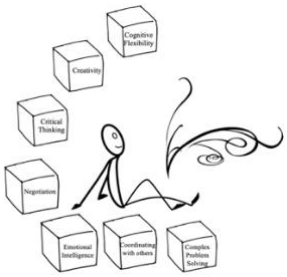


Scaffolding Pi (Secondary)

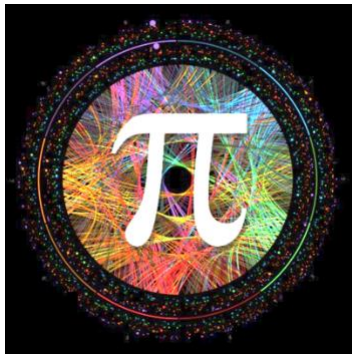
Donna Lee Fields, Ph.D.

theory behind scaffold…

In honour of International Pi Day (March 14th) let's scaffold the number Pi!!! Pi is the ratio of a circle's circumference to its diameter, but let's go beyond the literal. Let's delve into the essence of the equation and explore Pi as representative of what many consider numbers to be: the true international language that connects all of us.

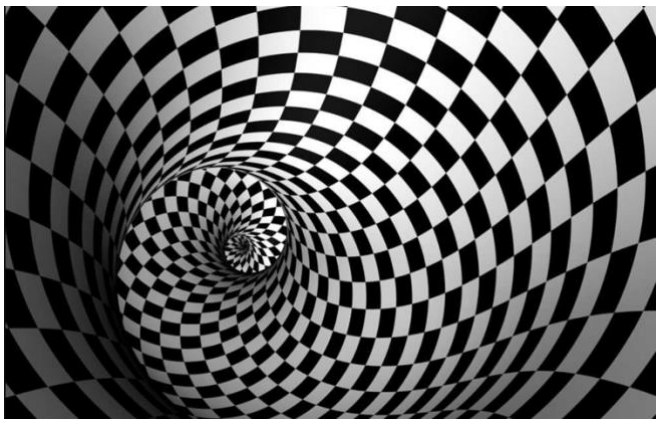
Let's see how the celebration of Pi can connect us to astronomy*, *music, forestry**, technology*** and much more. Pythagoras said that…

numbers are the essence of all things and that "all animate nature were kin."



Step by Step…

1. Each group of students gets a copy of the image of the spiral (see below).



2. Students make and write 10 statements about the spiral.' Provide academic language to help them begin: square, circular, end, spiral, forever, vertical, horizontal.

3. Once they have discussed the spiral for a few minutes, propose the following question: "How do you think all the comments you made about the spiral connect to your everyday lives?.' *Make the following academic language visible to help them to express t*hemselves: inanimate, motion, forward, backward.

4. Once they have discussed the new questions for a few minutes, propose the following question: 'What do you think this quote has to do with the image of the spiral?'

> *numbers are the essence of all things*
> *and that "all animate nature were kin*
>
> (Pythagoras)

5. Groups read the following descriptions of areas of life that can be described by maths. They put these concepts in their own words and relate the to their own surroundings as much as possible.

   *The Pythagoreans, having discovered the mathematical laws of musical pitch, inferred that planetary motions produced a “music of spheres”. and developed a “therapy through music” to bring man in harmony with the celestial spheres.

   **Forestry is the quantification of natural resources which is assigning numbers to things that occur naturally.

   ***The essence of modern life is increasing being viewed as code - digital relationships. Those digital relationships, once you unpack them, you realise that there's no 'us and them' there's only 'we'.

6. Groups summarise their conclusions, make the visible, and share them with the rest of the groups.

Kin: a group of people descended from a common ancestor or constituting a people, clan, tribe, or family.

Regardless of the size of the circle, Pi is always the same number. So, for any circle, dividing its circumference by its diameter will give you the exact same number: 3.14159…or Pi.

Example of a conversation two students can have about the image of the spiral:

Other activities for Pi Day…

What is Pi?
Pi Week Lessons
Plan a Pi Day Party for March 14
7 Classroom Resources for Pi Day
Video: 3 Blue 2 brown History of Pi

Musical interpretation of Pi: