KINDERGARTEN MATHEMATICS

Number

Kindergarten: Number (K.N.1, K.N.3, K.N.5)

Enduring Understanding: Quantities can be counted and compared using numbers, words, and numerals.

Essential Question(s): What math words can be used to count?
How can objects be counted?

Specific Learning Outcome(s):	Achievement Indicators:
K.N.1 Say the number sequence by 1s, starting anywhere from 1 to 30 and from 10 to 1. [C, CN, V]	➔ Recite the number sequence from 1 to 30 and from 10 to 1. ➔ Name the number that comes after a given number, 1 to 9. ➔ Name the number that comes before a given number, 2 to 10. ➔ Recite number names from a given number to a stated number (forward—1 to 10, backward—10 to 1) using visual aids.
K.N.3 Relate a numeral, 1 to 10, to its respective quantity. [CN, R, V]	➔ Construct a set of objects corresponding to a given numeral. ➔ Name the number for a set of objects. ➔ Hold up the appropriate number of fingers for a given numeral. ➔ Match numerals with their pictorial representations.
K.N.5 Demonstrate an understanding of counting to 10 by ■ indicating that the last number said identifies "how many" ■ showing that any set has only one count [C, CN, ME, R, V]	➔ Answer the question, "How many are in the set?" using the last number counted in a set. ➔ Show that the count of the number of objects in a set does not change regardless of the order in which the objects are counted. ➔ Count the number of objects in a given set, rearrange the objects, predict the new count, and recount to verify the prediction.

Prior Knowledge

Students' knowledge of counting will depend on experiences in the home and in other settings such as daycare or nursery.

Background Information

Stages of Counting

Rote Counting (Ages 2 to 6): Most preschool children learn some counting words, even though they may not say these words in the correct order.

With experience they learn the proper sequence (stable order) but may be unable to make one-to-one correspondence between the object being counted and the number names that are applied to them.

Rational Counting (Ages 5 to 7): The students attach the correct number name to each object as it is counted (one-to-one correspondence).

The students understand that the final count number indicates the number of objects in a set (cardinality).

Strategic Counting (Ages 5 to 8): Counting on and counting back are two strategies that extend students' understanding of numbers and provide a basis for later development of addition and subtraction concepts.

In counting on, the students count forwards beginning at any number. Counting back is challenging for many young students, and students need many opportunities to gain skill and confidence in counting backwards from different numbers.

Counting Principles

The research related to how children learn to count identifies principles which children need to acquire to become proficient at counting. They include

Stable Order: Words used in counting must be the same sequence of words used from one count to the next.

Order Irrelevance: The order in which objects are counted does not matter. Counting things in a different order still gives the same count.

Conservation: The count for a set of objects stays the same whether the objects are spread out or close together. The only way the count can change is when objects are added to the set or removed from the set.

Abstraction: Different things can be counted and still give the same count. Things that are the same, different, or imaginary (ideas) can be counted.

One-to-one Correspondence: Each object being counted is given one count in the counting sequence.

Cardinality: After a set of objects has been counted, the last number counted represents the number of objects in that set. If students need to recount they don't understand the principle.

Note: The numbers 11 to 19 in English often cause difficulties for students because of the way they are said and read. The oral language pattern of 14 as "four and ten," for example, is the reverse of the usual pattern of "tens first and then ones." Other languages use the pattern of "tens first and then ones" for these numbers. Invite students to share their language with the class.

Mathematical Language

Counting numbers: one to thirty, backward, forward

Position words: after, before, count on, count back

Learning Experiences

Assessing Prior Knowledge: Interview

1. Have students start at 1 and rote count forward as far as they can. Stop after the first error.
2. Have students count backward from 10 to 1.
3. Place a set of objects in a line. The number selected (4 to 10) will depend on the students' rote counting. Have the students count the objects. Observe the students as they count.

   Do the students

   - touch or move the objects as they say the number word?
   - count each object once only?
   - say the number sequence correctly?

   Ask: "How many objects are there?" Do the students reply without having to recount?
4. Have the students spread the objects out on the table. Ask: "How many objects are there?" Do the students reply without having to recount?

- **Name the number that comes after a given number, 1 to 9.**
- **Name the number that comes before a given number, 2 to 10.**

Note: Students can be expected to name the number after a given number if they can count forward beyond that number. Inversely, students can be expected to name the number before a given number if they can count backward beyond that number.

The counting sequence for these experiences should be adjusted to meet varied student needs.

- **Echo counting:** The teacher counts and the students echo the teacher. Begin with single numbers and work towards a small grouping of numbers (e.g., 6, 7, 8 or 6, 5, 4). Support students by holding up two or three fingers so students can keep track of the next two or three numbers.
- **I say … You say …:** The teacher (or leader) says a number in the counting sequence and the class or individual student responds with the number that comes after or before.
- **Orchestra counting:** Put students into groups. The first group begins counting forward from 1. When the leader points to another group they continue the count from where the previous group left off.
- Use poems, songs, and stories that have forward and backward counting sequences. Have students predict which number comes next as you read through the poem or story. Use sticky notes to cover up the numbers on each page or each section of a poem and have students identify the hidden number.
- **Rote counting and one-to-one:** Divide students into groups of two or three, and provide each group with laces and beads. Have the students count in unison by ones as they string the beads. Ask questions such as: "When we put on another bead how many will be on our string?" This task can be repeated counting backward as beads are removed.
- **Bead number line:** Have students count (forward and backward) as the beads are moved one-by-one from one side to another.

