Mathematical Melodies
Counting on Numbers
Music and lyrics by Lisa Fenwick

Counting on Numbers

All of us are learning numbers
1,2,3,4,5,6, more
We can count up to 100
Spread the numbers across the floor

Counting on numbers, this pattern is by one.
Count along with me, counting can be fun

We can then count even faster,
By skip counting up by 2's
2,4,6,8,10,12,14,
Then the rest is up to you

Counting on numbers, this pattern is by two.
Count along with me until we are through

2's are good but let's go faster
Let's skip count it up by 5's
5,10,15,20,25,
How many bees in the hive?

Counting on numbers, this pattern is by five.
Count along with me, let's do a math jive

Lastly, we can count much quicker
By skip counting up by 10's
10,20,30,40,50
Math is with us till the end

Counting on numbers, this pattern is by ten
Count along with me, let's start a new trend

You can do this by yourself now
You can use a hundreds chart
Lots of ways to count 100
Lots of counting, you're so smart!

Counting on Numbers

PRIMARY: Grade 1, Grade 2 and Grade 3

The Big Ideas

Skip counting is important in the development of fluency in calculation, number sense and as the basis of multiplication and division.

Skip counting is a skill that develops over time growing as students continue to expand the range of numbers with which they can skip count. They will also become able to skip count from any number, not just starting at zero, which results in the most familiar sequences (e.g. 0, 2, 4, 6 ... instead of 1, 3, 5, 7 ...).

The overall goal is to have students count fluently forwards and backwards by twos, fours, fives, tens and hundreds starting at any number.

Before achieving this, they will be able to skip count forwards fluently, but may experience difficulty counting backwards.

Hands On

Working in small groups give each cluster of children a box of popsicle sticks, erasers or straws and some rubber bands. Ask your students to devise a system using the objects and rubber bands to count faster then if you were counting by 1's. Wait and see what they come up with. If they are stuck ask them what they do when they skip count. The goal is to have them bunch the objects together and count using 5's or 10's. Have the groups share their strategies. Is it faster to count by 5s and 10s? Label this strategy grouping.

Curriculum Connections
Number Sense and Numeration

Quantity Relationships
- represent, compare, and order whole numbers to 10, using a variety of tools (e.g., connecting cubes, ten frames, base ten materials, number lines, hundreds charts) and contexts (e.g., real-life experiences, number stories);
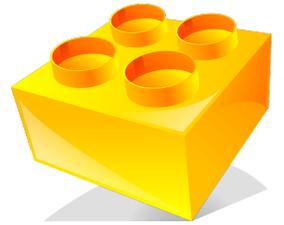
- demonstrate, using concrete materials, the concept of conservation of number (e.g., 5 counters represent the number 5, regard- less whether they are close together or far apart);

Counting
- **demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting;**

- **count forward by 1's, and 2's,to 10, using a variety of tools and strategies (e.g., move with steps; skip count on a number line; place counters on a hundreds chart; connect cubes to show equal groups; count groups of pennies, nickels, or dimes);**

Operational Sense
- solve a variety of problems involving the addition and subtraction of whole numbers to 20, using concrete materials and drawings (e.g., pictures, number lines) (Sample problem: Miguel has 12 cookies. Seven cookies are chocolate. Use counters to determine how many cookies are not chocolate.);

Inaugural Voyage
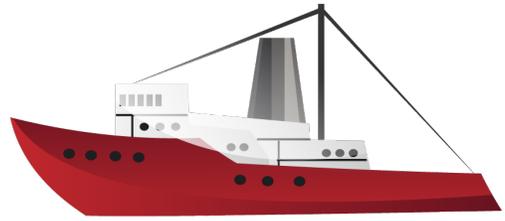
One way to introduce skip counting using a BOUNCY BALL.....

- Gather students in a large circle around the class or in the middle.
- Ask your students "who can count the number of people in the class the fastest?"
  - Pick a student to count the class. He/she will most likely count the class by 1s.
    - Now ask the class "Is there a faster or easier way to count everyone?
      - Demonstrate counting by 2s to your students, first using a hundreds chart.
      - Then lead them in counting by 2s without it.
      - Begin bouncing a ball while students skip count in unison to its bounce.
        - Once students have had a chance to practice have them send the ball around the circle in time with their skip counting.
- Students can practice 2's, 5's and 10's.
- Try going backward!
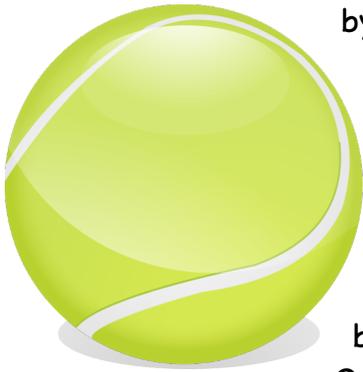
Using the Hundreds Chart to Explore skip counting....

Students work in pairs to skip count by 2's, 5's and 10's using a hundred board and clear counters. Each time they practice skip counting students should be encouraged to stop and discuss the patterns that they see on the board left by the counters. Students should practice skip counting forward and then skip counting

Handout(s):
100s Chart
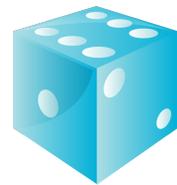
Let's Play a Game
Paper with Personality!

Place students in 4 groups and give each group one piece of paper. When you say "go," the first person will write a 2 on their paper. The paper should be passed clockwise to the next person who will then add 2 to this number and write 4 on the paper. The paper is passed continuously until each group reaches 20, counting by 2s. When each group is done have one member check for accuracy. This game can be repeated with 3s, 4s, 5s and 10s.

Character Education

COPY CATS! Friends - skip counting by 2s

Start by having a class discussion: Have you ever seen two people who looked exactly alike? When two people are identical what are they called? Do they know anyone who is a twin? When someone uses the word twin how many objects are they talking about?
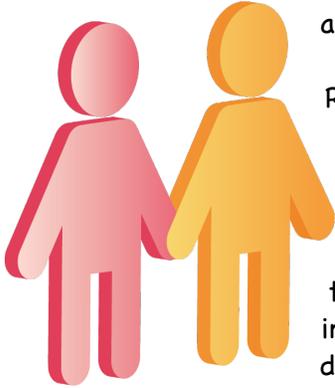
Read Ling and Ting: Not Exactly the Same.

Class Discussion about the book:
Although the two main characters in this story looked alike how were they different? Did the two copy each other? Did they each have unique interests and ideas? Were they copy cats? What does it mean when someone is a copy cat?

While copying is often considered the sincerest form of flattery making our own decisions and valuing who we are as individuals is important. We are all unique and when we allow our uniqueness to shine through, to be different, our class, and our lives are richer for it. Thinking for oneself, making our own decisions is an important part of being true to oneself. Being different - that is what makes our world so intriguing!

Class Activity:
Students cut out large cat faces and decorate them. The goal is for each student to make a cat completely different than any other student at their table or group. When they are finished students are each given a number to write on their cat's 'chin.' Cats can then be mounted around the room and used to practice skip counting.
A follow up activity - read Ruby the Copy Cat.

Resources:
Ling and Ting: Not Exactly the Same by Grace Lin (2010)
Ling and Ting are identical twins that people think are exactly the same, but time and again they prove to be different.

Ruby the Copy Cat by Peggy Rathmann (1993).
It's the first day of school, and Ruby is new. When her classmate Angela wears a red bow in her hair, Ruby comes back from lunch wearing a red bow, too. When Angela wears a flowered dress, suddenly Ruby's wearing one, too. Fortunately, Ruby's teacher knows a better way to help Ruby fit in--by showing how much fun it is to be herself!

