

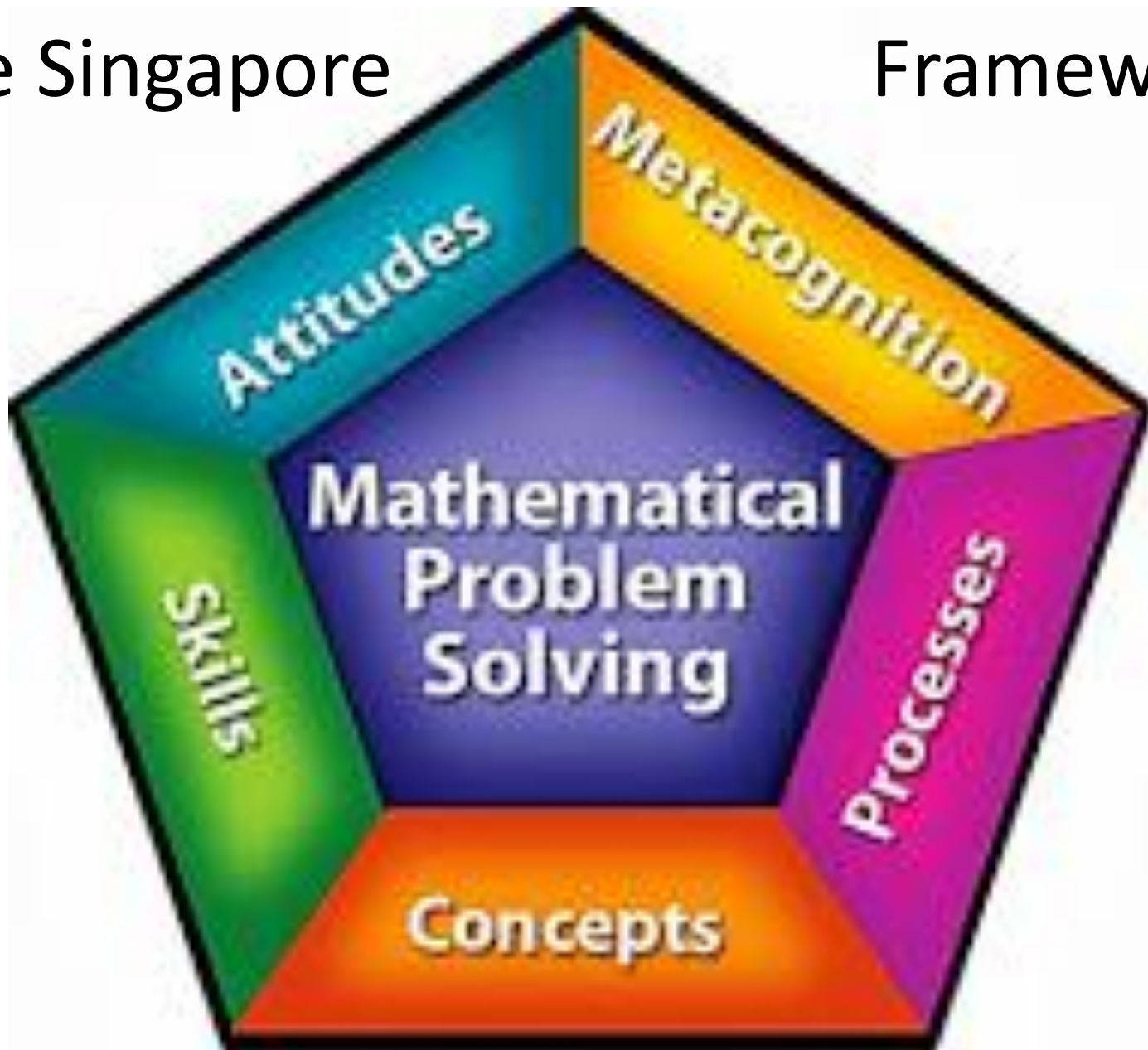
FAMILY MATH NIGHT 2014

Overview of the Singapore Math Approach

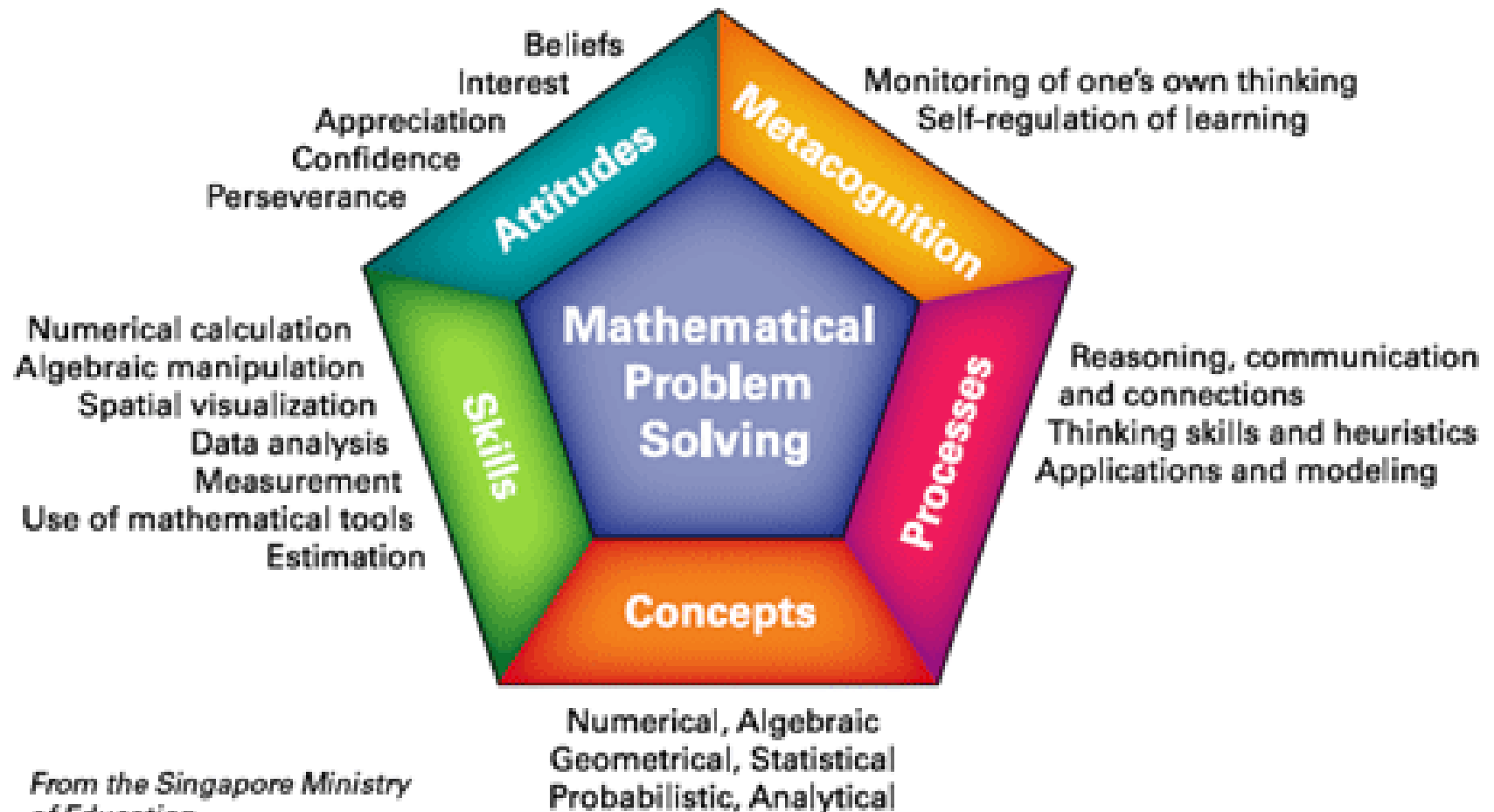
Adam Brown

The Singapore

Framework



Singapore's Mathematics Framework



“Singapore Math”

It's Not New and It's Not Singaporean!

- Program developed in Singapore 30 years ago
- Based on the research of an American
- Aims to build flexible thinking and communication skills, strengthen problem solving, and deepen conceptual understanding starting at an early age

How Do We Help Build...

- Self-confidence?
- Conceptual understanding?
- Critical thinking and reasoning skills?
- Stamina and perseverance?
- Excitement and interest?

It starts when children are young and must continue as they get older!

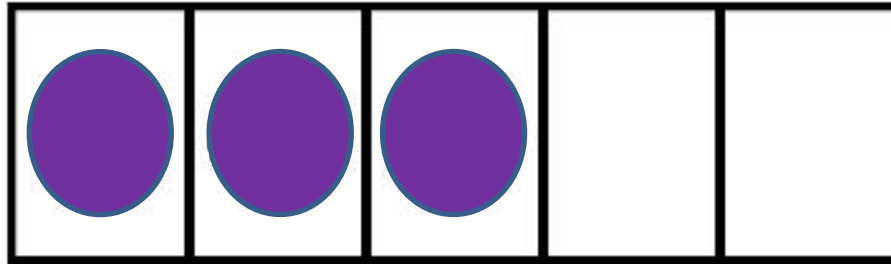
We Want Students “Under the Hood”



