



**The
Flexibility
Formula**

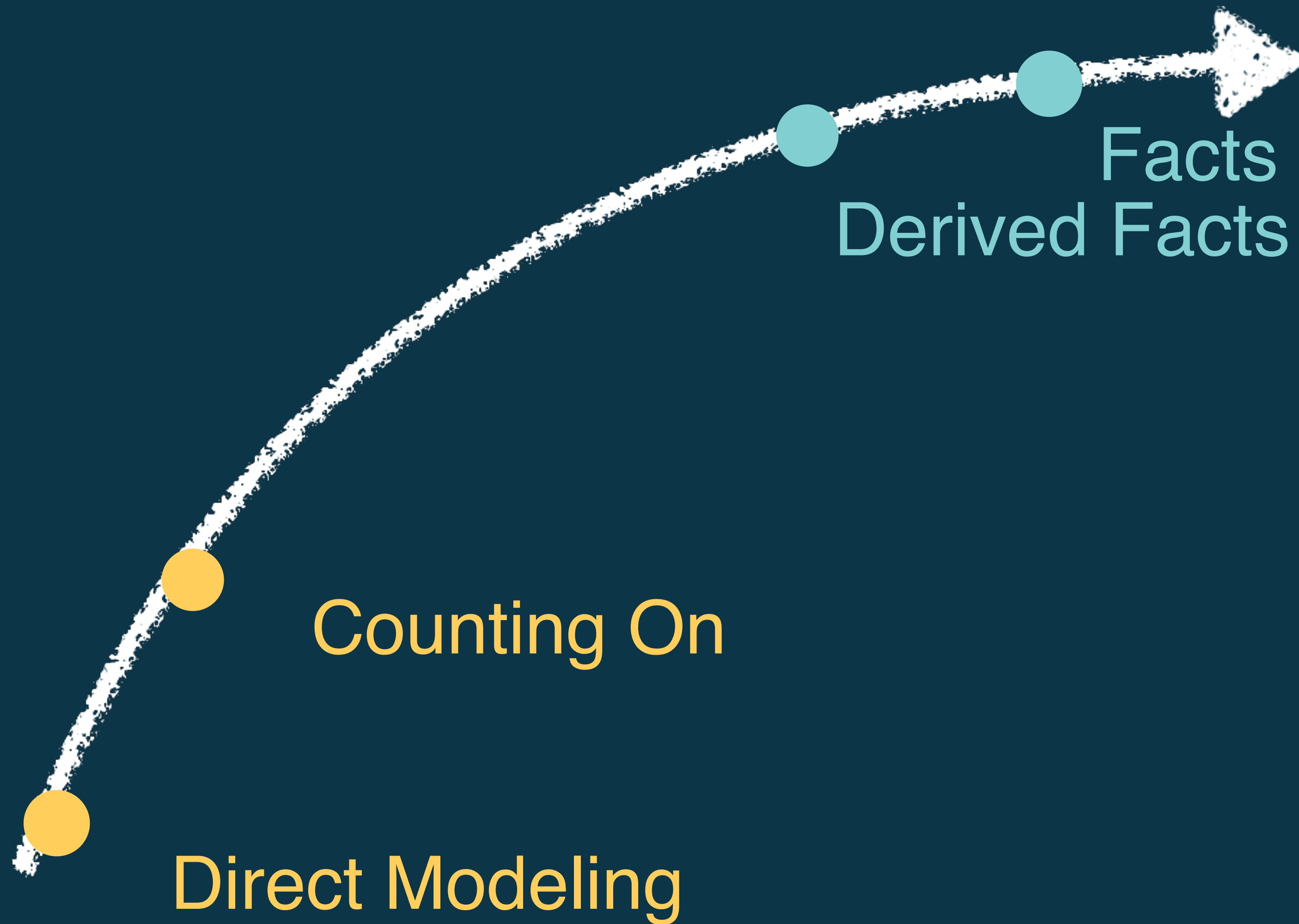


PREK - 2ND GRADE

Snapshot of UNDERSTANDING

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CGI Progression



Thomas Carpenter, et. al

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+	0	1	2	3	4	5	6	7	8	9	10
0	0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	11
2	2	3	4	5	6	7	8	9	10	11	12
3	3	4	5	6	7	8	9	10	11	12	13
4	4	5	6	7	8	9	10	11	12	13	14
5	5	6	7	8	9	10	11	12	13	14	15
6	6	7	8	9	10	11	12	13	14	15	16
7	7	8	9	10	11	12	13	14	15	16	17
8	8	9	10	11	12	13	14	15	16	17	18
9	9	10	11	12	13	14	15	16	17	18	19
10	10	11	12	13	14	15	16	17	18	19	20

What if I can't remember
 $7+8$?

