

Session 8

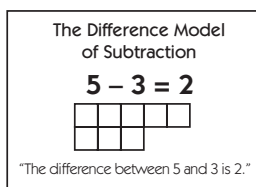
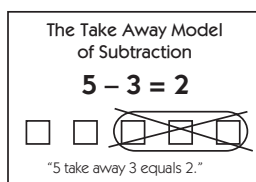


WORK PLACES

Getting Started with Work Places 4

Overview

Before sending students out to do Work Places today, be sure to introduce Cats & Mice. This is a complex and interesting game because it features the idea of subtracting by finding the difference between 2 sets rather than taking away part of a set.



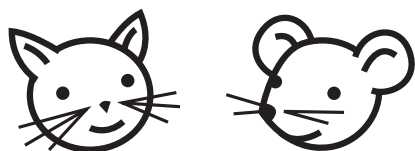
You'll need

- ★ work baskets 4A–4F set up for Work Places 4
- ★ a work folder for each child with a copy of the Work Places 4 Planner stapled to the front (Blackline 3.6)
- ★ Work Places 4 & 5 Arithmetic Observation Sheets (Blackline 3.7; if you've decided to use these sheets, you might want to have 2 or 3 labeled with children's names and ready to go. Or, you might need to spend today's Work Place time making sure things are going smoothly as this is only the second day for these activities.)

Introduction to Cats & Mice

Overview

While "take away" is a common way of thinking about subtraction, the difference model also occurs on a daily basis. It is the way we compare quantities, distances, heights, weights, and so on. The Cats & Mice game introduces your children to differencing and offers both a standard version and an easier version.



You'll need

- ★ Cats & Mice gameboard (Overhead 3.2) or Cats & Mice gameboard: Getting Started Version (Overhead 3.3)
- ★ overhead pens in 2 different colors

Skills

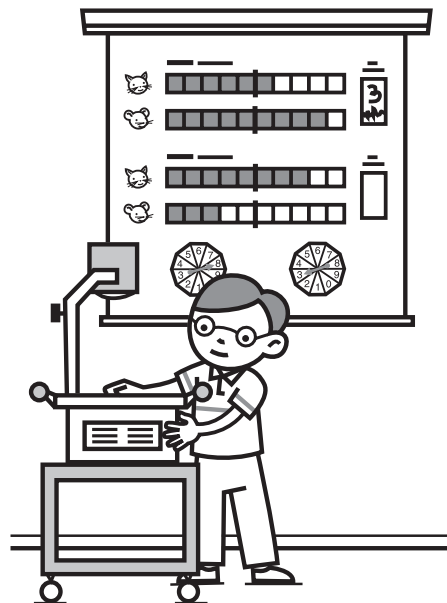
- ★ exploring subtraction as a process of finding the difference between 2 numbers
- ★ recording information on a graph
- ★ adding strings of numbers and comparing the totals

Session 8 Introduction to Cats & Mice (cont.)

Although primary children frequently think of subtraction as a process of taking something away, it is used to find differences quite often in daily life. Determining differences is how we compare quantities, distances, heights, weights, and so on. If we listen to the ball game and find that the Blazers have 42 points while the Sonics only have 26, we quickly calculate how many points the Blazers are ahead by finding the difference. If Fred is 6'3" and David is 5'10", we compare their two heights to discover that Fred is 5" taller. We examine differences rather than removing quantities when we interpret graphs in the newspaper. We believe that in the primary grades it is important to introduce and practice subtraction both as a process of taking away and finding differences.

Unless instructed otherwise, children will usually figure differences by working up from the smaller number—counting up from 26 to 42, or even working in chunks of 10 (26, 36, 37, 38, 39, 40, 41, 42—the Blazers are winning by 16!). The difficulty lies not in determining the difference itself but in the formal notation used to record the transaction. If the Cats have 2 points and the Mice have 5, most children will be able to tell you that the Mice are winning by 3. Few will be able to record the difference in the form of a subtraction sentence, however. Even among very able children you're likely to see $2 + 3 = 5$ or $2 - 5 = 3$ (both of which might be considered valid, but nontraditional statements).

If you want to introduce the idea of finding differences without pushing the notation just yet, you'll see that there's an easier version of the Cats and Mice record sheet available. Some teachers begin with the "getting started" version, in which children compare differences without using the formal subtraction notation, and then move into using the more challenging record sheet a week or so later.










