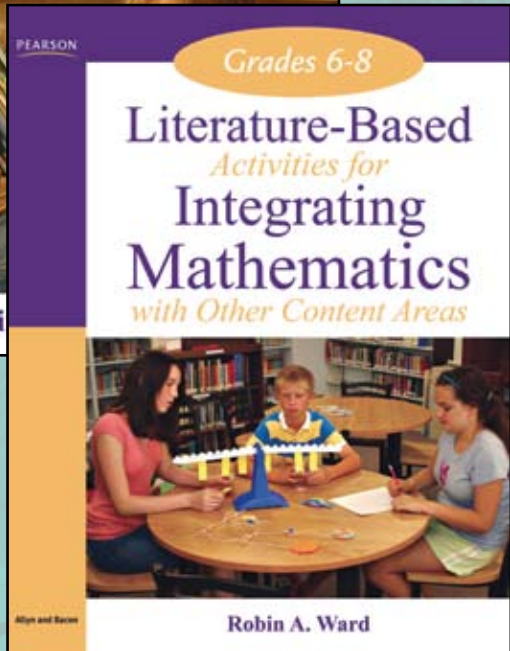
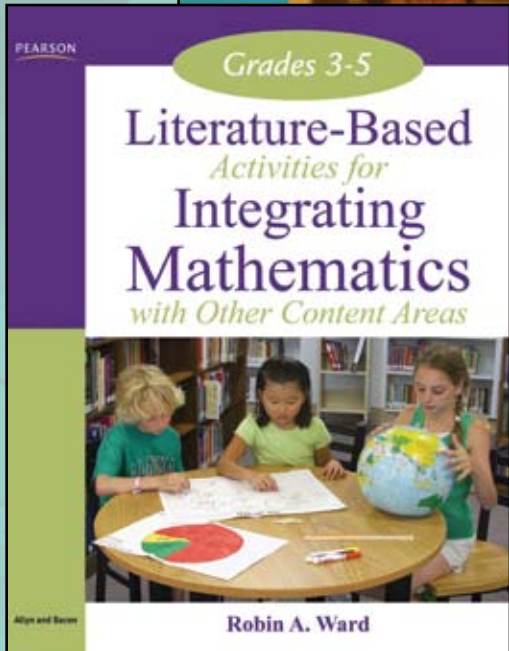
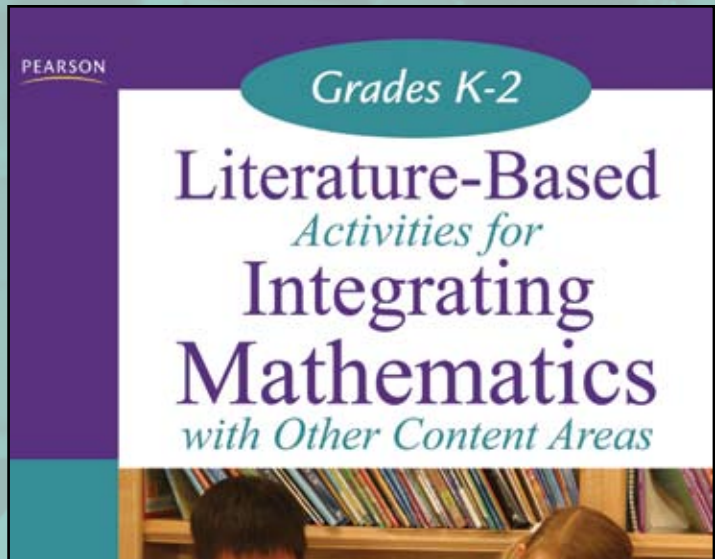
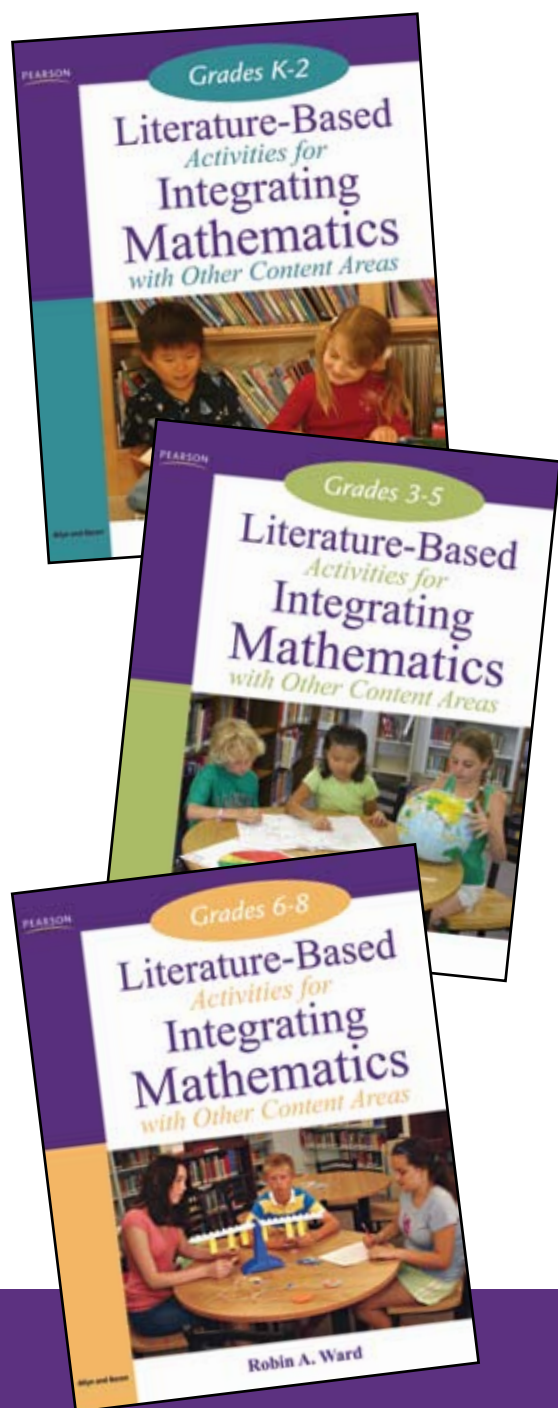