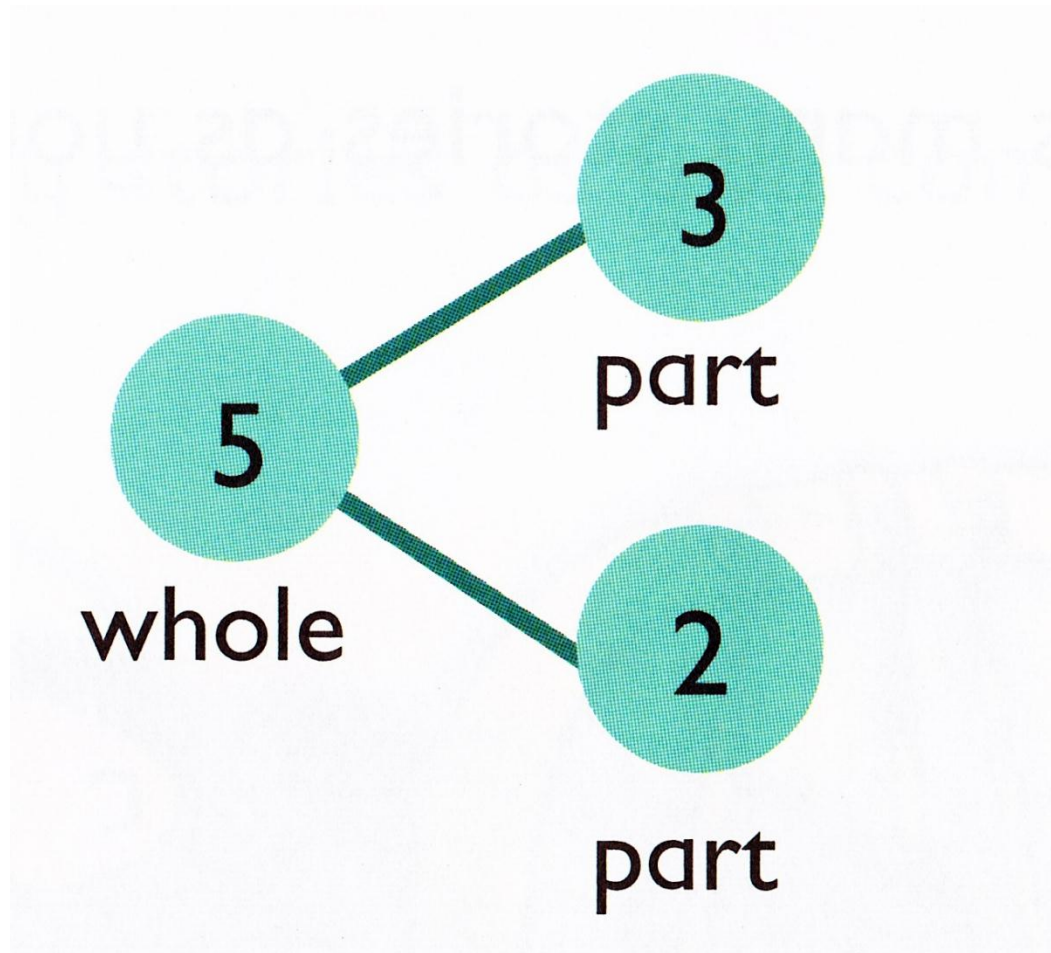
Concrete-Pictorial-Abstract



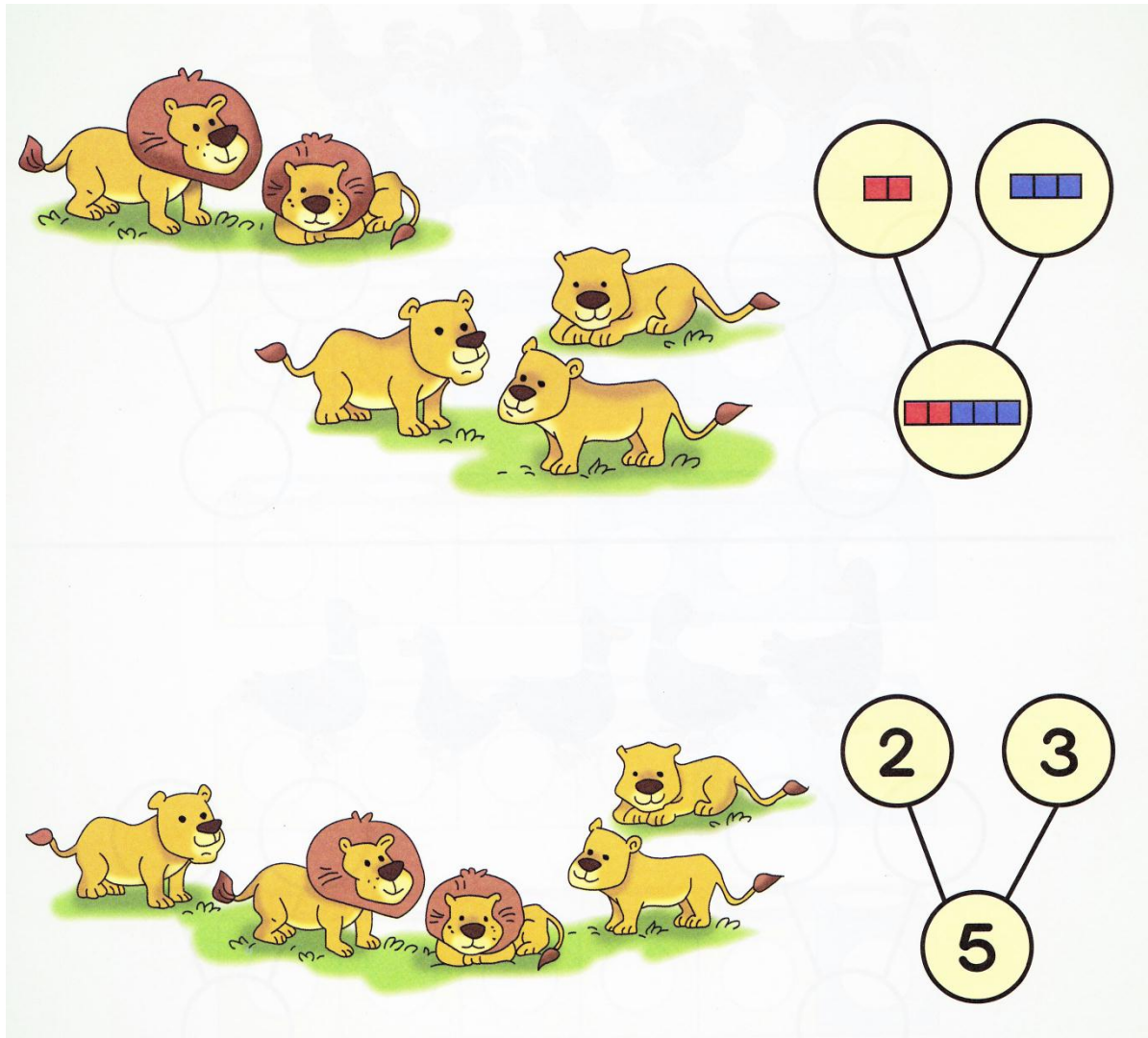
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Number Bonds

