Objective: Count to 1000 by 1s, 2s, 5s and 10s and to 100 by 25s using starting points that are multiples of 1, 2, 5, 10 and 25 respectively.

Representation:

Materials: base ten blocks, six-sided die.

Roll the die. Make a set of that number using flat blocks (hundreds). Roll again and add that many long blocks (tens) to your set.

Write the number for the set you have created.

Add 2 single blocks (ones) to your set. Regroup if you can. Write the new number. Repeat this several times, building to your set and adding to your list. Can you make it all the way to 1000?

Adaptations: build your set a single block at a time, or 5 single blocks at a time, or by a long block (tens) each time.

PROBLEM SOLVING

Jerry started counting by tens at 630. Erica started counting by fives at 875. Johnel started counting by ones at 936. How many numbers did each have to say before reaching 1000?

STRATEGY: *Make a List*

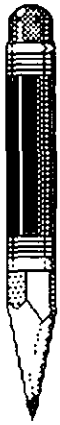
ANSWER:

Jerry: 37, Erica: 25, Johnel: 64, including the starting number.

adaptations:

DOWN

While building sets, do not progress above the value 100, and use a 100 chart along with the manipulative. Build the set and color the number showing the value of the set on the chart. Describe the pattern which emerges.



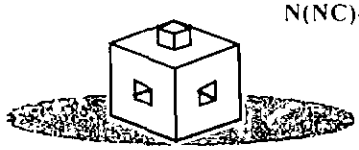
UP

Model the numbers on the calculator as well as build the set with manipulatives. To model the numbers on the calculator, repeatedly, add the number you are counting by to the value on the calculator screen.

Writing Corner:

Sandy made a list of the first 15 numbers she said while counting by fives. Make the same list as Sandy's. Describe any patterns you see in the list.

Objective: Estimate, then count the number of objects in a set (0-100) and compare the estimate with the actual number.



Representation:

Materials: linking metric cubes, metre stick.

Take a large handful of the linking blocks. Estimate the number of blocks in your handful. Write your estimate.

Link the blocks together and place the train along the edge of the metre stick.

Count how many cm the end of your train is from the estimate you recorded.

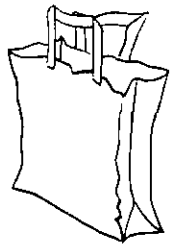
Repeat. Try to get closer the next time.

Which student in your class can take the largest handful of blocks?

Play a game with a friend: Repeat the above process five times, summing the differences between the actual lengths and the estimated lengths for all 5 rounds. The player with the lowest sum wins.

Problem Solving

A bag is filled with small blocks. Each student in your class is asked to draw 1, 2 or 3 blocks from the bag. Estimate how many blocks will be drawn in all. What is the largest number possible? The smallest?



STRATEGY: *Act It Out*

ANSWER:

Answers vary.

adaptations:

DOWN

Estimate smaller numbers of blocks. Place blocks in groups of 10 before determining the actual number of the set. Partition the set and make estimates of the subgroups.

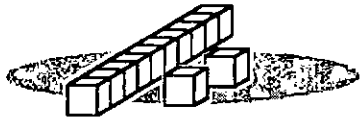
UP

Work with a partner. Each of you take a handful of blocks. Estimate the size of your set, your partner's set and the set that would be created if both your sets were combined.

Writing Corner:

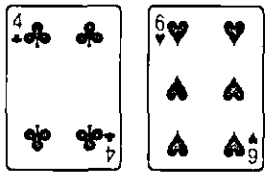
In the problem above, how did you make your estimate?

Objective: Recognize, build, compare and order sets that contain 0-100 elements.



Representation:

Materials: deck of cards (ace, 10, and face cards removed), base ten blocks.



- Begin by shuffling the cards. Turn the first 2 cards face up to determine a value less than 100. For example, the cards shown make 46.

- Take as many long (tens) blocks as the value shown on the first card and as many single (ones) blocks as shown on the other card. What is the value of your set?

- Repeat to create a second set. Which set has more long (tens) blocks? How do you know? Which set has more single (ones) blocks? How do you know?

- Which set is larger? How much larger?

PROBLEM SOLVING

Janna and Susan each reached into a bucket and pulled out a handful of bingo chips. Janna took out 10 more chips than Susan did. Together they took out 74 chips.

How many bingo chips did Janna have? How many bingo chips did Susan have?

