

# Activity Cards

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# Vertical Operations

## Objective

Students can solve problems with one- and two-digit numbers when displayed in a vertical format.

## Materials

### Program Materials

- Neighborhood Number Line
- Double-Digit Number Cards (Addition), 1 set
- Number 1–6 Cube, 1 per student pair

## Alternative Groupings

**Individual:** Partner with the student and complete the activity as written.

**Small Group:** Complete the activity as written, but make sure all students take a turn recording and creating equations.

## Introduce the Activity

- Shuffle the Double-Digit Number Cards.
  - Pair students. Have each pair take out a sheet of lined paper.
  - Distribute a Number 1–6 Cube and five cards, facedown, to each pair of students. Keep one card for yourself.
  - Sketch a sheet of paper on the board, and model the activity for the students. Ask a volunteer to be your partner for this demonstration and to turn over your number card. Write this number on the top left of your paper outline, leaving room on the right to write an equation. Next, ask your partner to roll a Number 1–6 Cube. Write this number under the first number, and put a plus sign to the left of it.
- **Why did I put the second number under the ones in the first number and not under the tens?** *because this number has no tens in it, only ones*
- Make sure students understand the importance of aligning the numbers correctly when they write addition problems in this format.
  - Ask your partner to help you solve the problem by thinking aloud. Write the answer he or she provided on the board.
- **I'm going to write the same problem next to it horizontally to make sure our answer is correct. Think aloud as you do so, and use the counting-on strategy to find the sum.**
- **Did we get the same answer using both strategies?**

## Begin the Activity

- Each partner will roll the Number 1–6 Cube. The student with the larger number goes first.
- The first player picks the numbers for the addition problem by turning over the top Number Card and by rolling the Number 1–6 Cube. The second player does the recording for this round of game play. Partners work together to solve the problem.
- The recorder should initially write the problem in a vertical format. When a sum has been found, the problem should be rewritten in a horizontal format and solved to check the accuracy of the first solution.
- Ask students to write neatly so other students can easily read each problem.
- Remind students to put the bigger number on top when they are using the vertical format and to align the numbers carefully.
- Students should alternate roles until a fifth problem has been solved.

## Conclude the Activity

- Each student pair then exchanges the equations they created with another pair to check them for accuracy. If students believe an equation is incorrect, they should mark it and discuss it with the team that created the equation. Then the four students should consult the Neighborhood Number Line to figure out the correct answer to the equation.
- The pair with the greatest number of correct equations is the winner. Note that this game may have more than one winner.
- If time permits, have each pair exchange cards with another pair and play a second round.

## Questions to Ask

- ▶ **Was it easier or harder to solve the problems when they were written in a vertical format? Why?**
- ▶ **What strategies did you use when you were solving problems in the vertical format?**
- ▶ **What strategies did you use when you were solving problems in the equation format?**

## Variation: Vertical Subtraction

To teach subtraction in the vertical format, play the activity as written but use the Double-Digit Number Cards (Subtraction).



# Counting Back

## Objective

Students can write equations to describe backward progression on a number line.

## Materials

### Program Materials

- Counters, 20
- Neighborhood Number Line (1–20)
- Number Cards (1–10)

## Alternative Grouping

**Individual:** Act as the student's partner and complete the activity as written.

## Prepare Ahead

Shuffle the Number Cards for each pair of students and place them facedown on the table.

## Introduce the Activity

- Have students take out a sheet of paper.
- Display the Neighborhood Number Line and place Counters on numbers 1–20.
- Display the following questions on the board and tell students they will use these questions to help them solve subtraction problems.
  - ▶ **Where are you now?**
  - ▶ **How many chips do you need to take away?**
  - ▶ **Where will you be after you do this?**

## Begin the Activity

- One student will pick a Number Card showing a quantity to subtract. Before removing any Counters, that student will answer the questions. All students will write an equation to describe the operation. Then the student can remove the number of chips indicated on the card to verify the accuracy of his or her own answer.
- The other students challenge any answers that they think are incorrect.
- Students should write a separate equation for each turn and align them under one another.
- Remind students that the answer they get to each equation is the starting amount for the next equation.

## Conclude the Activity

- The student who reaches zero by drawing a card with the exact amount needed will be the winner if all of the equations on his or her recording sheet are correct.
- If necessary, replace the cards drawn on each turn and reuse the deck to complete the game.

## Questions to Ask

- ▶ **What was difficult about writing subtraction equations in this game?**
- ▶ **What was easy?**
- ▶ **Which problems were the most difficult to solve? Why?**






# Take It Back

## Objectives

- Students can use a number line and counting back to solve subtraction problems.
- Students can use a number line and counting back to solve a series of subtraction operations. (Variation)

## Materials

### Program Materials

-  Number Lines, 1 per student
- Number 1–6 Cube, 1 per pair
- Number Cards (6–20), 1 set per pair

### Additional Materials

colored pencils, 3 per pair (Variation)

## Alternative Grouping

**Individual:** Partner with the student and complete the activity as written.

## Prepare Ahead

Remove Number Cards 1–5 for this activity. For the Variation, remove Number Cards 1–11.

## Introduce the Activity

- Pair students. Designate one student to be the counter and the other student to be the recorder.
- Provide each student with one copy of Number Lines. Distribute a Number 1–6 Cube and Number Cards (6–20) to each pair.
- Tell students that they will use number lines to subtract.

## Begin the Activity

- The counter shuffles the cards and places them facedown before picking a card and announcing it to the recorder. The number on the card (e.g., 12) indicates where the counter will start.
- The recorder rolls the Number Cube and tells the counter the number displayed (e.g., 4). The counter will count back the number of times indicated on the Number Cube.
- Remind students that when counting back, they do not count the number they start from, but they do count the number they land on.

## Conclude the Activity

- When the counter announces his or her final location, the recorder illustrates the jump on his or her number line.
- The pair reviews the illustrated number line and creates a subtraction equation from it (e.g.,  $12 - 4 = 8$ ).
- Students switch roles after each problem until they have written six equations.

## Questions to Ask

- ▶ Explain the rule you use when you are counting back.
- ▶ Was it difficult or easy to show subtraction on a number line?
- ▶ What was difficult about it? What was easy?

## Variation: Take It Way Back

- In addition to the materials distributed in the original activity, students should take out three differently colored pencils. Use Number Cards (12–20).
- Instead of calculating and illustrating one jump, students will take away two numbers by rolling the Number 1–6 Cube twice and illustrate the equation using a different color for each jump.