- **Hidden Numeral Boards:**

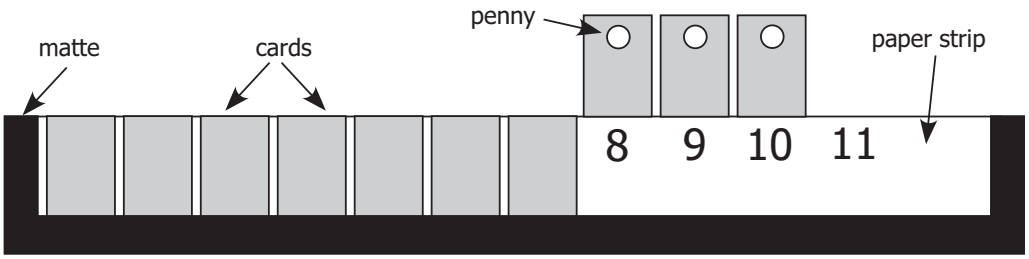
  Materials:

  — picture matting or heavy cover stock about 10 cm wide and 60 cm long

  — cards 6 cm x 9 cm

  — pennies or washers

Tape the cards onto the matte with transparent tape so that the top is taped down and the card can be raised easily. On the underside of each card near the bottom, tape a penny or a washer. This helps to keep the card from flipping up.



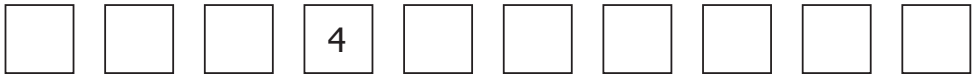
Strips can be customized to meet students' needs. Hint: When making a new number strip insert it into the numeral board and write the numbers in as you lift the flaps. This way the numbers will match up with the flaps.

The hidden numeral track can now be used to

- count forward and backward by lifting the flaps
- identify the number before and after by lifting one flap and pointing to the flaps to the left and right of the visible number
- identify the number between by using a group of three flaps and leaving the middle flap closed
- count on from a stated number to a given number by raising the flap of one of the numbers near the beginning of the numeral board and one near the end of the board

- **Use a row of 10 squares:** Place a number somewhere in the row. Have students place another number on the grid using the language of before and after to explain the number placement. *When students are confident with numbers to 10 you can add another row. **Note:** You do not need to assess beyond 10.

  For example,



  "The 5 goes right after the 4."

Assessing Understanding: Checklist

Use an assessment checklist to track student progress over time.

BLM K–4.1

Number After		
Student's Name	0–5	6–9

Number Before		
Student's Name	5–0	10–5

- **Recite number names from a given number to a stated number (forward—1 to 10, backward—10 to 1) using visual aids.**

- **Beaded Number Line:** Have students count while beads are being moved from one side to the other side. Stop after a particular number. Put a clip or a bread tag on the line to mark the stopping point. Have students count on from the marked number to the end of the line.
- **Make a vertical number line 1 to 10** with spaces large enough for students to stand or jump in. Have students take turns starting at a given number and then jumping from space to space until they reach a stated end number. As the students jump, they can count aloud or the class can count in unison.
- **Horizontal Number Line:** Use a number line along with a frog or kangaroo attached to a craft stick. Students take turns jumping the frog/kangaroo from a given number to an end number counting aloud as they move forward or backward.
- **Use two 1 to 10 (1 to 6, 1 to 20, or 1 to 30) dice:** Select a student to roll the first die and identify the number. This will be the start number. Have a second student roll the second die and say the number. This will be the end number. The class then begins with the start number and counts either forward or backward to arrive at the end number.

These learning experiences work on the count on and count back strategies. Students should be introduced to the vocabulary through teacher-modelling.

Observation Checklist

The students are able to

- ❑ confidently count forward by 1s from random starting points in the range
- ❑ confidently count backward by 1s from random starting points in the range

- **Construct a set of objects corresponding to a given numeral.**
- **Name the number for a set of objects.**
- **Match numerals with their pictorial representations.**
- **Answer the question, "How many are in the set?" using the last number counted in a set**

- Daily Counting Routines
  - **Attendance:** Select a student to count the number of students present.
  - **Counting Jar:** Fill a small jar with a different item each day. Select one or two students to count the objects each day. Have the class confirm the number by counting aloud as the student(s) points to each item.
  - **Counting Tree or Counting Wall:** Fill zippered bags with different numbers of items. Hang the bags on a tree (branch placed in a pail of sand) or on a bulletin board. Select one or two students to 'pick' a bag and count the number of objects. Items in the bags could support classroom themes or special events.

Vary the objects students count (not always using cubes, etc.). Include mixed sets of different objects (size, shape, etc.).