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  Grades K-2 ..... 8-14
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# DEAR TEACHERS,

**T**hank you for your interest in my newest mathematics series. I realize you have a wide-range of choices when selecting your professional development resources, and I appreciate that you have taken the time to test these sample activities from *Literature-Based Activities for Integrating Mathematics with Other Content Areas*.

Integrating children's literature into the teaching and learning of mathematics, science, social studies, and the arts is more than just reading a book to students. By exploring picture books and reading works of fiction, nonfiction, and poetry, you help students to engage in worthwhile and stimulating mathematical activities that encourage them to communicate their ideas verbally or through drawing or writing. In short, mathematics can be viewed as "a vehicle for thinking, a medium for creating, and a language for communicating" (Kleiman, 1991, p.48). In addition, using children's literature requires students to listen and comprehend — two vital skills needed for academic success. Thus, the goal of integrating children's literature across the content areas is to improve the overall literacy of your students.

I hope that you agree with this philosophy and goal, and find them reflected on the pages you are about to read. Feel free to use these activities any time or any place they fit into your curriculum. I'm sure you'll love them!

Best wishes.

*Robin*

Robin A. Ward

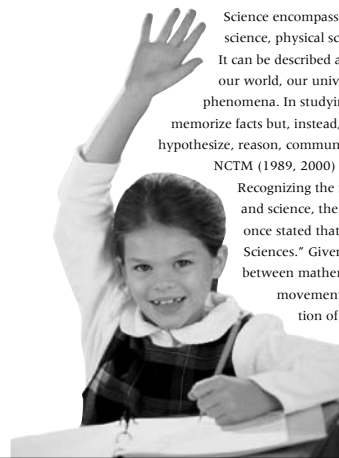


Photo by: Tommy LaVergne

Robin Ward has masterfully taken the guesswork and time out of creating exciting and engaging lessons to teach math across the content areas by integrating children's literature for the classroom teacher. In her new series, *Literature-Based Activities for Integrating Mathematics with Other Content Areas*, Robin facilitates content integration by presenting easy-to-implement, literature-based activities that integrate standards-based content from science, social studies, and the arts with standards-based math content. Divided into three grade-band volumes, K-2, 3-5, and 6-8, each book provides a wealth of grade-specific, classroom-tested activities that every teacher needs!!

## Literature-Based Mathematics and Science Activities

### The Mathematics-Science Connection



Science encompasses many domains including life science, physical science, and earth and space science. It can be described as the study and exploration of our world, our universe, our environment, and other phenomena. In studying science, students should not memorize facts but, instead, be encouraged to think, observe, hypothesize, reason, communicate, and problem-solve, activities NCTM (1989, 2000) and NRC (1996) strongly advocate. Recognizing the interplay between mathematics and science, the German mathematician Carl Gauss once stated that "mathematics is the Queen of the Sciences." Given the strong interconnectedness between mathematics and science, a mounting movement continues to support the integration of mathematics and science in the classroom curriculum (Basista & Mathews, 2002; Cobb, 2000;

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Each chapter opens with a brief overview that pinpoints the connection between mathematics and the specific content area (whether it be science, social studies, or the visual arts).

Johnson & Giorgis, 2001; Kaser, 2001; Moyer, 2000; Putnam Roth & McGinn, 1998). One of the best ways for young learners to use their knowledge and understanding of their world to make sense out of nature's sometimes complicated phenomena and today's advanced technological society is to integrate children's literature into the study of science and mathematics.

This chapter articulates a variety of literature-based activities that integrate concepts and skills used and learned in the study of mathematics with those in science. While engaged in these activities, students will discover and gain practice with such mathematics concepts and skills as integers, addition of positive and negative numbers, fractions, decimals, ratio, proportional reasoning (Number and Operations Standard); pattern recognition (Algebra Standard); symmetry, shapes (Geometry Standard); size, scale, proportion (Measurement Standard); and sorting, classification, data collection and interpretation, graphing, Venn diagrams, bar graphs, pie charts, line graphs (Data Analysis and Probability Standard).