Describe how you would hope that
students would think about solving $7 + 8$

Using derived facts

Which of these problems can you solve by using the double $5 + 5$ as a guide?


$$\begin{array}{r} 9 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +2 \\ \hline \end{array}$$


$$\begin{array}{r} 7 \\ +3 \\ \hline \end{array}$$


$$\begin{array}{r} 6 \\ +4 \\ \hline \end{array}$$

Crespo, et al (2005)



Number Sense is the Key

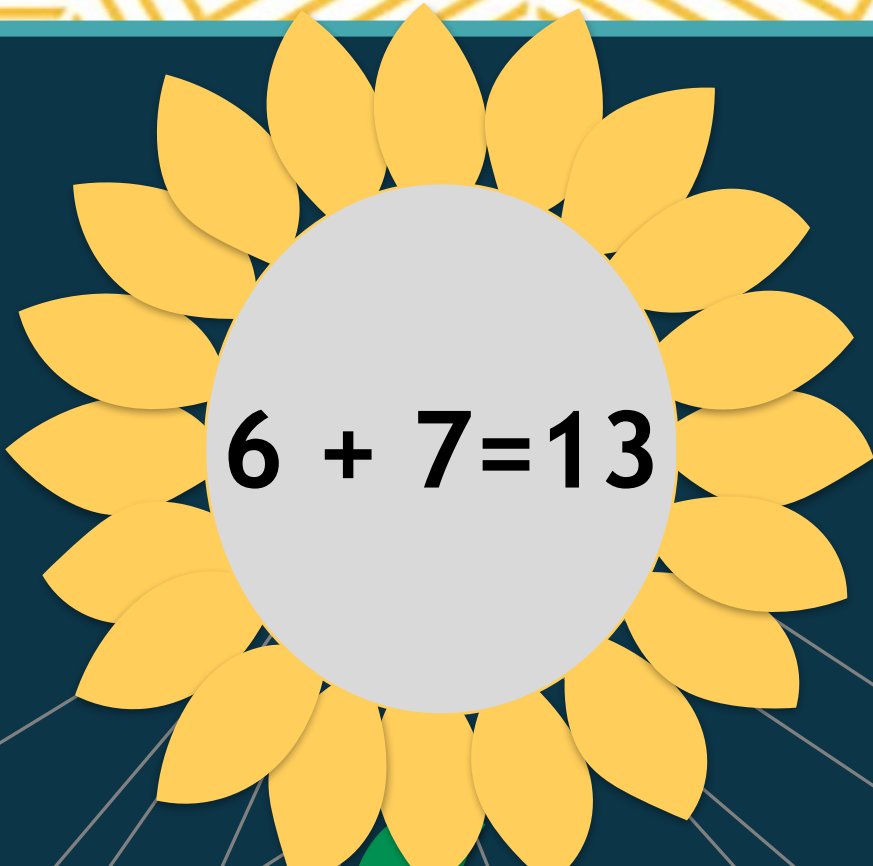
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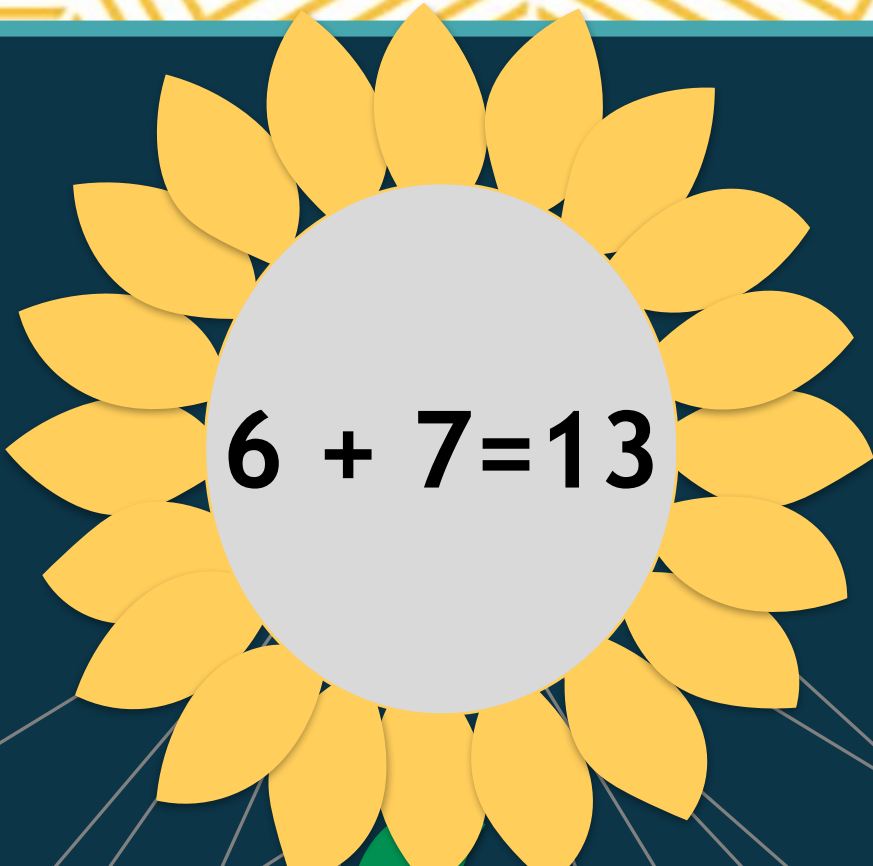
4 Types of Facts