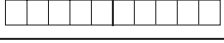
Session 8 Introduction to Cats & Mice (cont.)

If you choose to start with the more challenging sheet, explain that one way people use subtraction is as a way to find the difference between two sets of objects. If they're playing a game, for instance, and the score is 6 to 2, how much are they ahead by? Many children will answer 4, and if you ask them how they figured it out, they're likely to tell you that they counted up from 2 until they got to 6, although some might say that they knew the difference between 6 and 2 was 4, or that they just took 2 away from 6 to get 4. In any case, explain that the difference between 6 and 2 can be shown as a subtraction sentence: $6 - 2 = 4$. Then tell them you're going to introduce a game that will help them practice finding and recording differences, and that everyone will get to play, together at first, and then during Work Places.

Show the transparency of the game sheet on the screen and divide your students into two teams: the cats and the mice. Have a volunteer from each group come and spin for their team. Record the two numbers by writing them and coloring them in on the ten-strips, as shown below.

Overhead 3.2

Cats and Mice gameboard

		5
		8
		
		












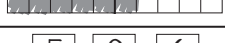


Continue until all three rounds have been played. Then, with the children's help, add all the mice points, all the cat points, and color in the totals at the bottom of the sheet. After finding the difference between the two final scores visually, record it as a subtraction sentence, using the boxes at the very bottom of the sheet (see following page).



You might want to leave the completed overhead up on the screen for the remainder of the math period. Some of our students have found it helpful to refer to as they play their first game of Cats and Mice independently at Work Places.


Session 8 Introduction to Cats & Mice (cont.)

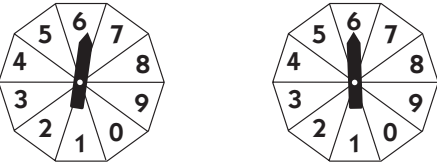
Overhead 3.2

Cats and Mice gameboard

		5
		8
		9
		4
		6
		6
	points $5 + 9 + 6 = 20$	
	points $8 + 4 + 6 = 18$	





totals $20 - 18 = 2$  won by 2 points.






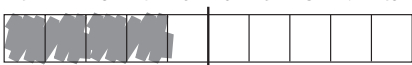
Note If this game and its accompanying record sheet are too hard for your group, introduce the “getting started” version of Cats & Mice (see below), which allows children to compare quantities and record differences without using standard notation. They can use the more complex record sheet later on.

Overhead 3.3 Getting Started Version









Who's Ahead? By How Much?


		The Winner by: 2 mice
		


Who's Ahead? By How Much?


		The Winner by: 5 cats
		


Cats & Mice gameboard

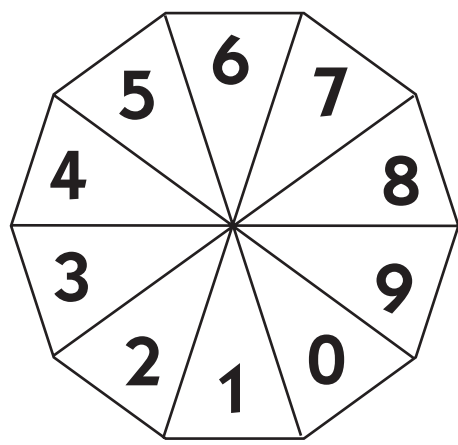
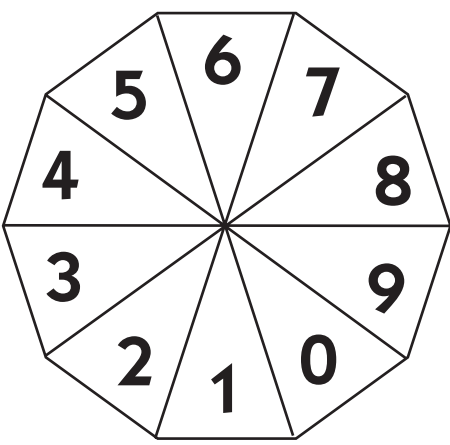
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	points <input type="text"/> + <input type="text"/> + <input type="text"/> = <input type="text"/>	






totals - =  won by points.






Cats & Mice gameboard

Who's Ahead? By How Much?



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1 2 3 4 5 6 7 8 9 10




--	--	--	--	--	--	--	--	--	--

The Winner by:


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Who's Ahead? By How Much?



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1 2 3 4 5 6 7 8 9 10



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The Winner by:

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