"Children's literature can help young learners make sense out of nature and today's advanced technological society."

Science concepts and skills featured in this chapter include scientific inquiry (Science as Inquiry, Content Standard A); electricity, light, positive and negative charges, wind, weather, aerodynamics of flight (Physical Science, Content Standard B); life cycles and characteristics of organisms, animal habitats, animal classification (Life Science, Content Standard C); the moon, moon phases, movement of the moon in the sky, relative size of the planets, the solar system (Earth and Space Science, Content Standard D); understanding about science and technology (Science and Technology, Content Standard E); personal health, food pyramid, nutrients, food groups (Science in Personal and Social Perspectives, Content Standard F); and science as a human endeavor (History and Nature of Science, Content Standard G).

The integrated literature-based activities also provide students with many opportunities to predict, estimate, problem-solve, and reason (Problem Solving and Reasoning and Proof Standards) as well as communicate and use

In addition, a list of concepts and skills featured in the literature-based activities are noted for the teacher.

The chapter matrix found after the overview lists each piece of children's literature used in that chapter's integrated activities, and offers teachers other relevant cross-curricular concepts and skills.



## Matrix of Mathematics and Science Activities

BOOK TITLE	MATHEMATICAL CONCEPTS AND SKILLS	SCIENCE CONCEPTS AND SKILLS	SOCIAL STUDIES CONCEPTS AND SKILLS	VISUAL ARTS CONCEPTS AND SKILLS
“Zebra Question” (a poem in <i>A Light in the Attic</i> ); <i>My Light</i>	number line, positive and negative numbers, integers, addition of positive and negative numbers	electricity, light, positive and negative charges	alternate sources of power, exploration of a biographical piece	artists' renditions of light and electricity, positive and negative images
“The Planet of Mars” (a poem in <i>Where the Sidewalk Ends</i> ); <i>The Planets in Our Solar System</i>	fractions, decimals, measurement, ratio, size and scale, estimation	relative size of the planets, planets in the solar system	exploration of a biographical piece	artists' renditions of the night sky, space, or solar system
<i>Wild Fibonacci: Nature's Secret Code Revealed</i>	patterns, pattern recognition, prediction	characteristics of organisms, scientific inquiry	exploration of a biographical piece, patterns in population growth	golden mean in architecture, artists who have used the golden mean
“Strange Wind” (a poem in <i>A Light in the Attic</i> ); <i>Let's Fly a Kite</i>	line symmetry attributes of quadrilaterals (kites)	wind, aerodynamics of flight	cultural history of kites, exploration of a biographical piece, fallout and implications of historic hurricanes and tornadoes	artists' renditions of windy scenes
“Me and My Giant” (a poem in <i>Where the Sidewalk Ends</i> ); <i>Beanstalk: The Measure of a Giant</i>	measurement, ratio, proportional reasoning, data collection and interpretation, line graphs, estimation	life cycles of organisms, scientific inquiry	mapping of grasslands, jungles, rain forests; exploration of a biographical piece on Johnny Appleseed	van Gogh's renditions of trees
<i>If You Hopped Like a Frog</i>	measurement, size and scale, ratio, proportional reasoning, estimation	characteristics of organisms	expanding populations' and industry's impact on animal habitats; interplay between geography, climate, and habitat	collage of animals

Each activity presents a brief overview of the children’s literature for the activity, the specific content concepts and skills to be taught, correlations to the national standards, materials, a description of how to implement the activity, along with assessment strategies, activity extension ideas, and cross-curricular connections.

## Activities Featuring Number and Operations

**“Zebra Question” (a poem in A Light in the Attic) (1981)**  
 by Shel Silverstein  
HarperCollins, ISBN #0060256737

**My Light (2005)**  
 by Molly Bang  
Scholastic, ISBN #0439751160

**Overview of Poem and Book:** Learn about opposites in Silverstein’s humorous “Zebra Question.” Then, discover everything you wanted to know about light and how it is transformed into the energy we use in our homes by exploring the captivating fact-filled book *My Light*.

**Mathematical Concepts and Skills:** number line, positive and negative numbers, integers, addition of positive and negative numbers

**Science Concepts and Skills:** electricity, light, positive and negative charges

**Overview of Activities:** Students explore characteristics of static electricity, a real-life example of combining positive and negative values. Students also gain practice with understanding and identifying negative numbers and adding positive and negative numbers.

**National Mathematics Standards (2000):** Students in grades 3 through 5 should “explore numbers less than zero by extending the number line and through familiar applications” (Number and Operations Standard) (p. 392).

**National Science Standards (1996):** Students in grades K–4 should “develop an understanding of light, heat, electricity, and magnetism” (p. 123). “By experimenting with light, heat, electricity, magnetism, and sound, students begin to understand that phenomena can be observed, measured, and controlled in various ways” (Physical Science, Content Standard B) (p. 126). Also, as a result of activities, students should “develop abilities necessary to do scientific inquiry” and “develop understanding about scientific inquiry” (Science as Inquiry, Content Standard A) (p. 121).

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Chapter 1 Literature-Based Mathematics and Science Activities **15**

**Materials:** tile spacers, scissors, balloons, black marker or pen, string, tape, salt, pepper, combs

**Description of Activities:**

1. Read the short poem “Zebra Question” by Shel Silverstein to set the stage for the upcoming activity involving numbers of opposite signs.
2. To provide a rationale and to excite students about the upcoming exploration of positive and negative numbers, introduce the book *My Light* and read the brief paragraph about lightning located at the end of the book. Students will learn that lightning is a form of electricity that occurs due to an exchange of positive and negative energy.
3. Prior to class, purchase enough tile spacers for each student to have at least ten. A tile spacer looks like a plus sign. Manipulate the tile spacer to resemble a minus sign by cutting off its top and bottom tip. Distribute to students five tile spacers that look like plus signs and five tile spacers manipulated to look like minus signs.
4. Begin a discussion about negative numbers by challenging students to think of real-life examples of negative numbers (e.g., below-zero temperatures, being in debt, below sea level, negative charges, below par in golf, etc.).
5. Show students on a number line where negative numbers reside and also the symbolic notation of a minus sign used to represent a negative number.
6. Model several problems involving integers using the tile spacers. For example, to help students make sense of the problem  $3 + (-1)$ , ask students to place in a row three of the plus signs (i.e., three uncut tile spacers) and to place one minus sign underneath in a separate row. Remind students how a positive plus a negative sums to zero. (Consider putting this into a more meaningful and familiar context by pointing out if you have two pencils and someone takes two away, then you have none.) Remove the one vertical pair of positive and negative signs since they add to zero, and notice that two plus signs are left over. Thus,  $3 + (-1) = 2$ . Model this same problem using the number line. Next, model  $-3 + 1$  by placing three minus signs in a row and one plus sign underneath. Since a positive and a negative sum to zero, remove the one vertical pair of the positive and negative sign, leaving two minus signs. Thus,  $-3 + 1 = -2$ . Model this same problem again using the number line.

Chapter 1 Literature-Based Mathematics and Science Activities **17**

- c. Students take two balloons and mark an X on both. Attach a string to both and tape them to a desk so they hang freely, close to each other but not touching. Students rub the X side of both balloons on their shirts and then let the balloons hang freely again. Students will notice the balloons repel, or move away from one another, because they have the same charge.
- d. Pour a teaspoon of salt onto a piece of paper. Sprinkle pepper on top of the salt pile. Students rub a comb several times through their hair and then hold it over the salt and pepper mixture. Students will see the pepper rise and stick to the comb. This happens because unlike charges attract and the pepper is lighter than the salt.

12. Students share their predictions and observations.

13. Revisit portions of *My Light*, reminding students how integral light and electricity are to our daily lives. Students write a paragraph or short essay entitled “A Day without Light (or Electricity).” Students share their creative writing samples.

**Assessment:**

- Did students locate positive and negative numbers on a number line?
- Did students correctly compute problems involving positive and negative numbers?
- Did students create meaningful word problems that involved negative numbers?
- Did students provide a reasonable definition for electricity?
- Did students record reasonable predictions for each experiment?
- Did students record accurate observations of each experiment?
- Did students develop a creative essay or paragraph about light and electricity?

**Activity Extensions:**

- Explore a biography of the sixteenth-century Italian mathematician, Rafael Bombelli, who is noted to be the first to express how to operate on negative numbers. Or explore a biography of sixteenth-century French mathematician, Francois Viète, who was the first to use a minus sign to indicate a negative number. Or explore biographies of other mathematicians who encountered and/or attempted to explain negative numbers in their work (e.g., Giolamo Cardano, Frances Maseres, Fibonacci, Leonhard Euler, etc.).

Literature-Based Activities for Integrating Mathematics with Other Content Areas, Grades 3–5 **18**

- Explore and/or engage in activities that investigate photosynthesis and other topics in Bang’s book.
- Using the Weather Channel and Where Lightning Strikes websites listed below, students explore frequency and location of lightning strikes. Students then create bar graphs or pictographs depicting lightning strikes data.
- Enjoy poetry about the sun authored by Shel Silverstein (e.g., “A Battle in the Sky” in *Falling Up* [1996]).
- Enjoy poetry about the concept of negative authored by Jack Prelutsky (e.g., “I’m Drifting through Negative Space” in *A Pizza the Size of the Sun* [1996]).

**Cross-Curricular Connections:**

**Visual Arts**

- Explore artists’ renditions of light and electricity (e.g., Theodore Gericault’s *Horse Frightened by Lightning*, Joseph Beuys’s *Lightning with Stag in Its Glare*).
- Explore positive and negative images in art by taking a square piece of colored paper, folding it in half, and then cutting out some shape (e.g., a lightning bolt, triangle, heart, etc.) from the middle. The resulting two pieces of paper are the positive and negative representation of that shape (i.e., the positive representation is the shape you cut out; the negative representation is the outline of the shape that results from cutting). Glue the positive and negative representations of the shape onto contrasting colored paper squares.