- Use a set of dot cards or dominoes with representations to 10. Place them face down on the table. Have students take turns drawing a card/domino and identifying the number shown.
- Prepare a set of activity cards. Seat students in a circle. Place cards face down in the middle of the circle. Students take turns drawing a card and then leading the class in performing the activity on the card. Have students count aloud as the actions are performed.

  Example:

BLM
K.N.1&3&5.1

- **Paper Plate Match:** Put a different number of unifix cubes on paper plates. Have students match the numeral to the quantity shown. Reverse the procedure by placing a numeral in front of each plate and having students put the correct number of cubes on the plates.
- **Spin or Roll and Build:** Use a 1 to 10 spinner or a ten-sided dice. Students take turns spinning or rolling and then building a unifix tower to match the number shown.
- **Concentration:** Prepare a set of numeral cards, dot representations, five frames, and finger representations. Shuffle the cards. Place them face down in a grid. Students draw two cards. If they match they keep the pair; if not, they return them to the grid. The game continues until all cards have been matched.

BLM
K.N.1&3&5.2

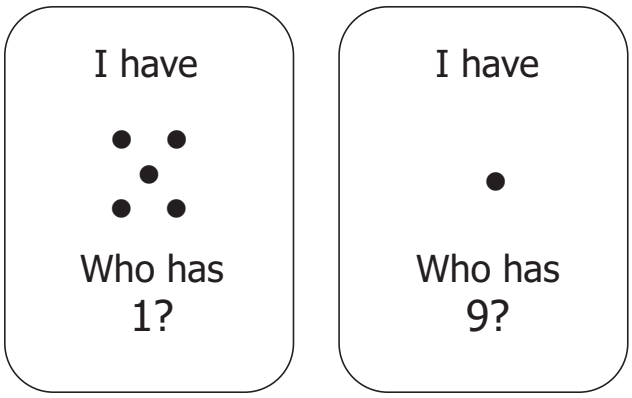
Differentiate the game by

  - limiting the number of cards used (e.g., 1 to 5 or using only numerals 2 and 3) and corresponding representations
  - using only one representation along with the numeral cards (e.g., numeral cards and finger representations)
  - placing the cards face up in the grid

- **I Have. . . Who has. . . ?:** Prepare a set cards from BLM 4.

  Example:

BLM
K.N.1&3&5.3



Note: The cards have been placed in order. Change the order to make the game more challenging.

Play with a small group (not more than 10). Pass out a card to each student. Model reading the card for students. Have one student begin by reading his or her card. The person with the answer to the "Who has…?" question follows by reading his or her card. Play continues until it gets back to the student who started the game.

- **Number Necklaces:** Give each student a numeral card, a dot pattern or a finger pattern card. Attach string and have students wear it as a necklace. On your signal have students find their partners.

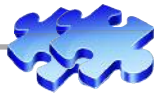
Observation Checklist

The students are able to

- ❑ count a set of objects
  - 2 to 5
  - 6 to 10
- ❑ name the number for a given set 1 2 3 4 5 6 7 8 9 10
- ❑ match a numeral to a set of objects 1 2 3 4 5 6 7 8 9 10
- ❑ make a set of objects to match a numeral 1 2 3 4 5 6 7 8 9 10
- ❑ match a numeral to different representations 1 2 3 4 5 6 7 8 9 10
- ❑ respond to the question, "How many are there?" without having to recount

Integrating Counting into Kindergarten Routines and Centres

CENTRE	SUGGESTED ACTIVITIES
Arts and Crafts	Paint a picture that includes a specified number of objects. Make a picture with a specified number of different types of paper or colours. Connect to the Paper cluster in science. Use playdough to make objects. Have them counted.
Math	Play board games that require counting. Use manipulative materials such as unifix cubes to make towers to match the number rolled on a dice.
Sand and Water	Have students count the number of sand shapes they have made. Count the number of small containers it takes to fill a larger one.
Block/Construction	Make towers/buildings and count the number of blocks used. Make a structure that uses a specified number of blocks.
Role Play	One-to-one matching setting the table. Matching cars with garages, etc.
Music and Reading	Read or listen to counting stories and act them out. Use finger plays and number rhymes. Sing counting songs



Performance Task: Mystery Bags

Materials: a collection of paper bags with different numbers of objects in each bag (e.g., math materials, keys, buttons, small toys, erasers, pencils, etc.)

Context: Someone left a box in our classroom. The box is full of bags. The bags have different objects in them. I would like your help putting the name and number of objects on the outside of each bag.

Have students work in pairs. Provide each pair with two or three bags. The number of objects in each bag should be within (or just outside of) their counting range. Direct them to count the number of objects and then write the number and the object name on the bag.

Observe students as they work.

- Are they able to count the collections?
- Do they have a strategy for keeping track of the counting for a larger collection, for example, snapping cubes together in groups of five or ten?
- Are they able to record the number of objects?

Have students share their findings with the class.

Kindergarten: Number (K.N.2)

Enduring Understanding: The quantity of a small collection can often be determined through instant recognition or by thinking of it in its parts.

