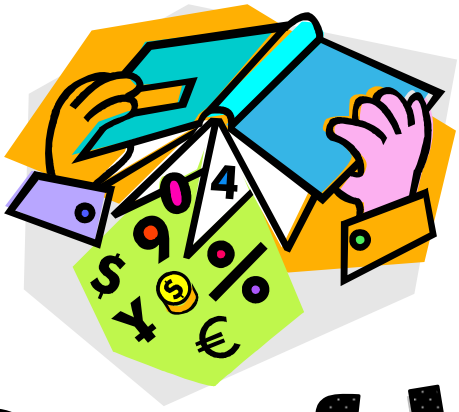
Mathematics:



'A Story of Units'

Parent Handbook

Grade K

Module 1

Grade K • Module 1

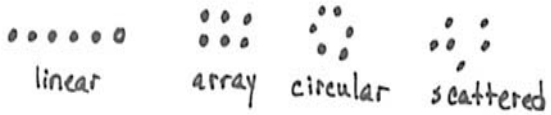
Numbers to 10

OVERVIEW

The first day of kindergarten is long anticipated by parents and young students. We want students to expect school to be a dynamic and safe place to learn, an objective that is realized immediately by involvement in purposeful and meaningful action.

In Topics A and B, classification activities allow students to analyze and observe their world and articulate their observations. Reasoning and dialogue begin immediately. "These balloons are exactly the same." "These are the same but a different size." As Topic B closes, students recognize cardinalities as yet one more lens for classification "I put a pencil, a book, and an eraser, 3 things, in the backpack for school; I put 5 toys in the closet to keep home." From the moment students enter school, they practice the counting sequence so that when counting a set of objects, their attention can be on matching one count to one object, rather than on retrieving the number words.

In Topics C, D, E, and F, students order, count, and write up to ten objects to answer "how many?" questions from linear, to array, to circular, and finally to scattered configurations wherein they must devise a path through the objects as they count. Students use their understanding of numbers and matching numbers with objects to answer "how many?" questions about a variety of objects, pictures, and drawings.



They learn that the last number name said tells the number of objects counted. Daily, they engage in mathematical dialogue. They might compare their 7 objects to a friend's. For example, "My cotton balls are bigger than your cubes but when we count them, we both have seven!"

Very basic expressions and equations are introduced early in order to saturate the students with numbers throughout the entire year so that they exit fluent in sums and differences to 5. Decomposition is modeled with small numbers with materials, drawings, and as addition equations. Students see both the expression 2 + 1 (Topic C) and the equation 3 = 2 + 1 (Topic D) describing a stick of three cubes decomposed into 2 parts. Emphasis is not placed on the expressions and equations, or using them in isolation from the concrete and pictorial, but rather simply show them as another representation of decompositions alongside counters and drawings.

In Topics G and H, students use their understanding of relationships between numbers and know that each successive number name refers to a quantity that is one greater and that the number before is one less. This important insight leads later in the year, and in Grade 1, to Level 2 *counting on* rather than *counting all*.

In this module, daily fluency activities involving large amounts of counting are integrated throughout the conceptual development: "I counted 6 beans in a row. I counted 6 beans in a circle and then squished them together and counted again. There were still 6!" "I can make my 6 beans into rows and there are no extras." Students complete units of 5 using the fingers of their left hand and "5-groups." The numbers 6, 7, 8, and 9 are introduced relative to 5: "Five fingers and ____ more." Students also explore numbers 5 to 9 in relation to 10, or 2 complete fives: "9 is missing 1 to be ten or 2 fives." Students start to master writing numbers to 10, they practice with paper and pencil. This is a critical daily fluency that may work well to close lessons, since management of young students is generally harder towards the end of math time. The paper and pencil work is calming, though energized.

