

Counting Frames and Ten Frames; tools for building strong number relationships.



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What is Number Sense?

“...good **intuition** about numbers and their **relationships**. It **develops gradually** as a result of **exploring numbers**, **visualizing** them in a **variety of contexts**, and **relating** them in ways that are not limited by traditional algorithms.” (Howden)



Four number relationships that build strong number sense

- **Spatial Arrangements** - recognizing how many without counting by seeing the visual structure. Connected to a sense of magnitude.
- **One & Two More, One & Two Less** - this is not the skill of counting on two or counting back one, but instead knowing which numbers are one more or two less than any given number.
- **Part-Part-Whole** - seeing a number as being made up of two or more parts. *(A quantity can be broken up [decomposed] into smaller parts & the smaller parts can be joined [composed] to form the whole.)*
- **Benchmarks of 5 and 10** - since 10 plays such an important role in our number system (and two 5s make up 10), knowing how numbers relate to 5 & 10 is key.

(Van De Walle, 2006)

Quick Looks

from Number Talks by Sherry Parrish, Math Solutions

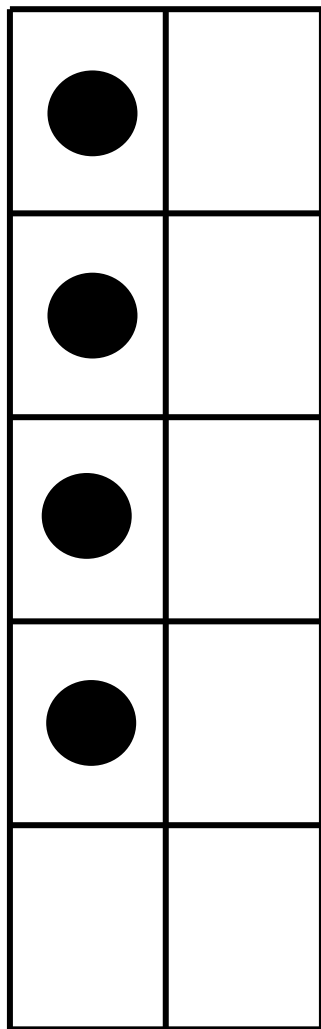
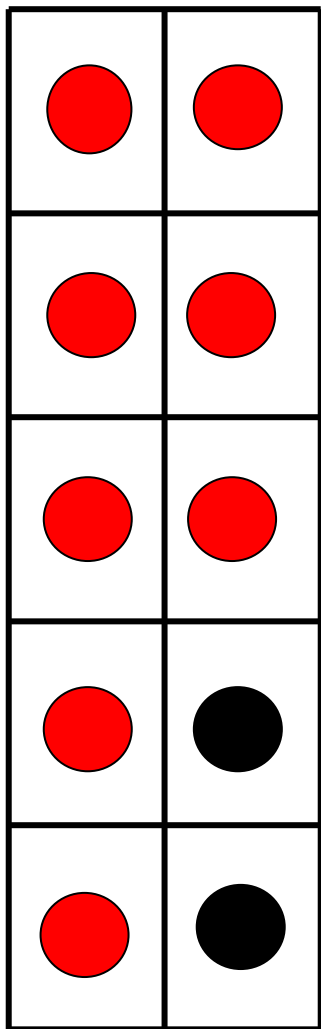
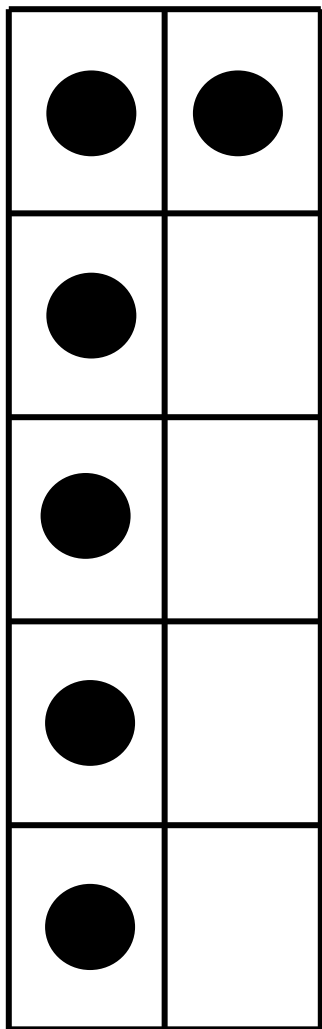
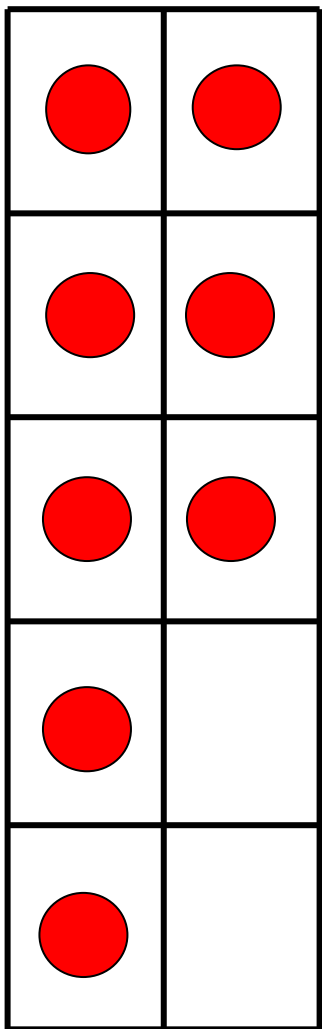


