

Addition and Subtraction in Center Time

Summary

Students will practice their addition and subtraction skills by participating in center activities.

Main Core Tie

Mathematics Grade 1

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(1.OA\) Standard 1.OA.1](#)

Additional Core Ties

Mathematics Grade 1

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(1.OA\) Standard 1.OA.2](#)

Materials

- *How Many, How Many, How Many*
by Rick Walton

Ship, Captain, Crew

2 dice

Scratch paper/math journal

Read My Mind

- [Read My Mind Number Cards](#)

Bull's-eye Bean Bag

For each group:

2 bean bags

Poster board

For each student:

- [Bean Bag Toss Record Sheet](#)

Domino Addition/Subtraction Sentences

For each group:

Handful of dominos

Dominos in All

For each group:

Set of dominos

Teacher/adult helper

Domino Directions

For each group:

Handful of dominos

For each student:

- [Domino Directions Addition Sheet](#)
or
- [Domino Directions Subtraction Sheet](#)

Matching Addition and Subtraction

For each group:

Set of [Matching Addition and Subtraction cards](#)

Number Trains

- [Number Train Number Sentence worksheet](#)
- [Number Train Plus/Minus Spinner](#)

- Number cube or die
- 20 Unifix® cubes
- Paper clip
- Break the Tower
 - Unifix® cubes
 - [*Break the Tower Record Sheet*](#)
- Ten Frame Additions and Subtraction
 - 10 counters
 - [*Ten Frame worksheet*](#)
- How Many in the Cave?
 - Paper cup (opaque)
 - Counters
- Red/Yellow Toss
 - Plastic or paper cup
 - 12 2-sided counters
 - [*Red/Yellow Toss record sheet*](#)
- Bowling Alley Subtraction
 - 10 2-liter soda bottles
 - Kick ball
 - [*Subtraction Bowling Alley worksheet*](#)
- Elevator Addition and Subtraction
 - For each group:
 - [*Elevator Game Board*](#)
 - [*2 Elevator Spinners*](#)
 - For each student:
 - Paperclips
 - 4 counters (each a different color)
- Catching Fireflies
 - For the class:
 - *Ten Flashing Fireflies*
 - For each student:
 - Small jar or paper cup
 - 10 small beads, popcorn kernels, or counters
- Additional Resources
- Books
 - *How Many, How Many, How Many*
, by Rick Walton; ISBN 1-56402-656-6
 - *Ten Flashing Fireflies*
, by Philemon Sturges; ISBN 1-55858-674-1

Background for Teachers

This lesson is designed to give the teacher effective activities for students to do during center time, stations, workshop time, etc. During center time, students work in small groups on various tasks. Each center has a different task for the students to complete. Students rotate through centers in a pattern set up by the teacher. Center time is great for cooperative learning, exploration, and small group instruction. Each teacher will run center time differently depending on his/her students, classroom, special needs, and teaching style. This lesson does not tell you how to organize centers; that is left up to the teacher. However, this lesson provides activities that can be used during center

time. Many of these activities may also be done as whole class activities.

Intended Learning Outcomes

2. Develop social skills and ethical responsibility.
5. Understand and use basic concepts and skills.

Instructional Procedures

Invitation to Learn

Begin by reading *How Many, How Many, How Many*. This book helps students think about numbers. While you are reading the book, stop and draw attention to the illustrations. Have students create addition and subtraction sentences that go along with the pictures.

Because these activities are designed to be used during center time, any of them could be used as an invitation to learn on a different day prior to a specific math lesson. Also, the activity discussed above could be used as a center activity where the teacher or other adult helper is available to guide the group's learning.

Instructional Procedures

Ship, Captain, Crew

This game is played in pairs.

Each student may have up to four rolls per turn. The winner is the player who has the largest "crew." You must roll a "ship" and a "captain" before you can roll for your crew. To get the "ship," you must roll a 6 (It cannot be a combination of two or more dice. It must be a six on one die.). To get the "captain," you must roll a 5 (Again, not a combination of two or more dice. It must be a 5 on one die.).

