lesson# 2

TEACHING THE CORE – EXEMPLAR LESSON PREPARATION GUIDE, MATHEMATICS

Thank you for participating in the Teaching the Core exemplar video project. We appreciate your important contribution to creating these valuable professional development resources for teachers across the country. The Teaching the Core exemplar video project is focused on capturing lessons that are exemplars of the Common Core State Standards in practice. In order to support you in planning for this lesson we have developed the following lesson preparation guide. When planning your lesson for video capture please follow the steps outlined below.

Step 1: Complete the below demographic information.

School Name: Lena Juniper Elem.	Teacher Name: Denise Coverley- Poxton
Date: March 5, 2014	Period / Time (e.g. 8:45-9:30): 10:30-12:00 am
Room Number: 44	Grade Level: 5th Grade
Demographics of the class (e.g., % ELL, % SPED, other relevant): ELL 4% , Exited ELL: 9%, student Attendance Review Board 9% SPED: 8% Gifted Talented: 14% Intervention: 33% School Data: 48% Free Lunch, 30% ELL	

Step 2: Determine the standard(s) to be addressed in this lesson.

For the purposes of this project, we are prioritizing the standards in the chart below. For K-8, lessons should target the grade level cluster(s), grade level content standard(s) or part(s) thereof as outlined in the table below. These priorities represent a subset of the major work[1] of the grade for K-8. For high school, reference the Widely Applicable Prerequisites[2] for a list of domains and clusters to focus on with the concepts listed in the table below as the top priority.

Gr	First Priority	Close Second
K	K.CC	K.OA
1	1.NBT	1.OA
2	2.OA.A, 2.OA.B	2.NBT
3	3.OA (Excluding 3.OA.9)	3.NF, 3.MD.C
4	4.NF, 4.NBT.B	4OA.A
5	5.NF, 5.NBT.B	5.MD.C
6	6.RP.A, 6.EE, 6.NS.1 (showing in particular how it arises from 5.NF.7)	6.NS.C
7	7.RP.A, 7.NS.A	7.EE.3
8	8.EE.B, 8.EE.C, 8.F.A	8.F.B, 8.SP.3 (supporting cluster)
HS	• Variety of modeling tasks. • Multi-step quantitative problems with lots of units and rates • Applications leading to 2 simultaneous linear equations in two variables • Applications of linear, quadratic , and exponential functions • Seeing and using structure practice with symbolic manipulation • "Thinking like a mathematician" (e.g., making a conjecture, checking consistency, generalizing) • Working with y=mx + b	If the lesson targets geometry in HS: the lesson should be focused on using algebra to solve measurement problems and/or the use of coordinate geometry

a. Note the cluster(s), standard(s) or parts thereof addressed in this lesson.
CCSS - Fractions - 5NFA1, 5NFA2, 5NFB6, 5NFB7
- Measurement/Data - 5MDB2

b. Note the aspect(s) of rigor called for by the standard(s) being addressed in this lesson: Conceptual Understanding, Procedural Skill and Fluency, and/or Application.
Rigor - data into fractions and Mixed numbers ~~and~~ adding fractions with uncommon denominators,
(Reminder: the aspect(s) of rigor called for by the standard(s) being addressed should also be the aspect(s) of rigor targeted in this lesson)
Procedural - multiple strategies shared
Application - Real world Problem solving - class order of pizza

[1] www.achievethecore.org/focus
[2] www.achievethecore.org/prerequisites

Step 3: Plan the Lesson

a. Use the grade-appropriate Instructional Practice Guide (achievethecore.org/math-common-core/instructional-practice) to plan your lesson. An exemplar lesson will meet all of the indicators for Core Action 1 and many, if not all, of the indicators for Core Action 2 and 3. Please write your lesson plan using the lesson plan format with which you are most familiar. Be sure to note:
   - Any materials you will use in the lesson (including multi-media)
   - Where this lesson fits within the context of the larger unit – what was covered before this lesson, and what will be covered after this lesson
   - Any student activities and where in the classroom those activities will take place

b. Reflect on the lesson you have just planned and note which of the Core Action indicators you think this lesson illustrates particularly well.

