Developing Thinking Strategies for Addition/Subtraction and Multiplication/Division

MCTM Duluth 2019

ORIGO
EDUCATION

NUMBER FACT STRATEGIES

ADDITION
- Count-on 1, 2 and 0
- Doubles 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 2)
- **Reinforce** (see page 2)
- **Practice** (see page 3)
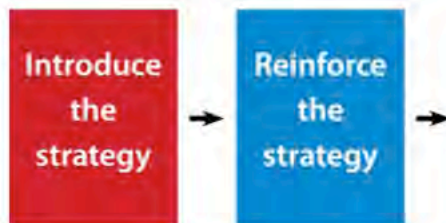- **Extend** (see page 3)

The Introduce Stage

Introduce the strategy →

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.

ORIGO
EDUCATION

The Reinforce Stage

Introduce the strategy → **Reinforce the strategy** →

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.

ORIGO
EDUCATION

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.

ORIGO
EDUCATION

The Extend Stage

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

ORIGO
EDUCATION

INTRODUCE: Make Ten

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

Tens Or Fives

$2 \times 10 =$ ___ $2 \times 5 =$ ___	$1 \times 10 =$ ___ $1 \times 5 =$ ___	$5 \times 10 =$ ___ $5 \times 5 =$ ___	$9 \times 10 =$ ___ $9 \times 5 =$ ___	$7 \times 10 =$ ___ $7 \times 5 =$ ___
$3 \times 10 =$ ___ $3 \times 5 =$ ___	$5 \times 10 =$ ___ $5 \times 5 =$ ___	$7 \times 10 =$ ___ $7 \times 5 =$ ___	$2 \times 10 =$ ___ $2 \times 5 =$ ___	$4 \times 10 =$ ___ $4 \times 5 =$ ___
$7 \times 10 =$ ___ $7 \times 5 =$ ___	$8 \times 10 =$ ___ $8 \times 5 =$ ___	$3 \times 10 =$ ___ $3 \times 5 =$ ___	$6 \times 10 =$ ___ $6 \times 5 =$ ___	$9 \times 10 =$ ___ $9 \times 5 =$ ___
$4 \times 10 =$ ___ $4 \times 5 =$ ___	$2 \times 10 =$ ___ $2 \times 5 =$ ___	$8 \times 10 =$ ___ $8 \times 5 =$ ___	$7 \times 10 =$ ___ $7 \times 5 =$ ___	$1 \times 10 =$ ___ $1 \times 5 =$ ___
$2 \times 10 =$ ___ $2 \times 5 =$ ___	$6 \times 10 =$ ___ $6 \times 5 =$ ___	$9 \times 10 =$ ___ $9 \times 5 =$ ___	$3 \times 10 =$ ___ $3 \times 5 =$ ___	$8 \times 10 =$ ___ $8 \times 5 =$ ___

Cube A: 6, 5, 4, 3, 2, 1

Cube B: 9, 9, 8, 8, 7, 7

Nice and Easy

90 × 3	90 × 4	90 × 6	90 × 7	90 × 8	90 × 9
70 × 3	70 × 4	70 × 6	70 × 7	70 × 8	70 × 9
50 × 3	50 × 4	50 × 6	50 × 7	50 × 8	50 × 9
30 × 3	30 × 4	30 × 6	30 × 7	30 × 8	30 × 9

Cube A: 15, 15, 25, 35, 45, 45

Cube B: 6, 8, 12, 14, 16, 18

Nice and Easy Too!

270	360	540	630	720	810
210	280	420	490	560	630
150	200	300	350	400	450
90	120	180	210	240	270