**Social Studies**

- Research alternate sources of power (fossil fuels, solar power, hydroelectricity).
- Explore a biographical piece of a scientist who experimented with light and electricity (Thomas Edison, Ben Franklin, Albert Einstein, etc.).

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In addition, more than 100 citations of instructional resources to support the teacher are included.

At the end of each book, Robin cites a list of more than 300 pieces of children's literature noted throughout the book.

## Instructional Resources References

### Recommended Book Series

- 100 Things You Should Know About Series (Barnes & Noble Books)
- Artists in Their Times Series (Scholastic)
- Barron's Famous Artist Series (Aladdin)
- Childhood of Famous Americans Series (Aladdin)
- Discover America State by State Alphabet Series (Sleeping Bear Press)
- Discoveries Series (Barnes & Noble Books)
- Don't Know Much About Series (HarperTrophy)
- Eyewitness Books Series (Dorling Kindersley)
- Eye Wonder Books Series (Dorling Kindersley)
- Getting to Know the World's Greatest Artists Series (Children's Press)
- Giants of Science Series (Penguin Young Readers)
- History Maker Bio Series (Lerner)
- How Government Works Series (Lerner)
- Inventions That Shaped the World Series (Scholastic)
- Inventor and Inventions Series (Benchmark Books)
- Once Upon America Series (Puffin Books)
- Scientists Who Made History Series (Raintree Steck-Vaughn)
- Smart About Series (Grosset & Dunlap)
- Smart About Art Series (Grosset & Dunlap)
- Spend the Day In Series (Jossey-Bass)
- Time for Kids Series (HarperCollins)
- Timelines Series (Franklin Watts)
- True Books: American Indian Series (Children's Press)
- Who Was . . . ? Series (Penguin Young Readers)

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The Appendix of each book features several assessment tools and rubrics to aid in evaluating student performance, skills, and abilities.



### Observation Log

Name: \_\_\_\_\_  
 Activity: \_\_\_\_\_  
 Date: \_\_\_\_\_

Objectives or Goals	Observed Behavior	Comments

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### Inventory of Student's Mathematical Disposition

Name: \_\_\_\_\_

	Date	Comments
Confident in using mathematics		
Flexible in doing mathematics		
Perseveres at mathematical tasks		
Shows curiosity in doing mathematics		
Reflects on own thinking		
Values applications of mathematics		
Appreciates role of mathematics		

(Derived from Stenmark, 1991, p. 34)

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### Group Assessment

Group members: \_\_\_\_\_  
 Activity title: \_\_\_\_\_

Did your group . . .	😊	😐	☹️
Listen			
Talk about the Task			
Cooperate			
Finish the Task			

What went well? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

What would you do differently? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

(Derived from Stenmark, 1991, p. 34)

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### Sample Writing Prompts

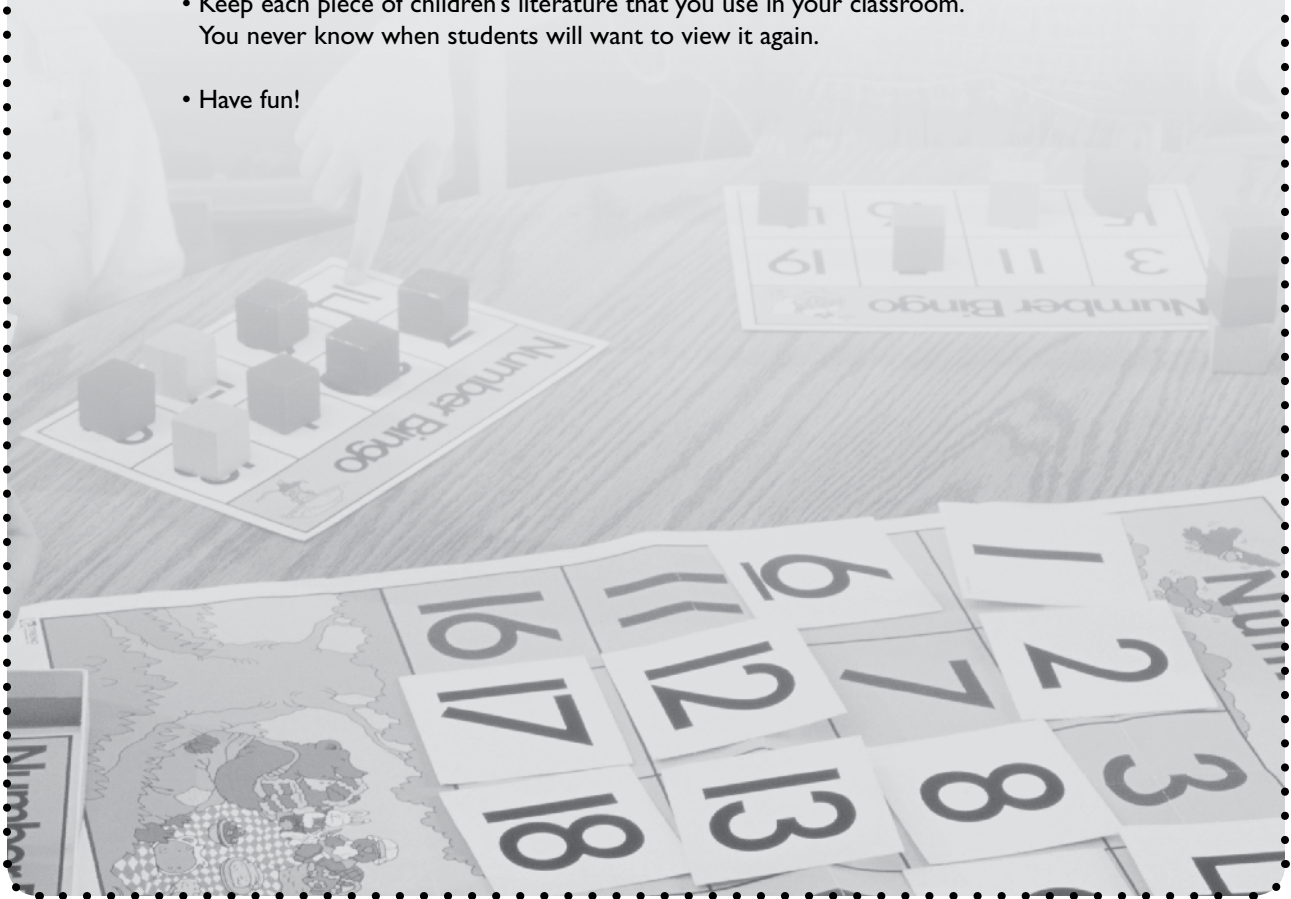
- In your own words, explain the meaning of . . .
- The most important thing I learned in math class today (or this week) is . . .
- The most important thing to understand about *polygons* is . . .  
(Note: change *polygons* to the concept explored)
- I discovered that . . .
- Explain your reasoning about . . .
- I know my solution is correct because . . .
- I feel confident about my solution because . . .
- I am still uncertain about . . .
- Describe any instances during which you became stuck and how you became "unstuck" while solving the problem.
- Describe a real-world experience/connection to the mathematical concept you learned about today.
- Write a letter to a classmate who did not attend class today so that he or she will understand what you learned about.
- Draw a picture or diagram showing how the concepts you learned about today are connected.