Terminology

New or Recently Introduced Terms

Exactly the same/not exactly the same/the same, but… (ways to analyze objects to match or sort)

Match (group items that are the same or that have the same given attribute)

Sort (group objects according to a particular attribute)

"How many" (with reference to counting quantities or sets)

Hidden partners (embedded numbers)

Counting path (with reference to order of count)

Number story (stories with add to or take from situations)

Zero (understand the meaning of, write and recognize)

Number sentence (3 = 2 + 1)

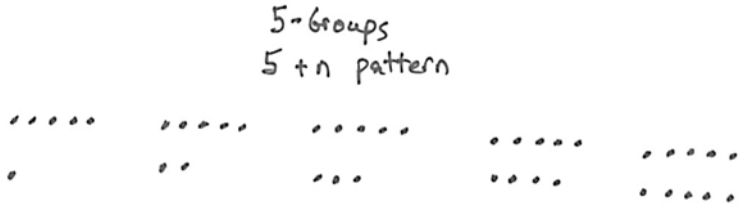
5-group

NRows/columns (linear configuration typ

Number path

1 more (e.g., 4. 1 more is 5)

1 less (e.g., 4. 1 less is 3)

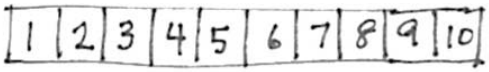


Suggested Tools and Representations

Rulers for use as a straight edge

Five dot mat

Five and ten frame cards



Number Path

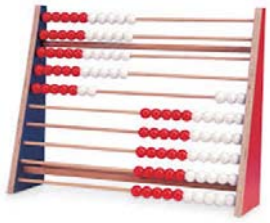
Number Path

Left hand mat

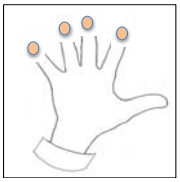
2 hands mat

Numeral cards, 0–10

Dot cards 0–10



Rekenrek



Left hand mat

Rekenrek (Slavonic Abacus having beads with a color change at the five.)

Problem Sets

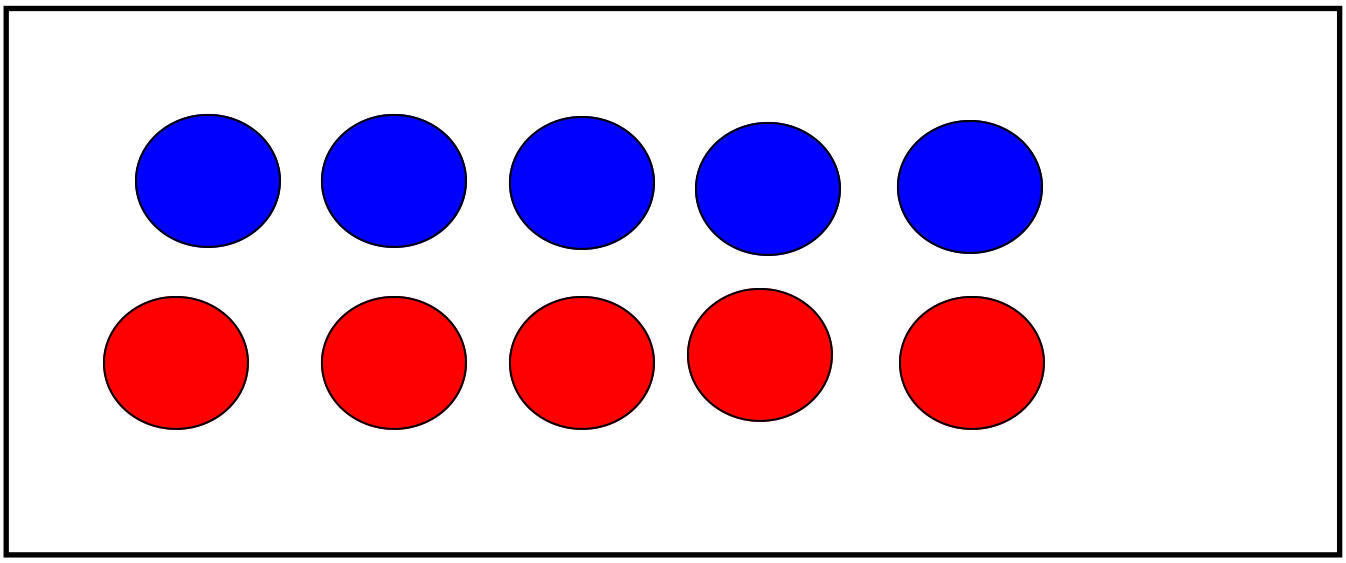
Concrete materials in individual bags for counting and sorting (white beans spray painted red on one side, bags of twigs, dried leaves, dry pasta, pennies, plates/forks/spoons/cups, etc.)

Commercial concrete materials (linker cubes in tens, non-linking cubes, square inch tiles, etc.)

