

5E Lesson Plan
Mr. Gallon

teachHOUSTON Student Name:

Mentor Teacher Name:

Grade Level: 4th Grade

Lesson Teaching Date:

Concept(s): Conversion is the act of obtaining equivalent value, as of money or units of measurement, in an exchange or calculation. Specifically, measurement conversion is the act of obtaining an equivalent measurement. Converting measurements is an important real life skill and is required to compare, order, or perform operations on measurements with different units.

TEKS:

The student is expected to:

4.11(B) performs simple conversions between different units of capacity within the customary measurement system.

Objectives	Evaluation Questions for each Objective
1. Choose an appropriate capacity measure for real life situations.	
2. Convert customary capacity measurements from larger to smaller or vice versa.	
3. Use conversions between different units of capacity within the customary measurement system to solve problems from real-life situation.	

Materials List and Advanced Preparations:

For each student:

- Assessment

For each group:

- Mr. Gallon body & limbs
- Scissors
- Glue

For the teacher:

- Holiday Party Problem transparency
- Rice
- An empty gallon milk container
- Measuring cups: quart, pint, and cup
- Punch Recipe transparency
 - The ingredients for the recipe

ENGAGEMENT		
What the Teacher Will Do	Eliciting Questions/ Student Responses	What the Students Will Do
Place Holiday Party Problem transparency on the overhead. “I need your help. I am planning a party and I have invited 23 people to the party. I have a punch recipe that makes 1 ½ gallons of punch. I want to serve each person a cup of punch, but I don’t know if there will be enough for everybody. ”	Will I have enough punch for everyone? Why or why not? <i>-Yes, because 1 ½ gallons seems like a lot</i> <i>-No, my family can drink a whole gallon of milk and there are a lot less than 23 people in my family.</i> About how many people do you think I can serve a cup of punch if I make 1 ½ gallons of punch for the party? <i>Any answer welcome</i>	Students will make predictions about the amount of punch.
	What information do you need to know in order to solve this problem? <i>You need to know how many cups are in a gallon.</i>	Students will discuss the problem with group members and offer suggestions on how to solve the problem.

TRANSITION
We decided we need to know how many cups are in a gallon. In our next activity we will use measuring cups to actually find out how many cups are in a gallon.

EXPLORATION

What the Teacher Will Do	Eliciting Questions/ Student Responses	What the Students Will Do
Distribute the Mr. Gallon body and limbs to each group.		
<p>Have a large pan filled with rice, an empty milk gallon container in the center of the pan, and a quart measuring cup outside the pan.</p> <p>Hold up the milk container for everyone to see.</p>	<p>What is the capacity of the milk container? <i>1 gallon</i></p> <p>Besides milk, what other things might be measured with gallons? <i>Gasoline</i> <i>Juice/punch</i> <i>Amount of water a household uses in a month</i></p>	
<p>Hold up the quart measuring cup.</p>	<p>What is the capacity of this measuring cup? <i>1 quart</i></p> <p>How many quarts of rice do you think it will take to fill the empty milk gallon container? <i>Any answer welcome</i></p>	<p>Students will make predictions about the number of quarts in a gallon by looking at each of the containers.</p>
<p>The teacher will chose a group to check the class' prediction by the containers and rice.</p>		<p>Two students will demonstrate how many quarts can fit in a gallon by filling the quart measuring cup with rice and pouring it into the gallon container until it is full. The 3rd student will record the information on the board (1 gallon = 4 quarts). The 4th student will glue the quart parts of Mr. Gallon to the model (the quart parts will be Mr. Gallon's arms and legs).</p>

		<p>The remainder of the class will glue the quart parts of Mr. Gallon to their own models.</p>
<p>The teacher will check for student understanding by asking questions and calling on individual students.</p>	<p>How many gallons are equal to 8 quarts? <i>2 gallons</i></p> <p>How many gallons are equal to 2 quarts? <i>1/2 gallon</i></p> <p>How many quarts are in 3 gallons? <i>12 quarts</i></p> <p>How many quarts are in 10 gallons? <i>40 quarts</i></p> <p>Which is greater: 6 gallons or 20 quarts? Why? <i>6 gallons because 6 gallons = 24 quarts</i></p>	<p>Students will use their Mr. Gallon Man models to answer questions.</p>
<p>Hold up gallon and quart containers. “We have seen what a gallon container and a quart container look like.”</p> <p>Hold up pint measuring cup.</p> <p>The teacher will chose a group to check the class’ prediction by using the containers and rice.</p>	<p>What is the capacity of this smaller measuring cup? <i>1 pint</i></p> <p>How many pints of rice do you think it will take to fill the quart container? <i>Any answer welcome</i></p> <p>How many pints of rice do you think it will take to fill the empty milk gallon container? <i>Any answer welcome</i></p>	<p>Students will make predictions about the number of pints in a quart or gallon by looking at each of the containers.</p> <p>A different group of students will repeat the process of using the rice to find out how many pints are in a quart. Two students will pour rice,</p>