(Derived from Stenmark, 1991, p. 34)

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## Helpful Hints

- Read through the entire activity before class to assess whether you need to modify any steps for any reason or substitute materials.
- Capitalize on those teaching moments. Remember to use your judgement and pedagogical ingenuity to take tangents in the activities as deemed appropriate.
- Read each piece of literature in its entirety, then move onto implementing the activity with students. You'll be familiar with the story and have questions ready to ask the students during the activity. Everyone will want to participate. Take the time to stop and allow students to ask questions about the literature.
- Keep each piece of children's literature that you use in your classroom. You never know when students will want to view it again.
- Have fun!





# Activities Featuring Geometry

## Let's Fly a Kite (2000)

by Stuart Murphy

HarperCollins, ISBN #0064467376

## The Cloud Book (1975)

by Tomie de Paola


Holiday House, ISBN #0823405311

**Overview of Books:** Explore the concept of symmetry in *Let's Fly a Kite*, as a family builds a kite and heads to the beach, only to encounter many other real-life examples of line symmetry. Then, discover the many types and appearance of clouds in *The Cloud Book*.

**Mathematical Concepts and Skills:** symmetry, line symmetry in shapes, patterns

**Science Concepts and Skills:** clouds, wind, position and motion of objects

**Overview of Activities:** Students explore the symmetry in objects and in kites and create a symmetrically colored kite using watercolor. Students sketch and learn about various types of clouds as well as observe and identify clouds in the sky. Students observe and discuss the motion and position of a kite in flight.

**National Mathematics Standards (2000):**  Students in preK–2 should “recognize and create shapes that have symmetry” (Geometry Standard) (p. 396). Students in preK–2 should “recognize, describe, and extend patterns such as sequences of standard shapes” (Algebra Standard) (p. 394). Students in preK–2 should “recognize and apply mathematics in contexts outside of mathematics” (Connections Standard) (p. 402).

**National Science Standards (1996):**

Students in grades K–4 should develop an understanding of changes in earth and sky. Students should understand “weather changes from day to day and over the seasons. Weather can be described by measurable quantities such as temperature, wind direction and speed, and precipitation” (Earth and Space Science, Content Standard D) (p. 134). Students in grades K–4 should develop an understanding that the “position and motion of objects can be changed by pushing or pulling” and that the “position of an object can be described by locating it relative to another object or the background” (Physical Science, Content Standard B) (p. 127).

