From Tom Reich Date: July 1, 2013 FAMSF **Lesson Template**

Lesson Title. First day of Proportion Unit

Math: Introduction to Ratios and **Art:** Introduction to Still Life

Grade: 6th grade/ 7th grade review

Common Core Standards: 6.rp.1 (grade 6) Understand the concept of a ratio and use ratio language to describe a ration relationship between two quantities.

Description:
Students observe Fruit Still Life (Mace and Kirkpatrick) and describe using ratio terms and symbols. Follow up (homework): Still Life with Ducks and Vegetables (Hill)

Objectives:
Students observe numbers of fruit in still life and learn to express ratio with colon, using "to", and as a fraction. Students learn to make simple still life drawing of fruit.

Overall
Time estimates: 1 class period. 45 minutes plus 25 minute HW.
Material list:

1. Device to show art overhead to whole class (projector, or computer)
2. For each student, black and white copy of art as listed above
3. Student Print outs "Proportions Day 1" – 4 pages (for 3 ring binder)
4. Student printed homework – 2 pages.

Part 1: Previewing the Artifact
Strategy: Quick Writing Reflection
Time 5 – 7 minutes
Materials: See Page 1 of student print out
Step: 1. From overhead projection, students view art: Fruit Still Life (Mace and Kirkpatrick)
Respond to questions on "Previewing the Artifact"
Teacher to provide minimal prompts. "Review the grading rubric. You will be graded on your preview. You have 5 minutes to write. This is a continuous writing – you must write for 5 full minutes." "What do you see." "What don't you understand" "What would you like to learn more about" "What do you think the connection of this painting is to Math?"
2. Teacher circulates to be sure all are on task and answer questions.
3. Choose 3 students to read their responses. But teacher doesn't provide feedback at this point.

Part 2: Open Exploration
Strategy: Think/Jot Down/ Pair Share
Time 3 minutes
Materials: See Page 2 of student print out
Step:

1. Student jots down any observations about number of objects, patterns, description of geometric objects etc.
2. Compare notes with elbow partner
3. Refine/ update list. Make prediction of what the math connection is to the artifact
4. Option/ teacher asks some pairs to share out.

Part 3: Directed Observations and Mathematical Connections

Strategy: Work in pairs / Share with Table Group / Whole Class review

Time 15 minutes

New Vocabulary*:* Ratio, ratio symbols, comparison, part to part, part to whole

Materials: See Page 3 of student print out

Step:

1. Student completes tally chart of number of objects/ fruits in painting.
2. Students read how ratio terms are used and then applies to # of fruits.
3. Comparison of part to whole and whole to part.
4. Expansion to compare as many different objects as possible using correct terminology
5. Share with table group
6. Whole class review with teacher challenges.

Part 4: Formal Summary of Ratios – 3 ways to write ratios and 2 different types of ratios.

Strategy: Individual work / Share with Class / Copy teacher notes

Time 10 minutes

Materials: See Page 4 of student print out

Step:

1. Student complete summary in writing / symbols / table.
2. 2 Students chosen to present to class.
3. Copy teacher notes

Part 5: Introduction to drawing Still Life Fruit.

Strategy: Individual work / Student listens and draws

Materials: blank white paper, drawing pencil, color pencils.

Step:

1. Student begins to draw apple while following teacher directions.

Part 6: Homework or Follow up. Introduction to drawing Still Life Fruit.

Strategy: Individual work / present to group and class next day.

Time 10 minutes

Materials: See page 5 and 6 of student print out

Student Pages First day of Proportion Unit

Math: Introduction to Ratios and **Art:** Introduction to Still Life

Previewing the Painting *Strategy: Quick Writing Reflection*

Name of Painting: _____ Artist : _____

Instructions: Look at the painting and respond to the questions.
You don't have to have the "right answer." In fact you aren't expected to know the answer.
But you need to ask good questions and express an opinion about the art.
You need to write continuously for 5 minutes.

When you finish, give yourself a grade using this Rubric:

	Grade you give yourself	**Mr. Reich's grade for you**	
Your ideas up to 1 point			
Grammar. Up to 1 point			
Neatness. Up to 1 point			
TOTAL points			