Teen Numbers and the 10 Frame

Early Math Collaborative at Erikson Institute



Solving $8 + 6$



$$8+6$$

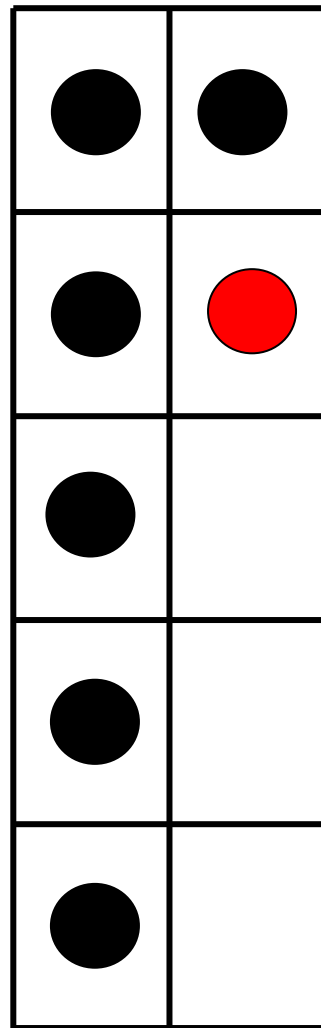
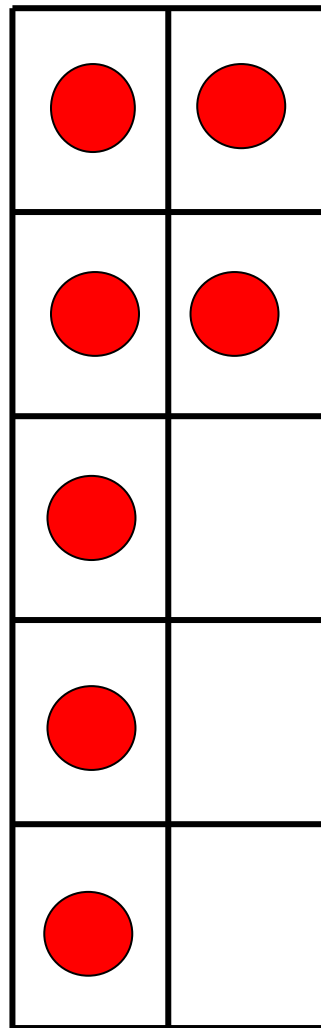
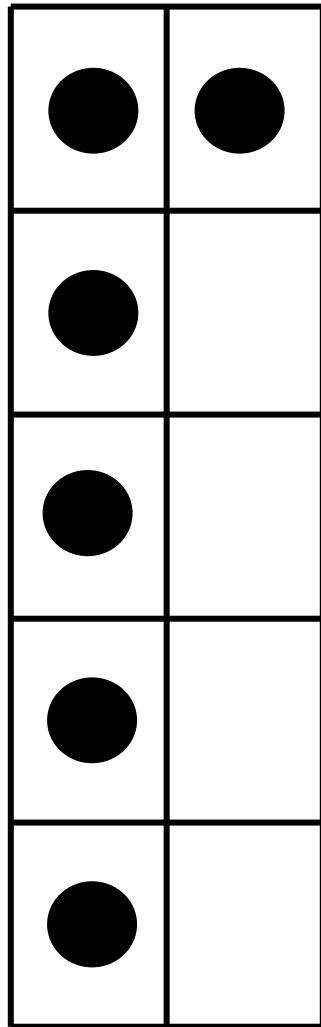
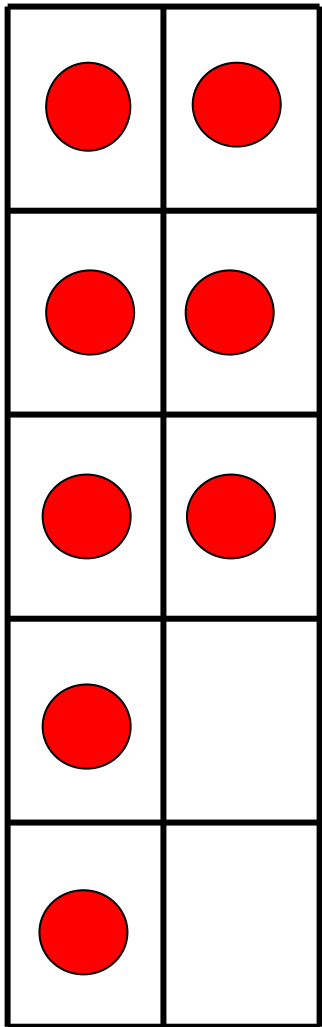
$$8+(2+4)$$