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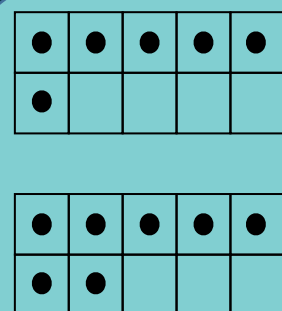
+	0	1	2	3	4	5	6	7	8	9	10
0	0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	11
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5	5	6	7	8	9	10	11	12	13	14	15
6	6	7	8	9	10	11	12	13	14	15	16
7	7	8	9	10	11	12	13	14	15	16	17
8	8	9	10	11	12	13	14	15	16	17	18
9	9	10	11	12	13	14	15	16	17	18	19
10	10	11	12	13	14	15	16	17	18	19	20

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A stylized sunflower with a grey circular center and yellow petals. The equation $6 + 7 = 13$ is written in black text inside the grey center. The sunflower has a green stem and is positioned on a green hill. Thin white lines radiate from the base of the sunflower's head across the dark blue sky to the horizon.
$$6 + 7 = 13$$


$$6 + 7 = 13$$

$$3 + (3 + 7)$$



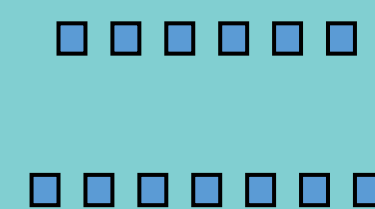
$$(6 + 4) + 3$$

Context

6, 7, 8,
9, 10, 11,
12, 13

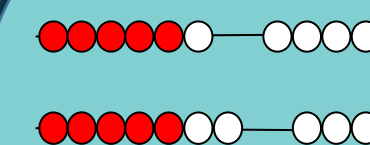
$$7 + 6$$

1,2,3,4,5,6
1,2,3,4,5,6,7
1,2,3,4,5,6,7,8,9,
10,11,12,13



7, 8, 9,
10, 11,
12, 13

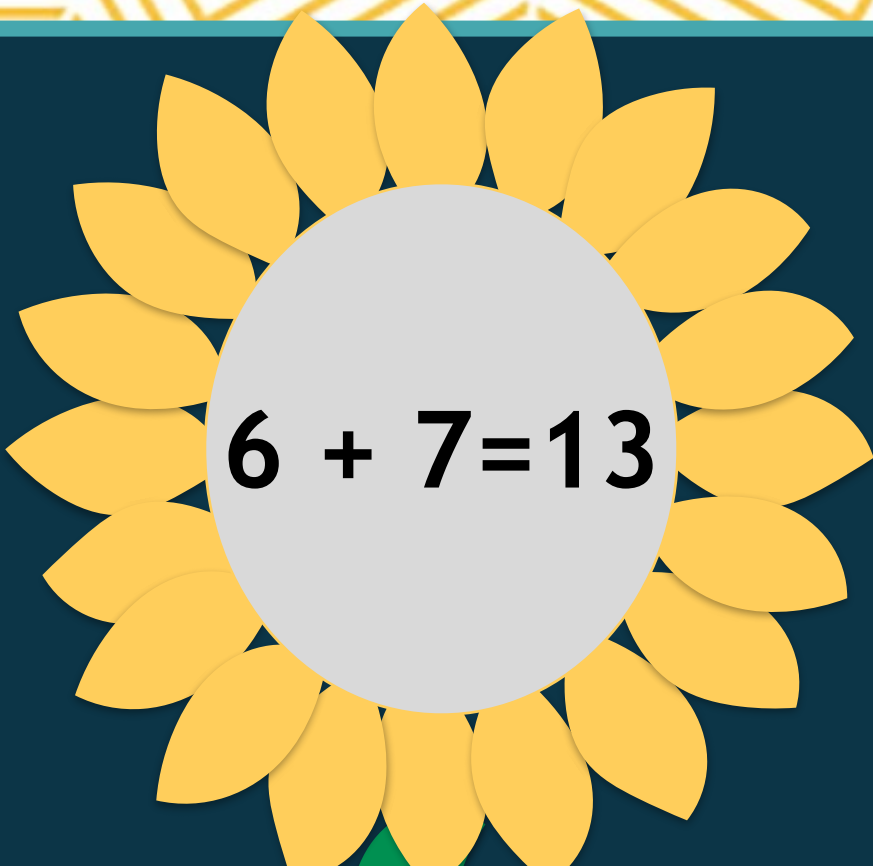
$$6 + 6 + 1$$



$$7 + 7 - 1$$

$$1 + (5 + 5) + 2$$

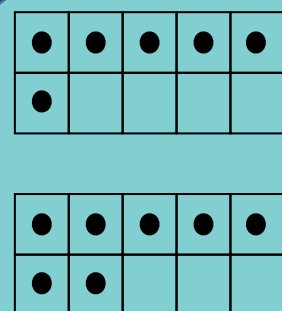
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$$6 + 7 = 13$$