Core Action 1: grade level cluster, grade level content builds on prior knowledge of data and fractions

Core Action 2: High quality questions
Variety of strategies and solutions
Discussion

Core Action 3: whole class and small group discussion
multiple tools and multiple strategies

c. Tell us anything else you feel is important to know about this lesson that is not captured above or in the lesson plan.

use of Accountable Talk during discussions

Step 4: Share the Lesson

a. At least 10 days before your lesson is recorded, please share all lesson materials (this completed document, lesson plan, handouts, and text) with [INSERT DISTRICT CONTACT(s)]. [INSERT DISTRICT CONTACT(s)] will review and provide you with feedback on your lesson at least one week before your lesson is recorded.

b. At least three days before your lesson is recorded, email the electronic versions of all lesson materials (this completed document, lesson plan, handouts) to lessonmaterials@teachingthecore.org.

c. The day of the lesson, attach a copy of your lesson plan and any student handouts to this document and give it to the videographer.

d. After the lesson, provide the videographer with samples of student work. If it is not possible to make copies of the student work, the videographer can take a picture. If you are not able to provide student work immediately after the lesson you can also bring samples to your interview.

Step 5: Prepare for Filming

The filmmaker will make every attempt to minimize the disruption to your classroom. In order to support this goal, we ask that you please keep the following in mind as you prepare for the day of the video-taping.

We ask that you:

a. Use black whiteboard markers – they show up better on film. The filmmakers will bring extra black markers in case they are needed.
b. You will need to wear a wireless microphone so that your voice is captured clearly on the video. Wear clothing that has a pocket or belt on which to place a transmitter as well a top which will allow a small microphone to clip on easily.

Common Core Math Learning Plan Template

Lesson Title: Pizza Anyone?

Author Name: Denise Coverley-Paxton

Contact Information: dpaxton@washoeschools.net

Appropriate for Grade Level(s): 3-5

CCSS(s) Language Arts/Math:
CCSS.Math.Content.5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
CCSS.Math.Content.5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.
CCSS.Math.Content.5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
CCSS.Math.Content.5.NF.B.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[1]
CCSS.Math.Content.5.MD.B.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. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*
Mathematical Practices Make sense of problems and persevere in solving them .Reason abstractly and quantitatively. Construct viable arguments and critique the reasoning of others. Model with mathematics. Use appropriate tools strategically. Attend to precision .Look for and make use of structure. Look for and express regularity in repeated reasoning.
CCSS.ELA-Literacy.RI.5.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 5 topic or subject area.*
CCSS.ELA-Literacy.SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly
CCSS.ELA-Literacy.SL.5.4 Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
CCSS.ELA-Literacy.SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.

Type of Lesson: Whole Class Discussion and Math Task with Fractions and Data Collection

Student Readings (list): Stuffed with Pizza

Supplies: Chart paper (one per group), Rectangular bin/shape for tracing, markers, scissors, Pizza Pan (one per group) and Pizza Fractions eighths (one large one to fit on pizza pan), Fraction Strips in eighths (class set) , Circle Fractions in eights (class set), glue, interactive/dry erase board, Data Sheets (class set)

Total Time Needed: 90 Minutes

The pages that follow the Learning Plan Template includes student readings and reading strategy/questions, source(s), handouts, assignment sheet, self-assessment/reflection and a rubric related to this lesson.