Player one rolls all four dice. If the player rolls a 5 or 6 on one die, then s/he sets the die aside and rolls the remaining dice.

After both a 5 and 6 have been rolled, the player adds the remaining two dice to get the number of his/her "crew." The player can only roll four times total. If the player does not roll a "ship" or a "captain" in four rolls, then his/her score is zero.

Player two goes after player one has finished rolling. The player with the largest "crew" wins.

Players do not have to roll four times. They may stop after one or two rolls if they feel they are finished and satisfied with the number of their "crew."

Example

Player one rolls all four dice and gets 2, 4, 6, 2. The 6 counts as the "ship," so it is set aside and s/he rolls the remaining three dice and gets 3, 6, 2. Player one still needs a "captain" (5), so all three dice are rolled again. This time the player one gets 5, 1, 6. The 5 is set aside, because it is the "captain," and the player then adds the remaining two dice ($6 + 1 = 7$). Player one has only rolled three times, so there is the option to stay with 7 or take the two dice and roll again in hopes of getting something higher. Player one chooses to roll again. (Both dice must be rolled again even though one die was a 6.) Player one rolls a 2 and 3 ($2 + 3 = 5$). Even though 7 is greater than 5, player one must stay with 7 because it was the last roll.

It is now player two's turn. All four dice are rolled and s/he gets 1, 3, 5, 5. Player two takes one 5 and sets it aside (it is the "captain"). The three remaining dice are rolled again to get 5, 2, 4. Still no "ship," so all three are rolled again to get 1, 1, 3. Still no "ship," so the dice are rolled for a final time to get 2, 4, 5. Player two has rolled four times and didn't get a "ship," so his/her score is 0.

Player one wins the first round. Players record their wins using tally marks on scratch paper or their math journal. The number of rounds the students play may be determined by the teacher. As an extension, students write about their experiences or strategies in their journals.

Read My Mind

Mix up the [Read My Mind Number Cards](#) and place them face down in one pile. Three students sit in a small circle so they can all see each other. One player hands the other two players one

card each. No one may look at the cards at this time.

At the same time, the two players with cards hold their card on their forehead so the other players can see it, but they can't see their own card.

The player with no card then silently adds the two numbers together and says the sum aloud. The first player to figure out what the number on his/her forehead is, wins. Students figure this out because they know the sum and they can see one of the addends on the other player's forehead.

The winner trades places with the player who dealt the cards and found the sum.

Example

Player one is given the number 3 and holds it on his/her forehead (s/he has not seen the card, but the other players can see it). Player two is given the number 4 and holds it on his/her forehead (s/he has not seen his/her card, but s/he can see the 3). Player three can see both of the cards and so he silently adds them in his head and says, "The sum is 7." Player one can see that the player two has a 4 and s/he knows the sum is 7, so s/he determines s/he has a 3. Player one says, "Three." S/he is correct and the winner, so s/he switches places with player three and another round continues.

Bull's-eye Bean Bag

For this activity, take the poster board and with a marker, draw a Bull's-eye with seven circles going from smallest to largest. Using the numbers 0-6, write one number in each circle.

Students take turns tossing both bean bags onto the poster board.

Use the numbers that the bean bags land on in an addition or subtraction sentence.

Students must write the correct addition or subtraction sentence and the answer on the [Bean Bag Toss Record Sheet](#). Math journals may be used instead.

Example

Player one tosses both bean bags onto the poster board. One bean bag lands on the circle with the number 2 and the other lands on the circle with the number 5. The student then writes the addition sentence and solves the problem ($2+5=7$). The next player takes his/her turn.

Domino Addition/Subtraction Sentences

For addition, students choose one domino at a time and write the addition sentence that matches the dots using numbers and symbols or words.

For subtraction, students choose one domino at a time and write the subtraction sentence that matches the dots, making sure they write the larger number first, using numbers and symbols or words.

Students record their number sentences on scratch paper or a math journal.