STRATEGY: *Act It Out*

ANSWER:

Janna has 42 bingo chips. Susan has 32 bingo chips.

adaptations:

DOWN

Start with sets less than 10 and use one-to-one correspondence to sequence sets and to determine which set is the largest or smallest.

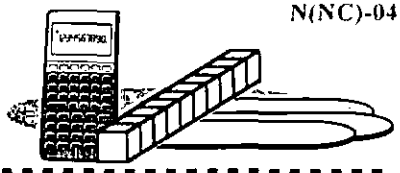
UP

Using base ten blocks create sets, each with a value greater than 100. Order the sets by comparing place values. Which set has more hundred blocks? Ten blocks? Which set has the greater value?

Writing Corner:

Describe two ways you can tell if there are more students in the Grade 1 class or the Grade 2 class.

Objective: Represent and describe numbers to 100 in a variety of ways.



Representation:

Materials: calculator, base ten blocks, popsicle sticks, 100 board, bingo chip, paper, pencil.

- Work in partners. Have one partner put a single digit in the calculator. The other partner will enter another digit in the calculator. For example, assume the display now reads:

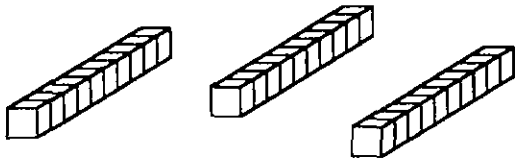
- One partner now builds the set (47 in this example) out of popsicle sticks while the other builds the set out of base ten blocks.

- Use the 100 board and place the bingo chip on the number created.

- Write sentences to describe the sets that have been built. For example,
  - 47 is 10 less than 57.
  - 47 is 3 more than 44.

Problem Solving

When I build my number, I use more long blocks than single blocks. The number of long blocks used is shown. What is my number?



STRATEGY: *Make a Model*

ANSWER:

Possible answers include 30, 31 and 32.

adaptations:

DOWN

Use only values less than 10. Play a game to see how many different ways you can describe the value chosen.

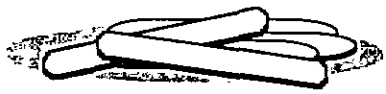
UP

Work in groups of three and use the same process to create values less than 1000. Omit the 100 chart and popsicle sticks from the activity to increase difficulty level and make conceptualization of the set more abstract.

Writing Corner:

Write a problem like the one above that would have someone try to guess your secret number.

Objective: Demonstrate place value concepts to give meaning to numbers up to 100.



Representation:

Materials: paper, pencil, popsicle sticks, string, bingo chips, 100 numberboard.

- Work with a partner for this activity.

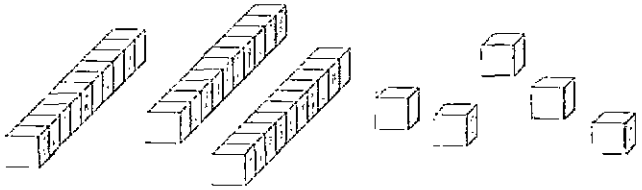
- Create a loop out of the string. You will work with your partner to build a set of popsicle sticks that has a value of 100 inside this loop.

- On a turn you can add one or two stick bundles (tens) or 1 or 2 single sticks (ones) to the set in the loop.

- After adding the sticks, write the new value of the set. Make a list of all the values you create on your way to 100. Move the bingo chip marker on the 100 numberboard to illustrate the new value (e.g., if you added two bundles, you will need to move the marker down 2 rows). How many turns does it take to get to 100 exactly? Can you get to 100 in exactly 12 turns?

PROBLEM SOLVING

Nicole can use only single base ten blocks and long blocks. She must use exactly 8 blocks. What values can Nicole make?



STRATEGY: *Make a List/Model*

ANSWER:

She can build: 8, 17, 26, 35, 44, 53, 62, 71, and 80.

adaptations:

DOWN

Build a set of sticks all the way to 20, one stick at a time. Write the number each time you add a stick. Repeat, but build a set to 100 adding a bundle of sticks (tens) each time. Now repeat to 100 mixing bundles and singles.

UP

Work with a partner. Create a 3-digit number on a calculator (e.g., 335) and build the set using base ten blocks. Take turns adding or removing a block of any size from the set and perform the comparable operation on the calculator (e.g., add a flat then +100).