Lesson Outline:

Time Frame (e.g. 15 minutes)	What is the teacher doing?	What are students doing?
5 min.	Place students into groups of 4. Give instructions for creating group Window Frame. 1. Place rectangular object/bin in the middle of the chart paper, trace around it to form a rectangular shape in the middle of the frame. 2. Draw a line out from each corner of the rectangle to the corner of the chart paper. The window frame should have 4 working areas. 3. Cut apart Pizza Pan Fractions and place on pizza pan. Cut apart the Fraction Sticks, Circle Fractions, Stuffed with Pizza, and Data Tables. (one set per student) 4. Glue Stuffed with Pizza at the top of their work area (under the rectangle). Glue Group Data Collection Table to the left of the work area. Glue the Class Pizza Fraction Table to the right of the work area.	Students get into groups of 4. Students create Window Frame. *see attached diagram
5 min.	Whole Class Discussion: Adding Fractions 1. Write on the board ¼ + ¾ = 2. Ask students to write the problem and choose a strategy to solve the problem. Ask them to use a visual representation. Call on students to come to the board and share their strategy for solving the problem. Ask students to comment on the shared strategy or share one of their own. *Monitor discussions and student use of Accountable Talk	1. Students write the problem ¼ + ¾ = ____, and use a strategy to solve their problem. 2. Students discuss strategies shared using "Accountable Talk."
5 min.	Whole Class Discussion: Adding Fractions 1. Write on the board ¼ + 2/6 = ____ . 2. Ask students to write the problem and choose a strategy to solve the problem. Ask them to use a visual representation. Call on students to come to the board and share their strategy for solving the problem. Ask students to comment on the shared strategy or share one of their own. *Monitor discussions and student use of Accountable Talk	1. Students write the problem ¼ +2/6 = ____, and use a strategy to solve their problem. 2. Students discuss strategies shared using "Accountable Talk."

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	*This is a review to ensure they have the background knowledge needed to be successful in the math task.	
10 min.	Math Task: Adding Fractions 1. Assign students to complete the story problem "Stuffed with Pizza" individually at their work area. 2. Instruct students to pick a strategy that helps them solve the problem and show their work on their window frame. Tell students they will be sharing their strategy and answers in their group.	1. Students complete the story problem "Stuffed with Pizza" individually. Show the steps for problem solving: Read the story, underline the question, circle the data needed to solve the problem, choose a strategy to solve the problem, answer the problem. 2. Students may use circle fractions, fraction sticks, or algorithm to solve the problem. All work is written on the window frame.
5 min.	Instruct groups to share their strategy and answers to the story problem. Teacher monitors groups. *Monitor discussions and student use of Accountable Talk	Students share their strategies and use "Accountable Talk". Students may make corrections to their work if needed if they did not get the correct answer agreed upon by the group, or if they would like to write another strategy that was shared.
10 min.	Whole Class Discussion: Data Collection 1. Write the following problem on the board: (School Name) has earned a pizza party for reading the most minutes during a District wide Read-A-Thon. Four different kinds of pizza will be ordered (Cheese, Pepperoni, Meat, and Dessert). How will	1. Students answer the following question by stating a claim with reasoning and evidence. (School Name) has earned a pizza party for reading the most minutes during a District wide Read-A-Thon. Four different kinds of pizza will be ordered (Cheese, Pepperoni, Meat, and Dessert). How will

[redacted]

