TEACHER LEADERS

ENGAGE. EMPOWER. INSPIRE.

Are Ratios Fractions?

Teacher Leader Summit
June, 2017

DEPARTMENT of EDUCATION

Louisiana Believes

Today's Goals

Today we will answer the questions:

1. What is the difference between a fraction, ratio, rate, and unit rate?
2. How do I help my students avoid common misconceptions?

By the end of today's session, you will feel better equipped to support students' developing understanding of ratios, rates, and units rates.

Agenda

- Welcome (2 min)
- Talking Points around Fractions, Ratios, and Unit Rate (25 min)
- Progressions Dive (10 min)
- Do Math!(20 min)
  - Look at prompts from perspective of student learning
  - Look at prompts through adult lens
- Reflection & Close (3 min)

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Talking Points

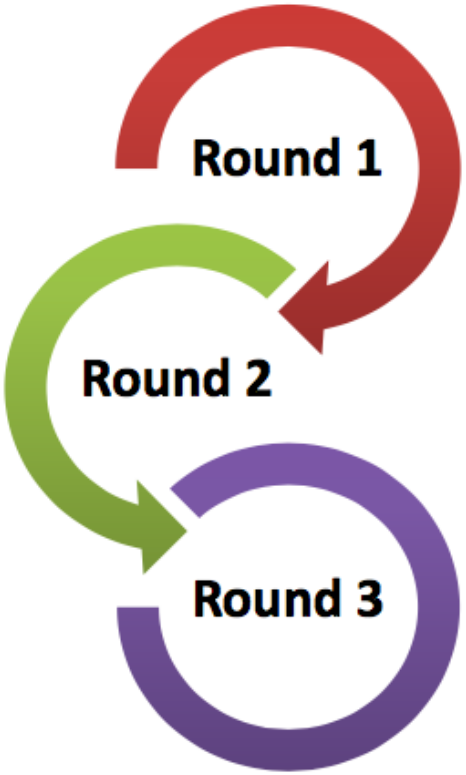
Source: http://bit.ly/1Lngbww

Talking Points

Louisiana Student Standards for Mathematics (LSSM):
Standards for Mathematical Practice

1. **Make sense of problems and persevere in solving them.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others.**
4. **Model with mathematics.**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

Talking Points



•Read printed statement
•Round robin say if you **AGREE**, **DISAGREE**, or are **UNSURE** & say **WHY**
•No one else may comment
•You may change your mind during Round 2 and/or Round 3

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Talking Points

- About which Talking Point did your table disagree most? Why?
- Which Talking Point did you agree or disagree with? How can you prove you were right?
- Did someone say something that changed your mind about a Talking Point? Which Talking Point and what changed your mind?

Source: Kristin Gray http://bit.ly/1VWNrEi

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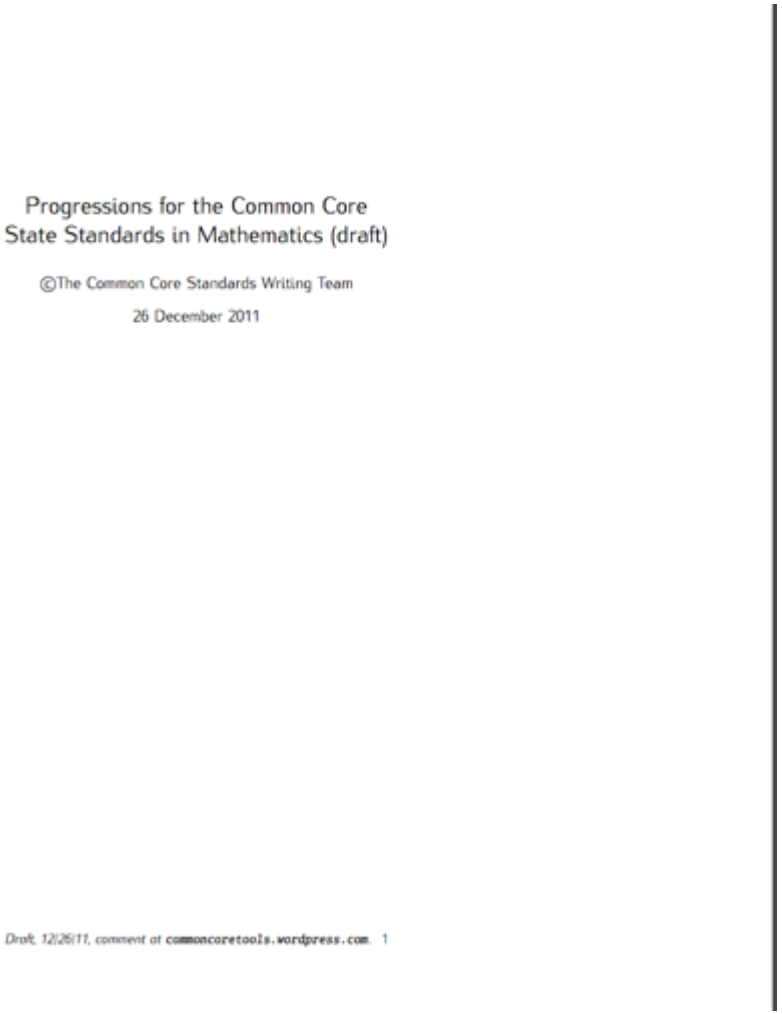
Progressions Deep Dive

As you read…

- ☆- Interesting
- ?-Questions
- !-Important



Progressions for the Common Core
State Standards in Mathematics (draft)

©The Common Core Standards Writing Team

26 December 2011

Draft, 12/26/11, comment at commoncoretools.wordpress.com 1

Progressions Deep Dive

In the progression document, you will see the pervasive use of mathematical language.

- Why is developing common mathematical vocabulary helpful for teachers and students?
- Identify an example of a mathematical term that was defined in the document you read.

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Juice Task

- Do this **entire** task as students would (using manipulatives!) even if you are already comfortable with the material
- Then use your chart paper to address the following for your statement:
  - Is your statement true or false? Why?
    - Be sure to include a visual representation that supports your thinking
  - What misconception about ratios and/or fractions could be addressed through this part of the task?

Juice Task

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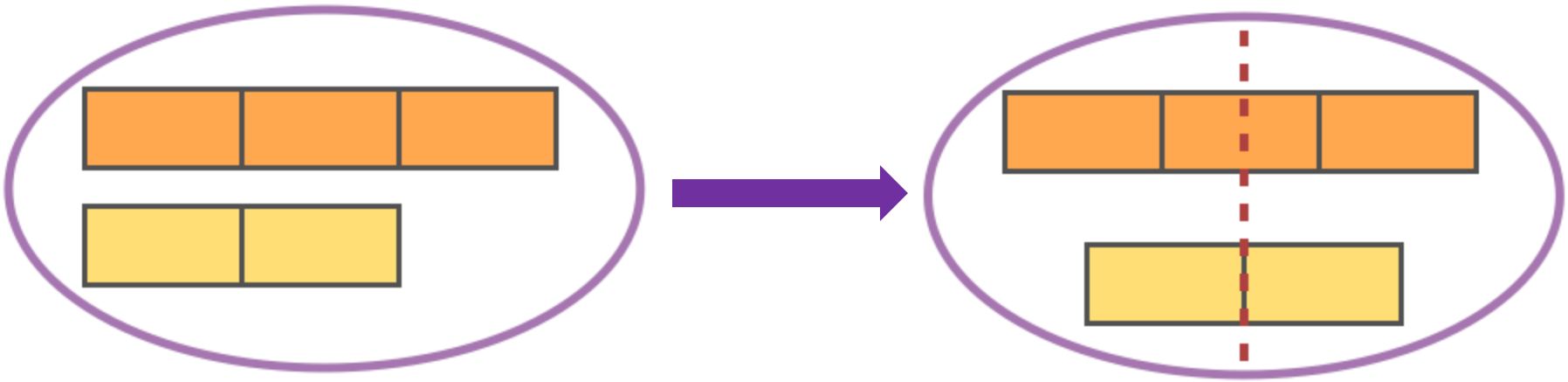
Juice Task

