

## **Lesson Plan:**

*Poetry and Mathematics - Each can help the understanding of the other become more vivid*

**Focus:** A more cognitive science and creativity can work together to create new understanding. Careful observation and succinctness of poetry can help us appreciate the mathematics around us

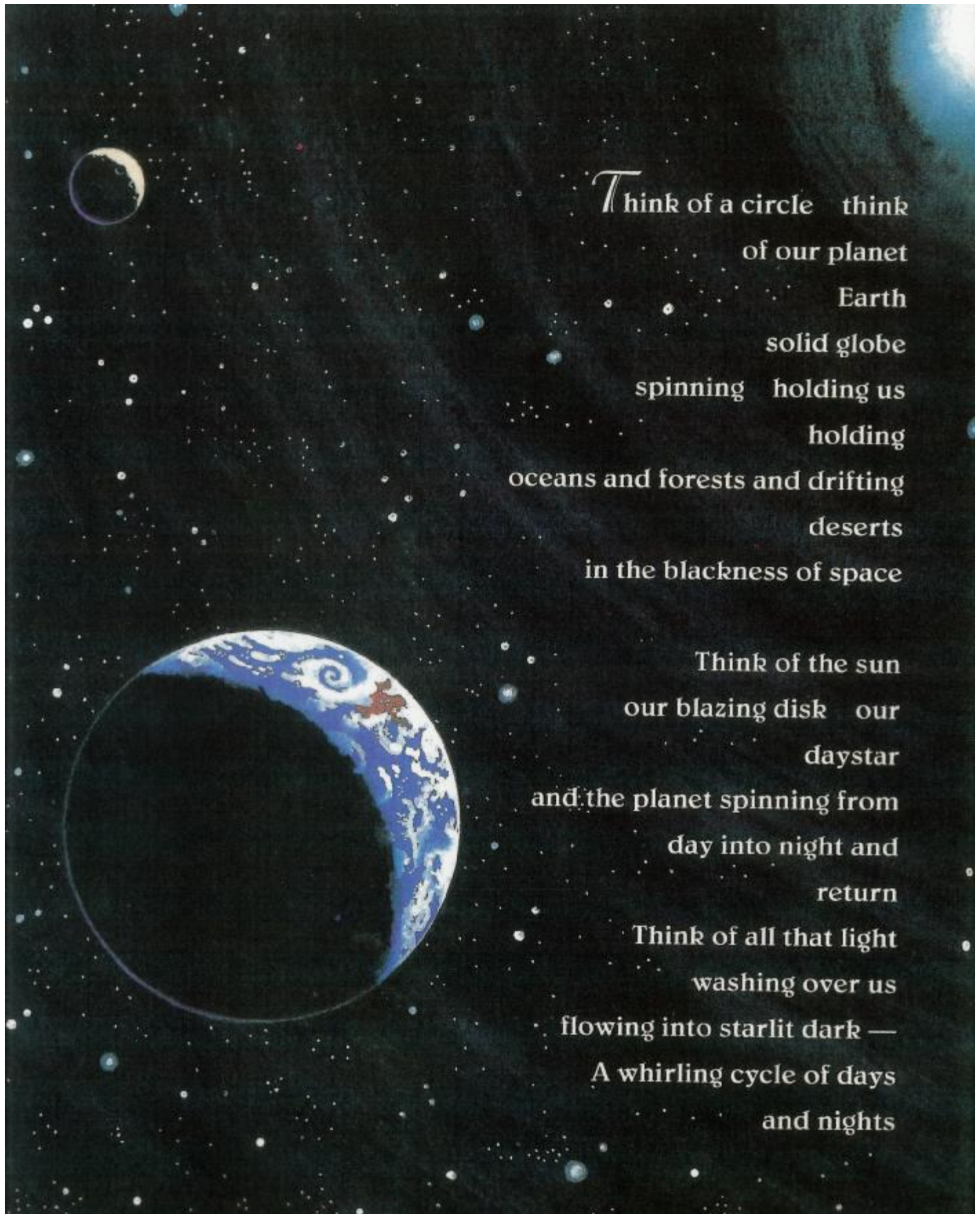
**Materials Needed:** 1 copy of Esbensen book *Echoes for the Eye*

**Supplementary Items:** Folder # 7 from full portfolio or the "Poetry and Mathematics" PDF file downloaded from the web site. The folder will contain the following 3 items. If you are doing this lesson all digitally then the following three items follow this page in the PDF file.