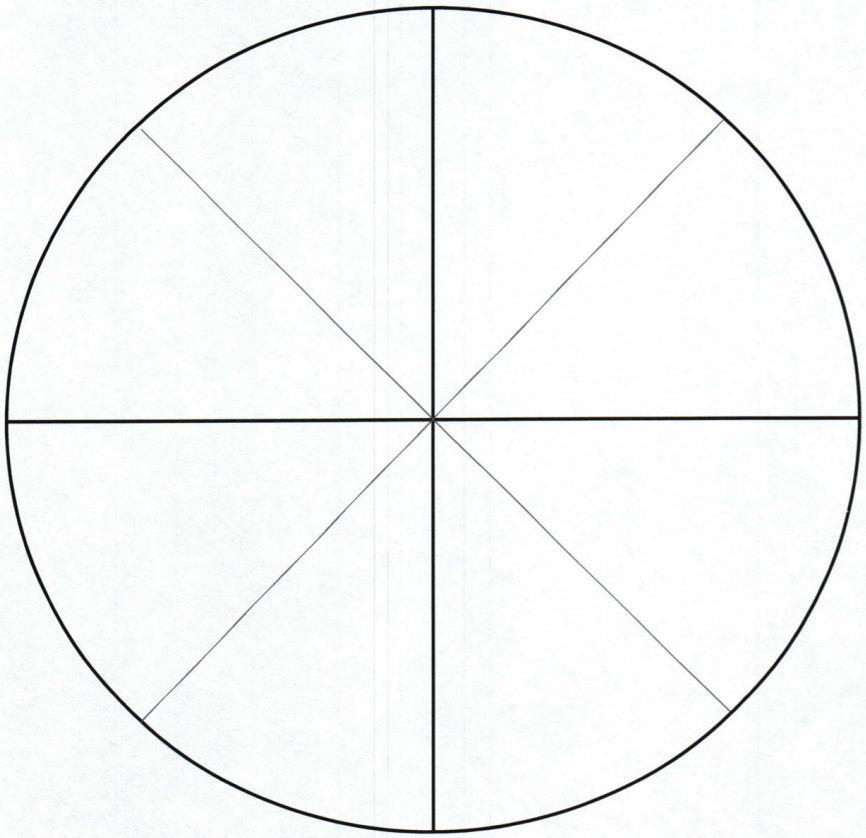
	4. Instruct the students that each person in every class will be asked which pizzas they would like for their two slices. They can order a slice from two different kinds of pizza, but they can only order two slices. *Monitor discussions and student use of Accountable Talk	
15 min.	Math Task: Data Collection 1. Assign groups to collect the data for their group on the Data Tally Table. 2. Once groups have collected their data, assign students to individually complete the Data Fraction Table. All fractions must be in recorded in lowest terms (4/8, 4 out of 8 slices = ½ of pizza). 1 Whole pizza = 8 slices. 3. Instruct students to share their strategies to convert data into fractions and answers in their groups. *Monitor discussions and student use of Accountable Talk	1. Groups collect the data for their group on the Data Tally Table. 2. Students individually complete the Data Fraction Table. All fractions must be in recorded in lowest terms (4/8, 4 out of 8 slices = ½ of pizza). 1 Whole pizza = 8 slices. Students use a variety of strategies to complete the table: Fraction Strips, Circle Fractions, or algorithm. All work must be recorded on the window frame. Students may glue any of their fraction strips or circles they used to solve the problem to their window frame. 3. Students share their strategies to covert data into fractions. Students may make changes to the work and the answers or add a new strategy that was shared.
15 min.	Whole Class Discussion: Converting Data into Fractions 1. Students share their Data, strategies, and fractions. 2. Discuss: How many of each type of pizza should we order for our class? *Be sure that students consider what to do with the fraction if they have a mixed number. What happens if we ignore the fraction? Can we order a fraction of a pizza? *Monitor discussions and student use of Accountable Talk	1. Students share their Data, strategies, and fractions. 2. Discuss: How many of each type of pizza should we order for our class? *Be sure that students consider what to do with the fraction if they have a mixed number. What happens if we ignore the fraction? Can we order a fraction of a pizza?

Description of Lesson Assessment: Students will demonstrate their knowledge of problem solving, choosing a strategy, converting data in fractions, and classroom discussion during each phase of the Math Task/Discussion, Window Frame work, and Rubric/Teacher Observation.

How will students reflect on the process and their learning? Students will work individually and in small groups building layer by layer their understanding of problem solving, data collection, adding fractions and mixed numbers, and remainders.

The pages that follow the Learning Plan Template includes student readings and reading strategy/questions, source(s), handouts, assignment sheet, self-assessment/reflection and a rubric related to this lesson.