Sara is making punch for a party. The ratio of the amount of orange juice to the amount of pineapple juice in the recipe is 3:2. The pitcher Sara is using holds 20 cups of juice. For each of the following statements, explain whether the statement is true or false and why:

a. There are 3/2 cups of orange juice for each cup of pineapple juice in the punch.
b. 2/3 of the juice in the recipe is pineapple juice.
c. There are exactly 4 more cups of orange juice in the pitcher than pineapple juice.
d. There are exactly 4 cups of pineapple juice in the pitcher.
e. 3/5 of the juice in the pitcher is orange juice.
f. The ratio of pineapple juice to the amount of orange juice in the recipe is 2:3.

Juice Task

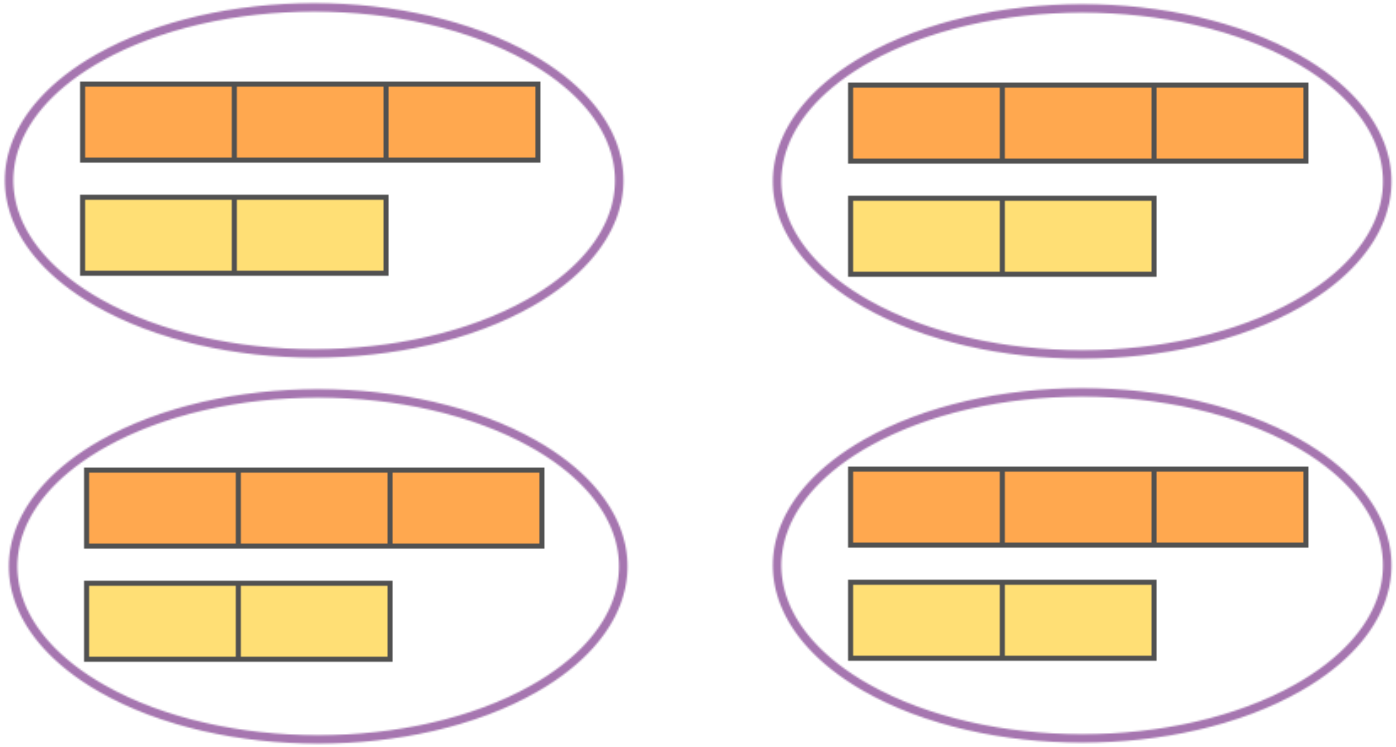
Statement A: There are 3/2 cups of orange juice for each cup of pineapple juice in the punch.



