

Culture-Based Lesson Plan

BDEC Shared Resource

Subject: Math 20-2	Grade Level: 11
Unit/Topic: Relations and Functions Parabolas in Inuit Culture	Lesson duration: 1 Block (80 mins)
Submitted by: William Logan	Date: May 10 2016
Curricular Outcome: Demonstrate an understanding of the characteristics of quadratic functions, including: Vertex, Intercepts, Domain and Range, axis of symmetry Solve problems that involve quadratic equations.	
Cultural Context: This task has students creating their own quadratic model for the inside and outside profiles of an igloo. This will give them the sense of the shape and size of an igloo.	
Lesson Structure (Teaching strategies &/or activities): A. From the Internet or another source, obtain a picture of an igloo that appears to have a parabolic shape that will help estimate the size of the igloo. B. Draw and label a cross section of the igloo on graph paper assume each block is 1 foot thick and the entrance is 2 feet below the snow line. C. Using the graph paper determine the vertex of the igloo and use another point on the igloo to make a quadratic function in the form $y = a(x-p)^2 + q$ D. Based on quadratic model, figure out how close to the entrance of the igloo a 5 foot 6 inch person could stand without ducking or bending.	

Technology/Materials/Equipment needed:

Computer with Internet

Graph paper

Calculator

Resources/References:

Nelson Principles of Mathematics 11 textbook.

Rubric for Assessment of learning can be found in teache3rs resource.

Assessment:

Use Rubric to evaluate the student's cross section of their igloo on the graph paper.

Check to see if proper steps were used to create a quadratic equation in the proper form based on the students cross section.

Determine if the student answered question D properly based on their cross section.

Achievement Indicators:

Determine the domain and range of a quadratic function

Sketch a graph of quadratic function

Solve contextual problem that involves the characteristics of a quadratic function

Making Community Connections:

During the sunrise festival igloos are built down by the river have students examine or help build igloos based on their math.

Have student determine the quadratic function of the already built igloos by measuring the dimensions.