Pizza Fractions



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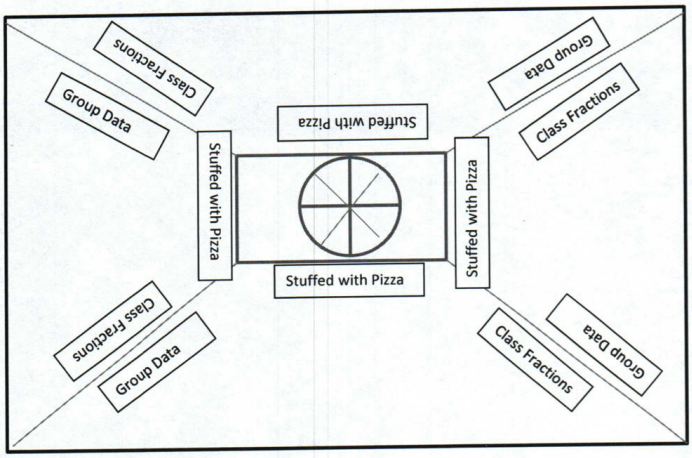
Window Frame



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Accountable Talk

*I believe_____because.....

*I want to agree with _____because.....

*I would like to build on what _____said.....

*I would like to disagree with what _____said.....

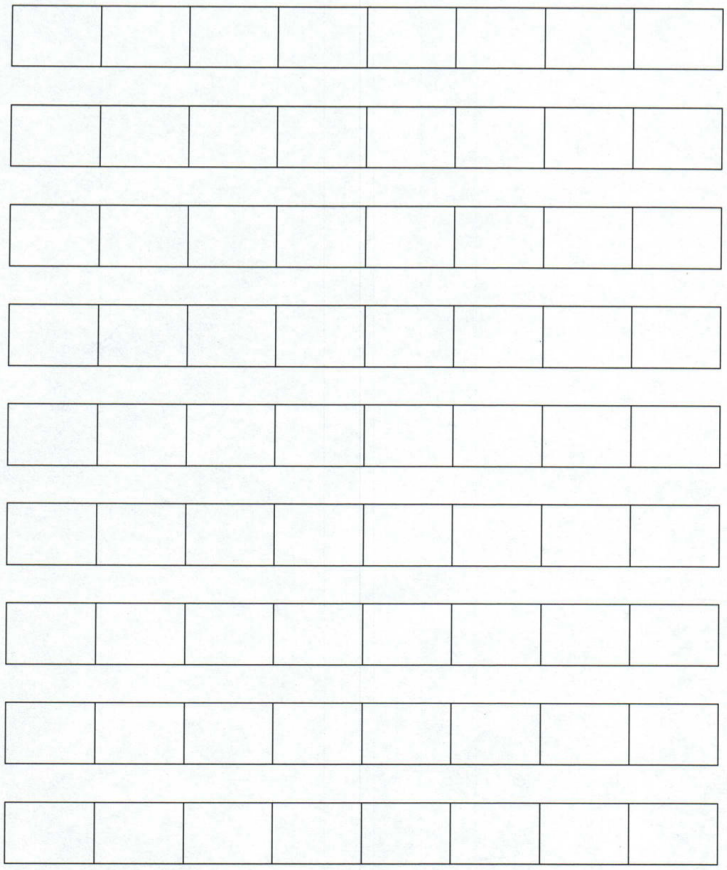
*I need clarification on.....

*In other words, what you said was.....

*Can you give an example?

*I can give an example of that.....