TRUE

Juice Task

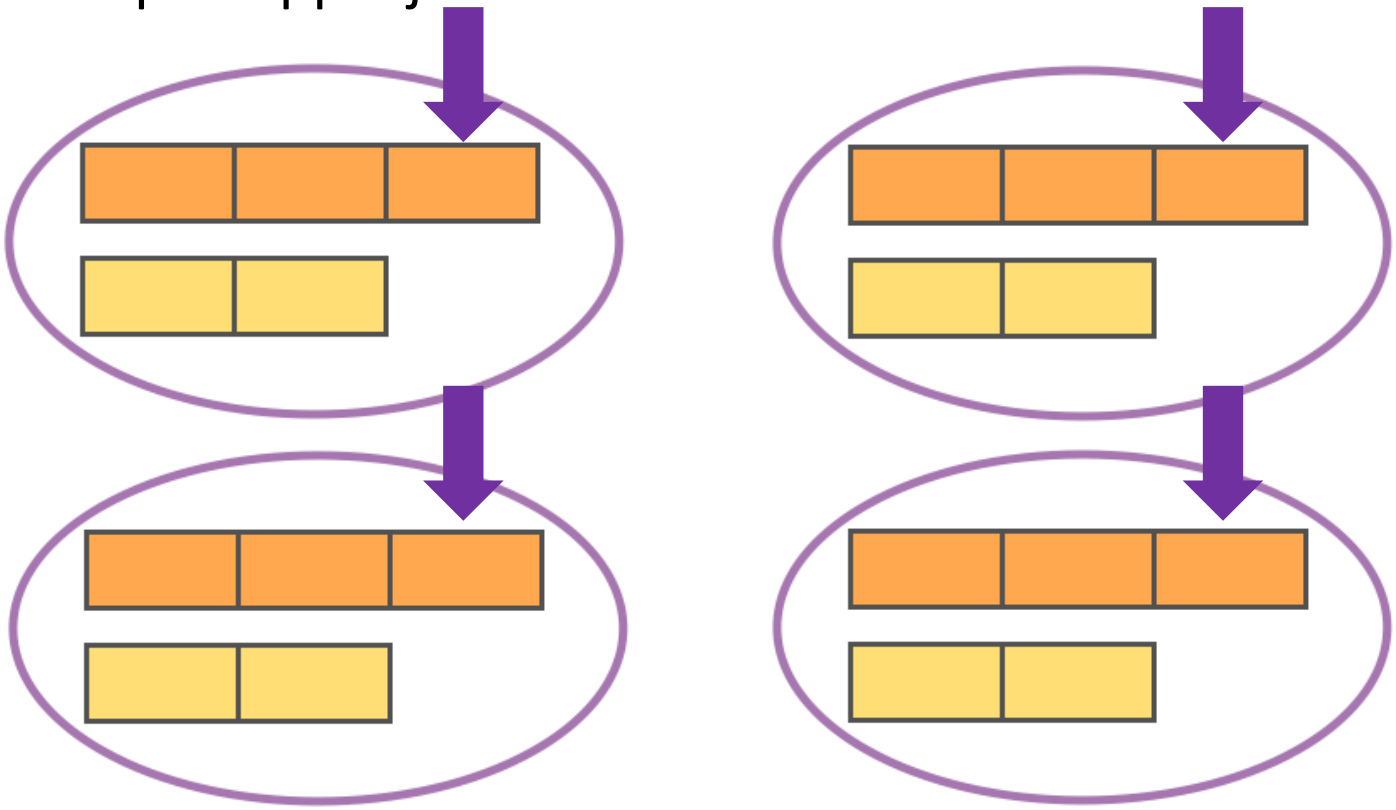
Statement B: 2/3 of the juice in the recipe is pineapple juice.