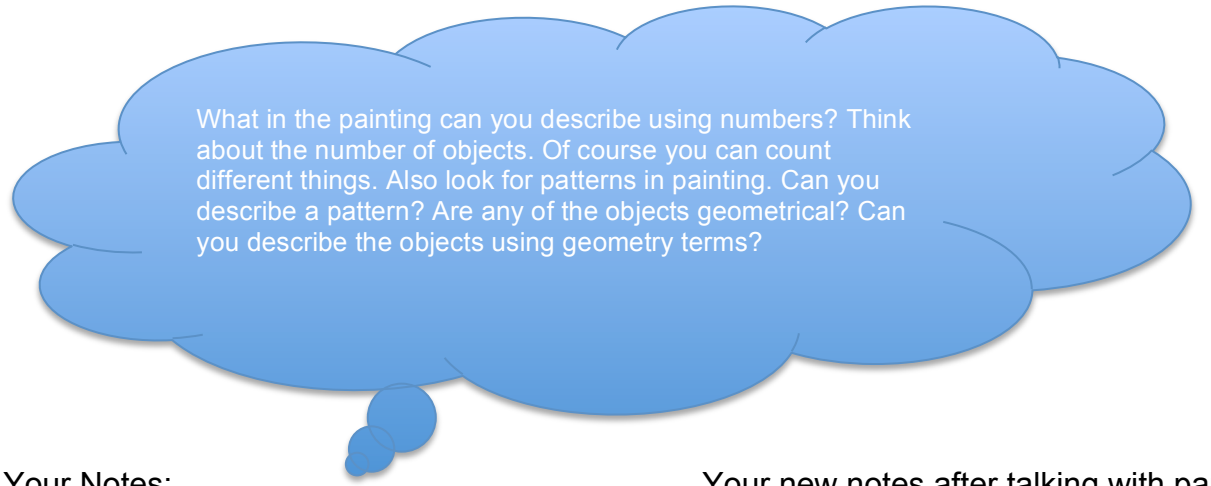
I Notice: Write down what you see in the painting. Describe the painting. You can also say if you like it and why. What surprised you about the painting? What does it remind you of?

I Wonder: Write down all the questions that you have about the painting. What would you like to know more about? What don't you understand?

I Predict : What do you think is the connection between MATH and this Painting? You may not know the answer but make an educated guess – that is a hypothesis! You do have to write something!

PART 2 Open Math Exploration *Strategy: Think/Jot Down/ Pair Share*

Instructions: Read the questions and write down your answers. You don't need complete sentences. In fact, you can use Math Symbols to answer the questions. You have about 3 minutes to write – don't stop writing. Then share with your elbow partner. Get ready to share your answers with the class!



Your Notes:

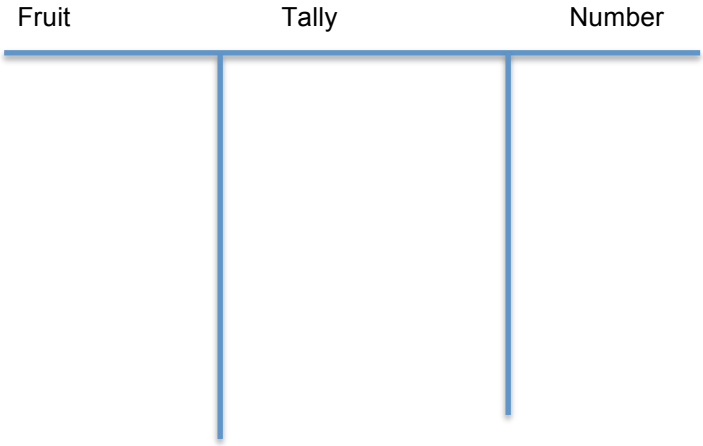
Your new notes after talking with partner.

PART 3 Directed Observations and Mathematical Connections

Strategy: Work in pairs / Share with Table Group / Whole Class review

New Vocabulary*:* Ratio, ratio symbols, comparison, part to part, part to whole

Record your observations.
Make a tally chart listing the number of different types of fruit. (Count each bunch of grapes as one.)



Read and Learn Compare the different number of fruit. In math a ***RATIO*** is used to compare 2 numbers.
For example, if there are 2 pears and 3 oranges, the ***RATIO*** of pears to oranges is 2 to 3.
You can also compare oranges to pears. That ***RATIO*** is 3 to 2.
? What is the difference between saying 2 pears to 3 oranges versus 3 oranges and 2 pears?

_____

There are *3 ways to write a RATIO.*

1. **Use the word "to"**
2. **Use a colon between the numbers. 2 pears : 3 oranges** So a **":"** is a symbol used for ratios!
3. **Use a fraction** $\frac{\mathbf{2\ pears}}{\mathbf{3\ oranges}}$ So a **fraction bar** is another symbol used for ratios!

Apply what you learned. Make a list of ratios comparing all of the pairs of fruits that you tallied up.
Write each ratio using the word "to" the colon ":", and as a fraction. Make more rows if you need to !
Don't forget you can reverse the order of the pairs !

