

Four-in-a-Row Computation

Strand:	Computation and Estimation
Topic:	Strategies for addition
Primary SOL:	2.CE.1 The student will recall with automaticity addition and subtraction facts within 20 and estimate, represent, solve and justify solutions to single-step and multistep problems, including those in context, using addition and subtraction with whole numbers where addends or minuends do not exceed 100. d) Demonstrate fluency with addition and subtraction within 20 by applying reasoning strategies (e.g., doubles, near doubles, make-a-ten, compensations, inverse relationships). e) Recall with automaticity addition and subtraction facts within 20. f) Use patterns, models, and strategies to make generalizations about the algebraic properties for fluency (e.g., $4 + 3$ is equal to $3 + 4$; $0 + 8 = 8$).

Materials

- Addition Strategies Chart (attached)
- Four-in-a-Row Addition Game Boards A, B, and C (attached)
- Addition Cards (attached)
- Subtraction Cards (attached)
- Counters

Vocabulary

addend, adding, addition, difference, equal, equation, minus, number fact, strategy, subtract, subtracting, sum

Student/Teacher Actions: What should students be doing? What should teachers be doing?

1. Display the Addition Strategies Chart. Review each strategy with the class, and record examples of problems for each one. When all students can demonstrate understanding of each strategy, proceed to the activity.
2. Put students into pairs, and give each pair two copies of Four-in-a-Row Addition Game Board A, several sets of addition cards, and a group of counters. Players take turns drawing two cards one at a time to create an addition problem using the cards as the addends (e.g., drawing a 5 card and a 4 card means that the addition problem is $5 + 4 = \underline{\quad}$). The player finds the sum and then uses a counter to cover the sum on their game board. The second player then takes a turn, drawing two cards, finding the sum, and covering the sum on their game board. If a player draws a sum that is already covered on their board, they lose their turn. The first player to cover four sums in a row, either horizontally or vertically, wins. While the

students are playing the game, encourage them to use the addition strategies discussed at the beginning of the activity and verbally share the strategy they used with their partner.

3. Regroup the students into different pairs, and have the new pairs play the game again, using Four-in-a-Row Addition Game Board B.
4. Regroup the students into different pairs, and have the new pairs play the game again, using Four-in-a-Row Addition Game Board C.
5. Review and summarize with the class what students learned in the activity.
6. See extension for subtraction version.

Assessment

- **Questions**

- Which addition strategy is the most difficult? Why?
- Which addition strategy is the easiest? Why?
- How did you decide which strategy to use when you picked your two cards?
- Was there a sum that came up more often than others? If so, why?
- Was there a sum that was difficult to get? If so, why?

- **Journal/writing prompts**

- Graham has four-digit cards: 3, 5, 8, and 0. What are the possible addition problems Graham can make with his cards? Create a list of these addition facts and their sums.
- “Doubles” is an addition strategy that some students use. List some doubles facts, and explain how knowing doubles facts can help with solving addition problems.

- **Other Assessments**

- Circulate as students are creating and recording their addition facts, and observe the strategies and rationale they use. Ask questions to determine whether they are absorbing the key points noted above. Note who is having difficulty, and provide help, as needed.
- Have students complete the following statements: “Today I learned_____.
Tomorrow I need_____.”

Extensions and Connections (for all students)

- Have students play the game again, but this time, have them create subtraction facts with the pairs of cards.

Strategies for Differentiation

- Allow students to use a calculator to check their sums.
- To generate two-digit numbers, have students use 10-sided number cubes instead of digit cards.
- Redirection and corrective feedback should be given throughout lesson.
- Allow students to use counters.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Addition Strategies Chart

One More Than	One Less Than
Doubles	Near Doubles
Make Ten	Related Facts

Counting On	Counting Back
Two more than	Two less than
Think Addition for Subtraction	Commutative Property (Turn Around)