Writing Corner:

Draw a picture of a set of base ten blocks including some single blocks (ones), and some long blocks (tens). Describe how you could calculate the value of your set.

Objective:

Round numbers to the nearest 10.

Representation:

Materials: 6-sided die, counting rods, metre stick, beans, paper, pencil.

- Roll the die. Take the same number of rods (of any color — all different, all the same or a mix) as the number rolled.

- Place the rods in a train along the edge of the metre-stick. Start your train at the number 'zero'. How long is your train?

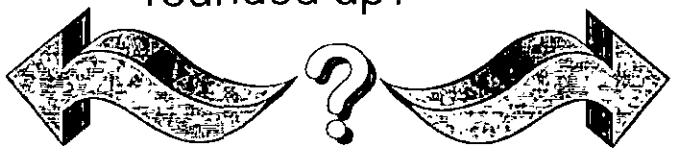
- Place one bean on the '10' on the m-stick. Place another on the 20, 30, 40 and so on. How can you describe these numbers?

- Which of these beans is closest to the end of your train?

- Write a sentence like the one below describing your train:
  '26 rounded to the nearest 10 is 30.'

PROBLEM SOLVING

How many numbers between 23 and 58 are there which would be rounded down if rounded to the nearest 10? How many are there which would be rounded up?



STRATEGY: *Make a List*

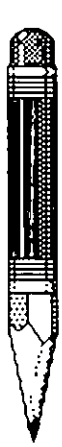
ANSWER:

There are 16 numbers which would be rounded down and 18 which would be rounded up.

adaptations:

DOWN

Use a 100 chart. Starting at the number 1, color all of the numbers which would be rounded down red and all the numbers which would be rounded up blue.



UP

Play a game with a friend:

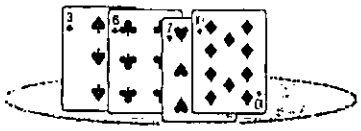
Write some numbers between 1 and 100 on cards. Flip the cards over one at a time. The first player to say the number to which this card would be rounded (when rounded to the nearest 10) keeps the card.

The player with the most cards wins.

Writing Corner:

Write a letter to a friend explaining how to round to the nearest 10. Finish your letter with a rule to know whether to round down or up. Include examples!

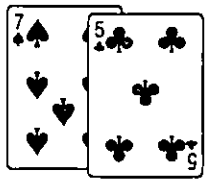
Objective: Read and write numerals to 100.



Activity:

Materials: deck of cards (A, 10, and face cards removed), paper, pencil.

• Play this game with a partner. Shuffle the cards and split them evenly between the two players.

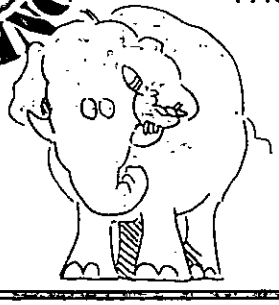


• Both players place 2 cards in order down on the table at the same time to create 2 digit numbers less than 100. Example: 75.

• Each players says his or her number out loud. The player whose cards make the largest value takes all 4 cards. Making a list, keep track of the largest number each player makes during the game.

• Continue to play until all the cards have been used, then count the number of cards each player has collected during the game, scoring one point for each card. The player who has made the single largest number during the game scores 10 bonus points. High score wins.

PROBLEM SOLVING



What is the largest number less than 100 you can make using only the following numbers?

5, 6, 3, 2

What is the smallest?

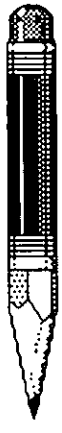
STRATEGY: *Guess & Check*

ANSWER:
Largest is 66, smallest is 22. Without using a digit twice, the largest is 65 and the smallest is 23.

adaptations:

DOWN

Using a calculator, construct a list of all of the numbers in order from 1 to 100. Generate the list by repeatedly adding one on the calculator. Write 3 sentences about the numbers in the list.



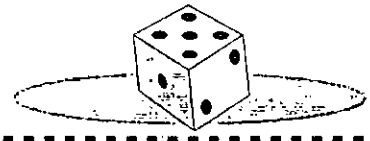
UP

Roll a die 3 times, keeping track of the values rolled. How many different 1, 2 and 3 digit numbers can you make using those numbers?

Writing Corner:

Write any number between 40 and 60. Write a sentence using that number and the words '10 less than.' Write another sentence using the words '3 more than.'

Objective: Read and write number words to 20.



Activity:

Materials: 100 numberboard, bingo chip, die (6-sided).

- Place the bingo chip on the square marked with a zero.
- Roll the die, and move the bingo chip forward that many spaces on the numberboard.
- Write the number word for the space on which the bingo chip lands.
- Repeat until you reach or pass the number 20, then set your marker on the 20 space and work your way back down.
- Which number word requires the most letters to write?
- Play a game with a partner. Roll the die and move the chip as above, but see who can write the most number words before passing the 20 space on the numberboard.

PROBLEM SOLVING

If you wrote out all the number words from one to twenty, which letter would you use the most often?

Which letter is used only once?

Which vowel isn't used at all?

STRATEGY: *Make a List*

ANSWER:

most common — letter e
only once — letter y
unused vowel — letter a

adaptations:

DOWN

Write out the number words from one to twenty in a list down the left side of your page.

On the right side of your page describe any patterns that you see.

UP

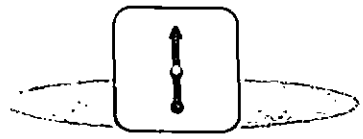
Draw 3 cards from a deck (A, 10, J, Q, K removed) and turn them face up in order. Write the number word to go with the number you drew.

Challenge: what is the first number word to use the letter a? letter b?

Writing Corner:

Write sentences to describe the students in your class. Say how many students there are in total; how many girls; how many boys. Write 2 more sentences to describe your classmates.

Objective: Use ordinal numbers to 31.



Representation:

Materials: spinner mat, overhead spinner, 31 various different small objects.

- Prepare the spinner mat by dividing the mat into 4 sections. Draw (or write the name) of one of the 31 objects in each section of the mat.

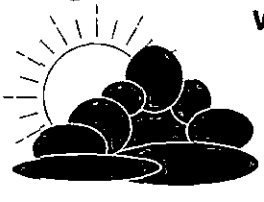
- Place the 31 objects randomly in a line.

- Twirl the spinner.

- Find the object identified by the spinner. Identify out loud the position that object holds from the front of the line (e.g., "twentieth from the front"). Now, switch that object with any other object in the line. Repeat several times.

- *Adaptations*: (a) instead of placing the objects in a line, place them one each on the spaces on a calendar page, (b) identify positions both from the front and back of the line, or (c) write as many sentences as you can describing the position of the object.

PROBLEM SOLVING



Joey noticed that there was a pattern to the weather in October. On the first day it rained. On the second day it was windy. On the third day the sun shone, and then the rain, wind and sun came again in that order. What will the weather be like on the 17th, 22nd and 31st if the pattern continues? How many sunny days this month?

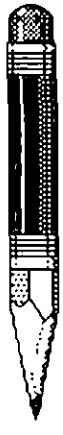
STRATEGY: *Make a List*

ANSWER:
17th — windy
22nd — rainy
31st — rainy, but 10 sunny days in all.

adaptations:

DOWN

Play a listening game. Start with a picture of 10 objects arranged in a line. Call out instructions such as "Color the first and seventh objects blue" or "Now color the third object pink," and so on.



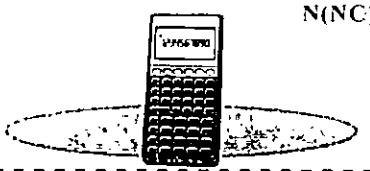
UP

Play a tic-tac-toe game on the month calendar page. Player one will say "put my X on the fifth." Player two selects and verbalizes another date on which to place his/her O. The first player with 4 in a row wins.

Writing Corner:

Construct a list of 3 places you hear or see ordinal numbers used. Give an example of each.

Objective: Explore the representation of numerals (0-100) using a calculator or a computer to display numerals.



Activity:

Materials: 100 board, bingo chips (two colors), calculator.

- Play a game of tic-tac-toe with a partner.
- First player picks any number on the 100 board and enters that number on the calculator.
- After entering that number on the calculator s/he can place his/her colored marker on that space on the 100 board.
- The second player now picks a number, enters it and claims that space on the 100 board.
- Players continue taking turns and claiming spaces until one player has 4 pieces in a row.

PROBLEM SOLVING

Jackie entered all the numbers from 1 to 50 in her calculator one at a time. How many numbered keys did she press?

How many times did she press the [3] key?