Dominos in All

This activity is designed to help students see different number combinations. The teacher or adult helper would say, "5 dots in all." Students would then look for dominos with a total of 5. Students may find a domino with a combination of 1 dot and 4 dots, one with a combination of 0 dots and 5 dots, or one with a combination of 2 dots and 3 dots.

Students write the different number sentence combinations on chart paper, white boards, or in math journals.

The adult helper then chooses a different sum and the activity starts all over again.

Domino Directions

This activity helps students see that addition and subtraction sentences can be written horizontally or vertically.

Students take one domino at a time and write the addition or subtraction sentence vertically and horizontally.

Students must draw the dots on the dominos to match their equations.

To help identify the larger number for subtraction sentences, students circle the domino side with the most dots.

The dots and addition and subtraction sentences are recorded on the [*Domino Directions Addition*](#) or [*Subtraction Sheet*](#) .

Matching Addition and Subtraction

Students match numerals, number words, or addition and subtraction sentences that represent the same amount.

These cards can be used to play a matching memory game where all cards are placed face down, and students alternate turning over two cards.

If a match is found, then the player gets to keep the cards, and the turn is over. If no match is found, then the player turns the cards face down again.

These cards can also be used to play a card game like "Go Fish" where students ask another student for a particular number and then match pairs, or find all four cards that represent the same amount.

The winner of the card game is the student with the most matches.

Number Trains

This game is played in pairs.

The players start by putting 20 cubes together to make a tower, then lay the tower horizontally on their desk so that it looks like a train.

The goal is to get rid of all the cubes. The players work as a team to accomplish this.

Players start by spinning the [*Number Train Plus/Minus Spinner*](#) to determine if they will add or subtract and roll the dice or number cube to see how many. If a spin or roll combination calls for adding more cubes than twenty, or taking away more cubes than are left, the players need to spin and roll again until they can make a move on the train.

In order to begin the game, students must spin a subtraction sign on the spinner because they cannot add any more cubes to their train.

Each student should record the number sentence for every turn on the [*Number Train Number Sentence*](#) worksheet.

To win the game, the partners should have a final equation listed on their record sheet that equals zero. Point out that the next equation on the worksheet will always start with the answer from the equation above, because the beginning train for each turn is the same as the ending train of the previous turn.

A math journal may be used in place of the *Number Train Number Sentence* record sheet.

Break the Tower

Give each student a specific number of Unifix® cubes and a [*Break the Tower Record Sheet*](#) .

Have the students put their cubes together to make a tower and place the tower behind their back. Either leave it whole or break it into two groups so there are cubes in each hand.

Students count the number of cubes in each hand and write the equation on the *Break the Tower Record Sheet*.

Students put the tower back together, place it behind their back, and break it again for a different equation.

This is a great way for students to see all different number combinations that have the same answer.

A math journal may be used in place of the *Break the Tower Record Sheet*.

Ten Frame Addition and Subtraction

This activity requires either the teacher or an adult helper.

Give each student a [*Ten Frame worksheet*](#) and 10 counters. The teacher or adult helper starts the game with a specified number.

Students place one counter in each square for each number they count until they reach the specified number.

Model how to fill the *Ten Frame*, starting with the upper left square and filling across the top row

before moving to the lower left hand corner.

After students have the specified number on their *Ten Frame*, the adult helper or teacher says a new number and the students must decide if they need to add or subtract.

Example

The first number was 6, so the *Ten Frame* showed six counters. The teacher then called out 9.

Students respond verbally, "Add three," and place 3 more counters on their *Ten Frame*. The teacher might then call out 4, students respond, "Minus five," and take 5 counters off their *Ten Frame*.

Equations may be recorded on chart paper or in math journals.

How Many in the Cave?

This game works well in pairs.

Give each pair of students a specific number of counters and one cup.

While one student covers his/her eyes, the other student takes some of the counters and places them in the "cave" (under the cup).

The student who was covering his/her eyes then tries to guess the number of counters in the cave.

Students determine this out because they know the number they started with and they can see the number that is not in the cave.