Essential Question(s): How many dots/objects do you see?
How do you see them?

Specific Learning Outcome(s):	Achievement Indicators:
K.N.2 Subitize and name familiar arrangements of 1 to 6 dots (or objects). [C, CN, ME, V]	➛ Look briefly at a given familiar arrangement of 1 to 6 dots (or objects), and identify the number represented without counting. ➛ Identify the number represented by a given dot arrangement on a five frame, and describe the number's relationship to 5. ➛ Identify the number represented by a given dot arrangement on a five frame, and identify the numbers that are one more and one less.

Prior Knowledge

Students may have had no formal experience with this skill.

Background Information

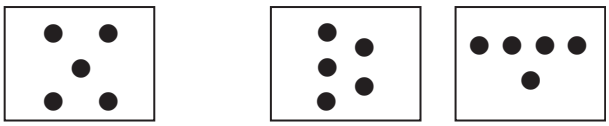
Subitizing is the ability to rapidly determine the quantity of a small group of objects without counting. Subitizing is a fundamental skill in a student's development of number understanding.

There are two types of subitizing; perceptual and conceptual. Perceptual subitizing is the ability to recognize the quantity of a set without counting. It is the basis for counting and cardinality and the focus of the Kindergarten outcomes. Conceptual subitizing is seeing number patterns within a set (part—whole) and then determining the quantity by putting the number patterns together.

Dot representations can be regular and irregular. Regular representation show the dots as you would find them on a dice or domino (see example on the following page).

Irregular representations group the dots in a variety of ways.

Example:



Regular Irregular

Mathematical Language

Sets, subitizing, "How many", dots, pips, five frames

Learning Experiences

Assessing Prior Knowledge: Interview or Small Group

Use dot cards for 1, 2, and 3.

Flash the cards in a random order.

Have students show with their fingers the number of dots they saw.

The students are able to subitize: 1 2 3

- **Look briefly at a given familiar arrangement of 1 to 6 dots (or objects), and identify the number represented without counting.**
- **Identify the number represented by a given dot arrangement on a five frame, and describe the number's relationship to 5.**
- **Identify the number represented by a given dot arrangement on a five frame, and identify the numbers that are one more and one less.**

BLM K.N.2.2

- **Dot Card Flash:** Use a set of dot cards with regular dot formations for the numbers 1 to 6. Give each student a work mat and counters. Explain to the students that you are going to flash a card and then ask them to make the arrangement they saw using the counters. Hold up the card for about three seconds.

  After they have built the dot arrangement, ask:

  How many dots did you see?

  How did you see them?

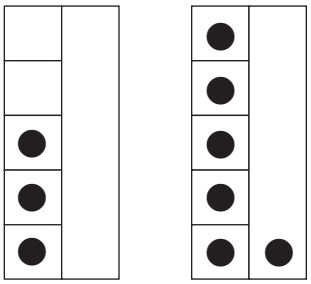
  How many counters did you use on your mat?

- **Flash Math:** Use an overhead projector and a set of dot transparencies or cards with the dot patterns made with a hole-punch. Briefly flash the dot formation. Have students hold up fingers to show the number.

- **Five Frame Flash:** Use a set of five frame cards. Briefly flash a five frame. Have students identify the number shown.

BLM K.N.2.1

Example:



BLM K.N.2.3

Using five frames, as shown, encourages the development of additive thinking and supports using 5 as a benchmark. Students can easily see 6 as 5 and 1 extra.

- **Dot Card/Five Frame Flash:**

BLM K.N.2.1

Materials: a double set of dot cards or five frame cards (or a mixture)

BLM K.N.2.2

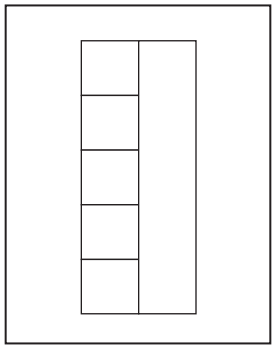
Directions: Have students play with a partner. Place the cards face down in a pile on the table. Students take turns turning over the top card. The first person to identify the number shown gets the card. In the event of a tie a second card is turned over. Play continues until all cards have been played.

- **More or Less Than Five:** Show students a five frame card. Ask, "Is the number shown more or less than 5? How many more? How many less?

BLM K.N.2.1

- **One More, One Less:** Give each student a five frame mat and counters. Show a five frame dot card. Ask students to identify and then make the number shown. Have them identify and make the number that is one more and one less.

BLM K.N.2.1



BLM K.N.2.3

Assessing Understanding

1. Observe students as they play a board game that uses a 1-to-6 numbered die.
2. Flash dot and five frame cards and have the students identify the number shown.
3. Show a five frame card. Ask the students to give the number that is one more and one less.

Observation Checklist

The students are able to

- ❑ count the pips
- ❑ subitize the numbers 1 2 3 4 5 6
- ❑ identify a dot formation on a five frame
- ❑ show the number that is one more and one less

Kindergarten: Number (K.N.4)

Enduring Understanding: Quantities can be represented in a variety of ways with objects, pictures, and numerals.

