

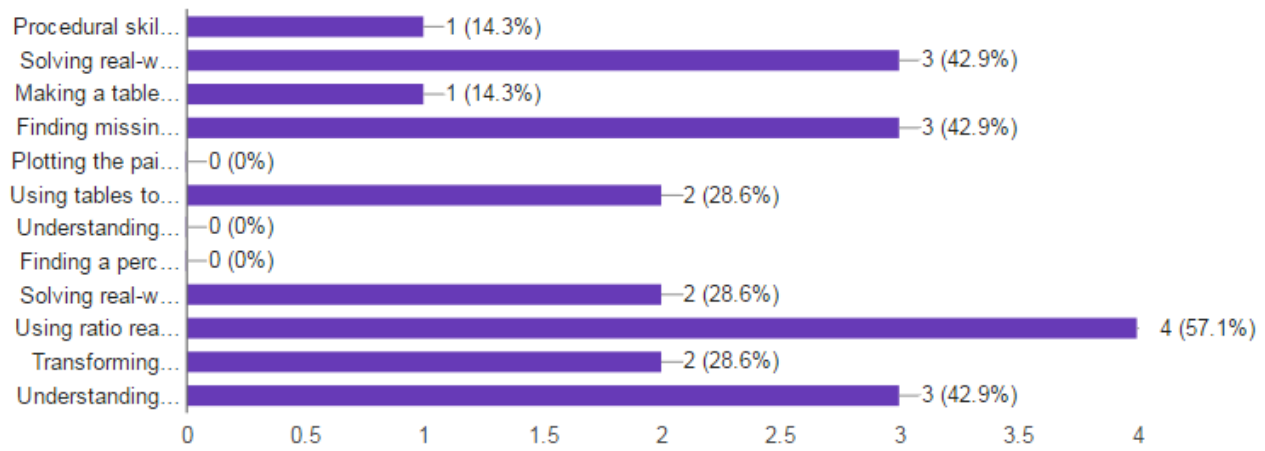
# Are We Teaching the Right Math in the Right Way?

## 6<sup>th</sup> Grade Math Email PD Session 1a – Teacher Responses

### Unpacking the Standards

Out of the list of math topics below, which three do you typically find to be the most challenging for your students?

(7 responses)



Explain why you believe students struggle with the first of the three boxes you checked.

(7 responses)

They have a hard time with proportions, understanding the concept. They are so used to just adding, subtracting, multiplying or dividing to solve a problem and think it's much easier to not have to write a proportion to solve.

I think my students struggle with solving real-world problems with percents because they do not fully understand the concept of percents. They also struggle with converting fractions and decimals which relates to the task of real-world percent problems.

Identifying the part and the whole from a written description

They dont grasp the concept of fractions

They can perform the isolated skills required, but have difficulty deciding when to find equivalent ratios, find unit rate, ect. They are equipped with multiple strategies (tables, double number lines, equiv fractions,) but sometimes are not sure which strategy is best suited for the problem.

They do not pay attention what they are asking you to compare in the problem.

Students do not read problems carefully. When multiple tasks are involved, they give up easily. The students do not re-read the question to make sure they answered the question.

## Explain why you believe students struggle with the second of the three boxes you checked.

(7 responses)

They are used to finding an addition pattern to complete a table rather than a unit rate and then using that unit rate to either multiply or divide to find the missing value in the table.

My students understand how to solve problems using ratios and rates, but they seem to struggle with the application of this skill. Since measurement conversions use rates and ratios in context, it is not outright with the skill, my students struggle to grasp that a conversion factor is essentially a rate.

(1) Trouble identifying the necessary facts. (2) Trouble placing units in the appropriate position in a proportion or conversion factor.

Fraction and multiplication issue

They sometimes forget to go back to the original ratio and look for the multiplicative relationship between the terms.

They do not understand that the horizontal table is the same as the vertical.

Measurement is abstract to students. The divide when they should multiply, etc.

## Explain why you believe students struggle with the third of the three boxes you checked.

(7 responses)

Again, it's all about proportional reasoning. They either want to multiply or divide, knowing which is smaller or larger rather than writing a proportion to solve.

I believe this is a struggle for students because they are not familiar with the two systems being used interchangeably yet. They know how to convert within the metric system and some even know how to do a few conversion within the customary system, but I don't believe they understand the overall implications of why it is important to be able to convert between the two systems.

Students often move to multiplication or division without first thinking out what the problem needs.

Equivalent fraction issues

They sometimes are not careful to list the units in the same order for each ratio when they set up their problem.