FALSE

Juice Task

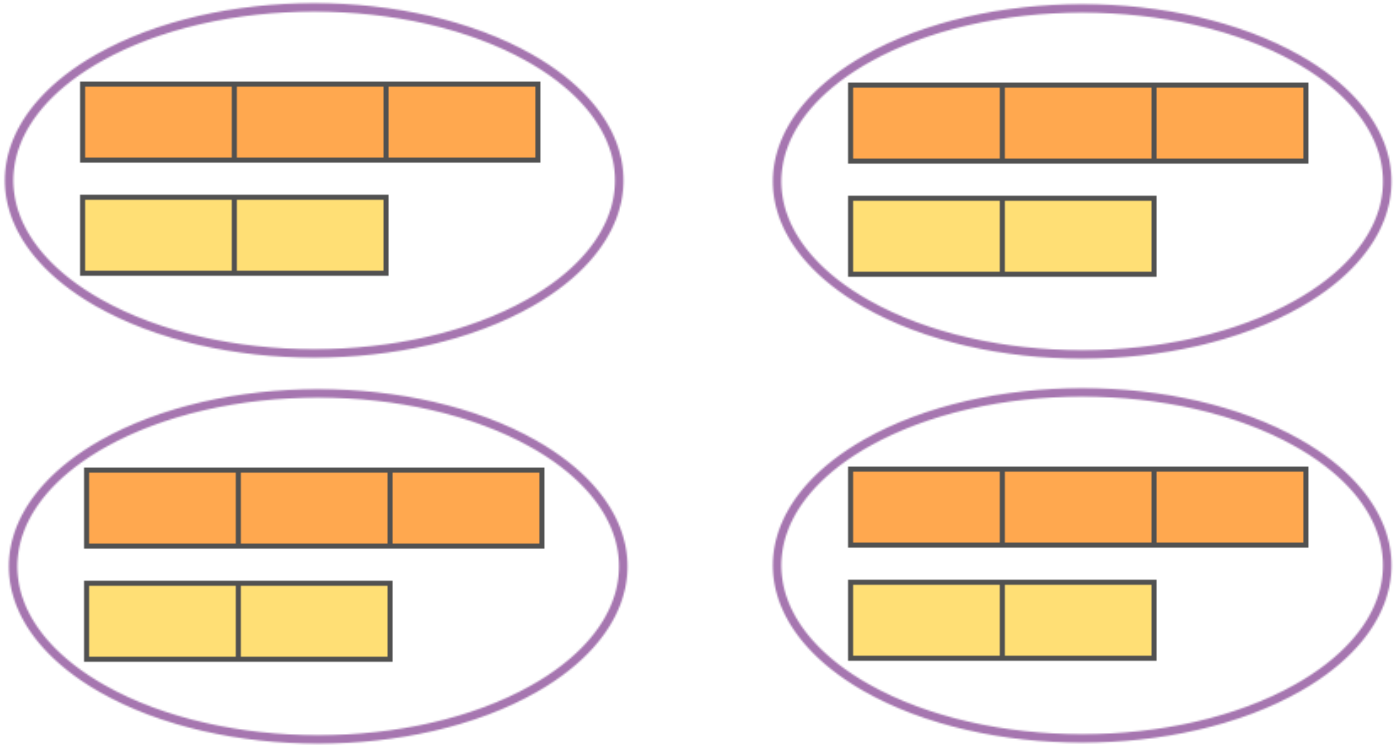
Statement C: There are exactly 4 more cups of orange juice in the pitcher than pineapple juice.