Essential Question(s): How can quantities be shown?

How many different ways can you represent a number?

Specific Learning Outcome(s):	Achievement Indicators:
K.N.4 Represent and describe numbers 2 to 10 in two parts, concretely and pictorially. [C, CN, ME, R, V]	➛ Show a number as two parts, using fingers, counters, or other objects, and name the number of objects in each part. ➛ Show a number as two parts using pictures, and name the number of objects in each part.

Prior Knowledge

Students may have had experience

- counting beyond 10
- understanding that for any given set there is only one count

Background Information

Part-whole understanding is the ability to conceptualize a number as being composed of other numbers. It is one of the most important number relationships. For example, the number 8 is a whole amount but it is also made up of smaller groups 7 and 1, 2 and 6, 3 and 5, and 4 and 4.

Research shows that a strong part-whole understanding positively impacts students' performance in number concepts, place value, and problem solving.

The development of part-whole understanding with numbers to 10 is the basis of success with larger numbers.

Kindergarten students need to progress at their own rate. Not all students, therefore, will necessarily be working on the same number at the same time. Having students work with larger numbers before they are fluent with smaller numbers can encourage them to become dependent on rote procedures.

It is recommended that you begin working with the number 4. It is easy to show with fingers on one hand and to show the part-part-whole relationships. From there students can learn about the numbers 2 and 3 before progressing to 5 through 10.

Mathematical Language

Sets, part, whole, numbers, groups

Learning Experiences

Assessing Prior Knowledge

1. Have the students count orally. Stop at 15.
2. Use a set of objects (5 to 10). Have the students count them. Ask, "How many are there?"
3. Have the students rearrange the counters. Ask, "Now, how many are there?"

Observation Checklist

The students are able to

- ❑ Count beyond 10
- ❑ Count a collection (5 to 10) accurately.
- ❑ Recount when asked, "How many are there?"
- ❑ Answer the question, "How many are there?" without counting.
- ❑ Recount the new arrangement.
- ❑ Identify the quantity of the new arrangement without counting.

- **Show a number as two parts, using fingers, counters, or other objects, and name the number of objects in each part.**
- **Show a number as two parts using pictures, and name the number of objects in each part.**

Students should be provided with multiple opportunities to explore part-part-whole relationships for each number 2 to 10. They should focus on a single number until they can confidently identify/show the different combinations for that number.

Note: Although part-whole activities resemble those for addition and subtraction there is no formal operation work in Kindergarten. Avoid the use of addition, subtraction, and equal symbols.

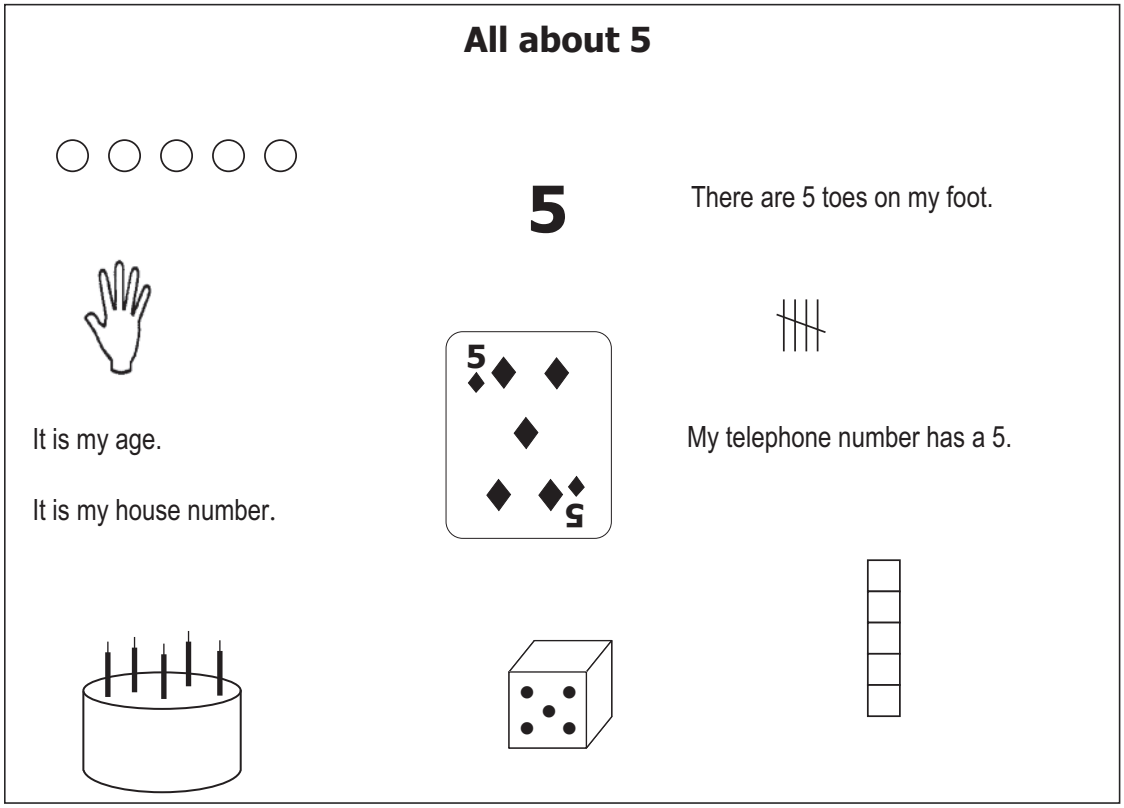
Possible materials/objects to use for representing number and showing part-part-whole relationships