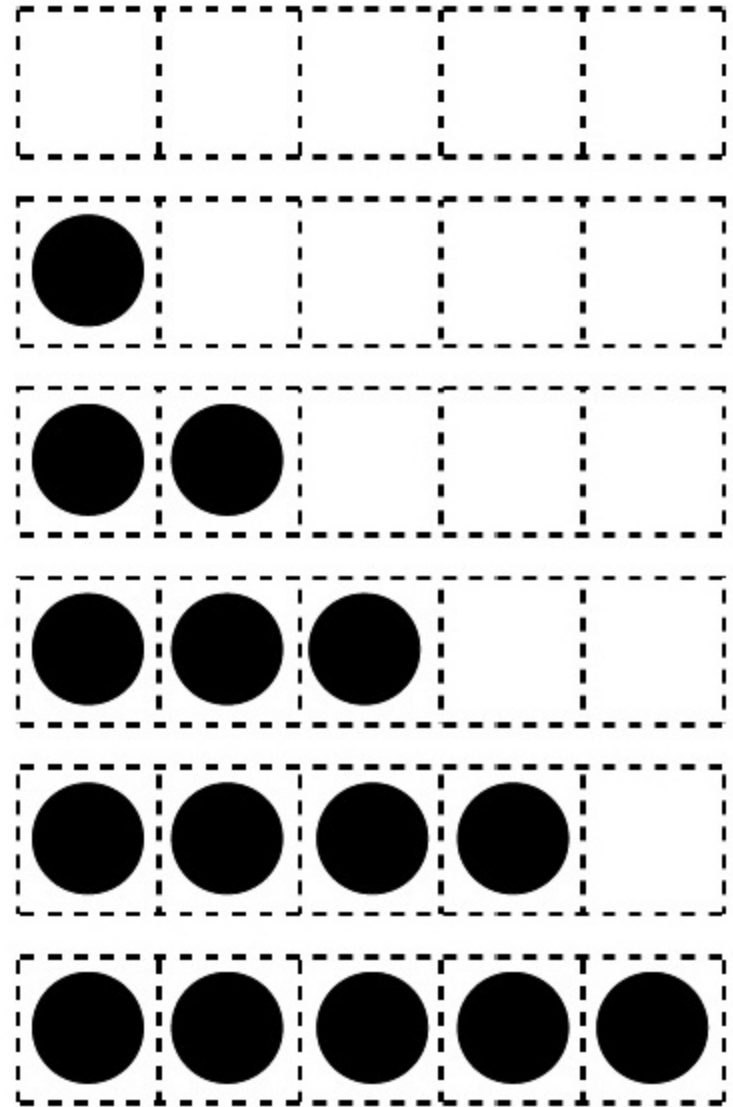


Communicating with Pictures

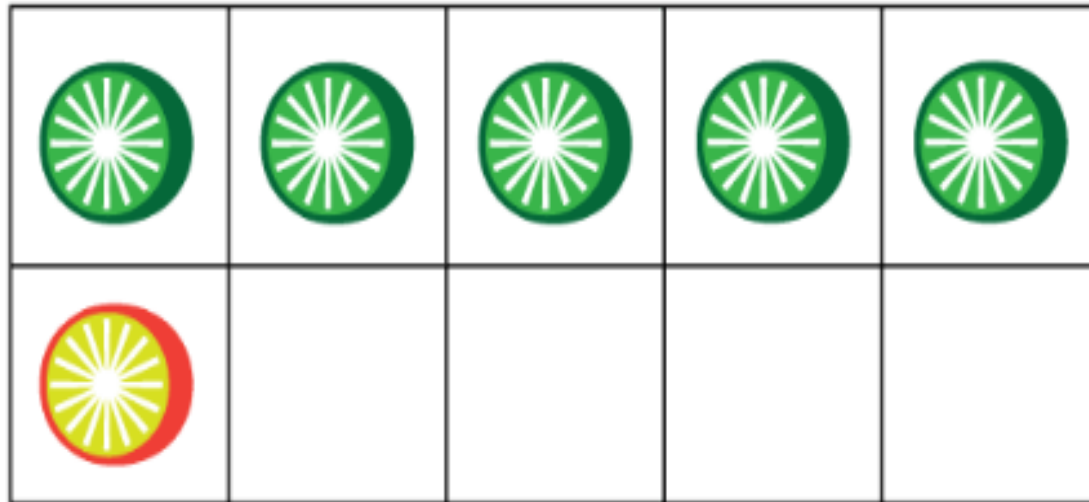


Noticing
Patterns
Within

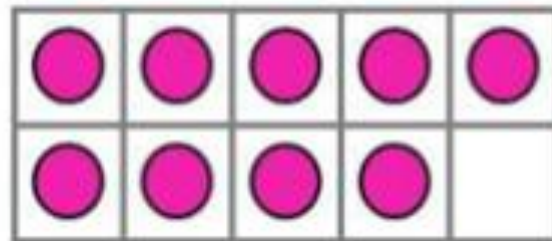
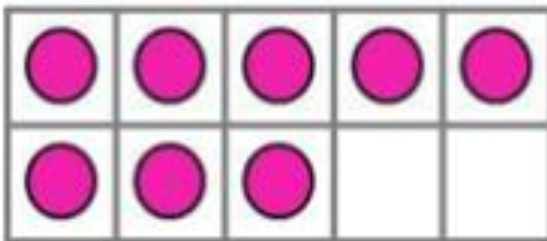
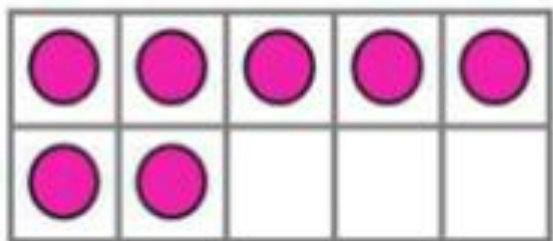
