



Grade 4 Math Enrichment - Unit 4 - Everest Trek

Unit Focus

This collaborative unit engages students as they work in small groups to apply math to solve meaningful problems: overcoming a series of obstacles as their group prepares to climb Mount Everest (hypothetically). Throughout their “climb” they will face multiple challenges from designing a coat that will protect them from subfreezing temperatures and wind, to building a bridge to cross a massive crevasse. Students will find math becomes powerful and meaningful as they apply their knowledge to solve these authentic problems.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
Common Core Mathematics: 4 - Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (CCSS.MATH.CONTENT.4.MD.A.2) - Make sense of problems and persevere in solving them. (CCSS.MATH.MP.1) - Model with mathematics. (CCSS.MATH.MP.4) - Use appropriate tools strategically. (CCSS.MATH.MP.5) NGSS/NSTA Science & Engineering Practices NGSS Science & Engineering Practices: 3-5 - Use prior knowledge to describe problems that can be solved. (SE.3-5.1.4) - Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. (SE.3-5.1.5) - Represent data in tables and/or various graphical displays (bar graphs, pictographs, and/or pie charts) to reveal patterns that indicate relationships. (SE.3-5.4.1) - Describe, measure, estimate, and/or graph quantities such as area, volume, weight, and time to address scientific and engineering questions and problems. (SE.3-5.5.2)	<i>Students will be able to independently use their learning to...</i> T1 Initiate a plan using a variety of methods/strategies appropriately, execute it, and evaluate the reasonableness and accuracy of the solution. T2 Apply models to solve problems. T3 Choose appropriate tools to make reaching solutions more efficient, accessible and accurate.	
	Meaning	
	Understanding(s)	Essential Question(s)
	<i>Students will understand that...</i> U1 Mathematicians monitor progress while problem solving, change course if necessary and evaluate the reasonableness of their solution. U2 Mathematicians create or use models to generalize, represent, and solve problems. U3 Mathematicians strategically use different tools to build conceptual knowledge or solve problems.	<i>Students will keep considering...</i> Q1 What do effective problem solvers do when they get stuck? Q2 What model best represents this problem? Q3 What are the strengths and weaknesses of the tools at hand?
	Acquisition of Knowledge and Skill	
	Knowledge	Skill(s)
	<i>Students will know...</i> K1 how to create a line graph K2 Vocabulary: line graph, x-axis, y-axis, independent variable, dependent variable, coordinates, control, Fahrenheit, Celsius	<i>Students will be skilled at...</i> S1 interpreting line graphs S2 interpreting data to solve a real world problem S3 conducting an experiment and creating data tables to record results

Stage 1: Desired Results - Key Understandings

Madison Public Schools Profile of a Graduate

- Design: Engaging in a process to refine a product for an intended audience and purpose. (POG.2.2)
- Collective Intelligence: Working respectfully and responsibly with others, exchanging and evaluating ideas to achieve a common objective. (POG.3.1)

S4 communicate ideas about solving a problem
S5 reflecting on solutions and considering possible improvements
S6 how to create a data table and/or create a graph
S7 how to read a thermometer