- fingers
- toothpicks
- craft sticks
- unifix cubes
- blocks
- colour tiles
- commercial counters (e.g., bear counters)
- pattern blocks
- spray painted lima beans or two-coloured counters—shake and spill
- "junk" box material— keys, shells, buttons, etc.

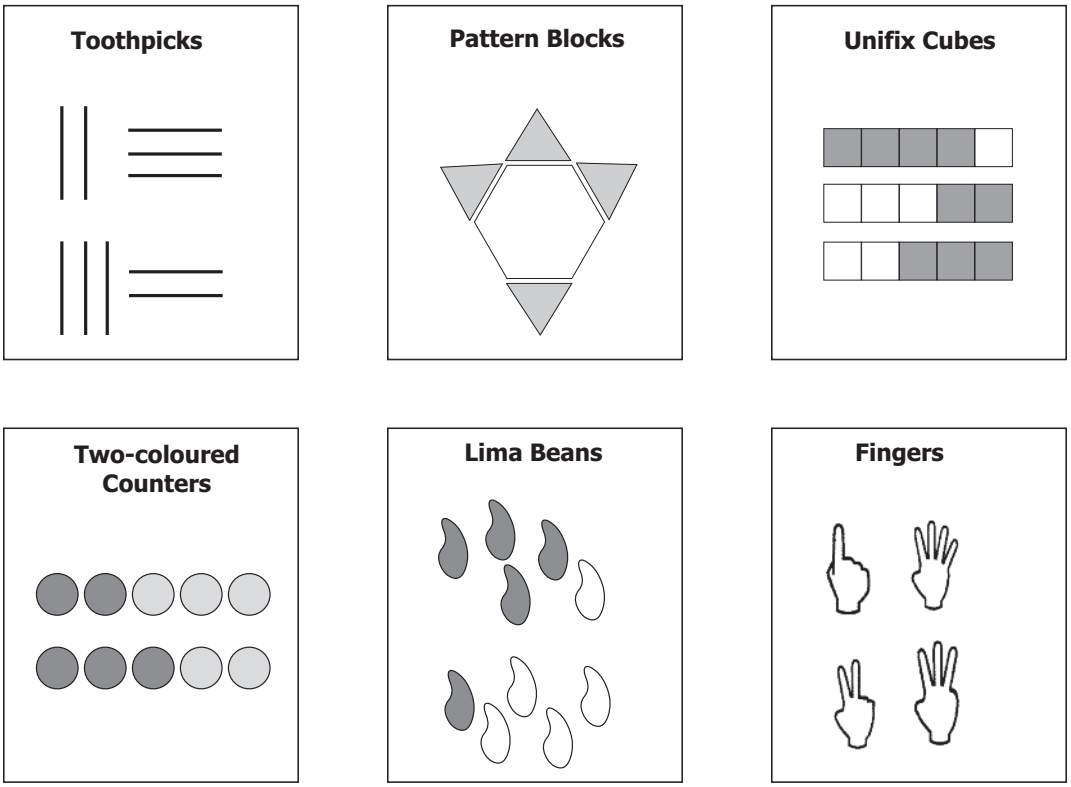
Examples of representing a number as a whole:

Note: This should be done with the support of the teacher perhaps as part of the group meeting time.

BLM K—4.1



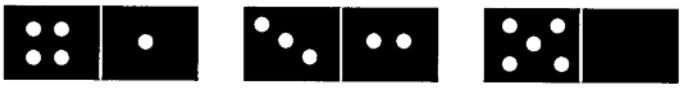
Examples of part-part-whole representations for the number 5:



Students should be able to use the same material to show all of the combinations for a number.

- **Dominoes:** Have students find the dominoes that total a particular number (e.g. , 5).

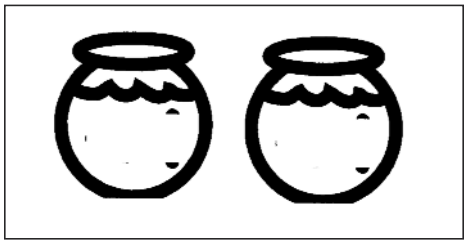
BLM K.N.4.1



- **Story Mats:** Use story mats to provide meaningful contexts for problem solving (e.g., use a 'fishbowl' story mat and fish counters or crackers with the following problem).

  The twins, Mary and Paul, got 9 fish on their birthday. They both want fish in their bedrooms. How many different ways can they share the fish?

BLM K.N.4.2



Have students draw pictures to record their findings.