TRUE

Juice Task

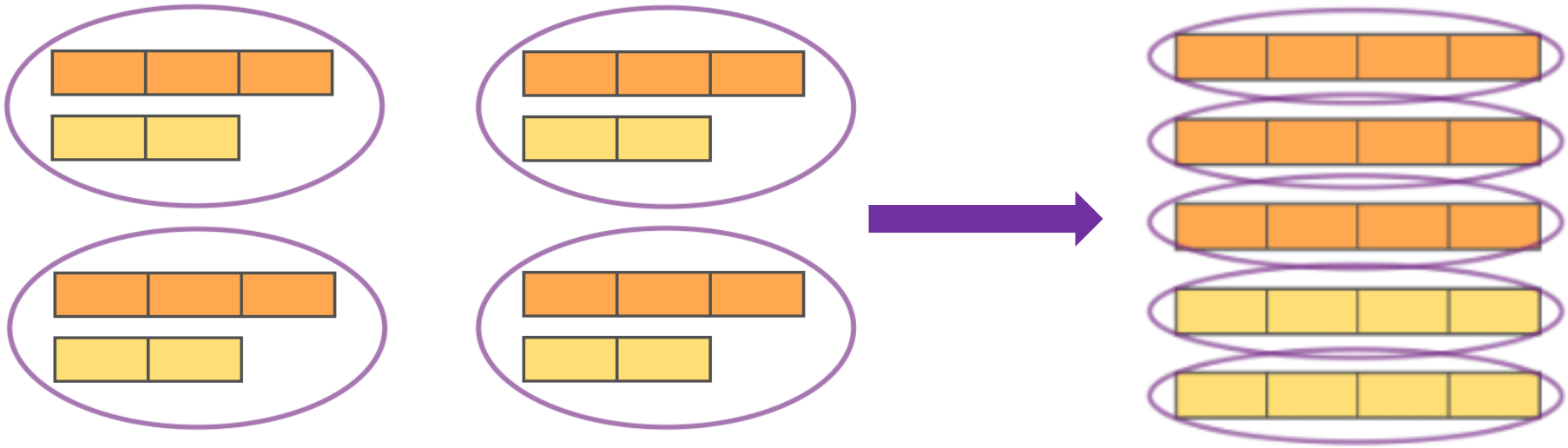
Statement D: There are exactly 4 cups of pineapple juice in the pitcher.



FALSE

Juice Task

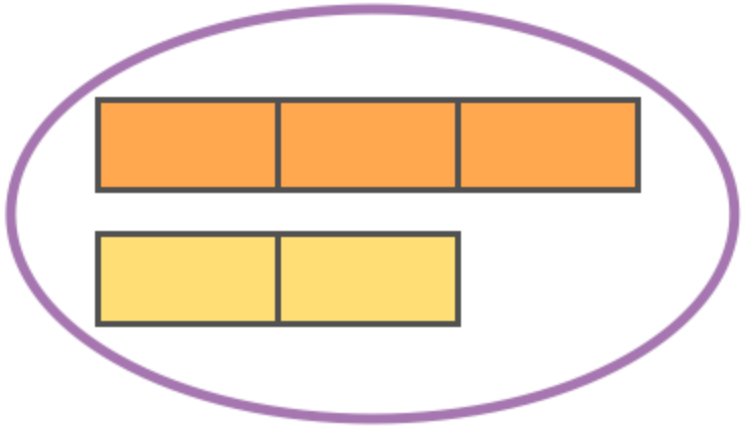
Statement E: 3/5 of the juice in the pitcher is orange juice.



TRUE

Juice Task

Statement F: The ratio of pineapple juice to the amount of orange juice in the recipe is 2:3.



TRUE

Juice Task

What are some elements from this task that help students move along the progression of understanding for the Ratio and Proportional Reasoning domain?

Fraction	Ratio	Rate	Unit rate

Juice Task

Statement A: There are 3/2 cups of orange juice for each cup of pineapple juice in the punch.

Fraction: 3/2 cups is the quantity of OJ in a batch of punch. 3/2 is the value of the ratio.

Ratio: Need to interpret 3:2 – for every 3c of OJ in the punch, there are 2c of PJ.

Rate: 3/2 cups of OJ per 1 cup of PJ. States how many cups of OJ there are per 1 cup of PJ.

Unit Rate: 3/2 – the numerical part of the rate.

Juice Task

Fraction	Ratio	Rate	Unit rate

Fraction: a number on the number line

Ratio: 2 or more related quantities with either like or different units

Rate: quantity with a complex unit, per 1

Unit Rate: the value of the ratio, numerical part of the rate

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Closing Discussion

- Did your thinking change?
- If so…
  - which Talking Point ?
  - what changed your mind?