$$(8+2)+4$$

$$10+4$$

$$14$$

Making 10 by
decomposing 6



$$8+6$$

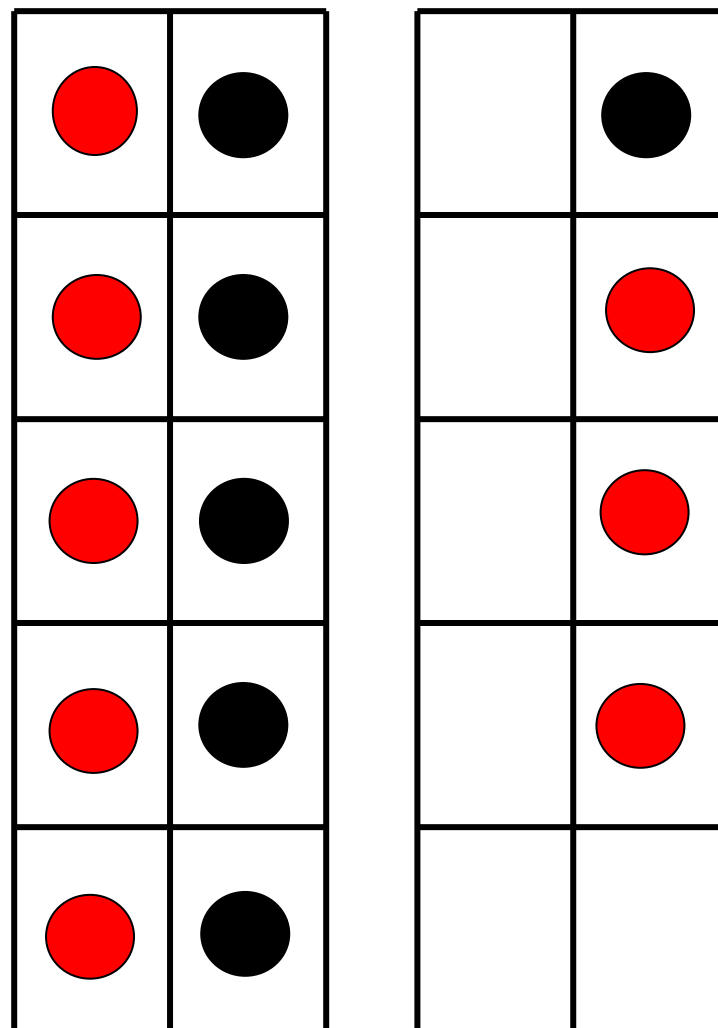
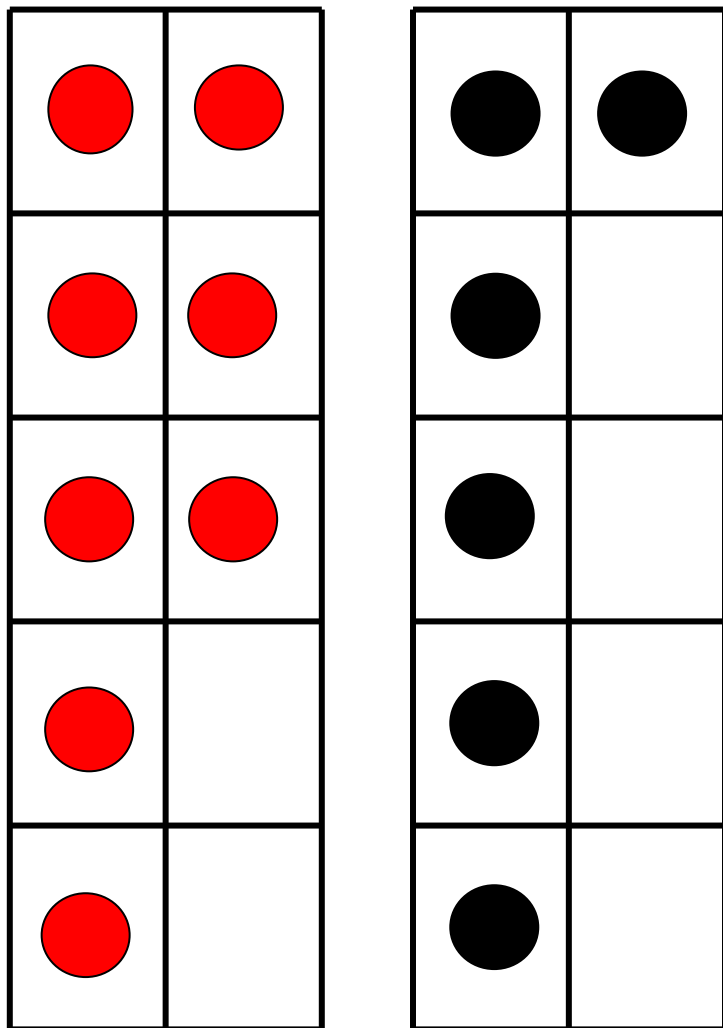
$$(7+1) +6$$

$$7 + (1+6)$$

$$7+7$$

$$14$$

Doubles