Handout(s):
Cat Face Cut Out

Multi-Media

Websites:
Skip counting game where students choose which number to count by
http://members.learningplanet.com/act/count/free.asp

Learn 360:
Videos:
Math Monsters - Doubles and Their Neighbors (skip counting by 2's)
Field of Seeds (a hamster that uses skip counting 2's, 3's and 5's).
Flyers (a hamster that counts by 5's, 10's and 100's).
http://www.learn360.com/index.aspx?site=

SmartBoard:
A great first game to learn how to skip count by 2s.
http://exchange.smarttech.com/details.html?id=735a0670-a331-4535-bc76-86cfbe84a1bc

How Do Ogre's Count?
(using a GIGANTIC number line, of course)

Thematic Imaginings

The Importance of Number Lines:
The number line is a powerful and sophisticated linear model of the number system. It can be used to: stimulate and support computation, develop a sense of number and order and locate numbers/estimate position.

It embodies all learning styles:
- Visual – image of positions and ordering of numbers on line, learners who like to work with visual images, pictures, diagrams
- Auditory – explaining how to get from one place to another on the line, learners who like to hear things, put things into words
- Kinesthetic – moving, pointing to jumps/steps along the line, learners who like to act things out, engage in movement

ACTIVITY PREP:
Supplies: Outside - long thin rope, chalk.

Location: This activity involves either a large outdoor space or the gym.

Set-Up: Create a giant number line outside using chalk. Create enough hash marks as possible. Spread the hash marks out so your students will be able to skip count easily. Number your line according to your students skill level.

Book: The Odious Ogre by Norton Juster (2010)
Presents the story of an enormous, insatiable, and short-tempered Ogre, who terrorizes the countryside and dines on hapless townspeople before encountering a friendly young girl who uses innovative methods to stop him.

Introduction: Lumber into the classroom (do your ogre best) and ask your students who you are? After several guesses describe your physical characteristics to your students (gigantic, green, large hands and feet, very stinky). Have them guess until either they get it or you are exhausted. "Ogres are quite wonderful creatures ….. because they are so wonderfully terrible! Today we are going to read a delightful book about one particularly dreadful Ogre." Hold up the book and read the title and the author…."The Odious Ogre by Norton Juster. Odious? That is a complicated word. Does anyone know what it means?" It means (to cause disgust or be repulsive). "Just by reading the title can anyone predict what the ogre is going to be like?" Once students make predications read the book.

Once the book is finished ask the question, "how do ogres count?" Have students venture guesses. "Today you are going to learn a secret about Ogre mathematics that no other students in the world know. Come let's find out." Lead them to where your giant number line is set up.

At your location: "Ogres are surprisingly good at counting because they use number lines. As you know number lines are a great mathematical tool to help us count forward and count backwards. Can someone show me where zero is? Where the number 5 is? If we use a number line where can we start?" "Yes, anywhere depending on the problem. Today we are going to practice skip counting. I am going to pair you up then the game begins."

A pair of students start at zero. Then you call out how they should skip through the number line. For example, skip by 2s. Then another pair of students begin at zero. You then call out another way to skip count by 5s. Play continues until all pairs have been through. Challenge: Have pairs stop at a certain number and change the way they count (start at zero and count by 2 and stop at 10, then count by 5s until you are off the line). Count back backwards!

Picture This!

More Literature links for skip counting.

Fiction:

<u>Cats' Night Out</u> by Caroline Stutson (2010)
In the city, windows light. How many cats will dance tonight? It's just a quiet evening in the city. Or is it? As the sun sets in the sky, dancing felines take to the streets and rooftops for a night on the town. Come along one night on Easy Street as a pair of cats start to groove to the beat. Count the cats by twos (and hunt for their number hidden on the page!) in this foot-tapping, finger-snapping counting book.

<u>Pie for Piglets</u> by Michael Dahl (2005)
A book designed to reinforce counting by twos to 20.

<u>What Comes in 2's, 3's and 4's</u> by Suzanne Aker (1990)
Introduces the numbers two, three, and four by enumerating the ways in which they occur in everyday life, from your two eyes and two arms to the four seasons of the year.

All content for Picture This was provided by Novelist (http://www.ebscohost.com/novelist/).

References

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Cat Face Cut Out

Skip Counting...

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

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41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Skip Counting

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51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100