1. Transparency of page 30 of poem on circles (item **B1**)
2. Transparency of Carl Sandburg's "Arithmetic" from *I Thought I'd Take My Rat to School* **B2**
3. Transparency of "Math is Brewing and I'm in Trouble" from *If You're Not Here, Please Raise Your Hand* by Kalli Dakos **B3**

### **Activities/Procedures:**

1. Ask your students to close their eyes and see what "inner video" they run while you read this section (page 30 of poem on circles) at least twice. Have students quickly make a pencil sketch of what they saw.
2. Use "Think, Pair Share" to brainstorm other places they see circles in their lives. Have them visualize their trip to school, their bedroom, games and toys, nature, etc.
  - Get out the books and read all of her "Circles" poem to see what else she thought of.
  - Study her use of space and other elements of poetry.
3. Explore the whole book to see what other facets of mathematics are included. Why aren't triangles included?
  - Are there any triangle patterns in nature or are they all manmade?
  - What else could be included?
  - Are there any other math/poetry books which could be written?
4. Have individuals or small groups choose a facet of mathematics to write a poem about. For younger students you may wish to do this as a whole class with the teacher as scribe but following all the steps below.
  - It's helpful to give a heads-up on this assignment the day before you plan to do it so that students have time to observe and think about what they will write about.
  - Spend part of a period brainstorming all the words, phrases and especially verbs they can think of that fit their topics.
  - Have them try writing "Barbara Esbensen style" (see poetry lessons on "Frog" and "Spider" from *Words with Wrinkled Knees*) with several versions of phrases which may or may not be included and different orders to see how they are included.
  - Bring to final copies and find a way to publish and share their work.
  - Share other poems about mathematics such as Carl Sandburg's "Arithmetic" from *I Thought I'd Take My Rat to School* or "Math is Brewing and I'm in Trouble" from *If You're Not Here, Please Raise Your Hand* by Kalli Dakos for a contrast in feelings about mathematics within other forms of poetry. **B2 & B3**



Think of a circle think  
of our planet  
Earth  
solid globe  
spinning holding us  
holding  
oceans and forests and drifting  
deserts  
in the blackness of space

Think of the sun  
our blazing disk our  
daystar  
and the planet spinning from  
day into night and  
return

Think of all that light  
washing over us  
flowing into starlit dark —  
A whirling cycle of days  
and nights

from Barbara Esbensen's *Echoes for the Eye* (Harper Collins, 1996) p. 30.  
Illustrated by Helen K. Davie.

## Arithmetic

- Arithmetic is where numbers fly like pigeons in and out of your head.  
 Arithmetic tells you how many you lose or win if you know how many you had before you lost or won.
- Arithmetic is seven eleven all good children go to heaven — or five six bundle of sticks.
- Arithmetic is numbers you squeeze from your head to your hand to your pencil to your paper till you get the answer.
- Arithmetic is where the answer is right and everything is nice and you can look out of the window and see the blue sky — or the answer is wrong and you have to start all over and try again and see how it comes out this time.
- If you take a number and double it and double it again and then double it a few more times, the number gets bigger and bigger and goes higher and higher and only arithmetic can tell you what the number is when you decide to quit doubling.
- Arithmetic is where you have to multiply — and you carry the multiplication table in your head and hope you won't lose it.
- If you have two animal crackers, one good and one bad, and you eat one and a striped zebra with streaks all over him eats the other, how many animal crackers will you have if somebody offers you five six seven and you say No no no and you say Nay nay nay and you say Nix nix nix?
- If you ask your mother for one fried egg for breakfast and she gives you two fried eggs and you eat both of them, who is better in arithmetic, you or your mother?

Carl Sandburg

From: I Thought I'd Take My Rat to School: Poems for September to June Selected by Dorothy M. Kennedy.  
 1993 Little, Brown and Company, New York, NY.

## Math Is Brewing and I'm in Trouble

Numbers single,  
Numbers double,  
Math is brewing  
And I'm in trouble.

If I could mix a magic brew,  
Numbers, I'd take care of you!

First I'd mix in one, two, three,  
And one, two, three no more would be.

Then I'd take four, five, six,  
And mix until the brew was thick.

I'd stir and add and stir some more -  
One hundred, two hundred, three hundred, four.

As thousands and millions boiled and swirled,  
I'd think of how I'd saved the world

From brains all stretched and gnarled and fried,  
With countless numbers multiplied.

I'd take all the math books in the class,  
And throw them in at the very last,

And watch the bubbles swiftly form,  
And whirl into an arithmetic storm....

I'd see the vapors fade away,  
And leave us to a better day.

Numbers single,  
Numbers double,  
Math is brewing  
And I'm in trouble.

If I could mix a magic brew,  
Numbers, I'd take care of you!

from If You're Not Here Please Raise Your Hand by Kalli Dakos