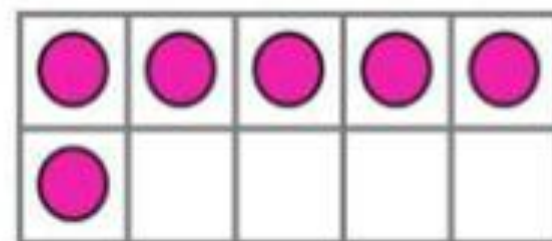
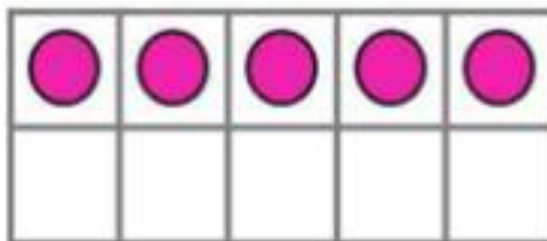
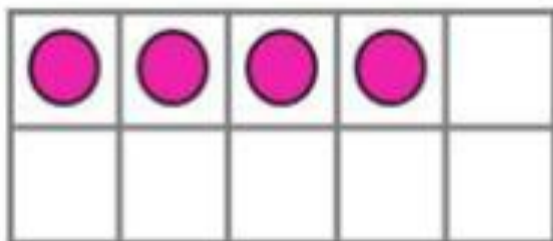
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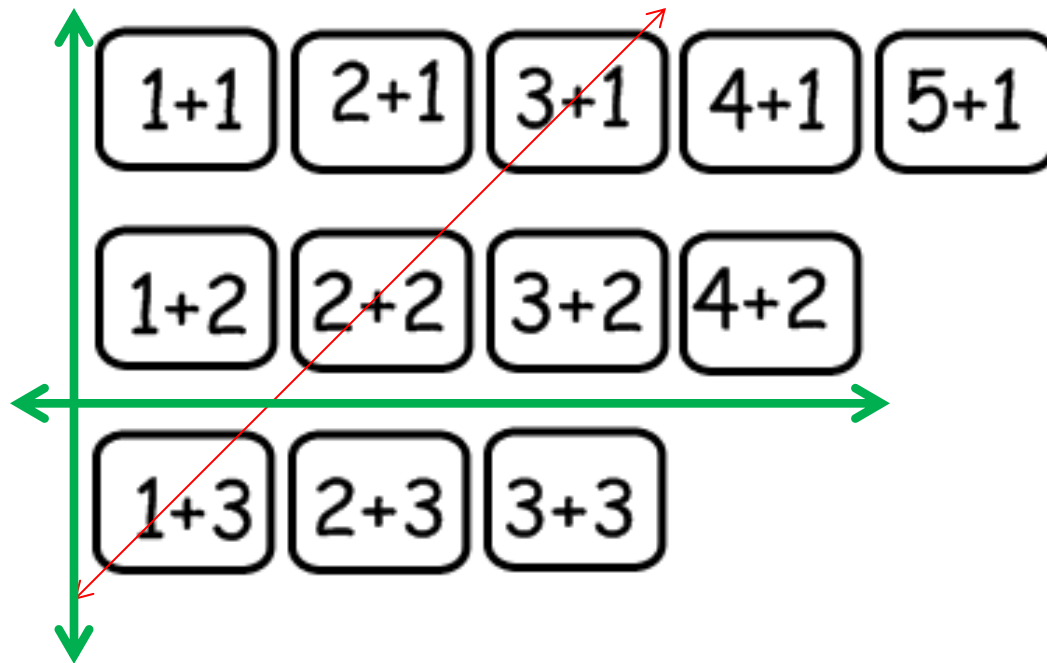
Using 5 to Connect to Larger Numbers



