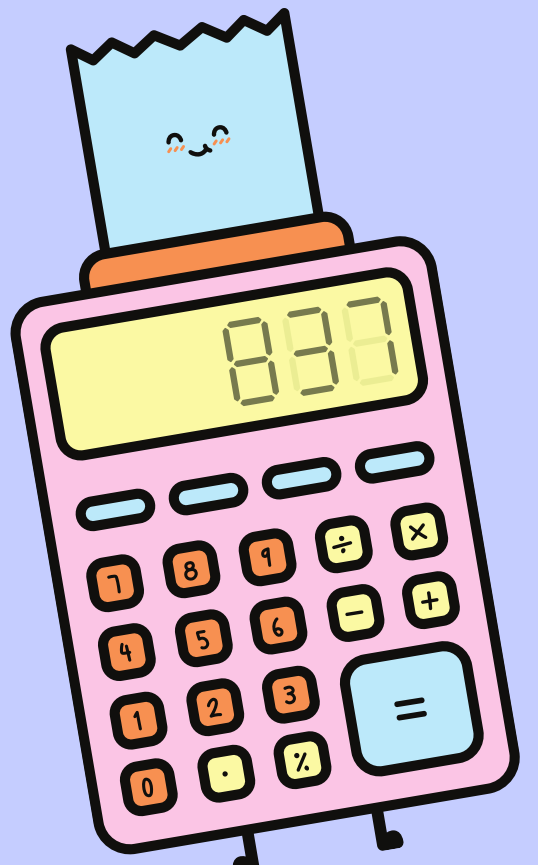


The concepts in each unit are presented based on a logical, mathematical progression. Each unique unit in the sequence builds upon the previous unit.

The [Framework for Statistical Reasoning](#), [Mathematical Modeling Framework](#), and the [K-12 Mathematical Practices](#) should be taught throughout the units.



Parent Support



Textbook & Workbook

Textbook

- Take notes from the textbook
- Reusable, please don't write on it (Kinder exception)
- Strongly encourage students to keep them in the classroom
- If damaged, please kindly buy a new one (\$14 each)

Workbook

- Homework
- Consumable, feel free to write/draw on them
- Go home with notebook everyday
- Teachers check them everyday
- If damaged/lost, please kindly buy a new one (\$14 each)

How to use IXL

Returning students

New students

**The Same
Username**

**Ask your teacher
for account**

Use it as
supplement, not
extra homework,
not drilling

Assessment

**Chapter Test at the
end of each chapter**

**Quarterly Test at the
end of each quarter**

**Study Guide will go
home before these tests**

(Dates & Time may vary
depends on grade level)

MAP testing

August

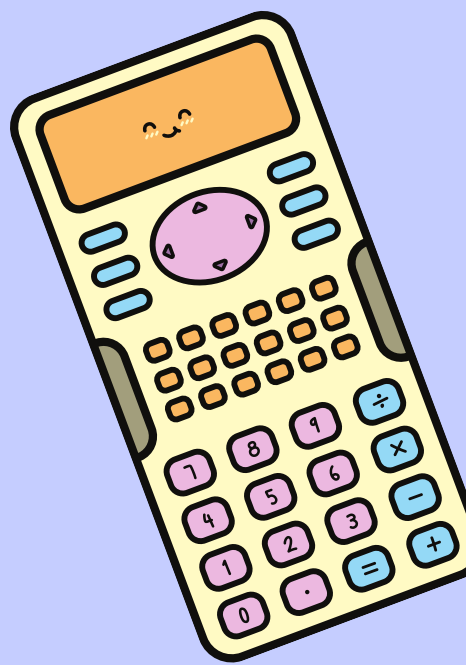
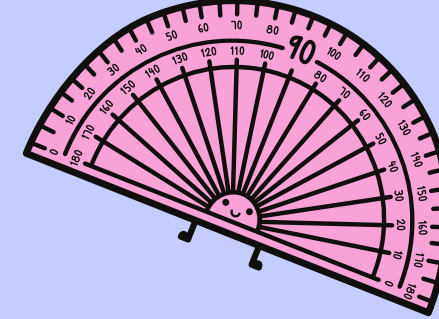
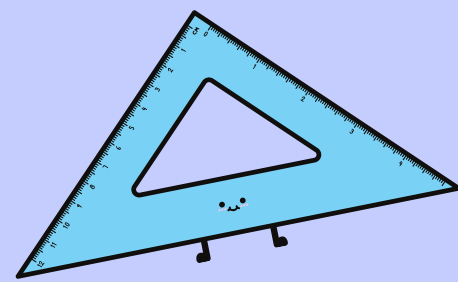
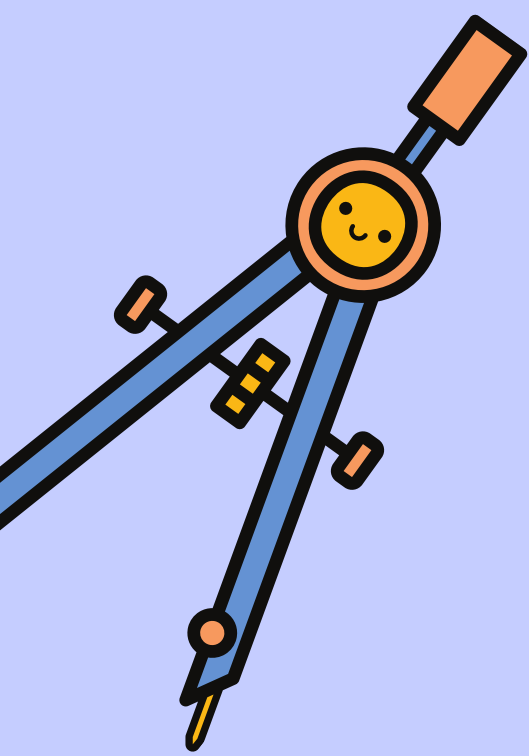
January

May

3rd and above

Milestones Testing

April 21–May 2, 2025



Q & A

Thank you !

My email: hyang@yhale.org

