Mathematical Melodies

EVEN ODD NUMBERS
Music and Lyrics by Graeme Thompson

Even Odd Numbers

Something odd happens when I count to ten
In fact five odd things happen, over and again
Which odd things happen every single time?
Well, there's 1, 3, 5, 7 and the number 9

Not odd like a talking dog, or non-stick glue
They're odd because they cannot be, divided by two

So these are odd numbers let's hear it again
Five odd numbers between one and ten
1,3,5,7 and the number 9
They're odd not peculiar and they feel just fine

More is going on when we count to ten
There are five even numbers when we look at it again
Which of the numbers are the even ones?
2, 4, 6, 8, 10 and then we're done

Not even less or even more, or even me or even you
They're even just because, they can be divided by two

So these are even numbers let's hear it again
Five even numbers between one and ten
2, 4, 6, 8, 10 You see
Even for you, and even for me

EVEN ODD NUMBERS

PRIMARY: Grade 1, Grade 2 and Grade 3

The Big Ideas

Identifying even and odd numbers is an important skill that children need to help them understand our number system and aid in their preparation to group whole number operations. It will also help prepare them to learn division, prime numbers and even square roots.

We define an even number as any integer divisible by two with no remainders. This means that the number can be divided into pairs or two equal groups with no leftovers. The numbers 2, 4, 6, 8, and 10 are all even.

An odd number is not divisible evenly by two. An odd number cannot be divided into pairs or two equal groups without leftovers. The numbers 1, 3, 5, 7, and 9 are all odd numbers.

Hands On

Encourage your students to hold up a certain number of fingers, then to "partner up" the fingers. If every finger has a partner, the number is even. If a finger lacks a partner, it's odd.

For larger numbers, explain that you look at the ones place for the number of fingers to partner.

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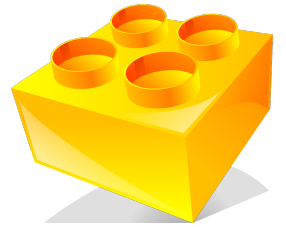
Counting
- demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting;

- 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 odd and even numbers

through... **Creative Combinations**

"All numbers are either odd or even. Even numbers have partners, odd numbers do not...like being the odd man out. To help me figure out which one is which we are going to use popsicle sticks, and this chart."

Use chart paper to create a simple T chart with one side labeled Even, the other side labeled Odd. Ask someone to read the labels and explain the chart.

First, remove one popsicle stick from the box and show the class asking "How many popsicle sticks am I holding up?" "Yes, one." "Does this popsicle stick have a partner?" No, so 1 goes in the odd column.

Next, hold up two popsicle sticks and ask "Does 2 have a partner? Is this combination evenly paired up?" "Yes, so 2 is even." Put 2 in the even column.

Hold, up 3 popsicle sticks. "Hmmmm how about 3, this is a bit tricky. To answer the question lets pair the popsicle sticks up and see if there is an odd man out. Two of the popsicle sticks pair up but we have one stick that is left out (an odd man out)." So three is odd." Put 3 in the odd column. Continue through until 9.

"Now, working in even number groups I want you to figure out which column 15, 23, and 34 belong in. Feel free to use the counters I placed on your desk. Be prepared to share your thinking!"

After, they share their thinking. Reiterate that no matter how large a number is, they can know if it is odd/even by looking at the ones place.
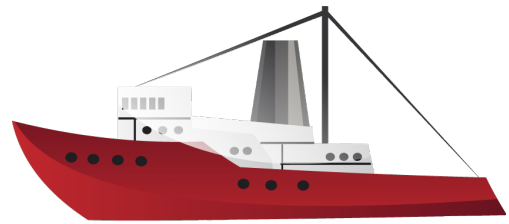
Handout(s):
Colorful Combinations Chart

Let's Play a Game
Play Odd and Even –
Animals Among Us

Make one laminated animal for partners to share. Label one half of the animal even and the other half of the animal odd. Partners take turns rolling two dice (or they can roll two numeral cubes and add them). With each turn, the partner rolling must prove if the roll is an even or odd number by placing that number of black cubes on the animal, in a paired arrangement. If the number is odd, there will be a leftover cube. After the even or odd designation has been proven,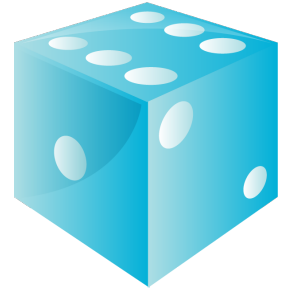 the numeral is recorded on the appropriate side of the animal with a dry erase marker by the child who rolled that number. Children work together to see which 'side' of the animal wins.