	<p>If it takes 2 pints of rice to fill up the quart container, how many pints of rice will it take to fill up the gallon? <i>8 pints</i></p>	<p>the 3rd student will record the information on the board (1 quart = 2 pints and 1 gallon = 8 pints), and the 4th student will glue the pint parts of Mr. Gallon to the model (the pint parts will be Mr. Gallon's lower arms and legs).</p> <p>The remainder of the class will glue the pint parts of Mr. Gallon to their own models.</p>
<p>The teacher will check for student understanding by asking questions and calling on individual students.</p>	<p>How many gallons are equal to 16 pints? <i>2 gallons</i></p> <p>How many gallons are equal to 4 pints? <i>1/2 gallon</i></p> <p>How many pints are in 5 gallons? <i>40 pints</i></p> <p>How many pints are in 10 gallons? <i>80 pints</i></p> <p>Marta drinks 7 pints of milk a week. Her brother Samuel drinks 4 quarts of milk a week. How much milk should their mother buy each week so there is enough for both Marta and Samuel? <i>15 pints or 7 1/2 quarts or approx 2 gallons</i></p> <p>How do you know? <i>6 pints = 3 quarts which gives you 7 quarts plus 1 pint left over, that pint is the same as 1/2 quart. Since there are 4 quarts in a gallon, you would need 2 gallons to have enough for Marta and Samuel to drink 7 1/2 quarts.</i></p>	<p>Students will use their Mr. Gallon Man models to answer questions.</p>
<p>Hold up gallon, quart, and pint containers. "We have seen the</p>		

	<p>How many cups are in 3 quarts? <i>12 cups</i></p> <p>How many cups are in 1 gallon? <i>16 cups</i></p> <p>How many gallons are equal to 32 cups? <i>2 gallons</i></p> <p>How many gallons are equal to 8 cups? <i>1/2 gallon</i></p> <p>How many pints are equal to 10 cups? <i>5 pints</i></p>	
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TRANSITION

Now that you know how to find how many cups in a gallon, let's go back to my question about the punch for my party. Will I have enough punch? You can use Mr. Gallon to help you solve the problem.

EXPLANATION

What the Teacher Will Do	Eliciting Questions/ Student Responses	What the Students Will Do
<p>Re-display the Holiday Party problem on the overhead. Read the problem again to remind students of the original question.</p>	<p>Can each of the 23 guests have a cup of punch if 1 ½ gallons of punch are made? Why or why not? <i>Yes; 1 ½ gallons of punch will make 24 cups of punch</i></p> <p>Does everyone agree with this answer? Does anyone disagree? Why? <i>Answers will depend of what the first group presented</i></p> <p>Did anyone solve the problem in a different way? How? <i>Answers will depend of what</i></p>	<p>Students use Mr. Gallon to solve the problem.</p> <p>Select students will share their answer and solution method.</p>

	<i>the first group presented</i>	
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TRANSITION
Now that you have helped me figured out my punch problem, I have a couple of problems for you to try on your own in groups. You can use your Mr. Gallon Man to help you.

ELABORATION – Part 1

What the Teacher Will Do	Eliciting Questions/ Student Responses	What the Students Will Do
Teacher will hand out Elaboration worksheet.	<p>What strategies did you use? <i>-Multiplied or divided to obtain equivalent measurements</i> <i>-Used Mr. Gallon Man to obtain equivalent measurements</i></p> <p>Did anyone else do it a different way? <i>Answers will depend of what students have presented</i></p> <p>Is your answer reasonable? How do you know? <i>Answers will depend of what students have presented</i></p>	<p>Students work on the elaboration questions in groups.</p> <p>Selected students will share their solution strategies.</p>

TRANSITION
It has been a hard day of work and I'm getting thirsty. Let's put what we have learned to use.

ELABORATION – Part 2

What the Teacher Will Do	Eliciting Questions/ Student Responses	What the Students Will Do
Say, "We've been talking about punch all day and it's making me thirsty. Let's make some punch."		

<p>Display the punch recipe transparency. Hide the 1 cup measuring cup.</p> <p>“Uh oh...it seems like we have lost one of the cups and all we are left with are the pint and the quart measuring cups. The directions are in cups!”</p>	<p>Can we still make the punch? <i>Yes, by converting the measurements into pints or quarts</i></p> <p>How much pineapple juice do we need? <i>1 pint</i></p> <p>How much orange juice do we need? <i>1 pint</i></p> <p>How much water do we need? <i>6 pints or 3 quarts</i></p> <p>How much sugar do we need? <i>1 pint</i></p> <p>How much Sprite do we need? <i>2 pints or 1 quart</i></p>	<p>Students will help make punch by providing correct conversions. Select students will measure, pour, and mix ingredients.</p>
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<p>TRANSITION</p>
<p>Today, we learned how to convert between cups, pints, quarts, and gallons. You used that knowledge to help me make punch. Now you will get a chance to show me how much you learned today.</p>

<p>EVALUATION</p>

Holiday Party



I am planning a party. I have invited 23 people to the party. I have a punch recipe that makes $1 \frac{1}{2}$ gallons of punch, and I want to serve each person a cup of punch.

