



Explore the Content of the Revised K-8 Mathematics TEKS



Fall Meeting – October 21, 2013



RUSMP Team

- Anne Papakonstantinou
- Richard Parr
- Alice Fisher
- Susan Troutman
- Carolyn White



Overview of the Day

Morning Session 9:00 a.m. – 11:30 a.m. (whole group)

9:00 – 10:00 a.m.	Introductions, Mathematics activity, and Discussion
10:00 – 10:15 a.m.	Break
10:15 – 11:30 a.m.	Ramping up the rigor in mathematics lessons

Lunch 11:30 a.m. – 12:30 p.m.



Overview of the Day

Afternoon Session I 12:30 p.m. – 2:30 p.m.
(K-5 and 6-8 TEKS breakout sessions)

12:30 – 2:15 p.m.	Decoding the language of the TEKS, Interpreting the mathematics in the TEKS
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2:15 – 2:30 p.m.	Break
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Afternoon Session II 2:30 p.m. – 3:00 p.m. (whole group)

2:30 – 3:00 p.m.	Debriefing and next steps
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Which process standards in the revised TEKS are illustrated by this problem?





Ramping Up The Rigor In Mathematics Lessons



Egg Dilemma

Anne has eggs to sell. Anne sells half of the eggs plus half an egg to Carolyn, then sells half the remaining eggs plus half an egg to Susan, and finally sells half the remaining eggs plus half an egg to Alice. At the end of these three sales, Anne is out of eggs. The strange thing is that Anne never had to break an egg.

How many eggs did Anne begin with?



Discussions

- Which concepts could be developed using this problem?
- For which grade levels would this problem be appropriate?
- Which of the revised TEKS does this problem support/address?



Extensions

- How could this activity be differentiated for different student populations?
- How would problems like this “ramp up the rigor” of mathematics lessons?



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Decoding the Language of the TEKS
&
Interpreting the Mathematics in the TEKS

(K-5 TEKS Breakout Session)





TEKS 3.3.C

The student is expected to explain that the unit fraction $1/b$ represents the quantity formed by one part of a whole that has been partitioned into b equal parts where b is a non-zero whole number.



Which Cuisenaire Rod pairs can be used to represent the unit fraction $\frac{1}{2}$?



Explanation

The length of the yellow rod is $\frac{1}{2}$ the length of the orange rod.

The length of the orange rod is 2 times the length of the yellow rod.



Which Cuisenaire Rod pairs can be used to represent each of the unit fractions:

$1/1$, $1/2$, $1/3$, $1/4$, $1/5$, $1/6$, $1/7$, $1/8$, $1/9$, $1/10$?





Discussion Questions

- How do you know that you have found all the representations for each of the fractions explored?
- Why are some unit fractions represented by fewer rod pairs than others?
- How can this exercise help students gain a deep understanding of unit fractions?



Why are unit fractions
emphasized in the revised TEKS?



TEKS 3.3.D

The student is expected to compose and decompose a fraction a/b with a numerator greater than zero and less than or equal to b as a sum of parts $1/b$.



TEKS 4.3.A

The student is expected to represent a fraction a/b as a sum of fractions $1/b$, where a and b are whole numbers and $b > 0$, including when $a > b$.



TEKS 5.3.J

The student is expected to represent division of a unit fraction by a whole number and the division of a whole number by a unit fraction such as $1/3 \div 7$ and $7 \div 1/3$ using objects and pictorial models, including area models.



Division of a Whole Number by a Unit Fraction:

Richard has 3 pizzas. If Richard gives each of his friends $\frac{1}{2}$ of a pizza, how many of his friends would receive $\frac{1}{2}$ of a pizza?



Division of a Unit Fraction by a Whole Number:

Two cyclists, Anne and Carolyn, are on a trip. Carolyn has $\frac{1}{4}$ gallon of water. If this water is shared equally between the two of them, what fraction of a gallon will each of them have?



TEKS 5.3.L

The student is expected to divide whole numbers by unit fractions and unit fractions by whole numbers.



Terms and TEKS

Grades K,1,2	Grades 3,4,5

Which terms in the revised TEKS are new to these grade levels?

Indicate the revised TEKS next to each term.



Terms of the TEKS

- Which mathematics terms would your teachers have trouble explaining?
- How will you support teachers in transitioning to this new mathematical language?



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Decoding the Language of the TEKS & Interpreting the Mathematics in the TEKS

(6-8 TEKS Breakout Session)



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Alice and Susan were running equally fast around a track. Alice started first. When she had run 9 laps, Susan had run 3 laps. When Susan had completed 15 laps, how many laps had Alice run?



How can this problem be modified to make it a proportional relationship?

Alice and Susan were running equally fast around a track. Alice started first. When she had run 9 laps, Susan had run 3 laps. When Susan had completed 15 laps, how many laps had Alice run?



Which revised TEKS are illustrated
by these problems?

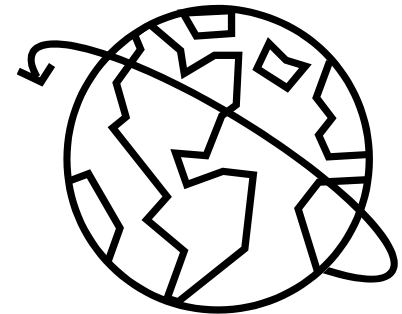


Imagine that you could put a string around the Earth's equator and pull it snug.

Now, add a length of 6 feet to the string and push it away from the equator an equidistant amount.

Which of the following is the largest animal that could walk underneath the newly placed string?

- A. Ant
- B. Frog
- C. Kitten
- D. Goat
- E. Elephant





Terms and TEKS

6 th Grade	7 th Grade	8 th Grade

Which terms in the revised TEKS are new to these grade levels?

Indicate the revised TEKS next to each term.



Terms of the TEKS

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The students were introduced to a system of equations.

HOW MUCH IS EACH SYMBOL WORTH?

			32
			29
			25
			24

33
40
37








Figure This!
Math Challenges for Families

Which is worth more, a
SMILE or a **FROWN?**

		+		+		=	\$40
		+		+		=	\$32
		+		+		=	\$35
		+		+		=	\$37
Sum	\$52		\$50		\$42		

Use Cuisenaire Rod Pairs to Express Unit Fractions

Which Cuisenaire Rod pairs can be used to represent each of the unit fractions:

$1/1$, $1/2$, $1/3$, $1/4$, $1/5$, $1/6$, $1/7$, $1/8$, $1/9$, $1/10$?

number of units

1 (white)	
2 (red)	
3 (lime green)	
4 (purple)	
5 (yellow)	
6 (dark green)	
7 (black)	
8 (brown)	
9 (blue)	
10 (orange)	

Richard has 3 pizzas. If Richard gives each of his friends $\frac{1}{2}$ of a pizza, how many of his friends would receive $\frac{1}{2}$ of a pizza?

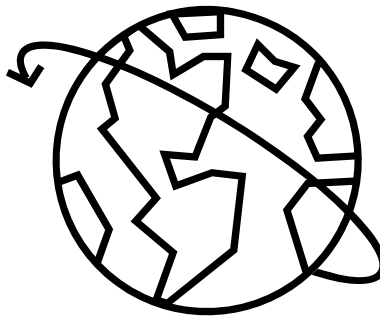
Two cyclists, Anne and Carolyn, are on a trip. Carolyn has $\frac{1}{4}$ gallon of water. If this water is shared equally between the two of them, what fraction of a gallon will each of them have?

String around the Earth

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