The Ten-Frame

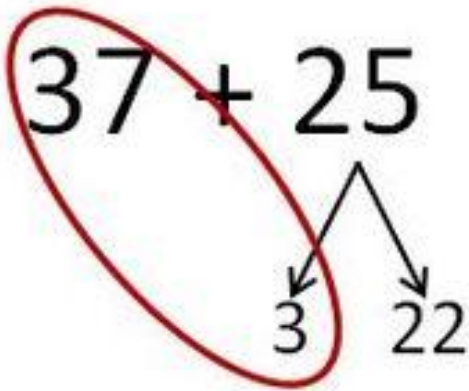


Patterns with Addition



Number Bonds with Larger Numbers

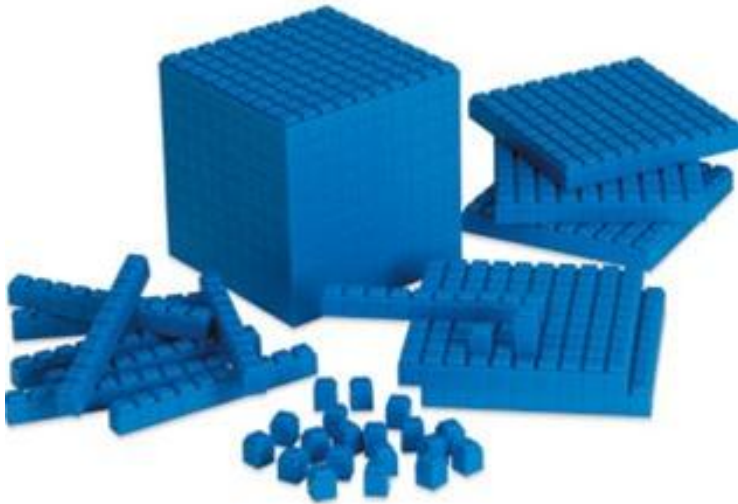
How else could you solve it?



