



Grade 4 Math Enrichment - Unit 3 - Yeti Measurement

Unit Focus

In this unit students will apply and extend their ability to estimate in order to answer both practical and fictional problems. Students will estimate lengths in both customary and metric units and extrapolate from a known measurement to estimate unknown quantities (length and volume). Their understanding of measurement will deepen as they create their own estimation challenges for their classmates and explore some of the uncommonly used and nontraditional units of measure that exist around the world. Students will apply their understanding to choose appropriate units of measurement to find the size of selected body parts, then scale up these measurements to create proportionally correct body parts and furniture for a "Yeti" that they are told has visited their classroom and left behind foot prints. To further challenge the students, they will be asked to estimate the dimensions of items such as a desk that would fit the Yeti. They will then be asked to determine the distance they can travel if they walked 10,000 steps every day for a year, and then scale up that estimate to predict how far the Yeti would go. In the final project, students will think smaller instead of bigger and scale down their own body measurements to estimate the size of a backpack and water bottle for Tom Little to take on an adventure. At the conclusion of this unit, students will have developed a rich understanding of how to estimate quantities using a variety of strategies.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
Common Core Mathematics: 4 - Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ... (CCSS.MATH.CONTENT.4.MD.A.1) - 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) - Reason abstractly and quantitatively. (CCSS.MATH.MP.2) - Model with mathematics. (CCSS.MATH.MP.4) - Use appropriate tools strategically. (CCSS.MATH.MP.5)	<i>Students will be able to independently use their learning to...</i> T1 use appropriate tools to make reaching solutions more efficient, accessible and accurate. T2 apply familiar mathematical concepts to a new problem or apply a new concept to rework a familiar problem.	
	Meaning	
	Understanding(s)	Essential Question(s)
	<i>Students will understand that...</i> U1 Mathematicians identify relevant tools, strategies, relationships, and/or information in order to draw conclusions. U2 Mathematicians flexibly use different tools, strategies, and operations to build conceptual knowledge or solve problems. U3 Mathematicians continually evaluate their process and the reasonableness of the intermediate results.	<i>Students will keep considering...</i> Q1 How do I decide if my answer makes sense and if not, what do I do? Q2 How does estimating help me? Q3 How does what we measure affect how we measure?
	Acquisition of Knowledge and Skill	
	Knowledge	Skill(s)
	<i>Students will know...</i> K1 how to measure length accurately to the nearest centimeter or quarter inch. K2 how to use appropriate tools to measure	<i>Students will be skilled at...</i> S1 estimating lengths and comparing estimates to actual measurements S2 developing benchmarks to aid in estimating lengths

Stage 1: Desired Results - Key Understandings

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- Analyzing: Examining information/data/ evidence from multiple sources to identify possible underlying assumptions, patterns, and relationships in order to make inferences. (POG.1.2)
- Product Creation: Effectively use a medium to communicate important information. (POG.3.2)

K3 Vocabulary: accuracy, millimeter, centimeter, meter, kilometer, inch, foot, yard, mile, customary measurement, metric measurement, scaling up
K4 benchmarks and relative sizes for length, volume, mass and/or weight

S3 converting units with same measuring system