$$8 + 6$$

$$(3+5) + (5+1)$$

$$5+5=10$$

$$3+1=4$$

$$10+4=14$$

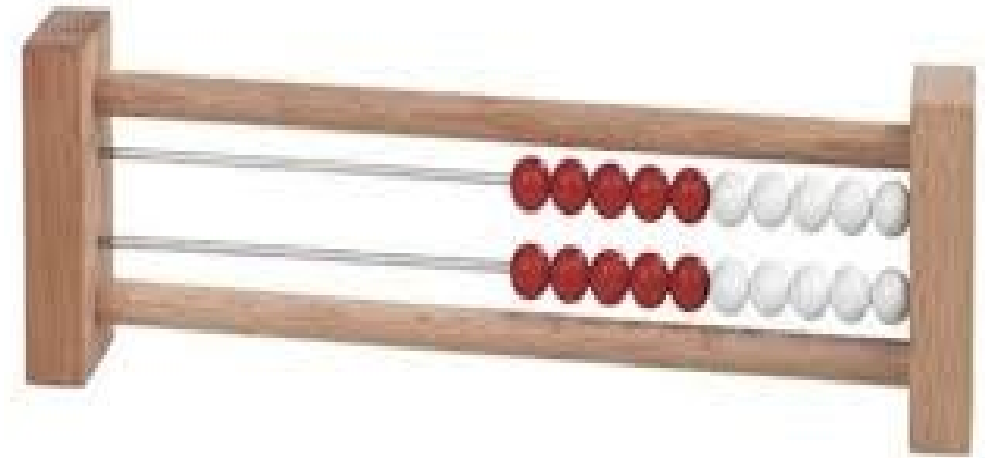
$$(5+5)+(3+1)$$

$$10+4$$

$$14$$

Making 10 by
using benchmarks
of 5

What is a counting frame?



