WELCOME!
Please respond to the pre-assessment prompts located at the entrance.
Inquiry Strategies to Support Mathematical Instruction in the PYP
Starting with a little humor.
LEARNING GOALS

How inquiry can be used to support the Common Core State Standards.

How inquiry can support math as part of a trans-disciplinary Primary Years Programme
Strategies

• How do inquiry strategies support the Common Core and a trans-disciplinary approach to teaching math?

Knowledge vs. Understanding
STRATEGIES:

• Inquiry Journals
• Visible Thinking Routines
• Project Based Learning
• Argument Writing
• Key Concepts
Fractions

What I know:

1. 2/3
2. 3/4
3. 1/2

Learning Goal: I know that a fraction must have equal parts and that a unit fraction is one of the equal parts.

4. Cross out any shapes that are not divided into equal parts. Then, write the correct fraction for each remaining shape.

5. Claire says that the following shape shows 1/3. Wyatt says that it does not. Who is correct? Explain.

Wyatt because the parts are not equal.
Inquiry Journals

Perimeter and Area

Learning Goal: I can apply the area and perimeter formulas for rectangles in real world and math problems.

5-14-14
Perimeter and Area

What I Know: I can find a missing side length by dividing the area by the given side.
The park in Alyssa’s neighborhood had new equipment and play areas added. The picture to the right shows part of the new park.

The new playground space has a length of 8 yards and an area of 48 square yards. Attached to the playground is a square sandbox. The width of the sandbox is half the width of the playground.

Alyssa was wondering about the area of the sandbox. Show the steps that Alyssa could follow to find the area of the sandbox.
1. Area = 48 square yards
2. length = 8 yards, width = ?
3. Area = L x W
4. 48 = 8 x W
   W = 6 yards
5. Width of sandbox is half of width of playground
6. To find half of something you divide
   10 ÷ 2 = 5
8. Sandbox is square in a square all sides are equal
The area of the sandbox is 9 square yards.
An *Inquiry Journal* supports inquiry in math because it forces students to show their thinking, prior knowledge and what they have learned.
Visible Thinking Routines

See, Think, Wonder

Claim, support, question

Chalk Talk

Generate, Sort, Connect, Elaborate

http://ronritchhart.com
What do you see?
What do you think?
What do you wonder?
Chester loves to play in the snow. He also really likes to eat snow. He played in the snow 4 times. Each time he played he ate 5 snowballs. How many snowballs did Chester eat in all?
Chester had a total of 24 holiday cookies. He gave them to 3 of his doggie friends. How many cookies did each dog get?
Visible Thinking Routines

• Generate, Sort, Connect, Elaborate

Jenny Rossi incorporates the thinking routine: Generate, Sort, Connect, Elaborate into her 3rd grade math lesson.

Jenny Rossi is the Cultures of Thinking coordinator and resource teacher at Way Elementary in Bloomfield Hills, Michigan. To help teachers at the school learn from one another, Jenny and others made videotapes of their use of thinking routines to share and discuss amongst the staff. Principal Adam Scher was kind enough to share this video with me.
THINKING ROUTINES

• Chalk Talk
Visible Thinking Routines

• CLAIM, SUPPORT, QUESTION

Multiplying by 10:

\[
\begin{array}{cccc}
T & O & T & O \\
72 \times 10 & = & 720 \\
\end{array}
\]

• To multiply by ten, do you just add a zero?
What makes you say that?
COOPERATIVE, PROJECT BASED LEARNING

• Garden Project
ARGUMENT WRITING

• Using argument writing for reflections
You can’t divide by zero, why not?
Order of Operations Lesson

• Jake has 2 cartons with 6 eggs in each. As he opens the cartons, he drops two eggs. How many unbroken eggs does Jake have left?

• FORM (what form does the equation take?)
• FUNCTION (of parentheses)
KEY CONCEPTS

Perimeter and Area Lesson

• PERSPECTIVE:
  • attributes of a rectangle, (can a square be a rectangle?)

Kindergarten video

• CONNECTION:
  • role of the equal sign,
  • addition and subtraction.

• CHANGE: converting equivalent fractions
  • Other ideas?
ADDITIONAL RESOURCES

- Inquiry cycle
Additional Resources

- [http://bit.ly/1ISdBB0](http://bit.ly/1ISdBB0)
- access key: math inquiry resources
Summing Up

• **LEARNING GOALS**

  How inquiry can be used to support the Common Core State Standards.

  How inquiry can support math as part of a trans-disciplinary Primary Years Programme.
“Yes, we must simplify and scaffold the work for the novice and make direct instruction clear and enabling - but in so doing we *invariably* sow the seeds of misconceptions and inflexible knowledge if we do not also work to attain genuine understanding of what the basics do and do not mean.”

~ Thoughts on education by Grant Wiggins
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Live Binder Access Key: Math Inquiry Resources

Bloomfield Hills Schools
- Lone Pine Elementary
- West Hills Middle School

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