Handout(s):
Animal Among Us

Using the
Hundreds Chart to Explore Odd Numbers
Place students in pairs and give each pair a hundreds chart and some clear chips. Ask students to cover up the first 20 odd numbers. What pattern is used to obtain the next number? (Add 2). Do students notice anything else about odd numbers? (The last digit is always 1, 3, 5, 7, or a 9). Mention that the numbers on the hundreds chart that are not covered are the even numbers and they always end in a 0, 2, 4, 6, or an 8.
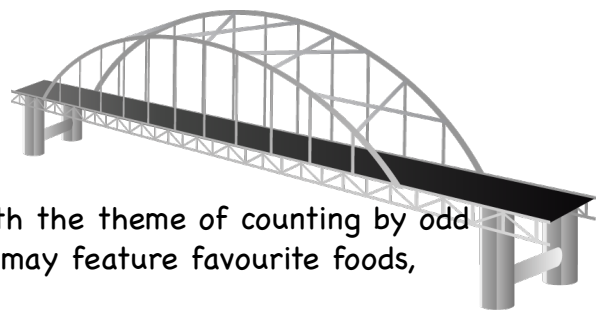
Handout(s):
100s Chart

Cross Curricular

Language and Visual Arts

Students work in pairs to develop their own book with the theme of counting by odd numbers OR by counting by even numbers. Students may feature favourite foods, objects in nature, toys, sports, etc.
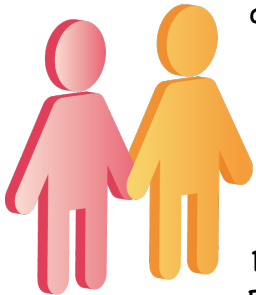
Character Education

Exploring 'odd man out' both in terms of being one and seeing one would lend itself to many character education topics including, how to make friends and how to include everybody when we play.

Discussion questions to explore:

Suppose you were invited to a birthday party but your best friend was deliberately left out. What would you do? Why?

Have you ever felt left out? What happened? Did you do anything about it?

Group Activity:

Divide the class into groups of four or five. Each group's task is to choose one group member to play the role of a new kid in class. The new kid's challenge is to try to gain acceptance into the group. After the role-plays, discuss with the class how it felt to be the new kid and how it felt to be part of the "in-group." Discuss some of the different ways of "breaking in" to a new group.

Books related to odd numbers and relationships:

Miss Lina's Ballerinas by Grace Maccarone (2010). Ballet instructor Miss Lina has a solution when her eight students, who always dance in pairs, are distraught when a ninth girl joins the class

Odd Boy Out: Young Albert Einstein by Don Brown (2004)
An introduction to the work and early life of the twentieth-century physicist whose theory of relativity revolutionized scientific thinking.

Multi-Media

Websites:
Odd and Even Poem
http://www.tooter4kids.com/classroom/math_poems.htm

Interactive Computer Game from the UK entitled 'Odd and Even'
http://www.crickweb.co.uk/ks2numeracy-properties-and-ordering.html#npmenu

Kids Math Game for Understanding Odd and Even Numbers
http://www.netrover.com/~kingskid/mathart/info.html

SmartBoard:
http://exchange.smarttech.com/search.html?q=odd+or+even+numbers

In the Garden of Even

BIG BOOK: <u>Vegetable Garden</u> by Douglas Florian (1991).

Students are introduced to vegetable gardens through a delightful big book, given a math problem related to even numbers and finish it all off with the making of carrot soup!

Thematic Imaginings

Supplies: You will need 20 carrots, a sun hat, garden gloves and spade.

Enter the classroom wearing the sun hat, garden gloves and carrying the spade. You need to wear all of this because later you are going to be working in your **Garden of Even**. But first you are going to read the big book <u>Vegetable Garden</u> together. <u>The Vegetable Garden</u> is a wonderfully simple book with rich colorful pictures and rhyming text. After reading the book, discuss vegetable gardens with your students asking them if they know anyone who has a vegetable garden? Or if they have ever helped in a vegetable garden before?

Continue by suggesting that one of your favorite vegetables that you grow in your **Garden of Even** is carrots. What is interesting about your Garden is that all the carrots that grow in your garden grow in even numbers. So, if the total number of carrots that grow in my garden is 20 what are the possible combinations of even numbers? Students are sent to work on this problem at their desks with paper, pencils and crayons. They are expected to provide a pictorial and written response of their thinking.

