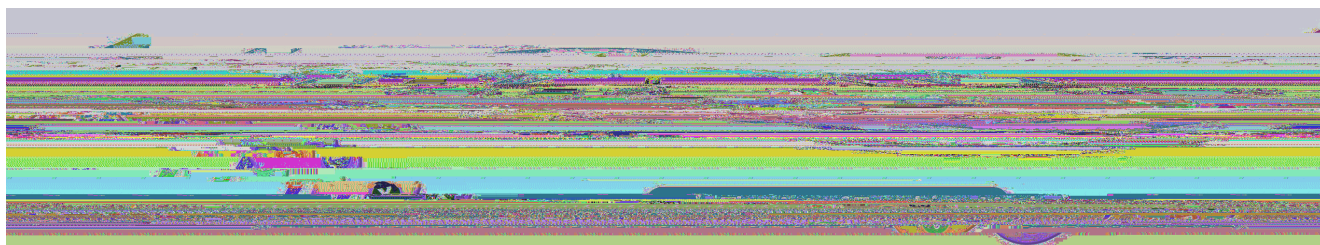


UNDERSTANDING CIRCUMFERENCE (AND PI)
THROUGH DRUM MAKING

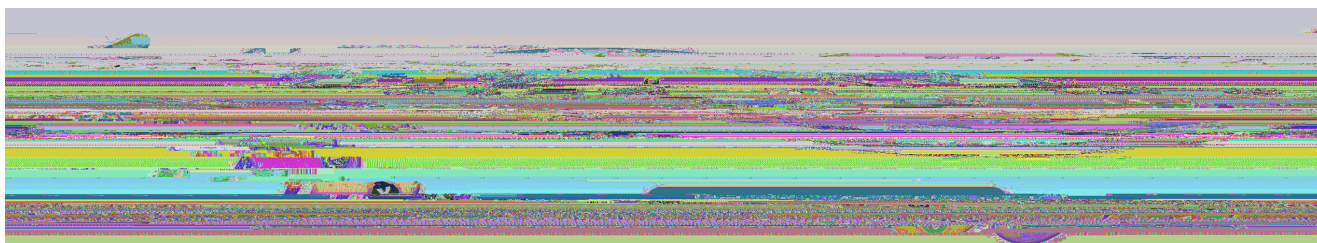


LESSON SEQUENCE	THINKING BEHIND
<p>Goals:</p> <ol style="list-style-type: none"> 1) To understand what circumference is and how it is used to build drums and other circular objects 2) To understand the meaning of pi 3) To appreciate the use of mathematics and cultural practices of the Songhees and Esquimalt Nations (along with many other First Nations in Canada and the US) 	<p>Pi is a number that mystifies many and when we ask people what it means they usually respond with 3.14159...which shows they know its value, but not necessarily what it actually represents. Our goal is to help students to understand it as a ratio by using hands on materials and practical applications. We also want students to be able to estimate circumferences to know if their solutions are reasonable. Finally, we will be exploring these concepts by looking at the process of drum making. If your school has drums, you can connect this to learning drumming protocol and actually drumming. If your school doesn't yet have drums but is planning on making them, this would be an ideal lesson for this.</p>

Introduction or Accessing Prior Knowledge (APK): (1-2 hours)

In partners/groups:

- 1) Show a First Nations drum -allow them to look at it carefully and then ask them what they notice and what they wonder.
- 2) Why is the drum important to many



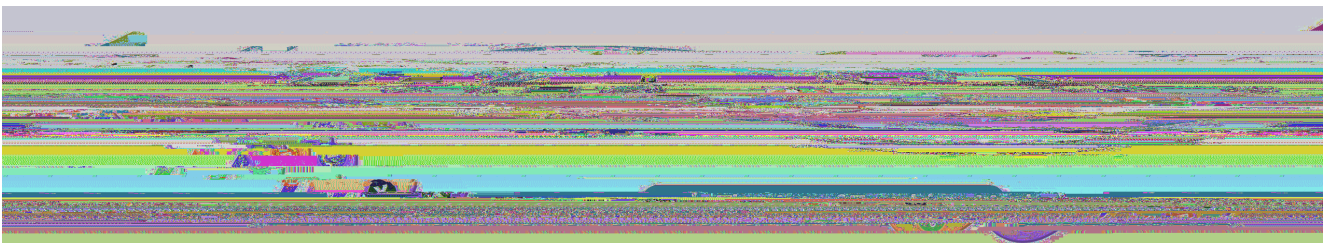
drum making (numbers,
symmetry, etc.)

4) Show the parts of the drum (long straight wood that will be eventually be bent into circles for the frame) and hide (real or synthetic). And ask students “how long of a piece of wood do we need if we want to make a drum this same size (as sample drum)?” (diameter = 35.5 cm/14 inch – may vary depending on your drum) Ask what the distance around a circle is called.

5) How much hide and lace are needed?

These will be our guiding or essential questions as we progress:

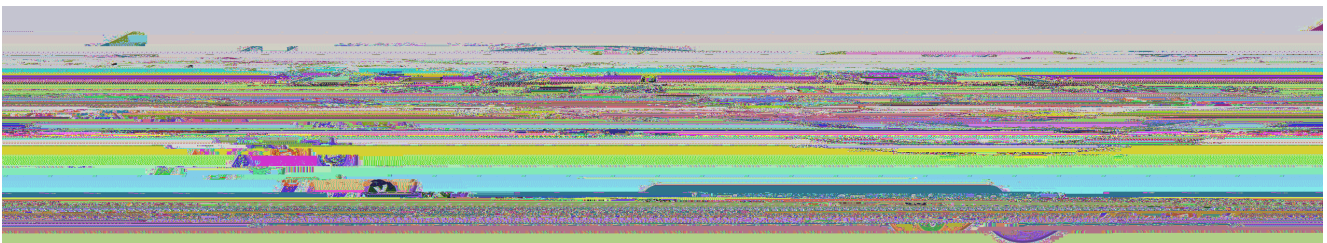
How long



What will be the circumference of the hide?

Estimate all values first and share out with the whole class, including how students came up with their estimates. I suggest using paper or scrap cloth and frames (either made from wood or cardboard strips – something stronger than paper) for students to mock up their ideas and try them out. If you don't have any frames, or cardboard to make them – you could use a tambourine (hopefully your school has at least one of these) as its size and shape are pretty similar to the frame (a bit smaller circumference but it gives the idea). Students can work in teams to solve this problem; however, each student will complete their own write up and reflection of their process.

Extension: How much lace is required – what length would be required to



References:

30-minute interview (on local news station) with Jorge “Two-Eagles” Lewis:

https://www.youtube.com/watch?v=aJf1XPECZ_A

28-minute video of Jorge Lewis making a drum (the same way we make our drums in schools in our district):

<https://www.youtube.com/watch?v=3uzmBCZUx0w>

Importance and history of drum making and drumming:

<http://native-drums.ca/en/home/#>

A history of pi –