Fruits	Ratio using "to"	Ratio using ":"	Ratio using fraction bar
Green grapes to black grapes	3 green grapes to 2 black grapes	3 green grapes : 2 black grapes	$\frac{\mathbf{3\ green\ grapes}}{\mathbf{2\ black\ grapes}}$
Black grapes to green grapes			

PART 3 continued **Directed Observations and Mathematical Connections**

Read and Learn

When you compare the number of grapes to the number of pears, you are not comparing all of the fruit in the painting. That is obvious, there are peaches, an apple, and maybe an apricot too.
When you are comparing some of the things, you are **comparing parts to parts.**

But you can compare some things to everything. **That is called comparing parts to the whole.**

In your refrigerator are 8 apples, 10 pears, and 3 mangoes.

So 8 apples to 21 total fruits, is **a Part to Whole comparison**

And 21 fruits : 10 pears is a ***Whole to Part comparison*****.**

Apply what you learned.
Look at your tally chart again. You wrote down the total number of fruits, right?

Make a list of ratios comparing **each type of fruit to the total number of fruit. That is a Part to Whole ratios.**

Each type of fruit to All the Fruits. *Part to Whole*	Ratio using "to"	Ratio using ":"	Ratio using fraction bar
Green grapes to all the fruit			
Black grapes to all the fruit			

Now make a **Whole to Part list of ratios** comparing the total number of fruit to **each type of fruit.**

Each type of fruit to All the Fruits. *Whole to Part*	Ratio using "to"	Ratio using ":"	Ratio using fraction bar
All the fruit to Apples			

Challenge your elbow partner.

Write a part to whole ratio here: _____

Ask your partner what fruit you are comparing.
Continue to quiz one another until both of you consecutively (in a row) get the answers correct.

YOUR NAME: _____ **DUE DATE: _____**

Remember, no Math homework is accepted late.

HOMEWORK

1. **Complete your drawing of the apple.**
2. **Draw another apple. Make this drawing better.**
3. **Use colored pencils and be prepared to present to your group and the class.**

Previewing the Painting ***Strategy: Quick Writing Reflection***

Name of Painting: _ Still Life with Ducks and Vegetables Artist : Hill

Instructions: Look at the painting and respond to the questions.
You don't have to have the "right answer." In fact you aren't expected to know the answer.
But you need to ask good questions and express an opinion about the art.
You need to write continuously for 5 minutes.

When you finish, give yourself a grade using this Rubric:

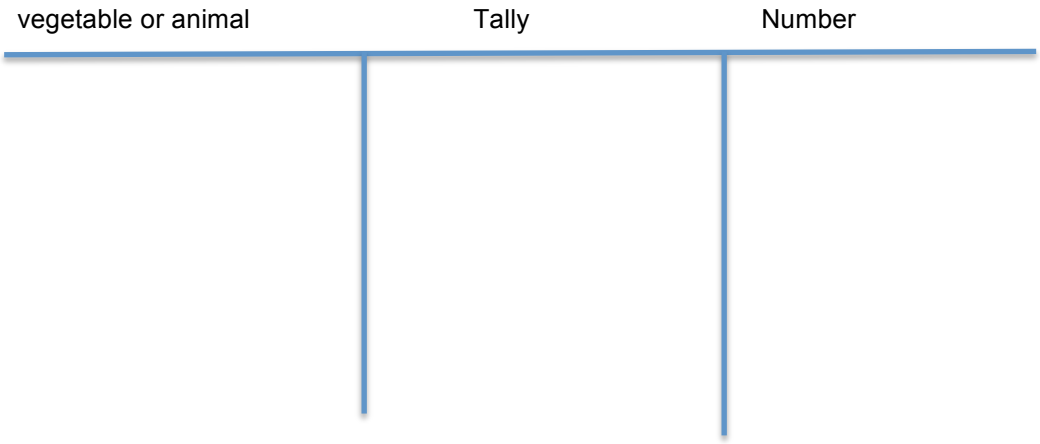
	Grade you give yourself	**Mr. Reich's grade for you**	
Your ideas up to 1 point			
Grammar. Up to 1 point			
Neatness. Up to 1 point			
Extra point for best in group or most improved in group.			
TOTAL points			

I Notice: Write down what you see in the painting. Describe the painting. You can also say if you like it and why. What surprised you about the painting? What does it remind you of?

I Wonder: Write down all the questions that you have about the painting. What would you like to know more about? What don't you understand?

3. ***Record your observations.***

Make a tally chart listing the number of different types of vegetables and animals in the picture.



HOMEWORK CONTINUED

Apply what you learned. Make a list of ratios comparing all of the pairs of vegetables and animals that you tallied up. Write each ratio using the word “to” the colon “:”, and as a fraction. Make more rows if you need to ! Don’t forget you can reverse the order of the pairs !

vegetables and animals	Type of ration	Ratio using “to”	Ratio using “:”	Ratio using fraction bar
Dead ducks to onions	Part to part			
Onions to dead ducks	Part to part			
Dead ducks to everything in picture.	Part to whole			
Everything to dead ducks.	Whole to part			