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eTech Math Mess Educator's Guide

Segment Title: Clash of the Iguanas

Alignment to Common Core Clusters	*5.NF Develop understanding of addition, subtraction, multiplication and division of fractions.*
Critical Focus Area(s) and Rationale	*5.NF.5.a Interpret multiplication as scaling (resizing) by comparing the size of a product to the size of one factor on the basis of the size of the other factor.* *5.NF.6 Solve real-world problems involving the multiplication of fractions and mixed numbers by using visual models or equations to represent the problem.* The concept of comparing by scaling, as opposed to comparing by a difference in length, requires a different type of understanding and comparative language. Scale thinking with fractional numbers provides a foundation to the focus on proportional reasoning that students will encounter in later grades. Proportional thinking is critical to later understandings of scale, comparing rates, and similarity of geometric figures.
Focus for Media Interaction / Suggested Classroom Activities	Tell the students that they are going to watch an argument between two brothers. As with most arguments, each is trying to show that they are right. Ask students to think about whether the brothers are actually arguing about the same thing, or if they are really arguing about something different. Tell them that they will need to come to agreement as to which brother is correct, and why.
Suggested Extension Activities & Resources	Common Core suggests that students have significant practice with familiar fractions – halves, quarters, eighths, thirds, fifths, etc. Change as a fraction of the original size is much different than comparing two lengths as equal or unequal. Present students with measurement problems that involve change, and have them compare new lengths to the original length using fractional

	concepts. In the problem presented, we are wanting students to approach this problem as a comparison of two improper fractions or mixed numbers by comparing new length to old length. Extend this problem by starting with two iguanas that have not grown the same amount, and started with different sizes. Which growth rate is greater, an iguana that grew from 9" to 12" in length over 3 months, or one that grew from 14" to 18" in the same 3 months? Why? Justify your answer with drawings, numbers, or words.
Suggested Formative Assessment Probe	As bell work or as an exit ticket ask students to write problems that require an interpretation of growth or reduction. Some example might include comparing the growth of trees during the spring and summer, the weight gained by babies in the first 6 months, a weight loss contest – who lost the most weight by fraction of starting weight; a weight-lifting exercise program – who increased their strength the most according to starting and ending weight. Students should provide you with their answer and their justification of how the decision was made.
One Proposed Solution to the Math Mess	While it is true that both iguanas grew the same length – 6" – during the previous six months, when we compare the amount each iguana grew to its size six months ago, we find that Pauley's iguana more than doubled its length (11:5) compared to Pete's which didn't double its length (14:8). When their growth is expressed as mixed fractions, Pauley's iguana is now $2\frac{1}{5}$ times as large as it was six months ago, while Pete's is only $1\frac{3}{4}$ as long as its size six months ago.