

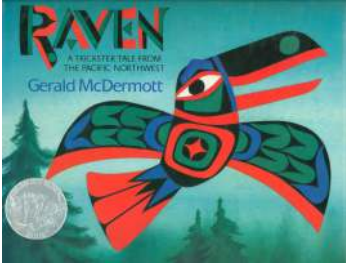
Bentwood Box Pentominoes

Learning Intentions:

- I can slow down my thinking to deeply understand math.
- I can describe, measure, and compare spatial relationships.

Adapted by Lynn Swift and Debbie Nelson from the following lesson:

<http://www.bcamt.ca/wp-content/uploads/2016/04/Raven-Part-1-Language-Supported-Math-Lesson.pdf>



Materials:

- **Bentwood Box**—can be found in School District#71 LRC's Bentwood Box Realia Kit, Call # RL 970 004 BEN
- *Pentomino or not a Pentomino?* Word Document
- Website: <http://resources.hwb.wales.gov.uk/VTC/ngfl/maths/cynnal/pentominoes/pentominoes.htm>
- *Raven* book by Gerald McDermott
- For background information on Bentwood Boxes:
 - <http://fooddaycanada.ca/featured-article/canadas-original-cooking-vessel/>
 - <http://arcadianabe.blogspot.ca/2012/04/cooking-in-bentwood-box.html>
 - Pentominoes and 5 square tiles for each student.

Before Reading:

BIG IDEAS: *Everyone can do math. We can describe, measure, and compare spatial relationships*

CURRICULAR COMPETENCIES: *Use reasoning and logic to explore and make connections. Engage in problem-solving experiences that are connected to place, story, and cultural practices relevant to the local community*

- Show slow down video:
- Picture walk the book, *Raven* by Gerald McDermott: What are you noticing? Thinking? Wondering?
- We are going to read this story together and connect some math learning. Storytelling is the way in which stories and life lessons are passed down from person to person and generation to generation.
- Show the Bentwood box: Turn and Talk – have you seen a box like this before, what do you know about boxes like this? What shape do you see? What could you hold in the box?

During Reading:

- Refer to the **Learning Intention** frequently to remind students that using slowing down math thinking helps us to deeply understand.
- Read the book; As you listen to the story, *Raven*, I want you to think about how the bentwood boxes and its top are important in the story.
- Ask the students how the box was important in the story.
- What math learning does a bentwood box offer? What math can you find in a bentwood box?
- Co-construct list together (use chart paper)

- Review learning intention and identify the specific math learning intention
 - I can understand what a pentomino is.
 - I can represent a pentomino with square tiles
 - I can find all the possible pentominoes
- Purpose of understanding what a pentomino is and connection to bentwood box: to build to a model of an open box (use bentwood box as example.)
- What's in /What's Out – show examples/non-examples of shape to determine what is a pentomino. Relate to bigger purpose—Some of these “nets” may be used to make an open box. Try some of the starter activities to get a sense of what a pentomino is from the following link.. <http://resources.hwb.wales.gov.uk/VTC/ngfl/maths/cynnal/pentominoes/pentominoes.htm>
- Together: Define pentomino
 - Plane flat figure
 - Comprised of 5 congruent (same size and shape) squares
 - Each square must share at least one complete side with the complete side of another one of the five squares.
- Show and discuss **Pentomino or not a Pentomino? document** to see help solidify the definition of a pentomino.
- Creating a vocab chart with class as math terms are suggested...(bentwood box, pentomino, edge/side, square, congruent, 2-dimensional (2-D), figure/shape, vertex, face, 3-dimensional 3_D
- Provide students with 5 square tiles and their own sheet of square grid paper. After providing a model of a pentomino (found in math materials or there are diecuts at the LRC), challenge them to see how many different pentominoes they can find and record (Shapes that are considered slide, flips, or turns of other shapes or translations, reflections, or rotations of other shapes are not considered different. Resist telling how many there are.)
- Next Divide class into 3 groups each with a teacher and large grid paper. Transfer pentomino from student sheet to large public sheet. Compare shapes to ensure slides, flips, turns are not included. Make a group statement: We found ___ different pentominoes. We think they are pentominoes because:
 - Group sharing of poster charts.
 - Are there other pentominoes found on other group posters?
 - Did we find all the different pentominoes?
- Review what a pentomino is.

After Reading:

Reflection time will allow students to consider their I CAN experience by acknowledging how they were successful with determining if they have found all the pentominoes.

Reflection Slip: plus, minus, interesting



Our Learning Intention:

We can describe, measure and compare spatial relationships.

Mathematics VOCABULARY

- transformational geometry
 - symmetry
 - transforms
 - mathematical thinking
 - cubes 3D (object)
 - square 2D (shape)
 - pentominoes
 - faces, edges
 - corner vertex vertices
- bent around observations
one side nailed

• nets

pointy tips!