Lesson 27

Objective: Count 10 objects and move between all configurations.

Draw 10 circles. Color 5 circles. Color 5 circles a different color.



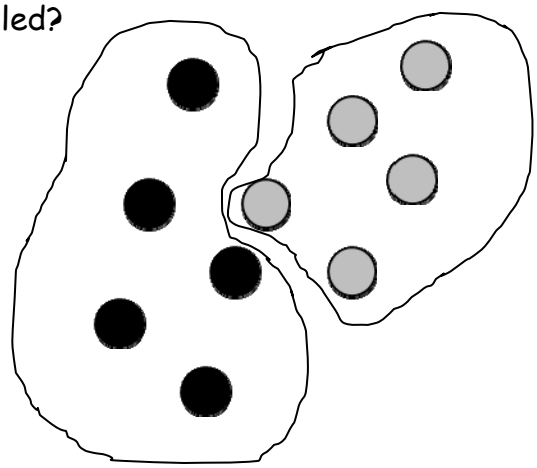
Lesson 28

Objective: Act out *result unknown* story problems.

Listen to my stories. Color the pictures to show what is happening.

Write how many in the box.

Jerry spilled his bag of marbles. Circle the group of grey marbles. Circle the group of black marbles. How many marbles spilled?



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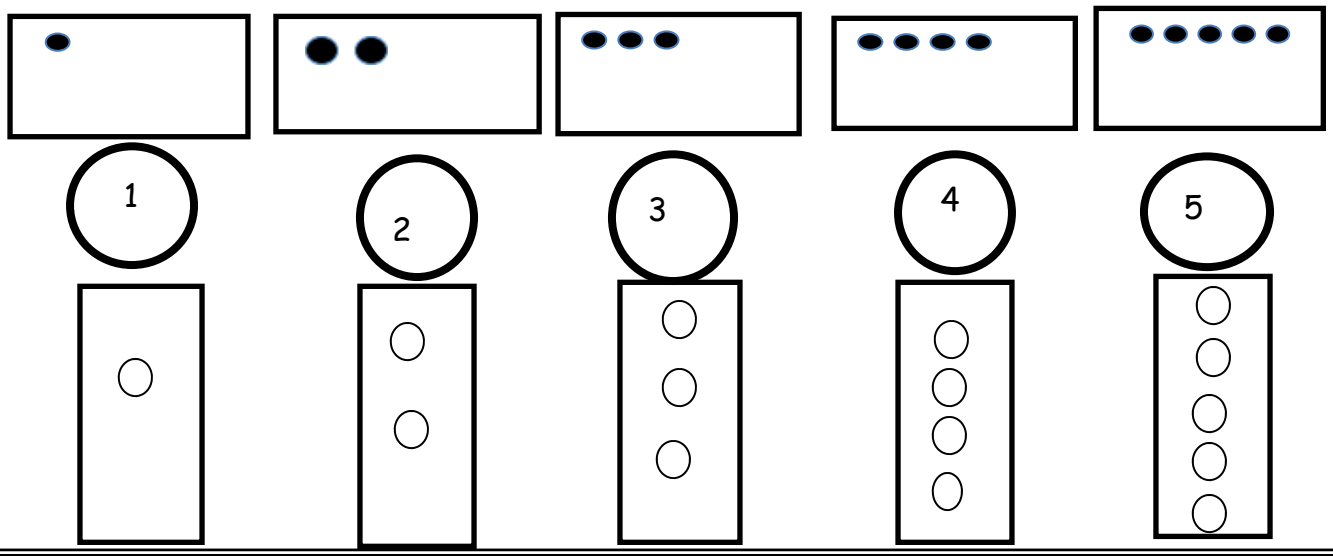
Lesson 29

Objective: Order and match numeral and dot cards from 1 to 10. State 1 *more than* a given number.

