PRACTICE TASK: Capturing Bears To 5&10

Time Frame: One day. However, it is strongly recommended that this activity be incorporated into center activities.

STANDARDS FOR MATHEMATICAL CONTENT

MCCK.OA.1 Represent addition and subtraction with objects, fingers, mental images, drawings[1], sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

MCCK.OA.2 Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

MCCK.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

MCCK.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

MCCK.OA.5 Fluently add and subtract within 5

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

Many games or other repeatable activities may not look like problems, but can be, nonetheless, problem-based. The determining factor is this: does this activity cause students to reflect about new or developing mathematical relationships? The following activity causes students to wrestle with the emerging idea of "*what if*". A discussion with students who have been working with this game is just as important as the game itself. These discussions usually take place in small groups. You might sit down with a specific group to discuss what they've been doing, what strategies they've discovered or how they have approached the game in general. Try to identify the reasons behind what they are doing. These discussions can also take place during a whole

group discussion so that the class can learn from the most effective strategies. Students should journal as part of the closing to discuss their experience and how they think they played. Did they use a good strategy to play the game? (metacognition) (Van De Walle, p.26)

ESSENTIAL QUESTIONS

- How can strategies help me when playing a math game?
- What is a pattern and where can you find patterns?
- What is a strategy?
- What should I be doing when playing a math game?

MATERIALS

Game to 5

- 11 counting bears or counters
- Capturing Bears playing cards (7 cards per game)
- Capturing Bears game board

Game to 10

- 21 counting bears or counters
- Capturing Bears playing cards (1-6)
- Capturing Bears game board

GROUPING

Partners (2 players)

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I (playing with 5s)

- Place the playing cards face up in a pile, starting with 2 and alternating each card (2-1-2-1-2-1-2) Place the 11 counting bears in the mountains. Player one picks up the "2" card on the top of the pile and has the choice to either put 2 bears in their cage (5-frame) or give 2 bears to player two's cage (5-frame).
- Player two then takes the next card on the top of the pile (#1 card) and has the choice of putting 1 bear in their cage or giving it to the other player's cage.
- Once a player's cage (5-frame) is full, all the bears in the full cage are cleared from the cage and moved to the van to be taken to the zoo. ***The bears in the van ARE NO LONGER IN PLAY!!!***
- The pattern continues until all 6 playing cards have been played and all 11 bears are in a cage or the van.
- The player with the most bears in their cage, not the van, after all the cards and bears have been played, is the winner.

Part II (playing with 10s)

- Place the playing cards in a pile from 1-6 with 6 being on the top. Place the 21 counting bears in the mountains. Player one picks up the number 6 card on the top of the pile and has the choice to either put 6 bears in their cage (10-frame) or give 6 bears to player two's cage (10-frame).
- Player two then takes the next card on the top of the pile (#5 card) and has the choice of putting 5 bears in their cage or giving it to their player one's cage.
- Once a player's cage (10-frame) is full, all the bears in the full cage are cleared from the cage and moved to the van to be taken to the zoo. ***The bears in the van ARE NO LONGER IN PLAY!!!***
- The pattern continues until all 6 playing cards have been played and all 21 bears are in a cage or the van.
- The player with the most bears in their cage, not the van, after all the cards and bears have been played is the winner.

Comment: In order to truly understand what strategies are required in this game, teachers are strongly encouraged to play this game with a colleague. At first this task may appear as only a counting game, however as students repeatedly engage in the task they begin to recognize that there is a great deal of strategy embedded within the activity. Students will begin to understand that whether they *take* or *give* bears, they need to continually recalculate how many bears are remaining, how many bears are still in play and how they can get close to 5 or 10 without reaching it.

Questions to engage students in the activity:

- How many bears do you need to make 5/10?
- Why did you decide to take/receive the bears? Why?
- Now that you know what you are doing this turn, what are you going to do on your next turn? Why?
- If you do give/take this turn, does that affect your next turn? How?

FORMATIVE ASSESSMENT QUESTIONS

- Why did you decide to put your bears that way?
- What were you doing while playing the game?
- Did you identify a pattern or strategy? Explain!

DIFFERENTIATION

Extension

- Mix the cards up and place them face down in an unknown order. Students will need to remember the card numbers that have been played and the number cards that are still in play and move accordingly to ensure that they have the most bears remaining in the 5/10 frame after all bears have been played.

Intervention

- The intervention in the task is in the game itself. The game demands that students use counting skills previously acquired in unit 1-4. However, within the game students will come to find that in order to consistently win they will need to add and subtract bears in advance of giving or receiving them. The game has repeated computation to calculate the future moves of the game. As an intervention, have students play in paired teams to discuss whether or not bears should be given or received.

