Developing Addition and Subtraction Facts with Understanding – Not Gimmicks!

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ORIGO EDUCATION

NUMBER FACT STRATEGIES

ADDITION

- Count-on 1, 2 and 0
- Use doubles
- Make ten

SUBTRACTION

- Think addition

MULTIPLICATION

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

DIVISION

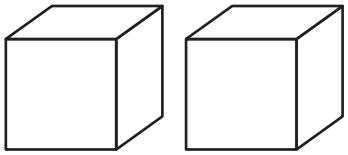
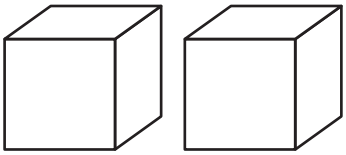
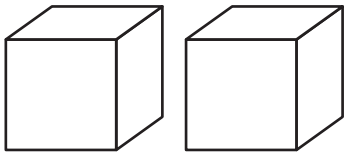
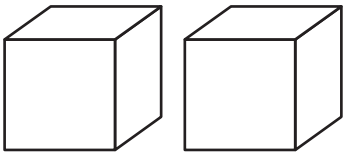
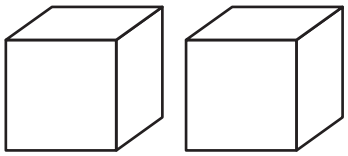
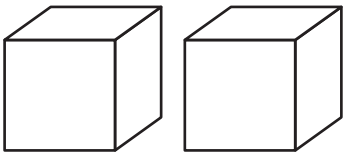
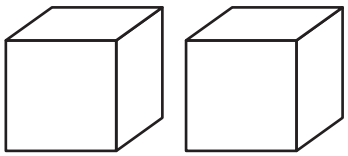
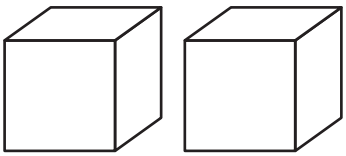
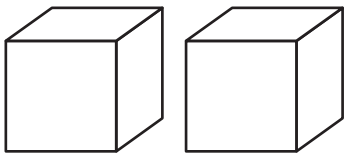
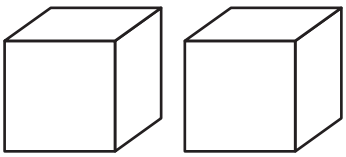
- Think multiplication

TEACHING SEQUENCE

- Introduce
- Reinforce
- Practice
- Extend

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: 