$$40 + 22 = 62$$

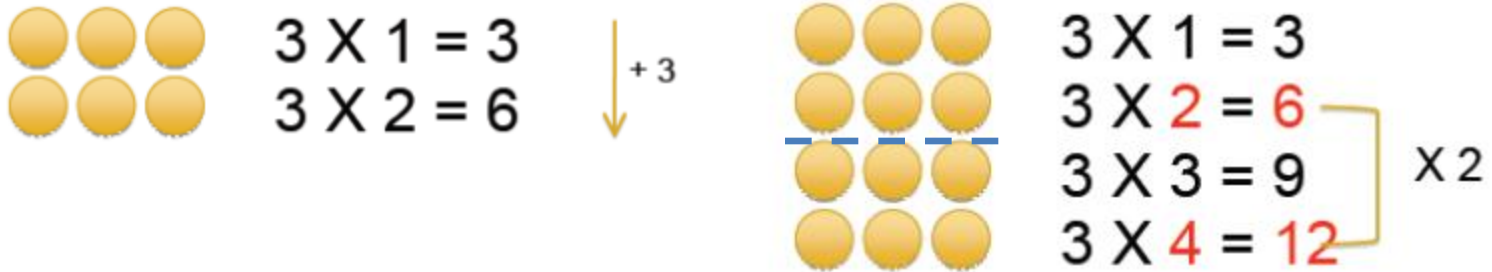
$$37 + 25$$

Concrete-Pictorial-Abstract



2,347

Patterns in Multiplication



$$3 \times 4 = (3 \times 2) + (3 \times 2)$$

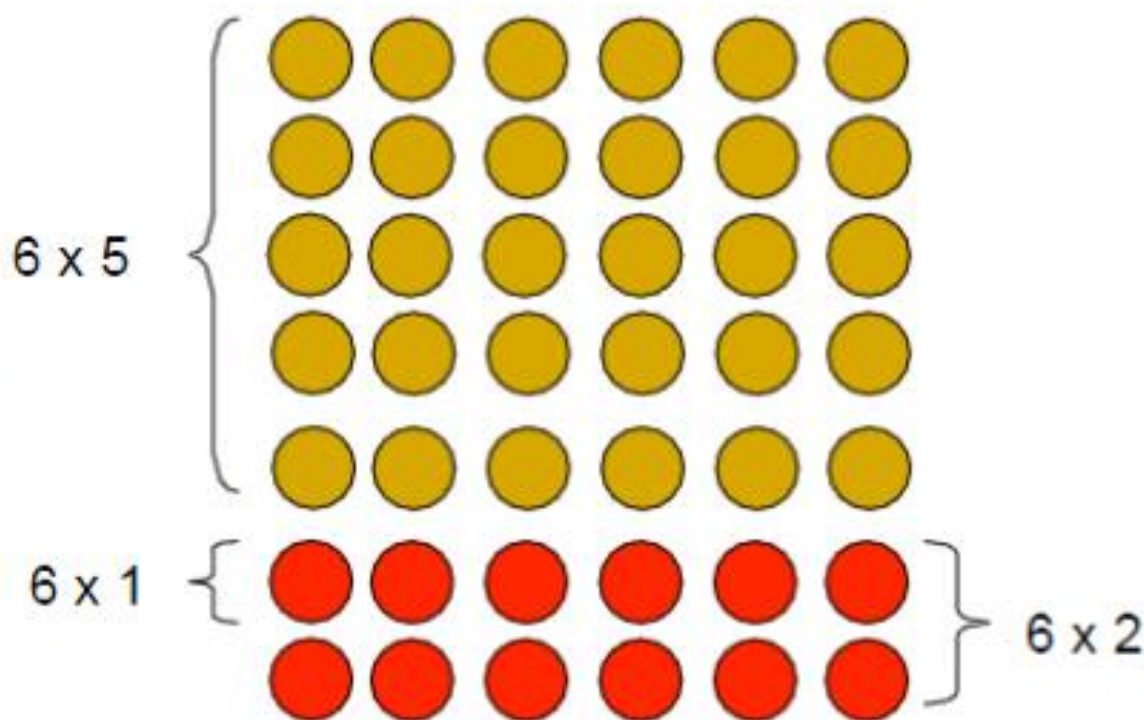
Number Bonds Return

$$6 \times 6 = 30 + 6$$

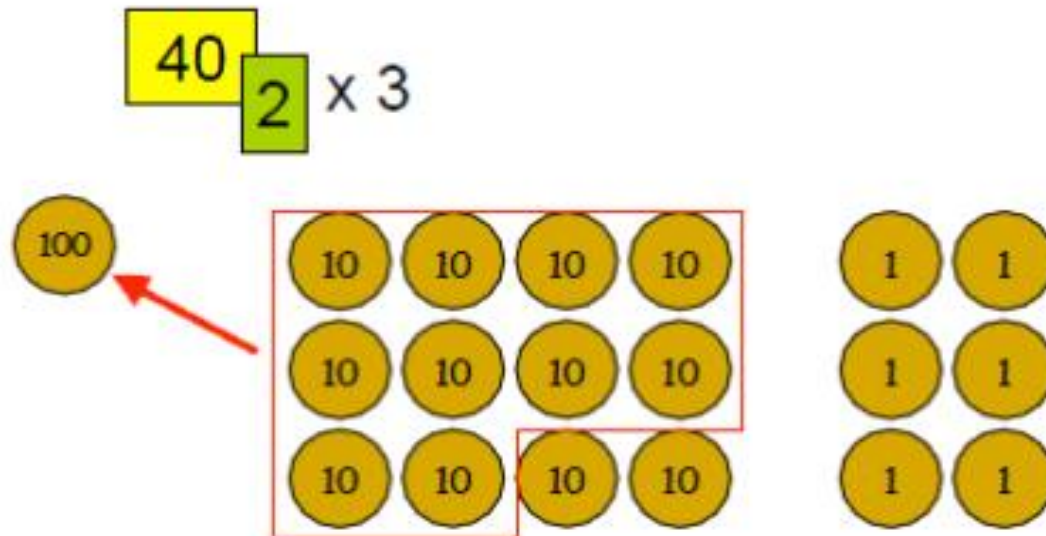
5 1

$$6 \times 7 = 30 + 12$$

5 2



Conceptual and Procedural



Multiply the ones by 3.

$$\begin{array}{r} 42 \\ \times 3 \\ \hline 6 \end{array}$$

Multiply the tens by 3.

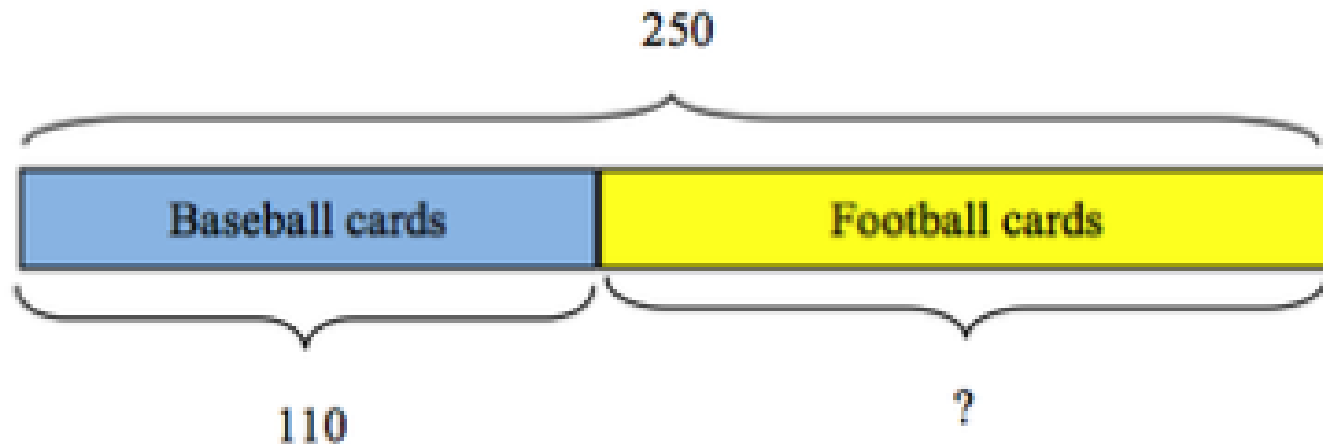
$$\begin{array}{r} 42 \\ \times 3 \\ \hline 126 \end{array}$$