Players switch places and the game continues.

Number sentences may be recorded in a math journal.

Red/Yellow Toss

This game works well in pairs.

Students take a specific number of 2-sided counters and place them in the paper cup.

Shake it and dump the counters onto the table.

Sort the counters according to the color of the side they landed on and record the toss on the [Red/Yellow Toss record sheet](#).

One student writes the addition sentence using the number of red counters first, the other student writes the addition sentence using the number of yellow counters first. Point out that no matter the order of the addends, the sum is still the same. This helps teach the order property of addition.

Bowling Alley Subtraction

Fill the 2-liter soda bottles about half full of water. Set them up on the floor in a triangle bowling pin formation. Mark off a line with tape about 6 feet away.

Students take turns rolling the kick ball to knock down the pins. After each turn, students must write down the subtraction sentence on their record sheet and set the pins back up for the next person.

This game is also fun as a class competition. You can divide the class into teams and have several lanes going at one time. The winning team is the one who knocks down the most pins overall. A math journal may be used in place of the [Subtraction Bowling Alley worksheet](#).

Elevator Addition and Subtraction

Each player starts on the first floor.

Players take turns spinning both [Elevator Spinners](#) and moving their game piece accordingly up and down the [Elevator Game Board](#).

If a player spins a move that may not be taken, s/he must spin again.

The first player to make it to the top floor and back down to the bottom floor wins.

Players write addition and subtraction sentences for each turn in their math journals.

Catching Fireflies

Addition or subtraction may be the focus of this activity, depending on the students' needs. The teacher or adult helper reads *Ten Flashing Fireflies* aloud.

As the story is read, students use the jars and beads (fireflies) to represent what is taking place

in the story.

After each page in the story, the teacher or adult helper stops and has the students write the addition or subtraction sentence that was just modeled using the beads and cups.

Chart paper, math journals, or white boards may be used to record the addition or subtraction sentences.

Extensions

Many of these activities are easy to integrate into writing activities. Students could write about the activities, make predictions, and write about the outcomes. Even though these activities are all addition and subtraction based, it is easy to take the same concept and adapt it to time, money, measurement, etc.

These activities are also great for early finishers, transition time, and even whole class activities. The activities in this lesson are written in a way that all students should be able to participate and receive the educational benefit from doing so. These activities will reach a variety of learning styles and can be easily adapted for students with special needs.

Each activity in this lesson is different and will require unique accommodations for children with special needs or ELL students.

Here are a few suggestions:

- Assign peer partners to students who need extra help.

- For activities that already require partners, an additional student could be added to groups to help and assist in any way.

- Worksheets may be enlarged for students who have difficulty seeing well.

- Students who have difficulty writing may give their answers orally.

- Pictures may be added to worksheets to help illustrate the meaning for ELL students.

- Special needs students may need fewer problems.

Family Connections

All of these activities would be excellent homework assignments for students to do with their families. Copy the description of the activity and send it home with the students along with any necessary supplies. This is a fun way to involve family members in math education.

Assessment Plan

Assessments vary with each activity. The majority of the activities require students to record their findings or thoughts in journals. Reviewing students' journal entries is an effective assessment strategy.

Some of the activities also will have a final outcome or project. This is also a main source of assessment, as student understanding affects the outcome of the final result or project.

Some of the activities also have worksheets that students complete while working on the activity. These worksheets are also excellent sources of assessment.

Observing student behavior and dialogue throughout the activities is an effective informal assessment for teachers.

Bibliography

Research Basis

Stahl, R.J. (1994). The Essential Elements of Cooperative Learning in the Classroom. ERIC Digest, ED370881.

This article supports cooperative learning and gives 14 essential elements for a successful cooperative learning framework. Teachers report academic gains when cooperative learning is implemented.

Marzano, R.J., Pickering, D.J., Pollock, J.E. (2001). *Classroom Instruction That Works*.

This book supports many different teaching methods that are successful in today's classroom. Cooperative Learning, hands on activities, and multiple intelligences are among the things covered in this book.

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