ADDITION CHART

+	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

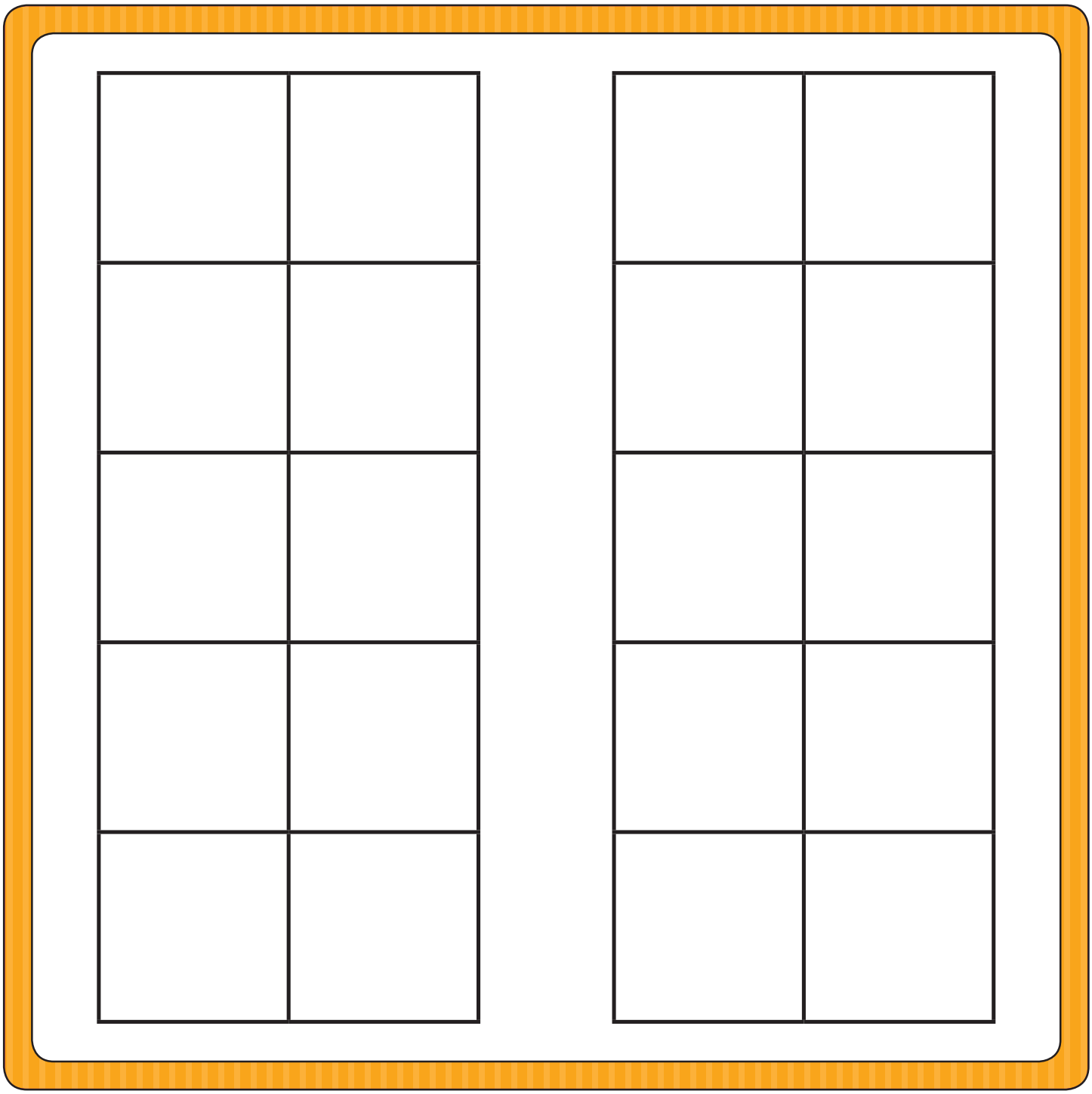
- ☐ Count-on facts
- ☐ Use doubles facts
- ☐ Make ten facts

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

Directions for the Games

Count on 1 or 2

Focus:
Adding 1 or 2 using the count on strategy

Materials:
Two number cubes configured as follows:
Cube A: 4, 5, 6, 7, 8, 9
Cube B: 1, 1, 1, 2, 2, 2
Colored pencil or marker for each student in different colors
Game board

Directions:
The player who completes the most equations is the winner.

How to Play:
Player 1 rolls, finds the matching equation with the matching sum and fills in the dice and equation on the game board in his/her color.
Next player rolls and fills in dice and equation in his/her color.
If a player rolls a sum that is already filled, he/she misses a turn.
Play continues until board is filled or time runs out.

Example:
Gertrude rolls a numeral six and 2 dots. She says, Six count on 2 is seven, eight. I will fill in one of the equations with the sum of 8 and fill in the dice to match my roll.

Doubles plus 1

Focus:
Using doubles facts to solve a doubles plus 1 equation

Materials:
Doubles add one game board
Once cube showing the numerals 4, 5, 6, 7, 8, 9
Four counters per player, each player has a different color counter

Directions:
The player who places all four counters on the board first, wins.

How to Play:
First player rolls the number cube and doubles the number rolled, then adds one to it.
Player claims the sum by covering it with a counter. If that sum is already covered, the player misses a turn.
Other players have a turn.