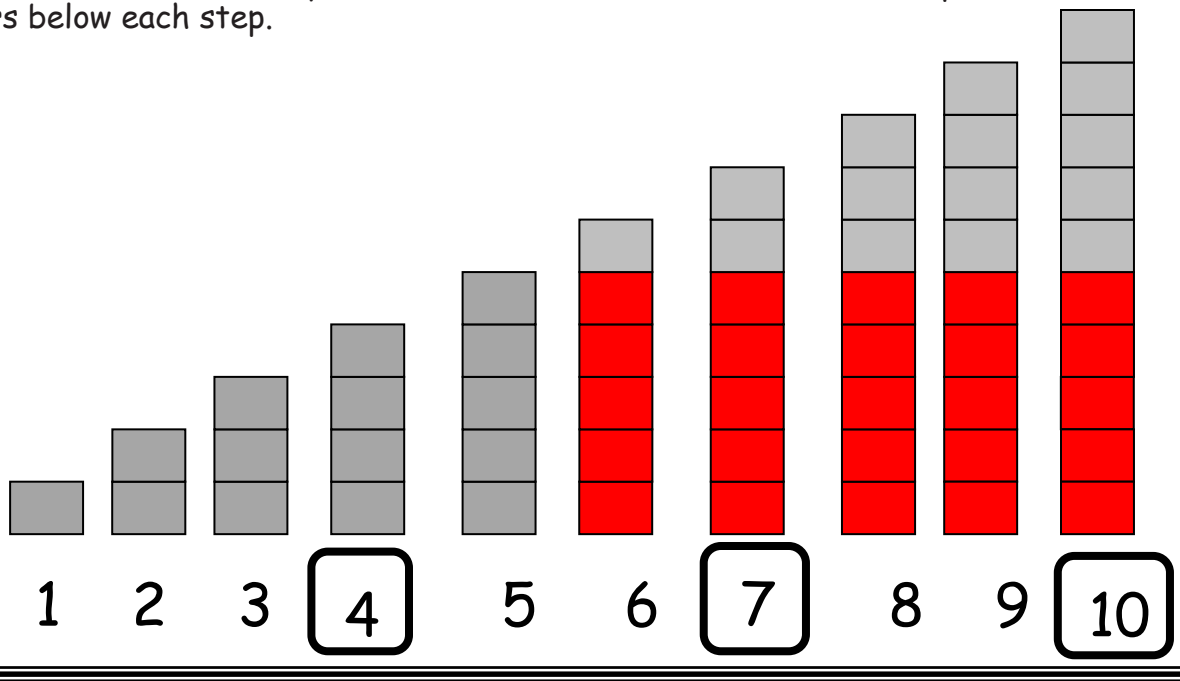
Count the dots. Write how many in the circle. Draw the same number of dots below the circle, but going up and down instead of across.



Lesson 30

Objective: Exploration: Make *math stairs* from 1 to 10 in cooperative groups.

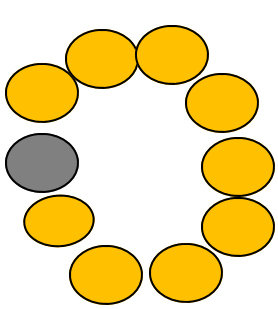
Count and color the white squares red. Count all the cubes in each step. Write the missing numbers below each step.



Lesson 31

Objective: Arrange, analyze, and draw one more up to 10 in configurations other than towers.

Color the empty circles orange. Count the grey circles and write how many grey circles in the box.



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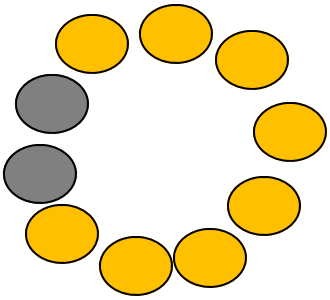

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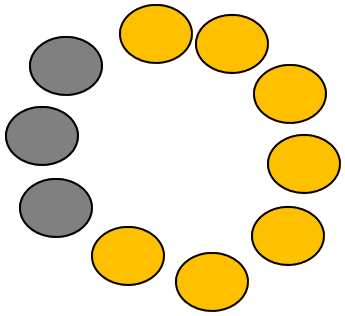

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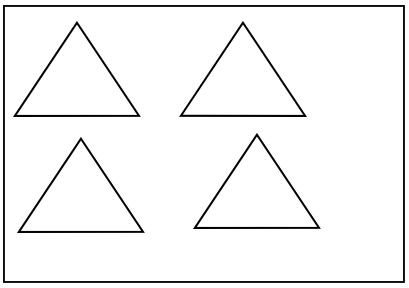
Lesson 32

Objective: Arrange, analyze and draw sequences of quantities of *1 more,* beginning with numbers other than 1.

Write the missing number. Draw objects to show the numbers.



