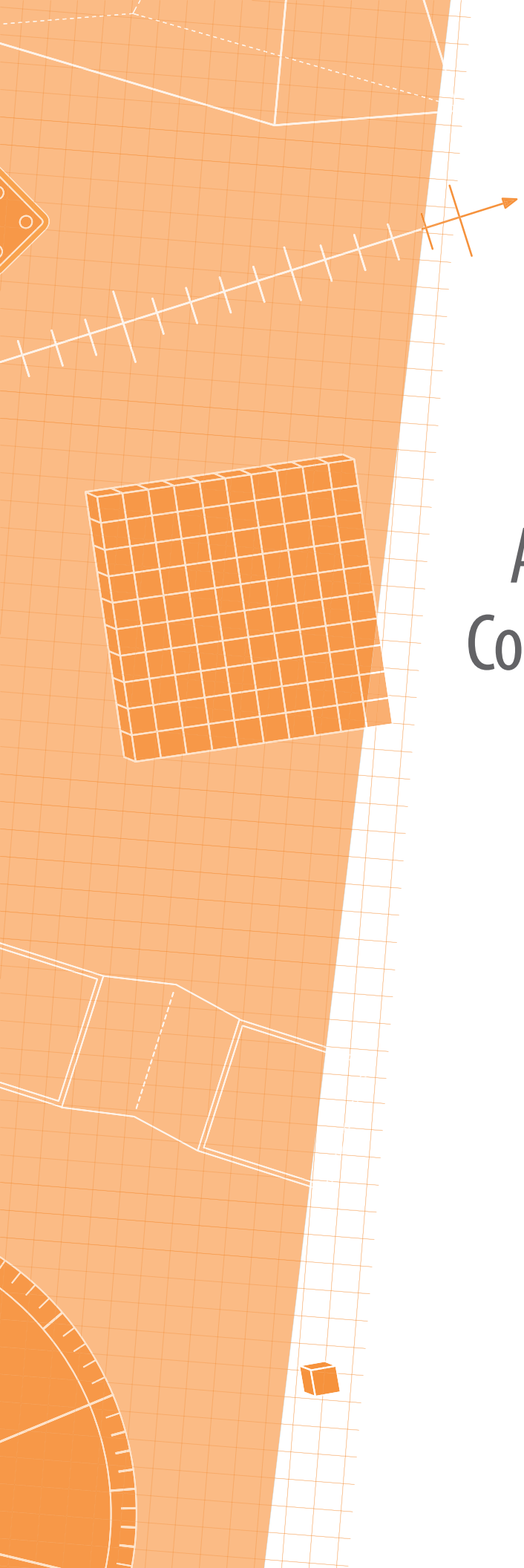

Building Links Between Addition and Subtraction: Concepts and Number Facts

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Language Ranging from Words to Symbols

Student Language

↓

Materials Language

↓

Mathematical Language

↓

Symbolic Language

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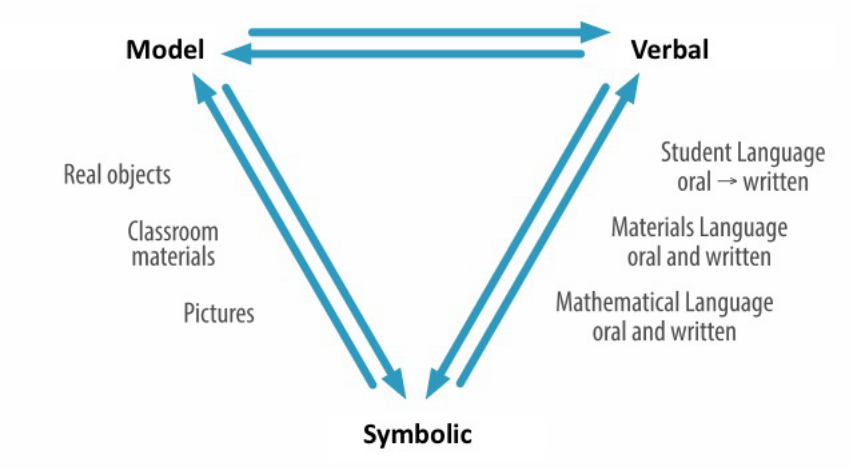
ORIGO's Teaching Model*



*Adapted from Ed Rathmell.