Example:
Carla rolls a 7 and says, "I know that double 7 is 14, so 7 add 8, must be one more, that's 15."

For ideas on how to bring out the mathematics in this game, see Fundamentals Yellow, pp 56-57.

Make Ten

Focus:
Reinforce the Bridge-to-Ten strategy for addition

Materials:
Two number cubes configured as follows:
Cube A: 8, 8, 8, 9, 9, 9
Cube B: 3, 4, 5, 5, 6, 7
Colored pencil or marker for each student in different colors
Game board

Directions:
The player who completes the most equations in their color is the winner. One player plays the left side of the board, one plays the right side. It is possible to add another player or two. In that case, each player would use the entire board and count the equations completed in his/her color at the end of the game.

How to Play:
First player rolls both cubes.
Player finds the tens fact that corresponds to the 8 or 9s fact that is rolled.
Player fills in the sum of the tens fact and the equation for the 8 or nines fact.
Next player has a turn.
Play continues until one player fills a side (in a two-player game), or the board is filled (if more than two are playing), or until time runs out.
Player with the most equations in his/her color is the winner.

Example:
Jorge rolls a 9 and a 5. He says, "I know that 9 is one away from ten, Nine add 5 has the same value as 10 add 4. That's 14. So I will fit in the space with 10 add 4 and add the equation 9 add 5 equals 14.

Addition and Subtraction Strategies Videos

Introducing the ORIGO Model for Teaching Skills
ORIGO One: https://origo-education.wistia.com/medias/26icnyoznj
Short Link: b.link/O1_22_E

Using Five- and Ten-Frames to Represent Numbers
ORIGO One: https://origo-education.wistia.com/medias/affdnul85b
Short Link: b.link/O1_45_E

Teaching the Count-On Strategy for Addition
ORIGO One: https://origo-education.wistia.com/medias/bv1c3s6bht
Short Link: b.link/O1_1_E

GS13: Exploring Doubles in the Real World
Gem Stones: https://youtube.com/watch?v=qfuWSb5CixY
Short Link: https://youtu.be/qfuWSb5CixY

GS14: Doubling Numbers Less Than 10
Gem Stones: https://youtube.com/watch?v=JZt2P4OdGx8
Short Link: https://youtu.be/JZt2P4OdGx8

Teaching the use Doubles Strategy for Addition
ORIGO One: https://origo-education.wistia.com/medias/w14o4303pm
Short Link: b.link/O1_4_E

GS15: Using Doubles to Add "Next Door" Numbers (Doubles-Plus-1 facts)
Gem Stones: https://www.youtube.com/watch?v=KMfqfZHzh8I
Short Link: https://youtu.be/KMfqfZHzh8I

GS16: Using Doubles to Add Nearby Numbers (Doubles-Plus-2 facts)
Gem Stones: https://www.youtube.com/watch?v=0QcCVR6Yqus
Short Link: https://youtu.be/0QcCVR6Yqus

GS5: Exploring combinations that make 10
Gem Stones: https://www.youtube.com/watch?v=qzydNEeHpQw
Short Link: https://youtu.be/qzydNEeHpQw

Using the Make-Ten or Bridge-to-ten Strategy to Addition
ORIGO One: https://origo-education.wistia.com/medias/e7tku31liu
Short Link: b.link/O1_7_E

GS6: Making a "Ten" to Add Basic Facts
Gem Stones: https://www.youtube.com/watch?v=ROuWdXdQ11g
Short Link: https://youtu.be/ROuWdXdQ11g

GS7: Making a Ten to add a 2 digit number and activity
Gem Stones: https://www.youtube.com/watch?v=kq1meaJDirA
Short Link: https://youtu.be/kq1meaJDirA

Teaching the Think-Addition Strategy for Subtraction
ORIGO One: https://origo-education.wistia.com/medias/cm98lr2tax
Short Link: b.link/O1_2_E