$$42 \times 3$$

$$= 40 \times 3 + 2 \times 3$$

Bar Models to Visualize

- Turn the words into a picture
- See relationships
- Determine reasonableness





$$\frac{1}{7}$$

$$\frac{1}{7}$$

$$\frac{1}{7}$$

$$\frac{1}{7}$$

$$\frac{4}{7} = 4 \times \frac{1}{7}$$

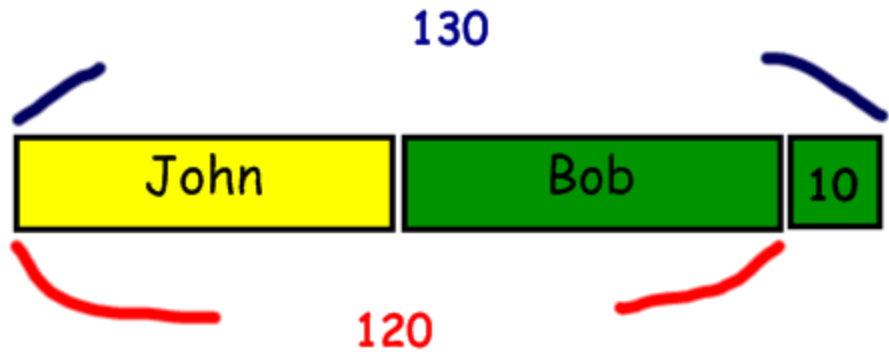
or

$$\frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7}$$

A Basic Algebra Problem

- High schools students Bob and John both work part-time on weekends at the local fast-food restaurant, and are paid at the end of the day on Sunday. When they receive their pay Bob gets \$10 more than John. Together they have \$130. How much money does each person have?

Concrete-Pictorial-Abstract



$$\text{Bob} = x \quad \text{John} = (x - \$10)$$

$$x + (x - \$10) = \$130$$

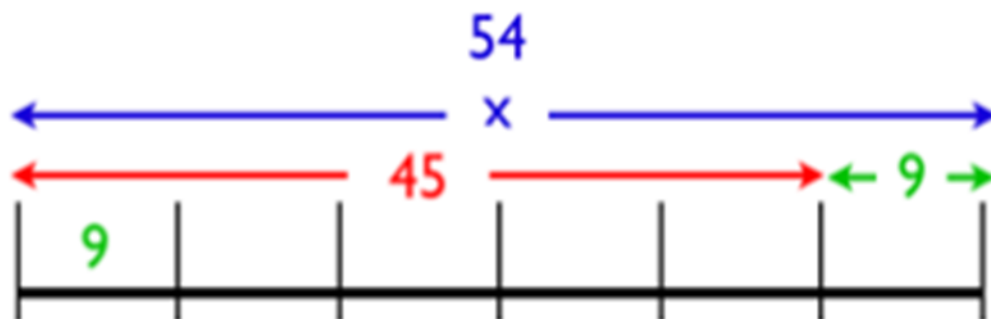
$$2x - \$10 = \$130$$

$$2x = \$130 + \$10$$

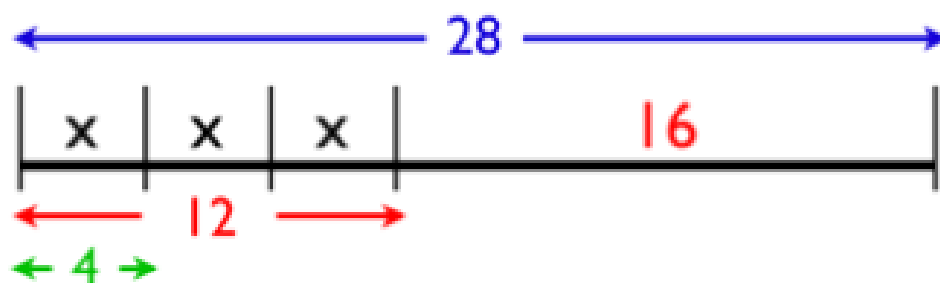
$$2x = \$140$$

$$x = \$70 \text{ (Bob)}$$

$$\frac{5}{6}x = 45$$



$$28 - 3x = 16$$



$$4x + 7 = 31$$

