Grade 5

Exploring Fractions and Problem Solving

Pulse check

1) In what topics are you seeing the most growth and learning with your students?
2) What topics do you feel you need to revisit before the end of the year?

Our Plan

Explore Multiplication of Fractions Tasks
Analyze Standards
Explore Fractions Measurement Tasks

Let's get warmed up

Count around the class– 3/8ths

What number do you think we will end on? Why?

Let's count.

Count Around the Class

3/8	27/8	51/8	75/8
6/8	30/8	54/8	78/8
9/8	33/8	57/8	81/8
12/8	36/8	60/8	84/8
15/8	39/8	63/8	87/8
18/8	42/8	66/8	90/8
21/8	45/8	69/8	93/8
24/8	48/8	72/8	96/8

- Which simplify to whole numbers?
- Which simplify to fractions with 1/2?
- Which simplify to fractions with 1/4 or 3/4?
- Which simplify to fractions with either 1/4, 3/4, or 1/2?

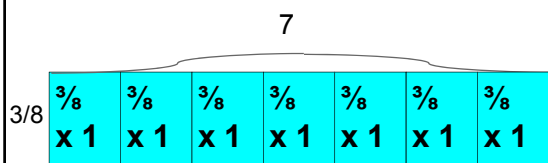**Roast Beef Sandwiches**

You put ⅜ pounds of roast beef on each sandwich. At the start of the party there are 7 sandwiches on the platter. How many pounds of roast beef were on the platter?
Use manipulatives and pictorial drawings to model this.

Roast Beef

What do your representations look like?

How do your representations match the problem context?

Area Model for how much roast beef

Area Model for how much roast beef

7

| 3/8 | ³⁄₈ x 1 | ³⁄₈ x 1 | ³⁄₈ x 1 | ³⁄₈ x 1 | ³⁄₈ x 1 | ³⁄₈ x 1 | ³⁄₈ x 1 |

³⁄₈ added together 7 times… what grade is this introduced?

Roast Beef Part Duex

At the end of the party there were 2 and ¾ sandwiches left. Remember there was ⅜ of a pound of roast beef on each sandwich. How much roast beef is left? How much roast beef was eaten?

Use manipulatives and pictorial drawings to solve this task.

¾ of 3/8 with area model
    4 columns, 8 rows
        shaded 3 of 4 and 3 of the 8
        overlap– 9 rectangles of 32
2 groups of 3/8 … 6/8

Roast Beef

What do your representations look like?

How do your representations match the problem context?

Area Model for how much was left

Area Model for how much was left

2 and 3/4

3/8 | ⅜ x 1 | ⅜ x 1 | ⅜ x ¾

What about how much was eaten?

What about how much was eaten?

7 - 2 ¾ = __
__ x ⅜ = __

Representations?

Things to consider...

How is ⅜ x 7 different from ⅜ x 2 ¾ for your students?

What are easier numbers than ⅜ x 7 that involve multiplying a fraction by a whole number?

Juicing it Up

There are 2 and ⅔ cups of juice concentrate in each bottle. The rest of the bottle is filled with water. If there are 4 bottles how much juice is there?

Use manipulatives and pictures to solve this task.

Juicing it Up

What do your representations look like?

How do your representations match the problem context?

Area Model for how much juice

Area Model for how much juice

4

2 ⅔ | **2 ⅔ x 1** | **2 ⅔ x 1** | **2 ⅔ x 1** | **2 ⅔ x 1**

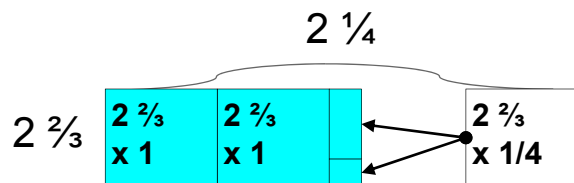Mixed number by a whole number… what grade is this introduced?

Juicing it Up

What do your representations look like?

How do your representations match the problem context?
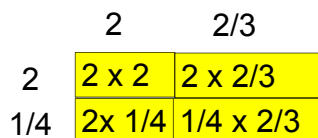
Juicing it Up

After children drink some there is enough liquid left to fill 2 ¼ bottles. How much juice concentrate is left? How much juice concentrate did students drink?