Adding Zero

Four-in-a-Row Addition and Subtraction Game Board A

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

Four-in-a-Row Addition and Subtraction Game Board B

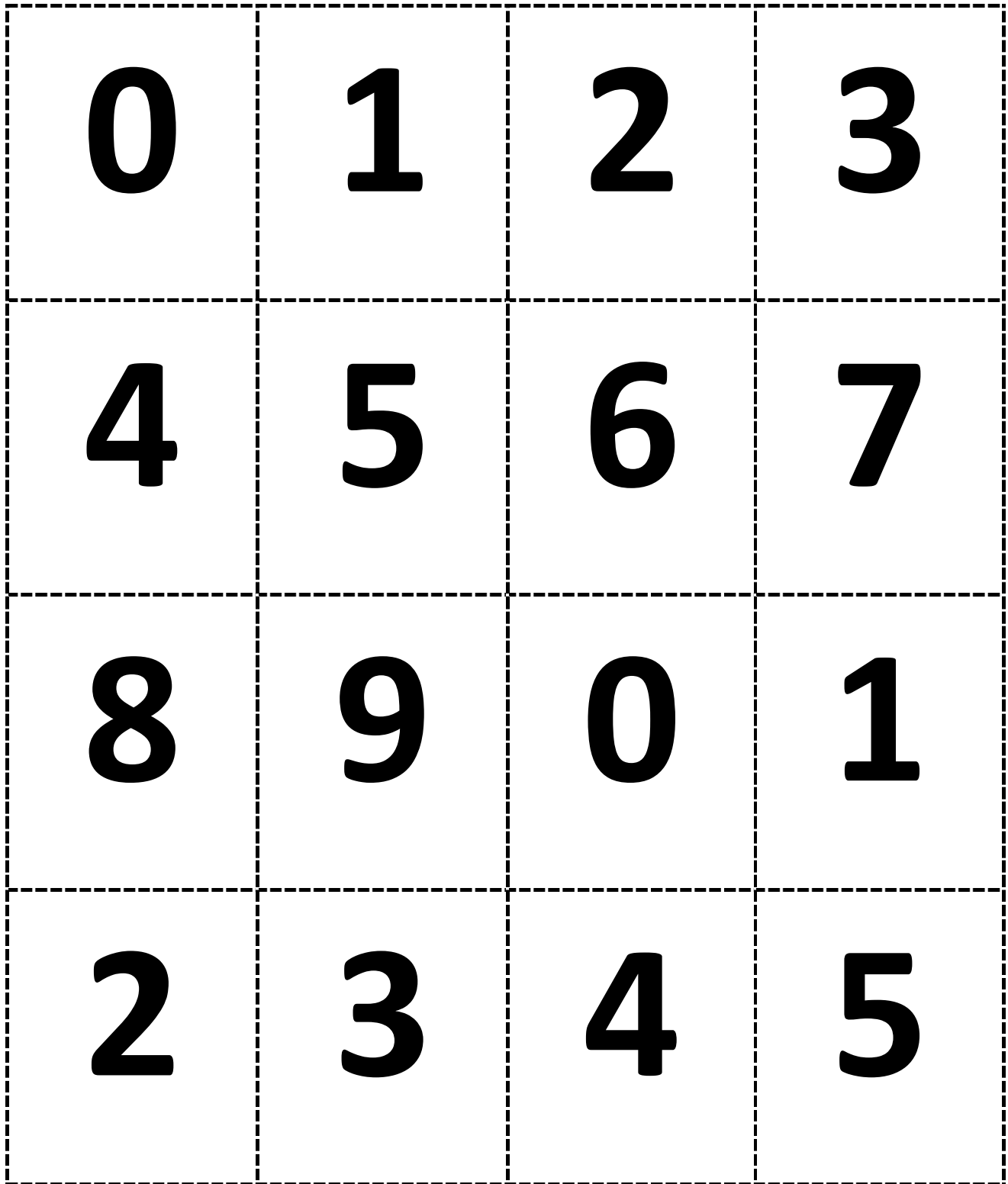
14	15	3	7
9	6	11	2
4	18	16	5
13	12	8	10

Four-in-a-Row Addition and Subtraction Game Board C

20	17	8	4
11	9	2	19