**Materials:** images of symmetric objects (e.g., butterfly, face, kite, etc.), paper cutout of a kite, 9" × 12" blue construction paper, watercolor paints, white chalk, ribbon, cotton balls, glue, kite

**Description of Activities:**

1. Show students several examples of photos or images of objects that are symmetric (see the Symmetry in Animals website for examples). Ask students to look at your face (or a classmate’s). What do they notice about the left-hand side of the face? The right-hand side? What do they notice about the left side of their bodies compared to the right side of their bodies? Facilitate a discussion leading students to see how each object is symmetric, meaning that if you folded a picture of the object in half (or drew a line through the middle of an object), the image on one side is the exact (or mirror) image of the other. Ask students to look for examples of objects in the classroom that have symmetry (e.g., door, window, their desk, etc.).
2. Give each student a large paper cutout of a kite using the Kite Outline website listed below. Students determine whether the kite is symmetric by folding it in half to see if both sides are identical. Students will find that a kite is symmetric if folded along its longer diagonal but not symmetric (that is, asymmetric) if folded along its shorter diagonal.
3. Show students the colorful illustrations of kites on the opening and final pages of *Let’s Fly a Kite*, encouraging them to see the symmetry in the shapes of the kites as well as in the symmetric colored patterns appearing on the kites.
4. Read *Let’s Fly a Kite*. Challenge students to look for pictures of objects in the book that are symmetric as the story unfolds.

5. Using the large paper cutout of a kite from step #2, students paint one side of it using watercolors, fold it along the longer crease, and then open it up. Students will see a symmetrically colored kite. Let kites dry for use later. Students can tie colorful ribbon to the tail of their kite if desired.
6. Describe how a windy day is the perfect type of day to fly a kite. Explain to students that wind brings changes in the weather as the wind pushes clouds along.
7. Engage students in a discussion about clouds. What are clouds? What do clouds look like? What are they made of? Are clouds different colors? Where do clouds come from?
8. Give students a piece of 9" × 12" blue construction paper and white chalk. Fold the paper in half vertically and then in half horizontally, creating four regions. Using the white chalk, students label the top left region as, "Clouds in the Sky."
9. Begin reading *The Cloud Book*, which defines what clouds are in its beginning pages and then names the three main types of clouds (cirrus, cumulus, and stratus). Students use the white chalk and record three cloud names—cirrus, cumulus, and stratus—in the remaining three regions on their paper.
10. Read the author's description (but do not show the illustration) of a cirrus cloud (i.e., "white and feathery . . ."). Stop reading and, using the white chalk, students make a sketch of what they think a cirrus cloud looks like in the region labeled "cirrus." Then, share the author's illustrations with the students. How accurate were their sketches?
11. Read the pages describing cumulus and stratus clouds, after which students make a sketch of each of these clouds, based on the author's description, in the appropriately labeled regions on the paper. Compare their sketches to the author's. How accurate were their sketches?
12. Continue reading all or select pages of *The Cloud Book*. Show the illustrations after reading the descriptions of the other types of clouds featured in the book.

13. On a new piece of 9" × 12" blue construction paper, students glue their watercolor kites. Glue cotton balls onto the blue construction paper, around the kites, representing clouds in a blue sky. Create a mural on a classroom wall by hanging their artwork in a rectangular array. Let students observe and discuss the patterns and symmetry they see in the kites.
14. On a frequent basis, allow students to observe and record the clouds they see in the sky at the start and end of each class day.
15. On a breezy day, fly a kite outside and let students observe its motion. Engage students in a discussion about the motion and movement of the kite. How is the kite moving (up? down?, etc.)? Where in the sky is the kite located? What forces are acting on the kite? How does the kite stay in the air?

**Assessment:**

- Did students notice the symmetry in the images and illustrations?
- Did students locate other objects in the classroom with line symmetry?
- Did students see that a kite has one line of symmetry?
- Did students create and see patterns and symmetry in the watercolor kites?
- Did students participate in the discussion about clouds?
- Did students sketch the three types of clouds?
- Did students record accurate observations about the clouds they observed?
- Did students participate in a discussion about a kite's motion?

**Activity Extensions:**

- Distribute paper cutouts of various shapes to students (precut prior to class). Students fold each shape in search of lines of symmetry. Students will find that some shapes have exactly one line of symmetry (e.g., isosceles triangle or trapezoid), some have more than one line of symmetry (e.g., square, rectangle, or circle) and some have no lines of symmetry (e.g., parallelogram or scalene triangle).
- Enjoy the poem "Strange Wind" in *A Light in the Attic* by Shel Silverstein (1981).

**Cross-Curricular  
Connections:**

**Visual Arts**

- Explore the work of artists who captured windy scenes (e.g., Van Gogh’s *Wheat Fields under Threatening Skies*, Winslow Homer’s *The Coming Storm*, etc.).
- View pages 38–41 in *A Child’s Book of Art* (Micklethwait, 1993), which display masterpieces illustrating the seasons and weather.

**Social Studies**

- Explore biographies of scientists and other historical figures who experimented with kites (e.g., Benjamin Franklin, the Wright Brothers, etc.).