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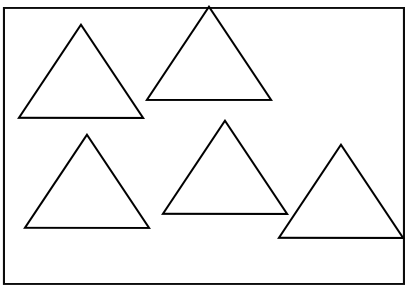

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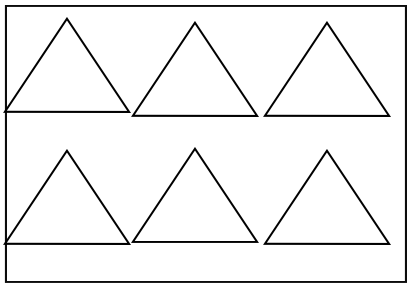

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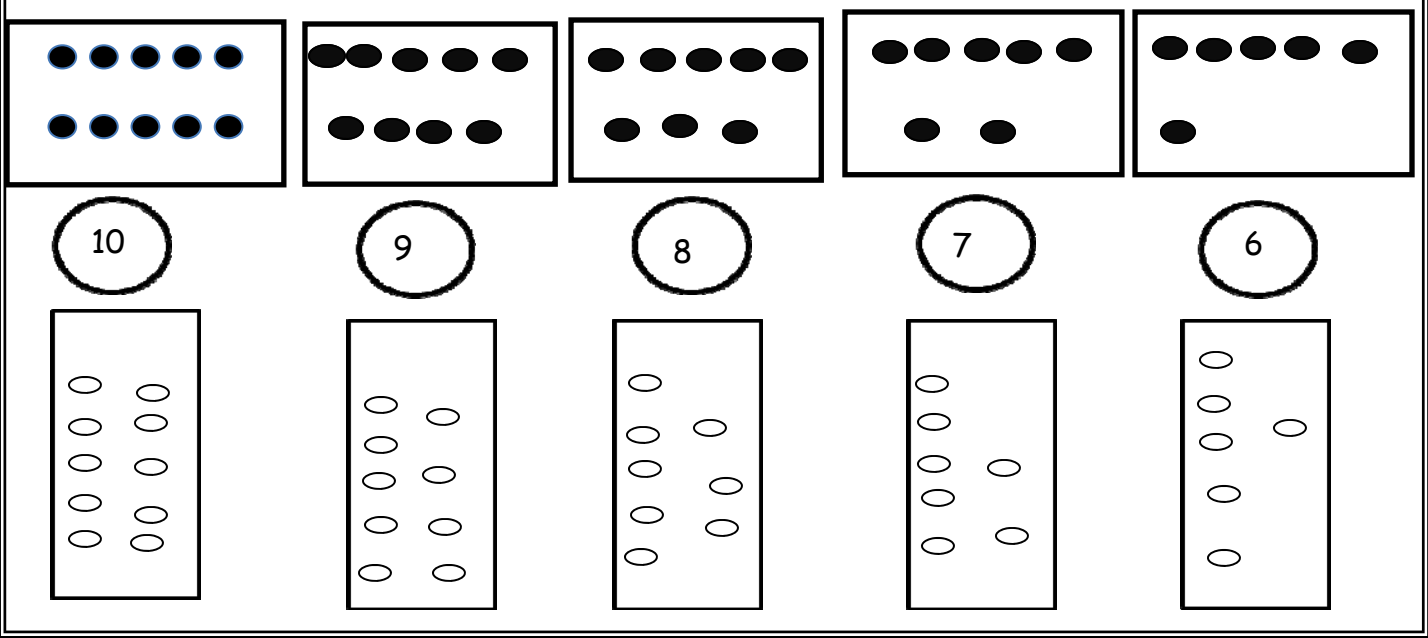
Lesson 33

Objective: Order quantities from 10 to 1 and match numerals.