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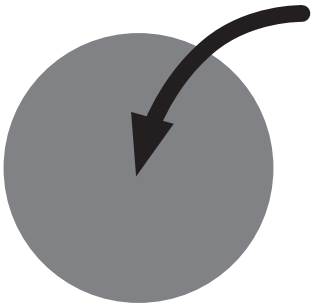
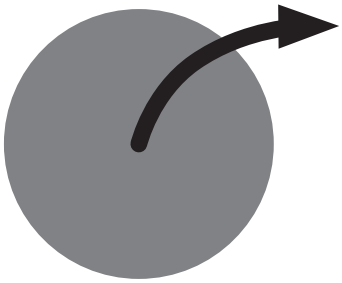
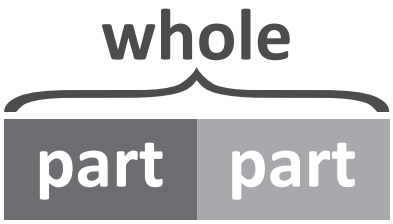
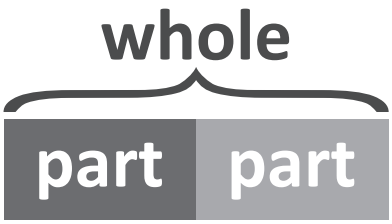
Write a word problem that you know is subtraction.

How do you know that your story involves subtraction?

What is known? What is unknown?

ADDITION AND SUBTRACTION MODELS

	Addition	Subtraction
Active	Add to 	Take from 
Static	Put together 	Unknown addend 
Static		Comparison 

WHAT'S THE PROBLEM?

Carefully read each story problem.

- Check (✓) the box to indicate the operation described.
- For each addition problem, write whether the model is 'add to' or 'put together'.
- For each subtraction problem, write whether the model is 'take from', 'unknown addend' or 'comparison'.
- It is not necessary to answer the problems.

1. **a.** Jacinta has 12 cards she wants to trade. Jade has 18 cards. How many more cards does Jade have than Jacinta?

+	–	?

_____

b. How many cards do they have together?

+	–	?

_____

2. **a.** Brie's lunch total is $13. If she pays with a $20-bill, how much change will she receive?

+	–	?

_____

b. Beau's lunch total is $15. How much less did Brie spend?

+	–	?

_____

3. **a.** Samuel has $22. He wants to buy a new bike helmet that costs $55. How much more does he need?

+	–	?

_____

b. Samuel's mother gave him another $20. How much money does he have now?

+	–	?

_____

4. **a.** Matt threw the beanbag 3 meters farther than Tom. Tom's throw measured 9 meters. How far did Matt throw the beanbag?

+	–	?

_____

b. Anton's throw measured 11 meters. How much farther did he throw than Tom?

+	–	?

_____

5. **a.** Monica's previous best race time was 61 seconds. She beat it by 2 seconds. What is her new personal best time?

+	–	?

_____

b. The record time is 55 seconds. How much more time will she need to shave from her personal best to equal that record?

+	–	?

_____

NUMBER FACT STRATERGIES

ADDITION

- Count-on 1, 2 and 0
- Double and near doubles
- Make ten

SUBTRACTION

- Think addition

MULTIPLICATION

- Use tens (5s)
- Make generalizations (1s and 0s)
- Use doubles (2s, 4s and 8s)
- Build up/down (9s and 6s)

DIVISION

- Think multiplication

TEACHING SEQUENCE

- INTRODUCE (see page 6)
- REINFORCE (see page 6)
- PRACTICE (see page 8)
- EXTEND (see page 8)

The Introduce Stage

This stage involves the use of concrete materials and pictorial representations to model the strategy.

At this first stage, ORIGO resources also include **contextual situations** to provide meaning.

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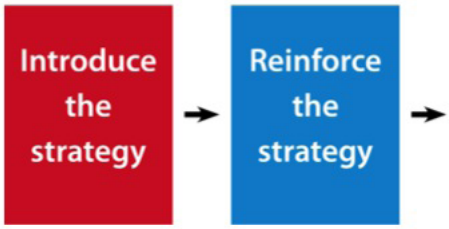
The Reinforce Stage



This stage provides the opportunity for the students to assimilate and internalize the strategy.

It is an additional link using pictorial models between the introductory work and the symbolic.