Guess My Way

from Number Talks by Sherry Parrish, Math Solutions



Number String on Rekenrek

from Math in the City

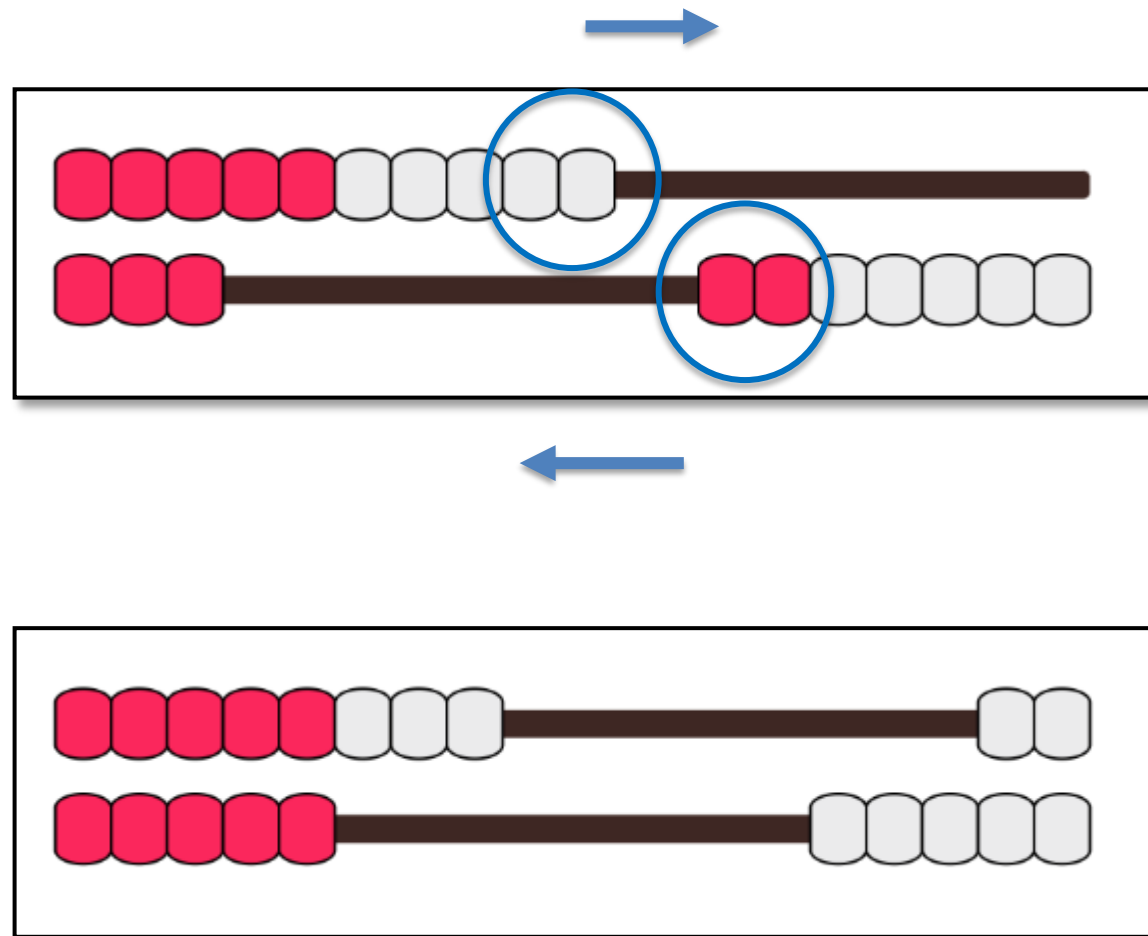


$$5 + 5$$

$$6 + 5$$

$$10 + 3$$

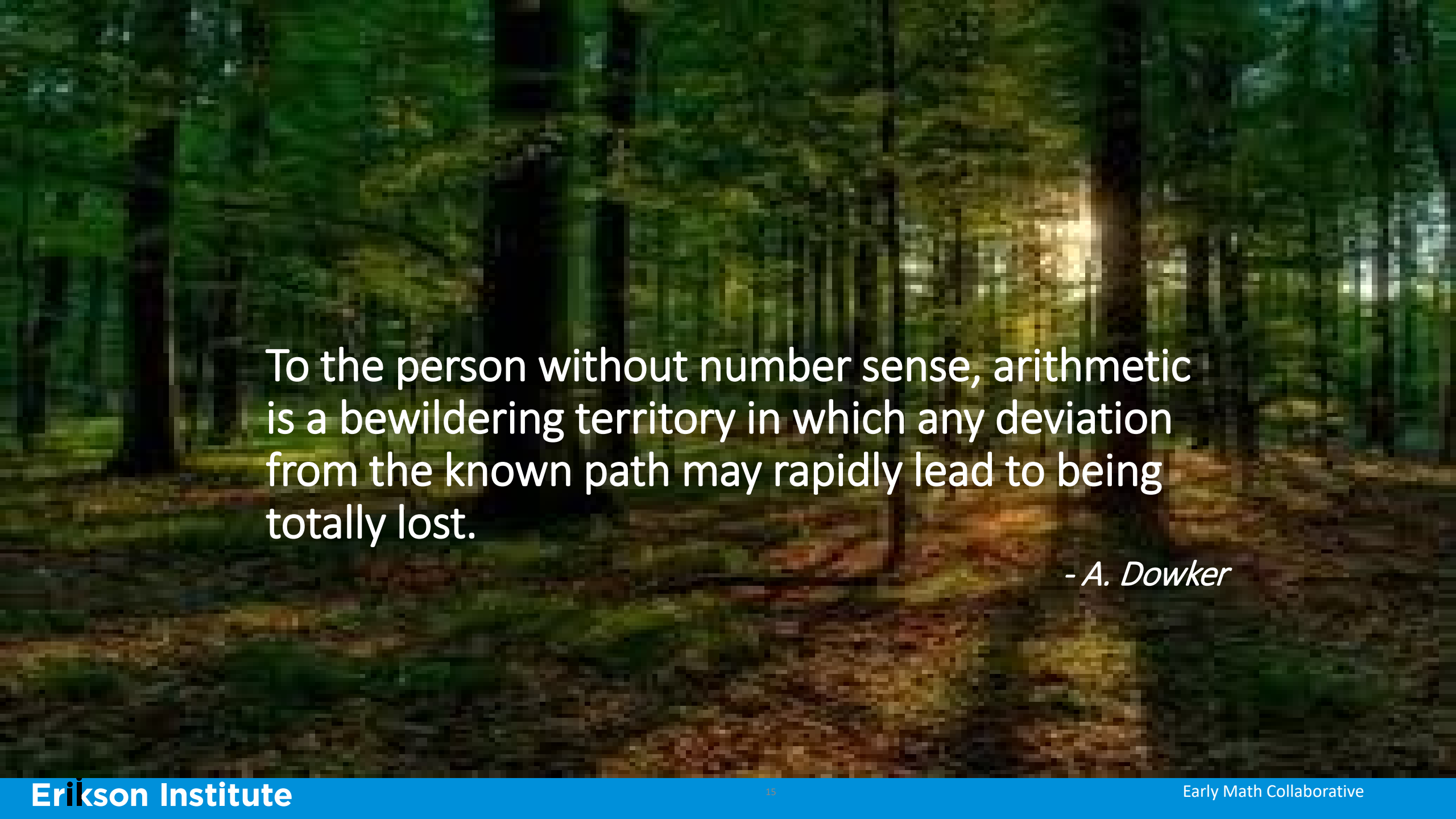
$$8 + 5$$



COMPENSATION

First Grader problem solving



A photograph of a forest path with sunlight filtering through the trees. The path is covered in fallen leaves and leads into a dense forest of tall, thin trees. The lighting is soft and natural, creating a serene atmosphere.

To the person without number sense, arithmetic is a bewildering territory in which any deviation from the known path may rapidly lead to being totally lost.

- A. Dowker

Classroom uses for these tools

The counting frame and 10 frames can be used for routines like -

- How many days in school?
 - How many people are here today?
 - How many classmates are 5 years old? How many classmates are 6 years old?
 - How many teeth have been lost by our classmates?
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- Mathlearning.org – online rekenrek