They do not know when to multiply or divide by ten, hundred, or thousand.

The students that struggle just are guessin and refuse to learn proper procedure.

In reference to one or more of the three topics you checked, describe an ineffective teaching strategy often used in classrooms.

(7 responses)

Not spending enough time on the concept. The pacing guide does not allow enough time for this standard.

Using paper and pencil notes as the major form of instruction proved ineffective for real-world problems of percents, and frankly for all the boxes I checked.

Tricks like "multiply if you move from a larger unit to a smaller unit".

Trying to find the pattern without using the unit rate

We may not work enough practice problems together before asking them to work on their own. Sometimes we don't work enough examples together to address the different types of problems they may have. GoMath doesn't always offer enough practice problems.

Teaching tricks.

An ineffective method for struggling students is group work. The students are not able to explore and discover.

Now, describe an effective teaching strategy to address the same topic(s) as the previous question.

(7 responses)

Repetition is what helped my students most this year. In the past, I don't think I spent enough time with proportions. This year, I used several activities in the class that required them to use proportions, cross multiply then divide.

I use the percent triangle as a way for students to visualize moving from a part to a whole in regards to percents. I also use scale models and visual representations when teaching the overall concept of unit conversions to students.

Use conversion factors and emphasize placement of units.

Teach the student how to find the unit rate and use the unit rate to find the unknown values in the ratio

Find additional practice items; assign practice lessons for each skill on Moby Max; cooperative groups or partner work; revisit topics often with Daily Questions and review or through activities during rotation time.

Teaching why before tricks.

An effective strategy is when the teacher demonstrates and models the desired outcomes. Practice and check. Then do group work.

**Louisiana Standard 6.RP.3: Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**

Give one example of a math problem that would measure a student's procedural skill and fluency related to 6.RP.3

(7 responses)

If you were comparing unit prices of two different brands or two different sizes.

Having a student complete a ratio table would measure procedural skill and fluency.

Given a ratio table with rows (4, 20), (6, 30), find the missing number in (7, ?).

When students are given two ratios that are equivalent and the student must find the missing value

List three ratios that are equivalent to 8:10; create a table

$$1/2 = 2/4 = 3/? = ?/8$$

$$2/3 = ?/15$$

Give one example of a math problem that would measure a student's ability to apply standard 6.RP.3 in a real-world situation.

(7 responses)

If it costs \$99 a year for Amazon Prime, how much would it cost for one month?

Students could answer a question asking them to predict ticket costs for various numbers of people based on a constant ticket rate.

The ratio of males to females in a school is 7:6. If there are 224 males at the school, find the number of females. Show your work using a table, tape diagram, double number line diagram, or equivalent fractions.

If the student is given a recipe and they must find the value of An ingredient if one of the ingredients are increased and the student must write the ratio then find the equivalent when one ingredient increases and how it will affect the other ingredients

Use a ratio given in a recipe. Adjust the recipe and see if the ratios are still equivalent.

Recipes being doubled, tripled and then the dreaded half or quarter the recipe.

The distance from Austin to Dallas is 200 miles. How far apart will these cities appear on a map with the scale of 1 inch = 50 miles?

**Louisiana Standard 6.RP.3a: Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.**

Give one example of a math problem that would measure a student's conceptual understanding of 6.RP.3a

(7 responses)

Finding ratios in a table of concentrate to water.

Having students evaluate if two different companies used the same ratio to fill their bags of trail mix would be an effective way to measure conceptual understanding. This would require students to find the ratios, compare them, and then make a statement based on that information.

[ Assume there is a graph of the line  $y = 7x$ . ] What ratio best describes the relationship between  $y$  and  $x$ ?

If the student was asked to explain whether or not ratios are equivalent, and have them explain why or why not

How are equivalent ratios similar or different from equivalent fractions?

John is working to mow lawns and charges \$5.00 per lawn. How many lawns will he have to mow to earn \$100.00. Make a vertical and horizontal table.

$3/60 = 5/?$

Give one example of a math problem that would measure a student's procedural skill and fluency related to 6.RP.3a

(7 responses)

Looking at a graph of two runners, which one has a faster rate.

Completing a ratio table and then plotting the points as  $x$  and  $y$  coordinates would be a way for teachers to measure procedural skill and fluency for this standard.

The ratio of cars to trucks on a highway is 3 to 2. On the graph provided, plot three points that shows possible numbers of cars and trucks.