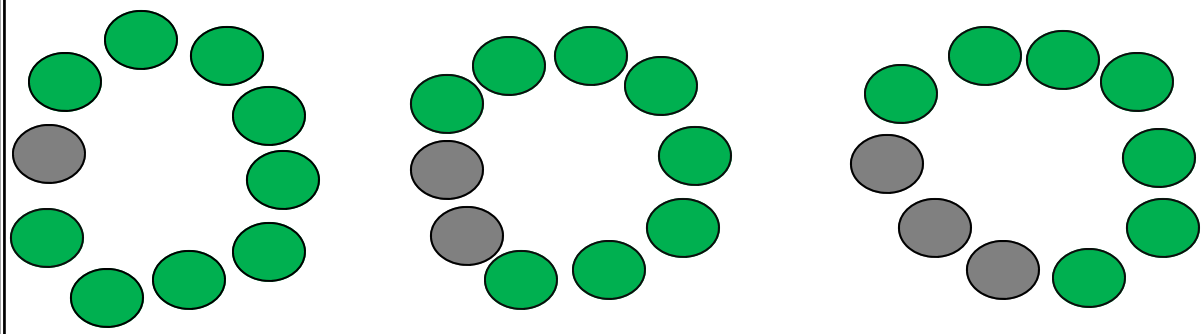
Count the dots. Write how many in the circle. Draw the same number of dots below the circle but going up and down instead of across.



Lesson 34

Objective: Count down from 10 to 1 and state *1 less* than a given number.

Color the empty ovals green. Count the green ovals and write how many. Use "1 less" to tell what is happening to the green ovals.

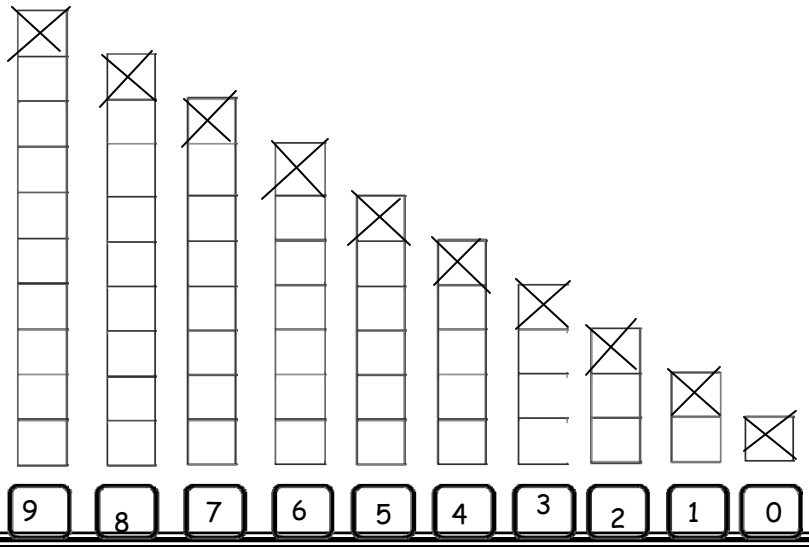


9 8 7

Lesson 35

Objective: Arrange number towers in orders from 10 to 1 and describe the pattern.

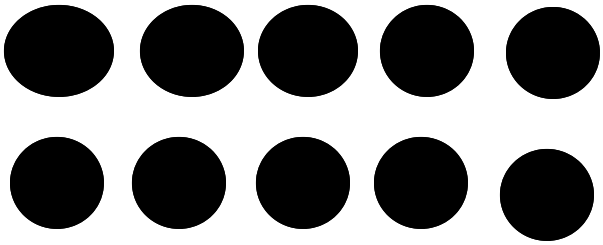
Count and say the number of cubes in the towers. Count the cubes that are crossed off. Say "1 less" that the total and write that number.



Lesson 36

Objective: Arrange, analyze, and draw sequences of quantities that are *1 less* in configurations other than towers.

Count and write how many.



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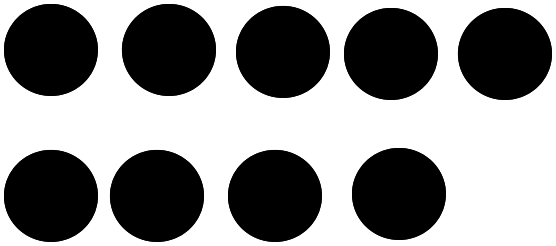
Draw 1 less. Count and write how many.



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Lesson 37

Objective: Culminating task—(Materials for this task include 5-group cards from 0-10) Decide how to classify the objects in your bag into two groups. Count the number of objects in each group. Represent the greater number in various ways. Next, remove the card from your pack that shows the number of objects in the smaller group. Put your remaining cards in order from smallest to greatest. Your friends will have to figure out what card is missing when they visit your station.

There is no homework for this lesson.