3	14	10	15
12	6	18	13

Addition Cards

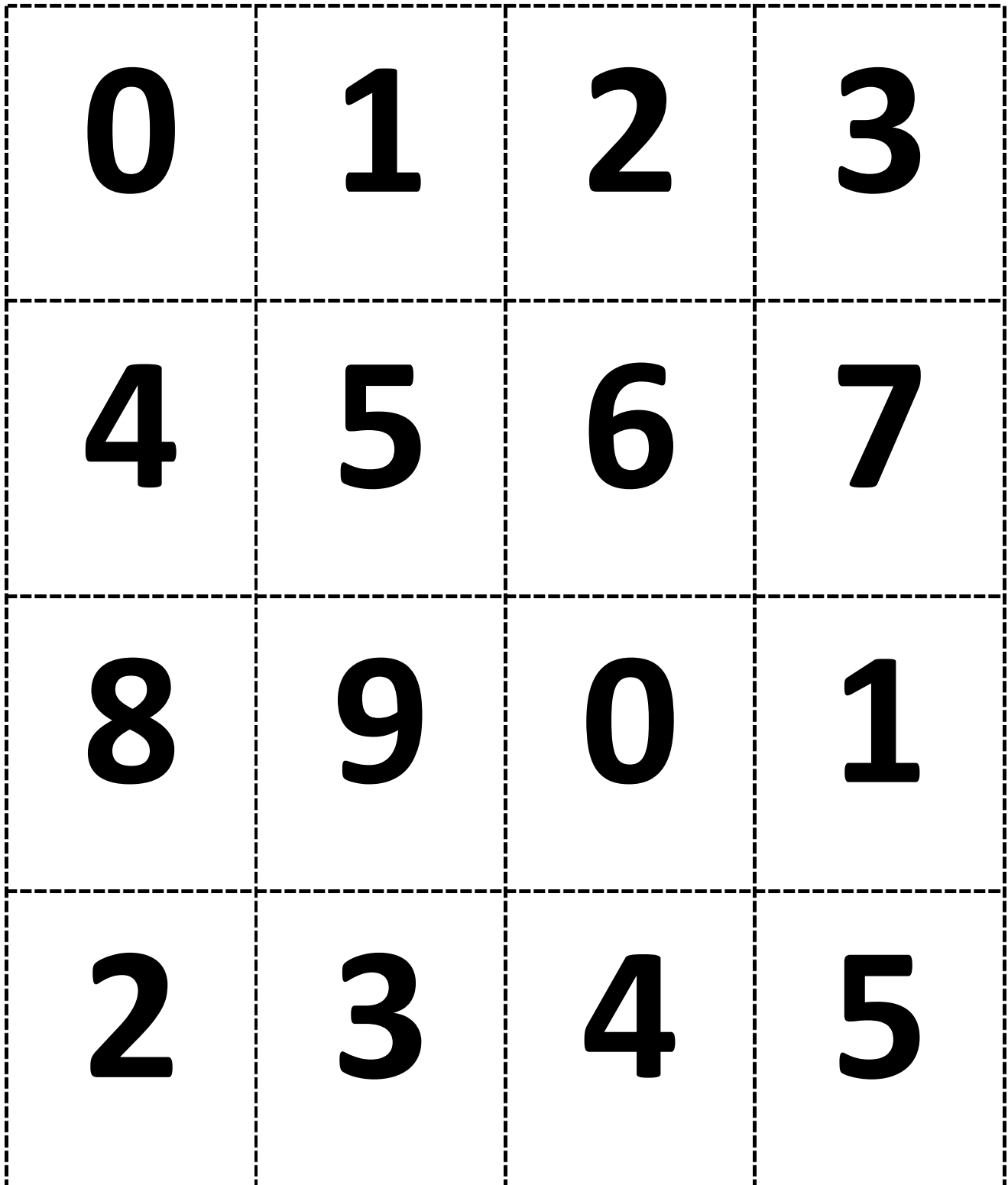
Reproduce cards on card stock, and cut them apart on the dotted line.



6	7	8	9
10	10		

Subtraction Cards

Reproduce cards on card stock, and cut them apart on the dotted line. Make two sets.



6	7	8	9
10	11	12	13

0	1	2	3
4	5	6	7

14	15	16	17
18	19	20	