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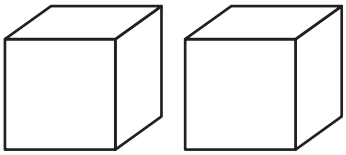
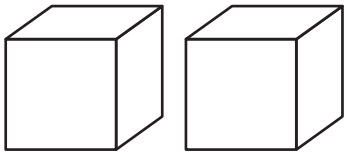
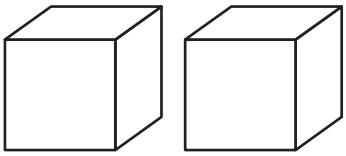
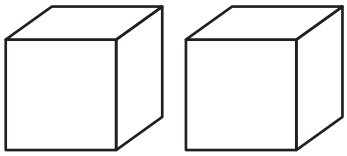
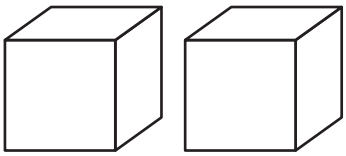
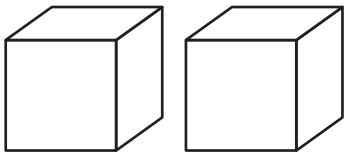
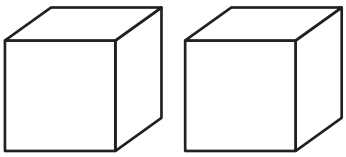
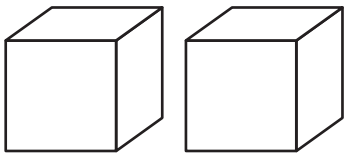
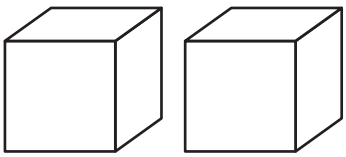
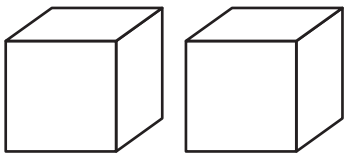
REINFORCE: Count on 1 and 2

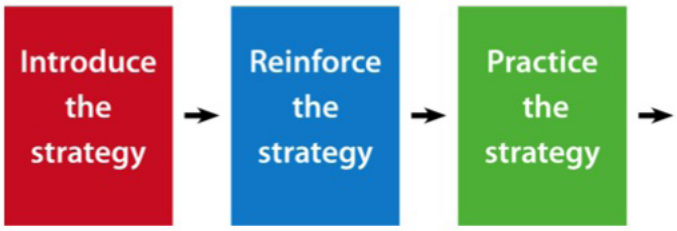
- Roll your number cubes and count on 1 or 2.
- Find your answer below.
- Write your numbers on the number cubes. Write the number fact.

 ____ + ____ = 11	 ____ + ____ = 6
 ____ + ____ = 5	 ____ + ____ = 8
 ____ + ____ = 9	 ____ + ____ = 7
 ____ + ____ = 8	 ____ + ____ = 6
 ____ + ____ = 7	 ____ + ____ = 10

Cube A: 4, 5, 6, 7, 8, 9

Cube B: 

The Practice Stage



This stage aims to develop accuracy and increase 'speed' of recall.

In this stage, a range of different types of written and oral activities is used.

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The Extend Stage

This stage moves the strategy to examples beyond the number fact range, including computation with decimals.

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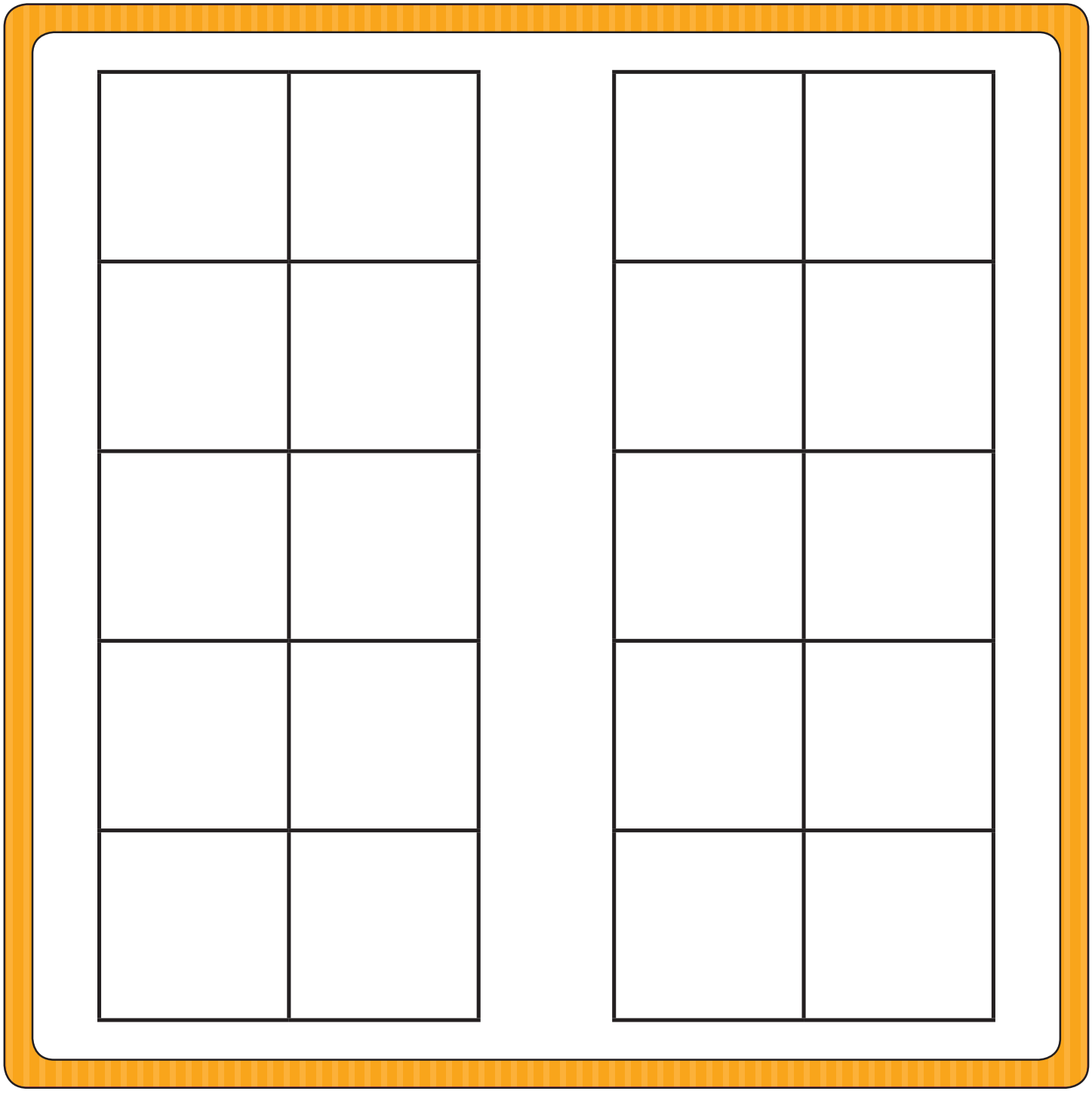
REINFORCE: Double-add-1