Fraction Sticks



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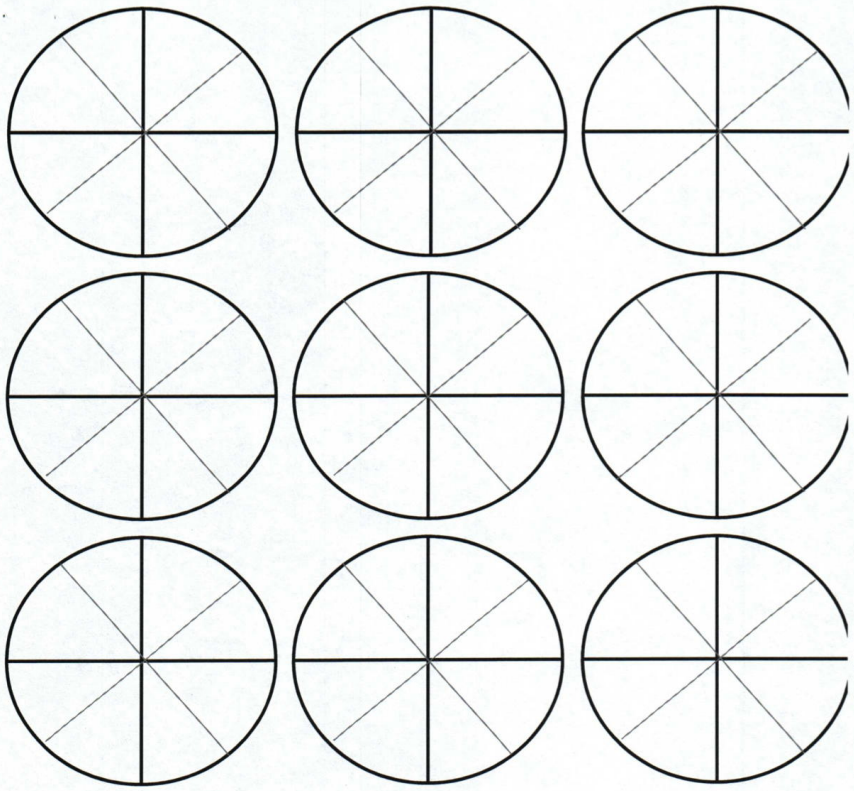

Fraction Circles

The pages that follow the Learning Plan Template includes student readings and reading strategy/questions, source(s), handouts, assignment sheet, self-assessment/reflection and a rubric related to this lesson.

Group Data Collection:

Data Tally Table

Group Name	Cheese	Pepperoni	Meat	Dessert
Total Slices				

1 whole pizza = 8 slices

Data Fraction Table

Pizza	Total Slices	Fraction	Lowest Terms
Cheese			
Pepperoni			
Meat			
Dessert			

- - - - - Cut on the dotted line - - - - - -

Class Pizza Fraction Table

Group Name	Cheese	Pepperoni	Meat	Dessert
1				
2				
3				
4				
5				
Total Pizzas				

1 whole pizza = 8 slices

Use the Group fractions to find the total number of each type of pizza that needs to be ordered.

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Stuffed with Pizza

Tito and Luis are stuffed with pizza! Tito ate one-fourth of a cheese pizza. Tito ate three-eighths of a peperoni pizza. Tito ate one-half of a mushroom pizza. Luis ate five-eighths of a cheese pizza. Luis ate the other half of the mushroom pizza. All the pizzas were the same size. Tito says he ate more pizza than Luis because Luis did not eat any peperoni pizza. Luis says they each ate the same amount of pizza. Who is correct? Choose a strategy and show all your mathematical thinking on your Window Frame.

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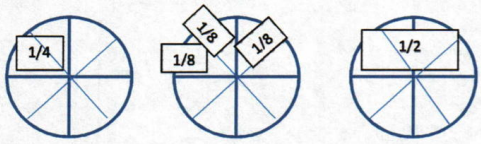
Tito: ¼ + 3/8 + ½ =

1/8	1/8 = 1/4						

1/8	1/8	1/8 = 3/8					

1/8	1/8	1/8	1/8 = 4/8=1/2				

¼ + 3/8 + ½ = 9/8 = 1 1/8 , Tito ate 9 slices of pizza or 1 whole pizza and 1 slice



2/8 + 3/8 + 4/8 = 9/8 =1 1/8 , Tito ate 9 slices of pizza or 1 whole pizza and 1 slice

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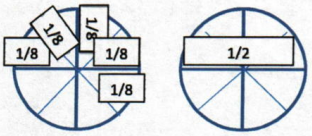
Luis: 5/8 + ½ =

1/8	1/8	1/8	1/8	1/8 = 5/8			

1/8	1/8	1/8	1/8= 4/8= 1/2				

5/8 + ½ = 9/8 = 1 1/8, Luis ate 9 slices or 1 whole pizza and 1 slice



5/8 + 4/8 = 9/8 = 1 1/8, Luis ate 9 slices or 1 whole pizza and 1 slice

Luis is correct, they both ate 9 slices or 1 whole pizza and 1 slice

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