Will I have enough punch for everyone?

Punch Recipe

2 cups Pineapple Juice

2 cups Orange Juice

1 packages Cherry Kool-aid

1 packages Orange Kool-aid

12 cups Water

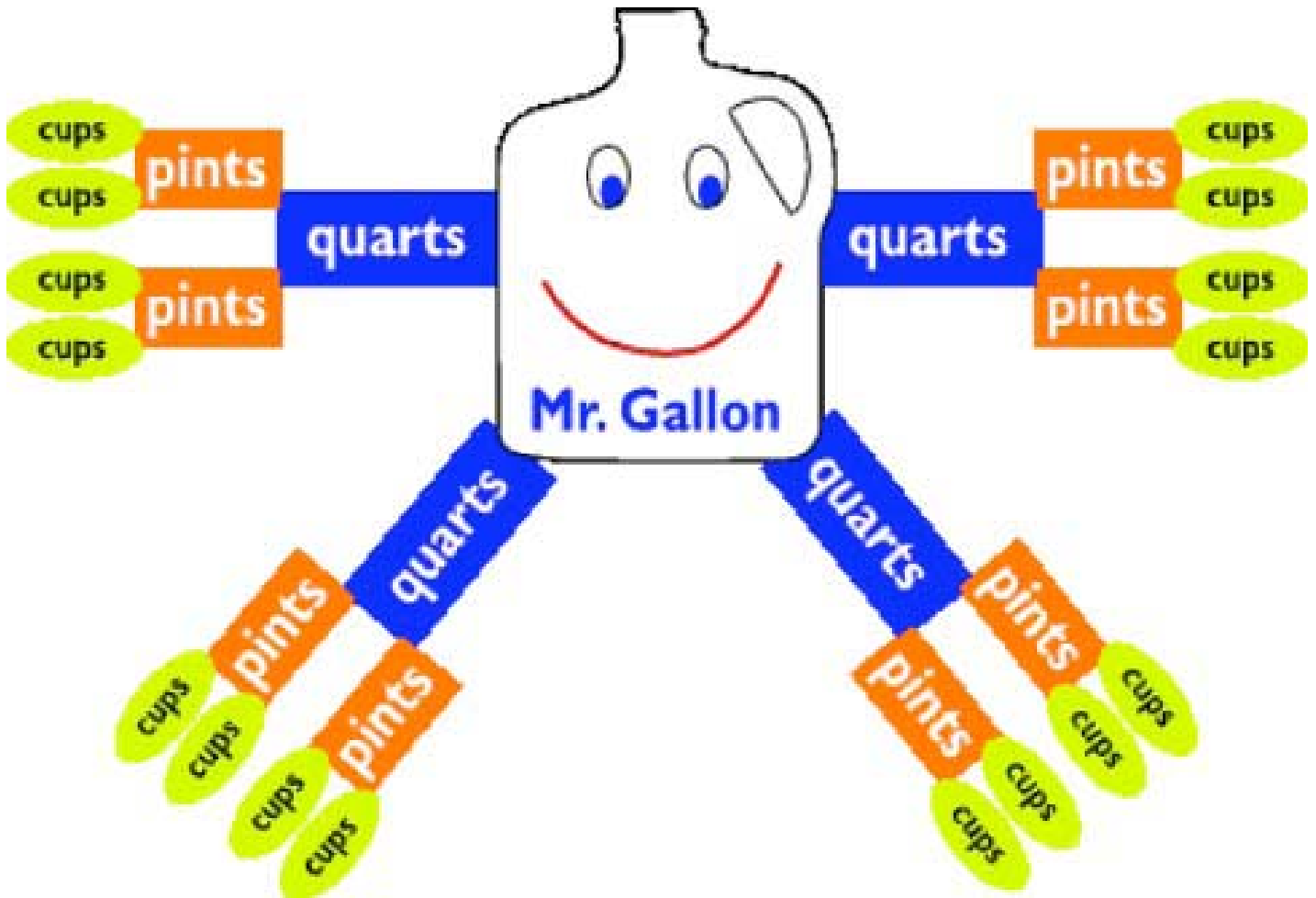
2 cups Sugar

4 cups Sprite

Mix the ingredients and serve.

Uh oh...it seems like we have lost one of the cups and all we are left with are the pint and the quart measuring cups. The directions are in cups! How are we going to make this punch?

Mr. Gallon



Mr. Gallon Body (for student work)



Elaboration

Use your Mr. Gallon Man and work with your group to answer the following questions.

1. There is a gallon of chocolate chip ice cream in the freezer. Eight people want to share the ice cream equally. How much does each person get? Show your work and explain your reasoning.

Is there more than one way to answer this question? Why or why not?

If possible, give another correct answer.



2. Lucy's school buys milk in gallon containers. Lucy's class has 32 students and each student receives a pint of milk for lunch. If a gallon of milk costs \$3.99, how much did the milk for Lucy's class cost? Show your work and explain your reasoning.