Examples of story mats:

- trees (leaves or apples)
- treasure chests (counters or pennies)
- piggy banks (pennies or counters)
- ponds (counters or paper ducks)
- playground (counters, paper dogs)

- **Rabbit Ears:** Have students put their hands behind their heads like rabbit ears. Ask them to use their fingers to show a number. Discuss the representations shown. Encourage students to show it in a different way. Note: Some students will have to work with their fingers where they can see them.
- **How many are hiding?:** Use a plastic container or box. Place a selected number of counters on top of the container. Be sure that the number is agreed upon by the students. Ask them to close their eyes. Put some of the counters underneath the container. Have them look at the counters remaining and ask, "How many are hiding? How do you know?"
- **Visualizing Numbers:** Have students close their eyes and imagine a particular number of objects. Ask, "How do you see 5?" Students should reply giving the part-part-whole representation (e.g., "I see 3 and 2." or "I see 1 and 4.").

Observation Checklist

Use a checklist to record students' progress related to part-part-whole understanding.

Students demonstrate part-part-whole understanding for a number when they are able to

- ❑ represent the number in two parts using a variety of materials
- ❑ apply part-part-whole understanding related to the number in problem-solving situations
- ❑ represent the number in two parts with objects and with pictures and name the number of objects in each part
- ❑ begin to use a strategy in order to identify the missing part when the other part is shown

BLM K.N.4.3

Student	Part-Part-Whole Understanding								
	2	3	4	5	6	7	8	9	10

Performance Task: Frogs—Part–Part–Whole Story

Read a book such as *Quack and Count* by Keith Baker. This book shows many ways to make seven in two parts.

or

BLM K.N.4.4

Use a flannel/magnetic story board. Select a number. Tell a part-part-whole story. For example: There are 8 frogs living in Mr. Smith's yard. They like to play in the grass and swim in the pond.

On Monday, 6 frogs played in the grass and 2 frogs swam in the pond.

On Tuesday, 4 frogs played in the grass and 4 frogs swam in the pond, etc.

Record the number combinations as the story is read/told.

Example:

Grass	Pond
6	2
4	4

Tell students that they are now going to make their own part-part-whole stories.

Note: Students can make up their own story context or use a math story board. Numbers can be selected by the students or assigned by the teacher depending on student needs.

Have students work in partners to make up and record their stories. Encourage them to use all possible combinations of their number.

Share stories with the class.

Assessing Understanding

Observe students as they work.

Observation Checklist

Student are able to

- ❑ tell a part-part-whole story
- ❑ record the story using pictures
- ❑ identify the number for each part
- ❑ find all the combinations for their number

NOTES

Kindergarten: Number (K.N.6)

Enduring Understanding: Quantities can be counted and compared using numbers, words, and numerals.

Essential Question(s): Which has more?
Which has less?

Specific Learning Outcome(s):	Achievement Indicators:
K.N.6 Compare quantities, 1 to 10, ■ using one-to-one correspondence ■ by ordering numbers representing different quantities [C, CN, V]	➛ Construct a set to show more than, fewer than, or as many as a given set. ➛ Compare two sets through direct comparison, and describe the sets using words such as "more," "fewer," "as many as," or "the same number." ➛ Order quantities using objects, five frames, ten frames, or dot cards. ➛ Order, using at least 2 benchmarks, numerals 1 to 10 on a vertical or horizontal number line.

Prior Knowledge

Students may have had no formal experience with this skill.

Background Information

One-to-one Correspondence: Each object being counted is given one count in the counting sequence. There are many opportunities in the classroom to practise one-to-one correspondence, for example, passing out materials (scissors, pencils, paper, books), voting (one vote per person).

Students often have difficulty with comparative vocabulary. They need direct instruction in order to develop facility with the terms.

Mathematical Language

More than, fewer than, as many as, the same number, less than, greater than

Learning Experiences

Assessing Prior Knowledge: Individual or Small Group

Give each student three paper plates and counters. Make a set of three counters on one of your paper plates. Ask students to use their paper plates to

- make a set that is the same as yours
- make a set that is smaller than yours
- make a set that is larger than yours
- identify the number of objects on each plate
- order the plates from the smallest to the largest

Observation Checklist

Students are able to

- ❑ make a set that is the same as yours
- ❑ make a set that is smaller than yours
- ❑ make a set that is larger than yours
- ❑ identify the number of objects on each plate
- ❑ count using one-to-one correspondence
- ❑ subitize
- ❑ order the plates from the smallest to the largest

- **Construct a set to show more than, fewer than, or as many as a given set.**
- **Compare two sets through direct comparison, and describe the sets using words such as "more," "fewer," "as many as," or "the same number."**

- **One-to-One Correspondence:** Have students sit in a circle. Students take turns rolling a 1 to 6 numbered die and making a unifix train to match the number rolled. When all students have had a turn, compare the trains. Ask, "Who has more? Who has less? Does anyone have the same number?"

  Extend the activity by

  - using two dice or dominoes
  - asking, "How many more cubes would we need to make the trains the same?"

- **Matching Trains:** Make a set of unifix trains of different lengths (some the same, some not). Have students find the ones that are the same.