11	19	13	15
13	9	17	19
17	11	15	9

Cube: 4, 5, 6, 7, 8, 9 *(Same as previous game)*

INTRODUCE: Make Ten



ORIGO Education: *Box of Facts (Addition and Subtraction)*

REINFORCE: Make Ten

- Roll your number cubes and write the fact below the example in the grid that will help you figure out the answer.
- Write the answer to both facts.

10 + 6 = ____ ____ + ____ = ____	10 + 6 = ____ ____ + ____ = ____
10 + 5 = ____ ____ + ____ = ____	10 + 5 = ____ ____ + ____ = ____
10 + 5 = ____ ____ + ____ = ____	10 + 5 = ____ ____ + ____ = ____
10 + 4 = ____ ____ + ____ = ____	10 + 4 = ____ ____ + ____ = ____
10 + 4 = ____ ____ + ____ = ____	10 + 4 = ____ ____ + ____ = ____
10 + 3 = ____ ____ + ____ = ____	10 + 3 = ____ ____ + ____ = ____
10 + 3 = ____ ____ + ____ = ____	10 + 3 = ____ ____ + ____ = ____
10 + 2 = ____ ____ + ____ = ____	10 + 2 = ____ ____ + ____ = ____
10 + 1 = ____ ____ + ____ = ____	10 + 1 = ____ ____ + ____ = ____

Cube A: 8, 8, 8, 9, 9, 9

Cube B: 3, 4, 5, 5, 6, 7

Extensions Across Grades

Begin with a special fact strategy

Strategies	First Extension	Further Extensions	Decimal Extensions
Count-on 6 + 1 9 + 2	Count-on 16 + 1 19 + 2	Count-on 26 + 21 29 + 12	Count-on 3.6 + 2.1 2.9 + 1.2
Use doubles 7 + 7 6 + 5	Use doubles 25 + 25 26 + 25	Use doubles 27 + 27 126 + 125	Use doubles 2.5 + 2.5 1.26 + 1.25
Make ten 9 + 4	Make ten 39 + 4	Make ten 198 + 25	Make ten 1.98 + 0.6

ORIGO EDUCATION

Addition Chart

- Count on
  - count on 1
  - count on 2
  - count on 0
- Use doubles
  - doubles
  - double-add-1
  - double-add-2
- Make ten
- The last facts

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

ORIGO EDUCATION

Take or Tally

Player 1	Player 2
13 – _____ = _____	13 – _____ = _____
12 – _____ = _____	12 – _____ = _____
11 – _____ = _____	11 – _____ = _____
10 – _____ = _____	10 – _____ = _____
9 – _____ = _____	9 – _____ = _____
8 – _____ = _____	8 – _____ = _____
Tally	Tally

Cube A: 1, 2, 3, 1, 2, 3

Cube B: 7, 8, 9, 10, 11, 12