Cooking with Kids:

Check out a great Gingered Carrot Soup recipe from Mollie Katzen's fantastic cookbook <u>The Enchanted Broccoli Forest</u>. It can be found at http://www.molliekatzen.com/recipes/recipe.php?recipe=carrot_soup
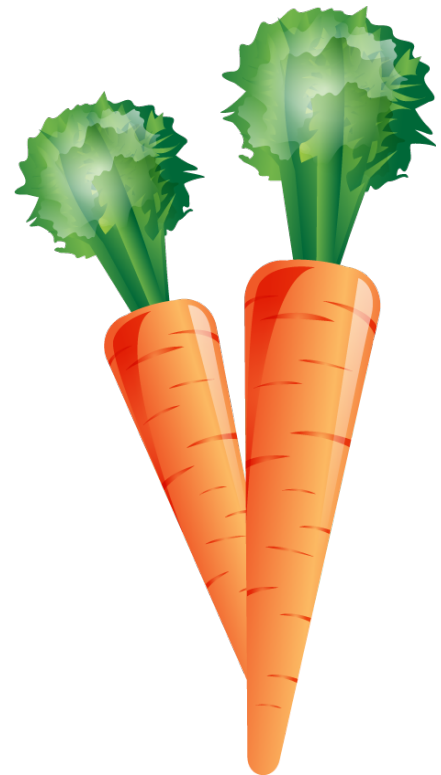
Handout(s):
Problem Solving Sheet

Picture This!

More Literature links for even and odd numbers.

Fiction:

Splitting the Herd: A Corral of Odds and Evens by Trudy Harris (2008)
When Miss Emma's cows wander into Cowboy Kirby's pasture, he uses odd and even numbers to count and split the herd, not realizing his math mistake.

One Odd Day by Doris Fisher (2006)
A boy awakens to find that everything around him is odd, from three sleeves on his shirt and five legs on his dog to clocks and calendars with only odd numbers. Includes a three-page "For Creative Minds" section with odd fun facts and number games.

My Even Day by Doris Fisher (2007)
A boy finds that everything around him is even, such as four flapjacks at breakfast to ten watermelons in his backpack. Includes a "For Creative Minds" section with questions about numbers.

Ocean Counting: Odd Numbers by Jerry Pallotta (2005)
With his trademark humour and wit, Jerry Pallotta teaches young readers how to count to 50 by odd numbers, using weird and wonderful ocean animals as counting tools. Explore the ocean as you meet 13 surf clams, 29 mussels, 49 smelts, and more.

Underwater Counting: Even Numbers by Jerry Pallotta (2001)
Facts and figures to fill an ocean! Learn to count from zero to fifty, counting even numbers by two. Sound complicated? Not so, with page after page of unique and fascinating sea creatures to discover. Four odd-looking Clown Triggerfish help make counting fun and, although they have been extinct for millions of years, you can count thirty-two fierce-looking Elasmosaurs.

Non-Fiction:
Odd and Even Socks by Melanie Chrismer (2005).
Explains the concept of odd and even numbers using paired and unpaired socks as examples.

Math Bags:
The Missing Mittens by Stuart Murphy (2001)
As a farmer tries to find the correct number of mittens for his various farmyard animals, the reader is introduced to odd and even numbers.

Math bags contain materials designed to help children grasp the basics of math centered concepts. This kit teaches the concept of understanding odd and even numbers by enclosing a related story book, cloth mittens for counting and a sheet of suggested activities.

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

References

Math Cats. (2000). Odd and Even Bank. Retrieved August 12, 2011 from http://www.mathcats.com/grownupcats/ideabankoddandeven.html

Ontario Ministry of Education. A guide to effective instruction in mathematics kindergarten to grade 6: Volume 5 Teaching Basic Facts and Multidigit Computations. Retrieve from http://www.eworkshop.on.ca/edu/resources/guides/Guide_Math_K_6_Volume_5.pdf

Ontario Ministry of Education. (2006). The Ontario curriculum grades 1-8: Language. Retrieved from http://www.edu.gov.on.ca/eng/curriculum/elementary/language18currb.pdf

Ontario Ministry of Education. (2005).The Ontario curriculum grades 1-8: Mathematics. Retrieved from http://www.edu.gov.on.ca/eng/curriculum/elementary/math18curr.pdf

Reys, R., Lindquist, M., Lambdin, D., Smith, N., & Colgan, L.(2010). Helping Children Learn Mathematics. Toronto: John Wiley & Sons Canada, Ltd.

Small, M. (2009). Good questions: Great ways to differentiate mathematics instruction. (2009). New York: Teacher's College Press.