Subitizing &
Cardinality

Verbal & Object
Counting

$$3 + (3 + 7)$$



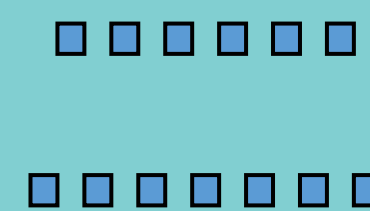
$$(6 + 4) + 3$$

Context

6, 7, 8,
9, 10, 11,
12, 13

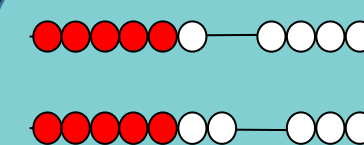
$$7 + 6$$

1,2,3,4,5,6
1,2,3,4,5,6,7
1,2,3,4,5,6,7,8,9,
10,11,12,13



7, 8, 9,
10, 11,
12, 13

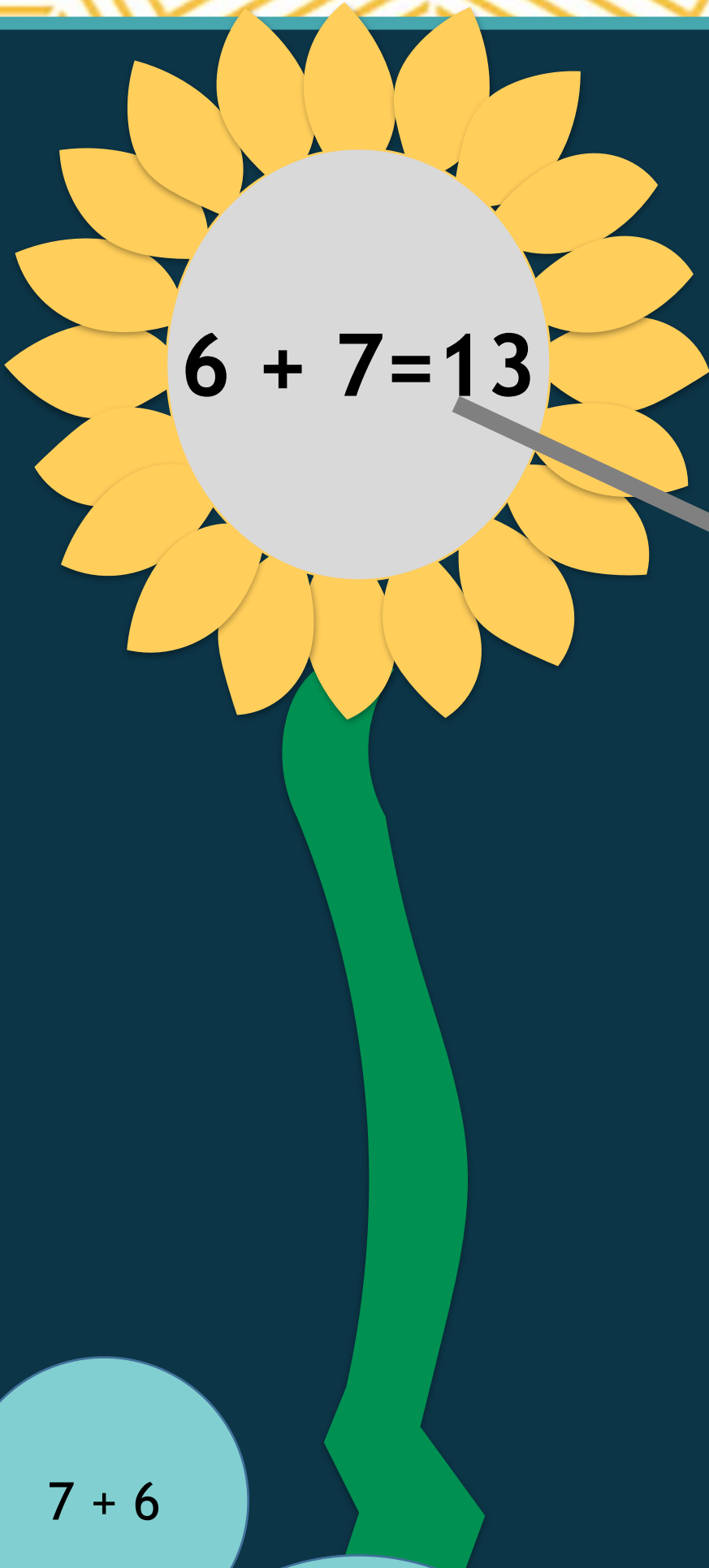
$$6 + 6 + 1$$



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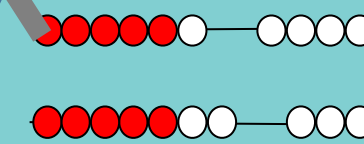
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$$6 + 7 = 13$$

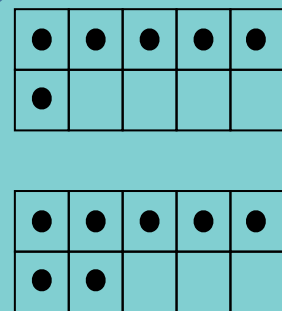
One/Two
More or Less and Part-Part-Whole