  Extend the activity by selecting one tower. Have students sort the rest into groups using the selected tower as a benchmark.

- **Dueling Towers (partner activity):** Students build a tower of 10 interlocking/unifix cubes. Have them put the tower behind their backs and break off a piece. Players put the pieces on the table in front of them and compare using the terms more than, fewer/less than, or the same as.

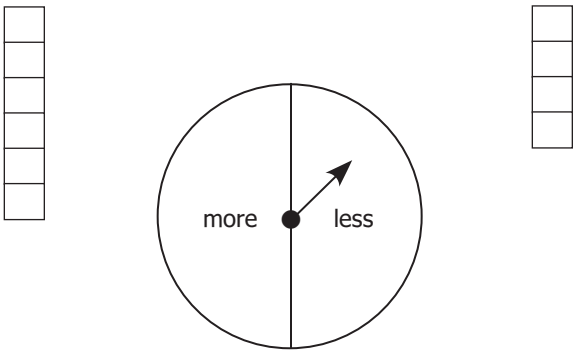
  Once students have had practise with this activity they can play it as a game.

BLM K.N.6.1

  Students continue to break off pieces of the tower but now they spin a 'more or less' spinner to determine which team member scores a point (gets a counter). Play continues until someone has collected five counters/points.

  Example:

  Player A has a tower of 6. Player B has a tower of 4.

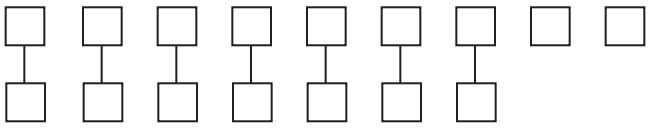


  Player A spins the more or less spinner and it lands on less. Player B gets a counter/point because his or her tower has fewer cubes. If the towers are the same both players get a counter/point.

- **Handfuls:** Work in partners. Each student takes a handful of cubes and then uses one-to-one correspondence to compare them. Vary the materials depending on the needs of the students (e.g., smaller objects for students comfortable with larger numbers).

  Support students by providing pipe cleaners, yarn, stir sticks, or craft sticks. Students can use them to join the objects between sets.

  Example:



BLM K.N.6.2

- **Board Games:** Playing board games in which students roll dice and move along a path reinforces one-to-one correspondence and subitizing.

Observation Checklist

Students are able to

- ❑ construct a set to show fewer than a given set
- ❑ construct a set to show more than a given set
- ❑ construct a set to show as many as a given set
- ❑ use the language of comparison correctly
- ❑ compare two sets using direct comparison (one-to-one correspondence)

- **Order quantities using objects, five frames, ten frames, or dot cards.**
- **Order, using at least 2 benchmarks, numerals 1 to 10 on a vertical or horizontal number line.**

- **What's the Order?:** Place a different number of objects on several paper plates. Select three of the plates and ask students to order them from least to greatest. Ask, "How do you know your order is correct?" Add another plate and have them reorder. Continue until all plates have been used.

BLM
K.N.6.3&4&5

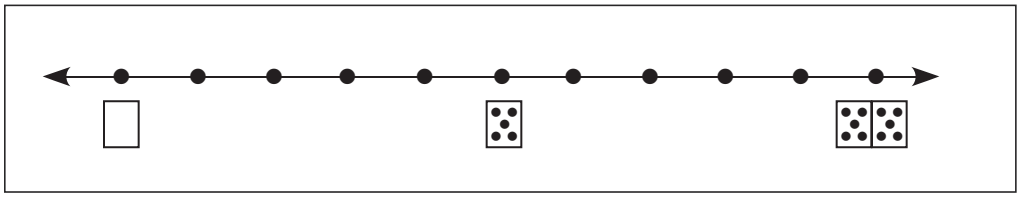
Repeat the activity using five frames, ten frames, dot cards, and finger representations.

Extend the activity by having students use numerals along with the objects and representations.

- **Ordering on a Number Line:** Make a large number line (see example).

  Use dot cards, five frames, ten frames, or finger representations. Place cards on the number line to be used as benchmarks. Have students place the remaining cards giving reasons for their placement.

  Example:



Repeat the activity using numeral cards.

- **Clothesline Numbers:** Put up a clothesline (string). Make a set of numeral cards. The cards should be folded (tent-like) to make it easier for them to be hung on the line. Place two or three cards on the line to be used as benchmarks. Have students take turns placing the remaining numerals. Ask them to justify their placement.

  Support students by increasing the number of benchmarks on the line.

BLM K.N.6.6

  Extend the activity by reducing the number of benchmarks on the line. Some students may be able to order the numbers using only an empty number line.

  Change the orientation of the number line so that it is vertical.

  Repeat the activities.

- **Where Do You Belong?:** Prepare a set of numeral cards to be worn around the neck. Randomly distribute them. Have students order themselves from least to greatest. Extend the activity by ordering from greatest to least.

Observation Checklist

Students are able to

- ❑ order quantities using various representations
- ❑ order numerals on a number line
- ❑ justify the placement of a particular numeral

NOTES