Van de Walle, J.A., Folk, S., Karp, K., & Bay-Williams, J. (2011). Elementary and middle school mathematics: Teaching developmentally. Toronto: Pearson.
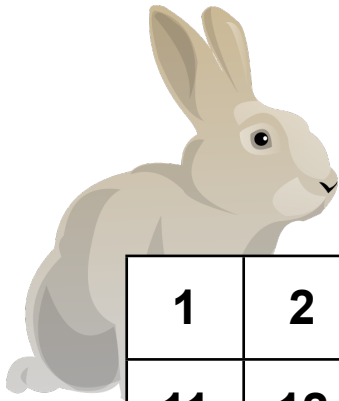
Even Odd Numbers

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

Creative Combinations
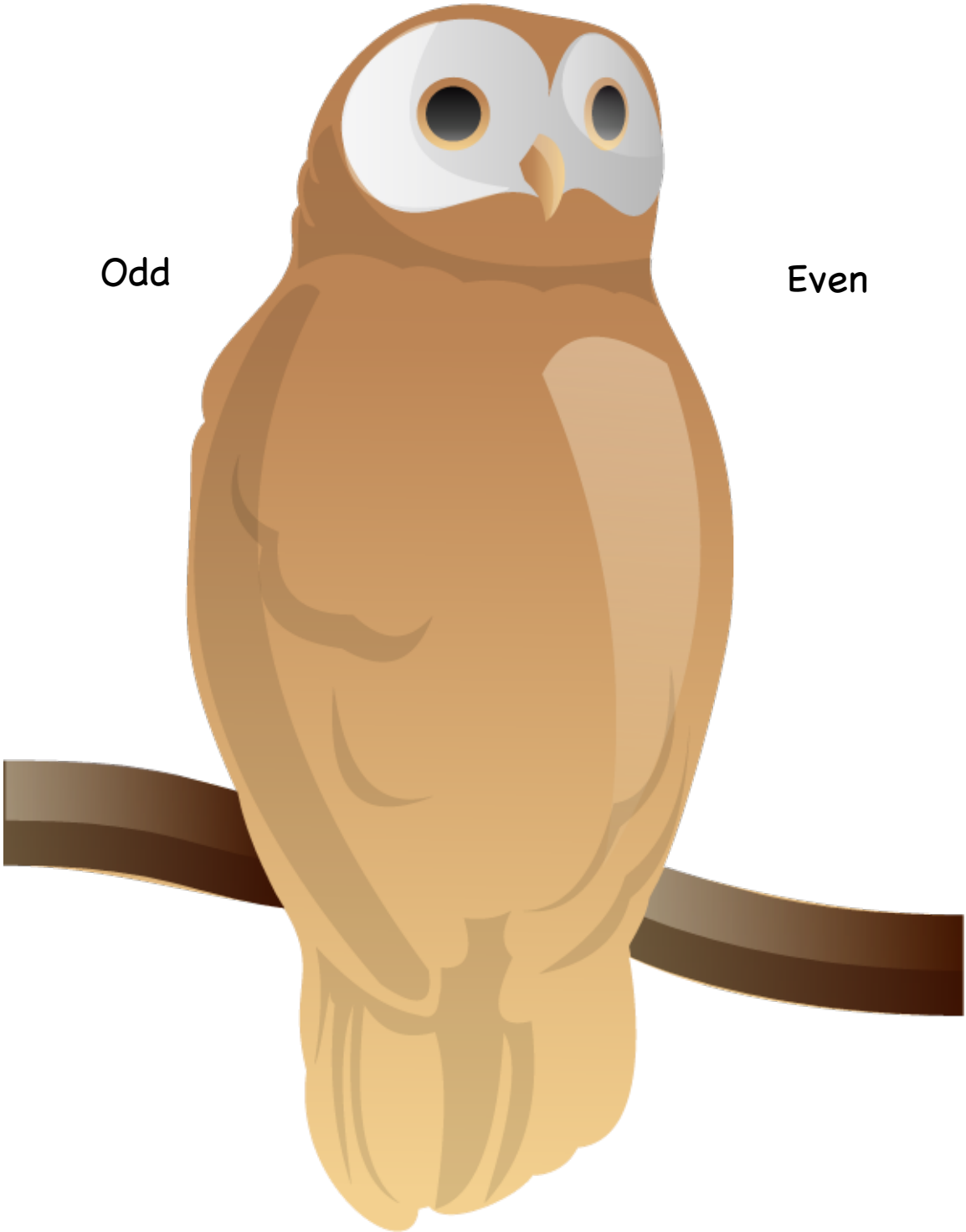
Odd   Even

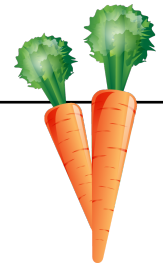# Animals Among Us

Odd

Even

Problem Solving

My Problem

My Work

My Explanation

My Answer

Name: _____

Dear Math Journal,

In math today I _____

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