Area model for how much juice left

Area Model for how much juice left

2 ¼

2 ⅔

| 2 ⅔ x 1 | 2 ⅔ x 1 | | 2 ⅔ x 1/4 |

Mixed number by a mixed number… what grade is this introduced?

2 and 2/3 x 2 and ¼ -- area model?

	2	2/3
2	2 x 2	2 x 2/3
1/4	2x 1/4	1/4 x 2/3

What order makes sense for multiplication?

Mixed number by mixed number- 5th
Fraction less than 1 by fraction less than 1- 3rd
Mixed number times whole number- 2nd
Fraction less than 1 by whole number- 1st
Fraction less than 1 by mixed number- 4th

Whole divided by unit
Unit divided by whole

Total amount divided by (size of group or number of groups)

Multiplication with fractions

Look at the unpacking document
    5.NF Domain

5.MD…. fractions are here?

5.MD…. fractions are here?

5.MD.2. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.
What operations?

Let's look at some data

1 and 3/8 inches	1 and 7/8 inches
1 and ¼ inches	1 and ½ inches
1 and ½ inches	1 and ¼ inches
1 and ¾ inches	1 and ¼ inches
1 and 5/8 inches	1 and 3/8 inches
1 and ¼ inches	1 and ¼ inches
1 and 5/8 inches	1 and 1/8 inches

Line Plot

Operations-
Think of 3 questions that you could ask that would involve operations with the fractional values on the line plot.

Line Plot

Be careful of…
Questions that require Students to add up multiple data points
Questions that require Students to find an average
(total is 25 inches and there are 12 data points:
25 inches divided by 12 or 2 and 1/12 inches

What if my students don't understand fractions…

Where should you focus?

Grade 1 and 2
• Take a rectangle and fold it into 2 equal pieces
• How do you know you have 2 equal pieces?

• Do the same with 4 equal pieces
• How do you know you have 4 equal pieces?

My students don't understand fractions…

Where should you focus?
Grade 3
• Take a piece of paper and think of the top edge as a number line- 0 is the left corner and 1 is on the right corner
• Fold the paper into 2 equal pieces
• Fold the paper into half again
• Fold the paper into half again

Fractions: CRA

- Concrete- folding paper or partitioning regions with folding/cutting
- Representational- drawing pictures or number lines
- Abstract- equations and numbers

Decimals in between

You will need decimal cards (set A and set B)
Set your benchmarks out (0, ½, and 1)
Each player gets 6 decimal cards
Place cards in increasing (ascending) order
The round is over when neither player can place any more cards.
        Rules on p. 45 of Unit 6 TE

Decimals in between

Math concepts?
Differentiation for high fliers?
Differentiation for struggling students?
How would you assess students as they play?

Decimals in between

Look at the dialogue in blue on p. 45
Read it.
What is the "big" math concept?
What do you notice about the questions in blue?

Dividing Decimals

Discuss ways to solve:
7.2 divided by 0.24?

Draw a picture/model to support your work.

3A.7

Solve and give your reasoning.

1. $86 \times 3.4 =$ 29.24   292.4   2,924

2. $13.68 \div 72 =$ 0.19   1.9   19

Turn to 3A.7 in Unit 6

With someone around you-
What is the mathematical goal?
What are students doing in this lesson?
Why do you think the discussion is important?
   What other questions could you also ask to build onto this discussion?

Units → Test Prep

For the content that is in this unit what is your plan for preparing students for the End of Year test?

What are your plans for building on your students' prior knowledge about mathematics?

Effective Test Prep

What should students be doing?
What is the role of the teacher?
What should be the emphasis/focus?

What a lesson *could* look like

- Opening ten minute math/number talk- whole class works in pairs/small groups
- Opening discussion about concepts
- Task to explore while the teacher poses questions
- Discussion (explanation from students about strategies), possible teaching by teacher
- Follow up tasks or activities- possible small group instruction or support
- Closing discussion

Questions?

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