Students are asked to find unknown value in a table then graph

Find missing values in a table

During a clearance sale, a toy shop offers a 20% discount on all toys. You purchased a Barbie doll and received a \$1.00 discount. What was the total amount paid for the doll? Use a tape diagram to solve the problem.

$3/60 = 6/?$

**Louisiana Standard 6.RP.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.**

Give one example of a math problem that would measure a student's procedural skill and fluency related to 6.RP.3c

(7 responses)

45 percent of 30 is what number?

Finding equivalent percents.

Find 20% of 450.

Students would be given a fraction and asked to find the percent

Find 25% of 100

What is 78% of 40?

$17\% = 17/100 = 0.17$

Give one example of a math problem that would measure a student's ability to apply standard 6.RP.3c in a real-world situation.

(7 responses)

If you have to pay 30% of your birthday present that is \$140, how much do you have to pay?

Students could use this standard to answer problems to answer questions about data collected in an experiment to analyze the data.

A sale is offering 25% off all items in a store. If you bought a video game for \$60, what discount would you receive?

A word problem involving the student finding the percent of a certain number in A given situation

A shirt is on sale for 25% off the regular price. The shirt costs \$25.50 at regular price. If you paid with \$20, how much change would you receive?

In a department store the owner paid \$15 for 1 kg of sugar. The owner marked the price up by 10% for the customers. How much does he charge for 1kg of sugar?

A batting average or a free throw completion percentage

**Louisiana Standard 6.RP.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.**

Give one example of a math problem that would measure a student's conceptual understanding of 6.RP.3d

(7 responses)

2 gallons of milk is how many quarts.

Students could match the units from the customary system with their counterpart in the metric systems. Students could also identify which unit of measure would be appropriate for certain items, i.e. a mile for distance traveled in a car, or kilograms for the weight of a car.

A student's hand is 7 inches long. When he uses his hand to measure the length of a table, it is 11 hands long. What is the length of the table in inches?

Have the student explain what percent means and how its used

Explain how you could use a diagram/model to convert ounces to grams.

John has a tablecloth that is 84 inches long. Will it fit a table that is 6 feet 2 inches with a 6 inch over hand?

Which is greater a meter or a yard?

Give one example of a math problem that would measure a student's procedural skill and fluency related to 6.RP.3d

(7 responses)

Your recipe calls for  $\frac{1}{2}$  gallon of milk. How many cups is that?

Convert between customary and metric systems.

Alex, Beth, and Cedric each bring water to an emergency center. Alex brings 3 gallons, Beth brings 6 quarts, and Cedric brings 5 liters. Using the fact that 1 liter is about 1.06 quarts, find the total amount of water brought in quarts.

15 students out of 30 scored well on a test, what percent is that?

5 miles = kilometers

5 feet 2 inches = \_\_\_ inches

Use a proportion to convert 2 quarts to liters.

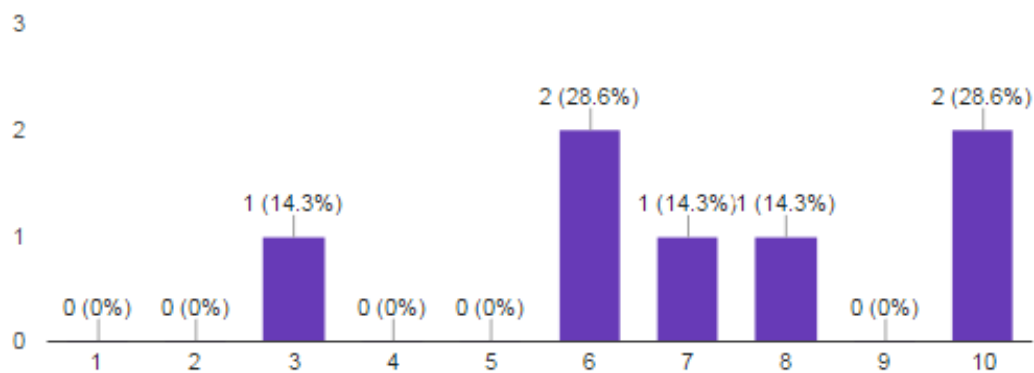
## Additional Feedback

Please provide any other comments you have related to the standards addressed in this Google Form.

(1 response)

None

On the scale below, rate this professional development process? (7 responses)



Thank you for completing this task! You may use the space below to comment on your scale response in the prior question...

(2 responses)

It might be useful if we could see other's comments once everyone has completed it.

It required me to dig a little deeper in to the standards and the types of problems that are involved in each. It was good to reflect before moving on to new material.