STRATEGY: *Act it Out*

ANSWER:

Jackie pressed 91 keys in all. She pressed the [3] key 15 times.

adaptations:

DOWN

Work with a partner. Take turns entering numbers in succession starting at one.

Continue until you reach 50.

UP

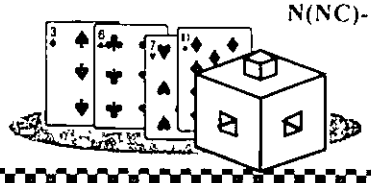
Find numbers which, when entered into the calculator and the calculator is turned upside down, spell the following words:

hi sos she

egg see his

Writing Corner:

Write a short story using words that can be spelled on the calculator. Replace those words with numbers or equations, and then let a friend read your story.

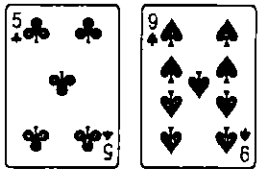


Objective: Demonstrate if a number from 1 to 100 is even or odd.

Representation:

Materials: metric cubes, metre stick, deck of cards (10, J, Q, K, A removed).

• Begin by turning over 2 cards to create a number less than 100. Find this number along the edge of the metre stick. This is the target number. Assume we turned over the following two cards and our target number is 59:

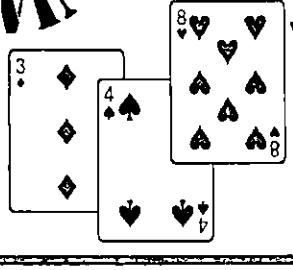


• Create a train along the edge of the metre stick by adding two cubes to the train at a time (starting at zero).

• Continue adding 2 blocks at a time until your train exactly reaches the target number (in which case your number is even) or until you pass the target number (in which case your number is odd, as in our example above).

• ***Adaptation:*** as you build your train, color all the various train lengths you made on a 100 board. Do you see a pattern?

PROBLEM SOLVING



How many different even numbers less than 100 can you make using only the digits 1, 3, 4 and 8?

STRATEGY: *Make a List*

ANSWER:
You can make 10 different numbers: 4, 8, 14, 18, 34, 38, 44, 48, 84 and 88.

adaptations:

DOWN

Work with a partner. Take turns counting from 1 to 100. One partner colors the numbers counted by the other on a 100 chart in different colors. One partner will have shaded the odd numbers, the other the even.

UP

Create sets of base ten blocks to model values less than 1000. Which size block determines whether a number is even or odd? Does the number of flat (hundreds) blocks determine whether a number is even or odd? Why?

Writing Corner:

Write a definition of an even number. Write a rule to tell if <u>any</u> number is even or odd.

Objective: Illustrate and explain halves, thirds and fourths as part of a region or a set.

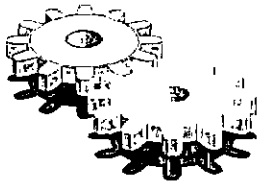
Representation:

Materials: pattern blocks, pencil crayons, pencil.

- How many red blocks does it take to cover a yellow block? What part of a yellow block does a red block cover?
- How many blue blocks does it take to cover a yellow block? What part of a yellow block does a blue block cover?
- How many green blocks does it take to cover a red block? What part of a red block does a green block cover?
- How many green blocks does it take to cover a blue block? What part of a blue block does a green block cover?
- Use any pattern blocks to create shapes which would contain:
  - four blue blocks
  - four green blocks
  - four red blocks

Problem Solving

With her pattern blocks, Jocelyn built a shape using eight blocks. A yellow block covers one third of her shape. Build a shape like Jocelyn's.



Can you make such a shape without using any green blocks?

STRATEGY: *Make a Model*

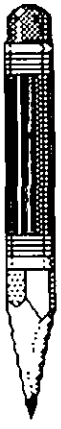
ANSWER:

There are 8 different combinations of blocks! But, only one solution not using any green: 6 blue and 2 red blocks.

adaptations:

DOWN

Take one pattern block, and trace around it twice (not overlapping, but touching on one side). Color one of the shapes to show one-half. Repeat with several different shapes. Trace around a block 3 times, shading one to show thirds, etc.



UP

Try representing parts of a set using pattern blocks. Take 4 of the same pattern block laying 3 of them face down on the table and standing one on its edge. What part of the set is standing on its edge?

Writing Corner:

Draw a rectangle, then draw a line to divide it in half. Explain how you knew where to draw the line.