THE BOX AND BOOK OF

FACTS

SUBTRACTION
ADDITION
+ −

IDEAL RESOURCES TO TEACH AND REINFORCE BASIC FACTS

The Box of Facts kits contain more than 200 laminated cards for the basic addition/subtraction and multiplication/division facts.
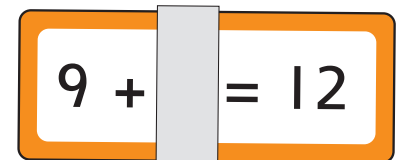
The Book of Facts teacher guides provide a comprehensive bank of activities and engaging blackline masters for each step of ORIGO's four-stage approach to number fact fluency.
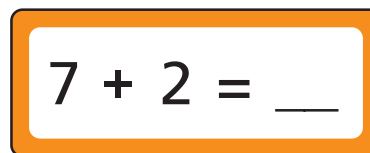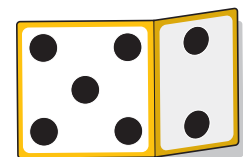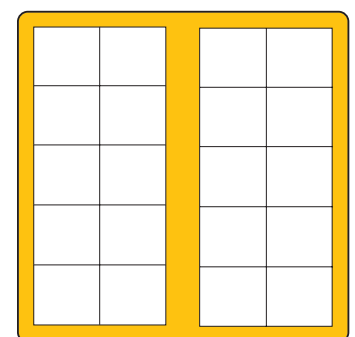
THE BOX OF FACTS

A comprehensive kit for developing basic number facts

ADDITION   SUBTRACTION

EXAMPLE STRATEGIES:
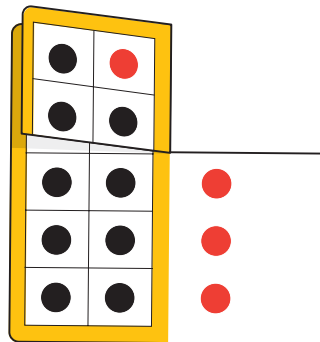
BRIDGE-TO-TEN STRATEGY

$$9 + \ \ = 12$$

MISSING-ADDEND SUBTRACTION CARDS

$$7 + 2 = \underline{\ \ }$$

ADDITION FLASH CARDS

COUNT-ON

BRIDGE-TO-TEN FRAMES

THE BOOK OF FACTS

Fishing for Facts

Name:

Complete each number fact. Then shade the double facts.

a. 5 + 5 =
b. 1 + 1 =
c. 8 + 8 =
d. 4 + 2 =
e. 6 + 1 =
f. 3 + 3 =
g. 2 + 2 =
h. 3 + 5 =
i. 5 + 2 =
j. 5 + 6 =
k. 9 + 9 =
l. 4 + 4 =
m. 7 + 7 =
n. 3 + 7 =
o. 2 + 3 =
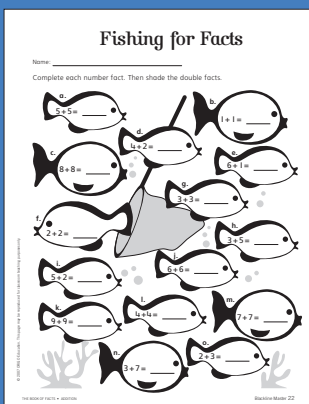
The Book of Facts: Addition

ADDITION

SUBTRACTION

THE BOX AND BOOK OF FACTS

MULTIPLICATION
DIVISION
×÷

NUMBER FACT FLUENCY

INTRODUCE
REINFORCE
PRACTICE
EXTEND

EXAMPLE STRATEGIES:

$18 \div 2 = \underline{}$
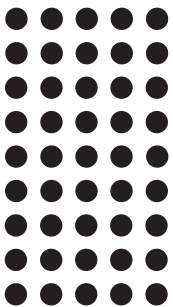
DIVISION
FLASH CARDS

$2 \times 6 = \underline{} = 6 \times 2$

$4 \times 6 = \underline{} = 6 \times 4$

DOUBLING
STRATEGY CARDS

$9 \times \underline{} = 27$

MISSING FACTOR
DIVISION CARDS

30 dots

5 equal rows

THINK-MULTIPLICATION
DIVISION STRATEGY

$9 \times 5 = \underline{} = 5 \times 9$

BUILD-DOWN AND
BUILD-UP
STRATEGY CARDS

THE BOX OF FACTS

A comprehensive kit for developing basic number facts

MULTIPLICATION   DIVISION

THE BOOK OF FACTS

Fives Facts

The Book of Facts: Multiplication

ORIGO EDUCATION