

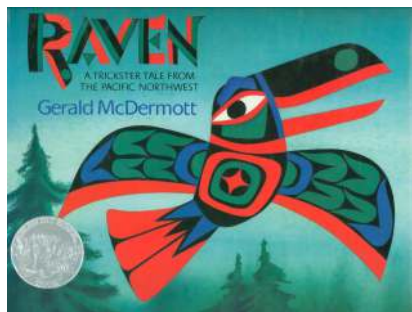
Bentwood Box Pentominoes

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 Comox Valley School District LRC's Bentwood Box Realia Kit, Call # RL 970 004 BEN
- Pentomino or not a Pentomino? Document
- Website: <http://resources.hwb.wales.gov.uk/VTC/ngfl/maths/cynnal/pentominoes/pentominoes.htm>
- For background info on Bentwood boxes:
 - <http://fooddaycanada.ca/featured-article/canadas-original-cooking-vessel>
- Bentwood box cooking: <https://www.youtube.com/watch?v=6d9P-ODggaM>
- *Which of these pentominoes can be folded into a net?* Word Document

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*

Before:

Review the story. Read if necessary. Or picture walk the story and have the students retell the story. Compliment the students on their oral sharing of the picture walk. Discuss that Raven is a shape shifter and transforms in the story *Raven*.

Refer back to the bentwood box: Wonder what does this have to do with math? What would the math be when thinking of a bentwood box?

- Show the Bentwood Box Cooking Video <https://www.youtube.com/watch?v=6d9P-ODggaM>

Introducing transformational geometry terms:

(Grade 5 Learning Standards) :

Slide/translation

Flip/reflection

Turn/rotation

(Grade 4 learning Standards):

Line Symmetry (using concrete materials such as pattern blocks to create designs that have a mirror image within them)

Review Learning Intention:

We can describe, measure and compare spatial relationships.

Continued...

Symmetry: Section 2 of website has symmetry demonstrations; the Plenary section demos reflections/rotations.)

<http://resources.hwb.wales.gov.uk/VTC/ngfl/maths/cynnal/pentominoes/pentominoes.htm>

Create or add to a math vocabulary chart to post: bentwood box/pentomino. Edge/side, square, congruent, 2-dimensional figure/shape, 3- dimensional object.

During:

Refer to last lesson's poster charts that showed all the possible pentomino shapes. Hand out the two grid papers with all the 12 shapes per pair of students. Cut the "nets" out and see how many can be folded into an open box. Make What's In/What's out piles on your desk. Work together as a pair.

What's in / What's out:

Sentence frames ~

These are some of the ___ that I think could be cut out and folded into open boxes. (include sketches)

These are some of the ___ that I think can not be cut out and folded into open boxes;. (include sketches)

To make an open box the pentominoes.....

Extensions:

- 1 .Use hexominoes (an arrangement of six squares with at least one side of each meeting). Can you design a net for a cube? Hand out grid paper for this.
2. Explore the number of shapes that can be made from six equilateral triangles (di-cut materials)

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 that can be folded into a open box (bentwood box without the lid).

Reflection Slip: plus, minus, interesting