$$6 + 6 + 1$$

Spatial
Relationship



$$3 + (3 + 7)$$



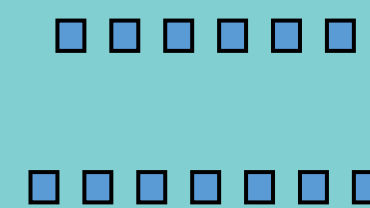
$$(6 + 4) + 3$$

Context

6, 7, 8,
9, 10, 11,
12, 13

$$7 + 6$$

1,2,3,4,5,6
1,2,3,4,5,6,7
1,2,3,4,5,6,7,8,9,
10,11,12,13

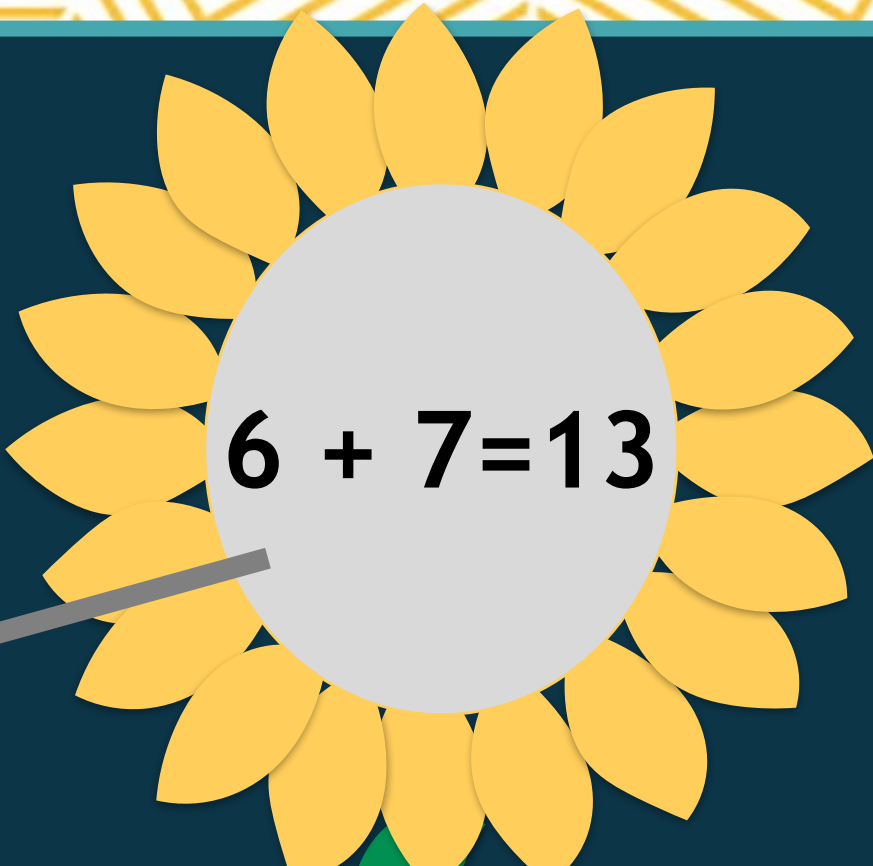


7, 8, 9,
10, 11,
12, 13

$$7 + 7 - 1$$

$$1 + (5 + 5) + 2$$

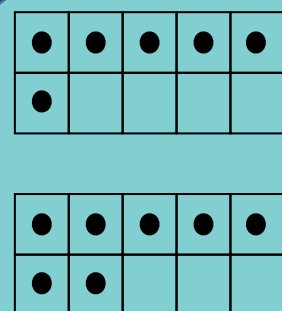
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$$6 + 7 = 13$$

Benchmarks and
Part-Part-Whole

$$3 + (3 + 7)$$

Spatial
Relationship



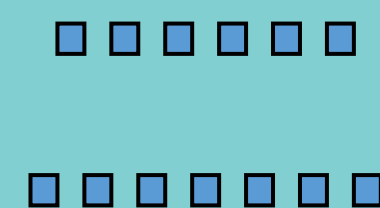
$$(6 + 4) + 3$$

Context

6, 7, 8,
9, 10, 11,
12, 13

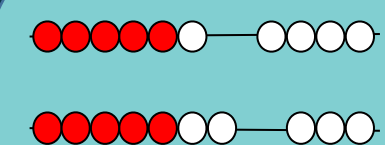
$$7 + 6$$

1,2,3,4,5,6
1,2,3,4,5,6,7
1,2,3,4,5,6,7,8,9,
10,11,12,13



7, 8, 9,
10, 11,
12, 13

$$6 + 6 + 1$$



$$7 + 7 - 1$$

$$1 + (5 + 5) + 2$$

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Benchmark
of 5 & 10

How many
more to
Make 10?

$$9 + 5$$

How
should I
chunk 5?

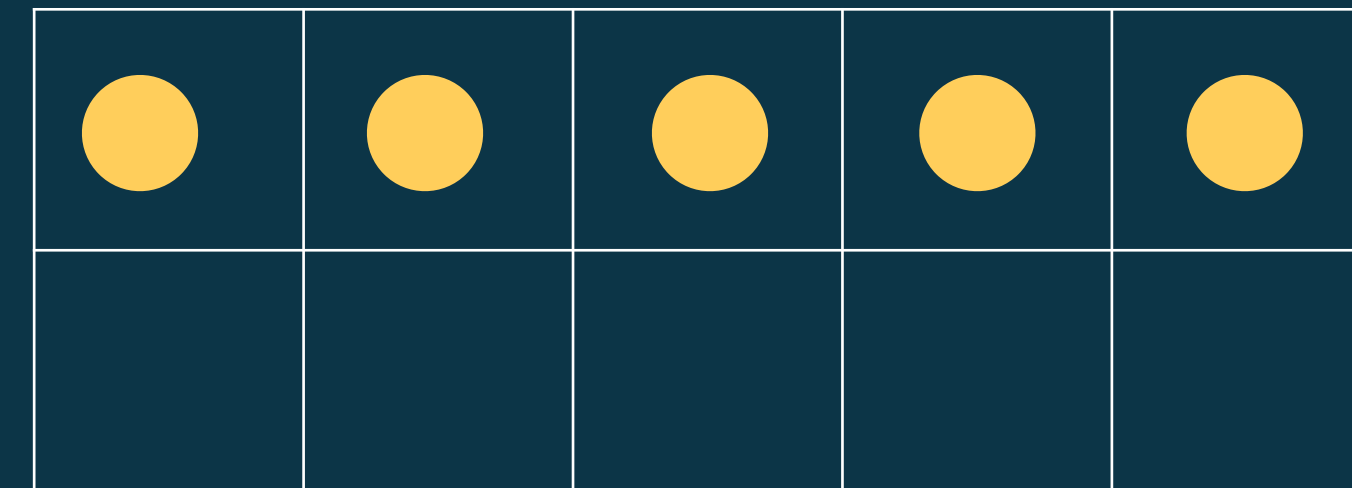
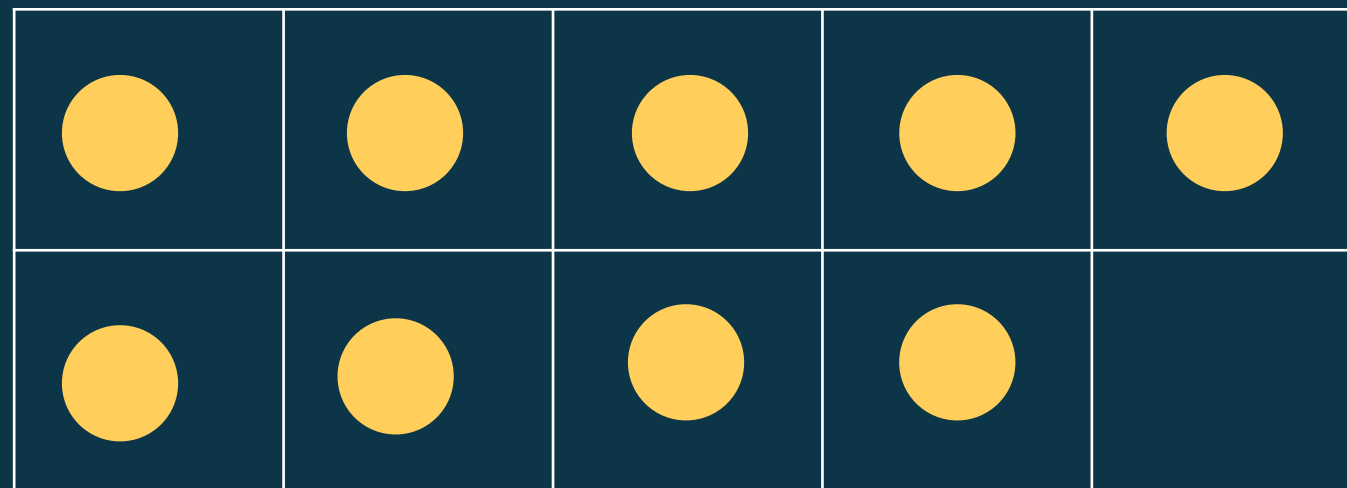
Part-Part-
Whole

What is
 $10 + 4$?

Benchmark
of 5 & 10

If I chunk 1
off, what's
left?

One/Two
More & Less



Spatial
Relationships

$$18 + 27$$

How many
more to
Make a 10?

How
should I
chunk 27?

A handwritten diagram on a light gray background illustrating the strategy of making tens. At the top, the equation $18 + 27$ is written in green. Two lines branch from the 18 and 27, leading down to the equation $20 + 25$. This shows that 18 is increased by 2 to become 20, and 27 is decreased by 2 to become 25, maintaining the same total sum.

$$20 + 25$$

If I chunk 2
off, what's
left?

What is
 $20 + 25$?

Early Numeracy

Subitizing

Verbal Counting

Object Counting

Cardinality

Number Relationships

Spatial Relationships

One/Two More & Less

Benchmark of 5 & 10

Part-Part-Whole

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