Capturing Bears to 5

Materials:

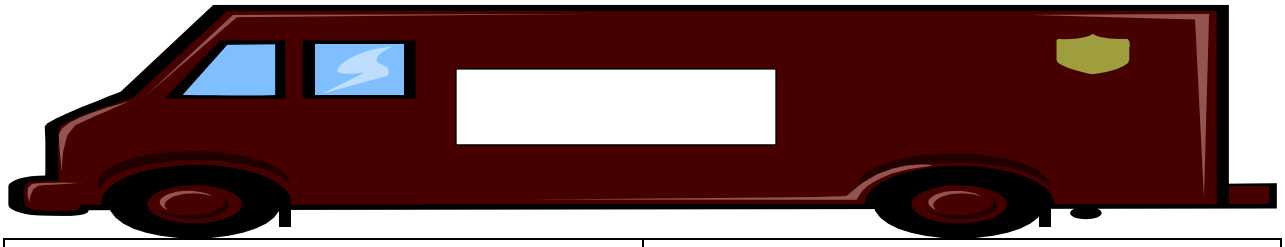
11 counting bears or counters
Capturing bears playing cards (7 cards per game)
Capturing Bears game board

Objective: To have a greater number of bears in your 5-frame than your opponent after all 6 cards have been played.

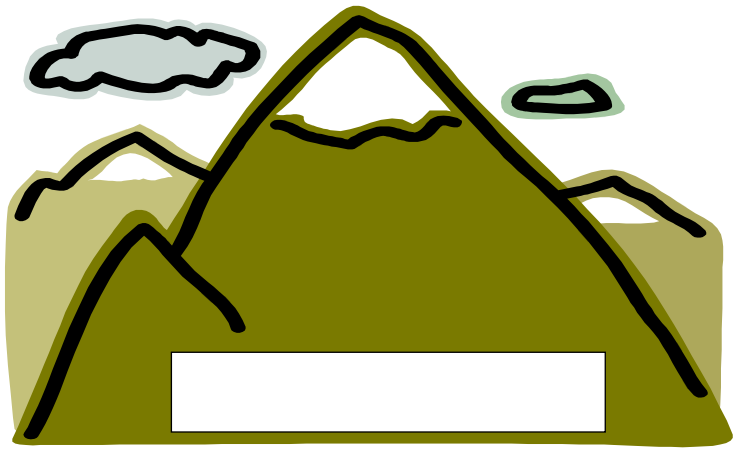
Directions:

1. Place the playing cards face up in a pile starting with 2 and alternating each card (2-1-2-1-2-1-2) Place the 11 counting bears in the mountains. Player one picks up the 2 card on the top of the pile and has the choice to either put 2 bears in their cage (5-frame) or give 2 bears to player two's cage (5-frame).
2. Player two then takes the next card on the top of the pile (#5 card) and has the choice of putting 1 bear in their cage or giving it to their player one's cage.
3. Once a player's cage (5-frame) is full, all the bears in the full cage are cleared from the cage and moved to the van to be taken to the zoo. ***The bears in the van ARE NO LONGER IN PLAY!!!***
4. The pattern continues until all 6 playing cards have been played and all 11 bears are in a cage or the van.
5. The player with the most bears in their cage after all the cards and bears have been played is the winner.

Capturing Bears to 5



Player 1 Cage	Player 2 Cage



Place cards here in 2-1-2-1-2-1-2 order

2	2	2
1	1	1
2	2	2
1	1	1
2	2	2
1	1	1
2	2	2
2	2	2

Capturing Bears to 10

Materials:

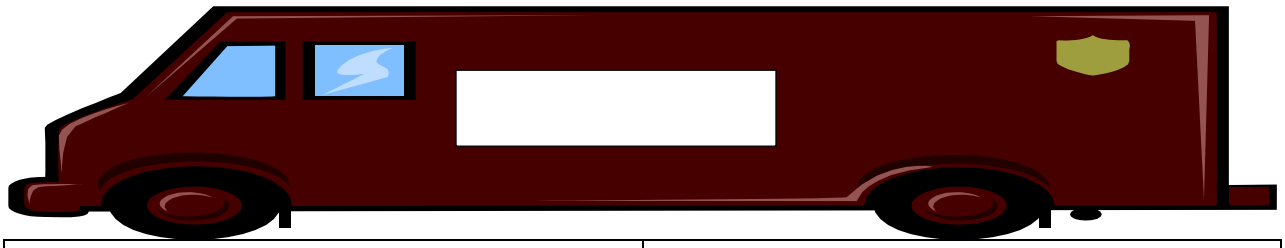
21 counting bears or counters
Capturing bears playing cards (1-6)
Capturing Bears game board

Objective: To have a greater number of bears in your 10-frame than your opponent after all 6 cards have been played.

Directions:

1. Place the playing cards in a pile from 1-6 with 6 being on the top. Place the 21 counting bears in the mountains. Player one picks up the number 6 card on the top of the pile and has the choice to either put 6 bears in their cage (10-frame) or give 6 bears to player two's cage (10-frame).
2. Player two then takes the next card on the top of the pile (#5 card) and has the choice of putting 5 bears in their cage or giving it to their player one's cage.
3. Once a player's cage (10-frame) is full, all the bears in the full cage are cleared from the cage and moved to the van to be taken to the zoo. ***The bears in the van ARE NO LONGER IN PLAY!!!***
4. The pattern continues until all 6 playing cards have been played and all 21 bears are in a cage or the van.
5. The player with the most bears in their cage after all the cards and bears have been played is the winner.

Capturing Bears to 10



Player 1 Cage	Player 2 Cage

Place cards here.
6 is the top card,
counting backwards

1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6