## Related Children's Literature

- Birmingham, D. (1988). *M is for mirror*. Norfolk, UK: Tarquin.
- Chorao, K. (2001). *Shadow night*. New York: Dutton Children's Books.
- de Paola, T. (1975). *The cloud book*. New York: Holiday House.
- DeWitt, L. (1991). *What will the weather be?* New York: HarperCollins.
- Gibbons, G. (1989). *Monarch butterfly*. New York: Scholastic.
- Gibbons, G. (1990). *Weather words and what they mean*. New York: Holiday House.
- Holub, J. (2001). *Vincent van Gogh: Sunflowers and swirly stars*. New York: Grosset & Dunlap.
- Hopkins, L. (1995). *Weather: Poems for all seasons*. New York: HarperCollins.
- Hutchins, P. (1993). *The wind blew*. New York: Simon & Schuster Children's Publishing.
- Metzger, S. (2003). *The little snowflake*. New York: Scholastic.
- Murphy, S. (2000). *Let's fly a kite*. New York: HarperCollins.
- Roca, N. (2004). *Fall*. Hauppauge, NY: Barron's Educational Series.
- Roca, N. (2004). *Spring*. Hauppauge, NY: Barron's Educational Series.
- Roca, N. (2004). *Summer*. Hauppauge, NY: Barron's Educational Series.
- Roca, N. (2004). *Winter*. Hauppauge, NY: Barron's Educational Series.
- Siddals, M. (1998). *Millions of snowflakes*. New York: Scholastic.
- Silverstein, S. (1981). *A light in the attic*. New York: HarperCollins.



## Related Instructional Resources

- Dorros, A. (1990). *Feel the wind*. New York: HarperCollins.
- Guerra, R. (2004). *The kite making handbook*. Devon, UK: David & Charles.
- Hunt, L. (1971). *25 kites that fly*. Mineola, NY: Dover.
- Levine, S., & Johnstone, L. (2005). *First science experiments: Nature, senses, weather, & machines*. New York: Sterling.
- Mack, L. (2004). *Weather* (Eye wonder series). New York: Dorling Kindersley.
- Martin, J. (1998). *Snowflake Bentley*. Boston: Houghton Mifflin.
- Micklethwait, L. (1993). *A child's book of art: Great pictures first words*. New York: Dorling Kindersley.
- Pelham, D. (2000). *Kites*. New York: Overlook TP.
- Reed, B. (1987). *Easy-to-make decorative paper snowflakes*. London: Dover.
- Simon, S. (193). *Weather*. New York: HarperCollins.
- Sitomer, M., & Sitomer, H. (1970). *What is symmetry?* New York: Crowell.



## Related Websites

### Clouds

<http://eo.ucar.edu/webweather/cloud3.html>  
<http://www.urbanext.uiuc.edu/weather/2.html>  
<http://www.wildwildweather.com/clouds.htm>

### Interactive Symmetry

<http://www.adrianbruce.com/Symmetry/>  
<http://www.adrianbruce.com/Symmetry/game/whiteboard-activity4.html>

### Kite Outline

<http://www.fastq.com/%7Ejbratt/education/theme/kitepatterns.pdf>

### Kite Resources for Teachers

<http://webtech.kennesaw.edu/jcheek3/kites.htm>  
<http://www.gombergkites.com/nkm/index.html>  
<http://classroom.kitingusa.com/resources.htm>  
<http://www.skratch-pad.com/kites/make.html>

### Make Snowflakes

<http://www.kinderart.com/seasons/dec7.shtml>  
<http://snowflakes.lookandfeel.com/>  
<http://pbskids.org/zoom/activities/sci/snowflake.html>

### Symmetry

<http://www.bbc.co.uk/schools/gcsebitesize/maths/shape/symmetryrev2.shtml>  
<http://regentsprep.org/Regents/math/symmetry/Photos.htm>

### Symmetry in Animals

<http://www.adrianbruce.com/Symmetry/4.htm>  
<http://www.adrianbruce.com/Symmetry/3.html>

### Symmetry in Faces

<http://www.adobe.com/education/digkids/lessons/symmetry.html>

### Symmetry in Shapes

<http://www.adrianbruce.com/Symmetry/9.htm>

### Virtual Manipulatives Library—Reflections

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_206\\_g\\_1\\_t\\_3.html?open=activities](http://nlvm.usu.edu/en/nav/frames_asid_206_g_1_t_3.html?open=activities)



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The Mathematics-Visual Arts Connection

**Assessment Resources References**

**Children's Literature References**

**Instructional Resources References**

**Research References**

**Appendix**



## What Teachers are Saying...

Refreshingly unlike other books and resources! I was pleasantly surprised that [these books are] full of content and ideas that are easily implemented. Teachers need more books like this!

— Amanda Guinn,  
Kindergarten Teacher,  
Monroe County Community Schools,  
Bloomington, IL

With all of the demands in our schedules these days, teachers need to be better at incorporating content within literacy [instruction]...these book do a great job of this.

— Tammy Brown,  
Early Education Staff Developer,  
Denver Public Schools

The math-visual arts connections are exciting! As I was reading [Robin's] suggestions for activities, I wanted to collect a group of eight- to ten-year-old students and begin working and learning with them. [She has] incorporated excitement for students who need to have concrete examples of math as well as attracting kinesthetic learners through hands-on activities. Well done!

— Kris O'Clair,  
Math and Science Intervention Coordinator,  
Denver Public Schools



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