

Unit Title: Tractor Ratios

Grade Level: 6

Subject Area: Math

Duration/Length/Number of class periods: 3-4 class periods

Description:

In this lesson, students will use ratios to determine the dimensions of a full-sized tractor using a 1/64th scale toy tractor. They will independently find ratios for a 1/32nd scale tractor.

Established Goals (National, State, Local):

Minnesota Math Standard 6.1.2.1:

Identify and use ratios to compare quantities; understand that comparing quantities using ratios is not the same as comparing quantities using subtraction.

What Enduring Understandings are desired?

Ratios will help students understand the relationship between two different sized objects.

Ratios will help students read maps, calculate dosings, measure ingredients, etc.

Ratios will help students make comparisons.

What Essential Questions will be considered?

-Why do a large objects and small objects both use the same ratio for comparisons?

-Why can't I subtract to make equivalent ratios?

-Why do equivalent ratios need the same labels? Why can't the labels be mixed?

-Where else do you see or use ratios in real life?

Students will know / be able to:

Students will be able to calculate full scale measurements from a smaller model using ratios and calculate a smaller scale measurement from a full-size object.

Description	Formative	Summative	Introductory Activity	Learning Activity	Student Technology Used	Teacher Technology Used	ISTE Standards
STEP 1: I will show tractors of 1/64th scale to the entire class. We will discuss how the toy tractors compare to real, full size tractors and why it's important to make each measurement of the toy tractor exact.			x				
<p>In groups of four, students will measure the 1/64th tractors to find the width of the front tire, length of the cab and height of the exhaust pipe on the front. Students will enter their findings on a shared Google Sheet so they can assess the reasonableness of their measurements compared to their peers.</p> <p>As a large group, we will agree on the toy tractor measurements from the Google Sheets and then convert them to real life measurements using 1/64th ratio. We will discuss the importance of using inches for measuring both tractors. Students will record their answers in a Google Doc.</p>	x			x	x	x	1.c. 2.a.
<p>STEP 2: I will arrange for a large tractor to be parked in the school parking lot. The students and I will measure the tractor's tire, cab and exhaust pipe. We will compare the actual measurements to our calculations from the day before.</p> <p>After moving back into the classroom, students will share in a Padlet the different ways ratios are used in real life besides in tractors and toys.</p>				x	x		1.c. 2.a. 2.c.
STEP 3: To show understanding, students will use the measurements of the large tractor to determine the measurements of a 1/32nd scaled toy tractor. They will record their answers in a Google Doc and share it with me. The rubric for this assessment is on a Jamboard . Finally, they will use Google Drawings to draw a tire, cab and exhaust pipe in about 1/32nd scale and 1/64th scale using the ruler provided in Google Drawings .		x			x	x	1.c. 6.c.

Materials, tools and resources:

toy tractors 1/64th to scale (one for every four students)
rulers
computers with access to Google accounts
[Google Sheet](#) for sharing measurements
[Google Doc](#) for recording answers
yard sticks
large tractor

[Padlet](#)

calculators

[Jamboard](#) rubric

access to [Google Drawing](#)

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