

ARTFUL CONNECTIONS WITH MATH GRADE 2

Regrouping Collage

2 sessions – 90 minutes

Essential Question: How can we visually depict regrouping?

Lesson Goal: Students add 3-digit numbers by examining ones, tens and hundreds and regrouping when necessary. They use different sizes of paper to visually differentiate between place values, and create an abstract paper collage that depicts the sum of their 3-digit numbers both with and without regrouping.

Lesson Objectives:

Students will be able to:

- add 3-digit numbers by regrouping ones, tens, and hundreds.
- create a paper collage that demonstrates overlapping and an understanding of regrouping using addition.

Common Core State Standards for Mathematics

Numbers and Operations in Base Ten 2.NBT: Use place value understanding to add and subtract.

7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

California Visual Art Content Standards

Artistic Perception 1.1: Perceive and describe repetition and balance in nature, in the environment, and in works of art.

Creative Expression 2.1: Demonstrate beginning skill in the use of basic tools and art-making processes, such as collage.

Historical and Cultural Context 3.2: Recognize and use the vocabulary of art to describe art objects from various cultures and time periods.

Aesthetic Valuing 4.3: Use the vocabulary of art to talk about what they wanted to do in their own works of art and how they succeeded.



Materials

- set of number cards
- sharpies
- colored pencil
- colored construction paper
- worksheet (attached)
- black construction paper

Key Vocabulary

Math: addition; regrouping

Art: collage; overlapping; composition

PRE-SESSION MATH LESSON

Prior to Session 1 for this lesson, review the math concepts of base ten regrouping.

- **Focus Question 1:** How do we use digits to represent the value of a number?
- **Focus Question 2:** How can using the same three digits produce different valued numbers?

In a whole class setting, review the place value (ones, tens, hundreds).

- Ask the students to represent numbers using drawings of base ten blocks on a place value chart.
- Then review the use of 0-9 (ones, tens, hundreds) in any one place value space.
- Next, review the need to regroup any place value that has more than 9 in any space.

Play “First to One Hundred” with your students.

Materials Needed: A place value chart, dry erase markers, wipes or erasers, number cube

Chart with this information:

If you roll: 1- add one ten to your mat
2- add two tens to your mat
3- add 3 ones to your mat
4- add 4 ones to your mat
5- add 5 ones to your mat
6- add 6 ones to your mat

Directions:

1. Break your students into pair or groups of four.
2. Ask students to take turn rolling the number cube and adding the number of ones or tens to their mat, based on the chart.
3. Then ask students to regroup ones to tens when more than nine are in the ones place value. The first student to get one hundred (or above) is the winner.

EXTENSION: You can also play First to Zero, having students use this chart:

If you roll 1- subtract one ten from your mat
2- subtract two tens from your mat

- 3- subtract 3 ones from your mat
- 4- subtract 4 ones from your mat
- 5- subtract 5 ones from your mat
- 6- subtract 6 ones from your mat

➤ **Post Session Focus Question:** How can I use three digits and produce different valued numbers?

Session 1 – Graphic number flashcards and worksheet

ACCESS PRIOR KNOWLEDGE (5 min)

Begin by writing two 3-digit numbers on the board that will require regrouping when added. Then review the concept of regrouping and ask students the following questions:

- Why is it necessary to regroup numbers?
- When do we use regrouping?

WARM UP ACTIVITY (30 min)

Begin by showing students how to “add” their two flashcards, by combining the ones, tens, and hundreds from both of their cards and drawing them in the “expanded” column of their worksheet. They can compose their graphic number design however they like.

- Then show students how to “regroup” this number by changing ten “dots” into a “line” or ten “lines” into a “square”. Again, they can compose their graphic number design however they like.
- Give each student two “graphic number flashcards.” Remind them that ones are represented by dots, tens are represented by lines, and hundreds are represented by squares.
- Have students add the two numbers and complete the worksheet.
- In standard form, write the two numbers and the sum on the back of the worksheet.
- Repeat three more times.
- Students cut out the 4 “regrouped” boxes on their worksheet and paste them onto black construction paper.
- Students can then color in the background with colored pencil.

CLOSURE (20 min)

- Which numbers required regrouping the tens? Which numbers required regrouping ones?
- How did you decide what kind of design to make with your ones, tens and hundreds?
- How did you decide how to arrange your regrouped boxes on the black paper?
- How did you decide what color to use in the background?

Session 2 – Look at Art, Create Collage

ACCESS PRIOR KNOWLEDGE

- What do you remember about regrouping?
- What do you know about collage?
- What do you know about overlapping?

ART OBSERVATION

- What do you notice?
- What would you describe the shapes you see?
- What kind of colors do you notice?
- What do you notice about how the shapes are positioned in the composition? (overlap, going off the page, color, shape)
- Which shapes look like they are in front? In back? (review overlapping)
- Why do you think the artist put some shapes in front of others? Explain that artists use overlapping to create the illusion of space.

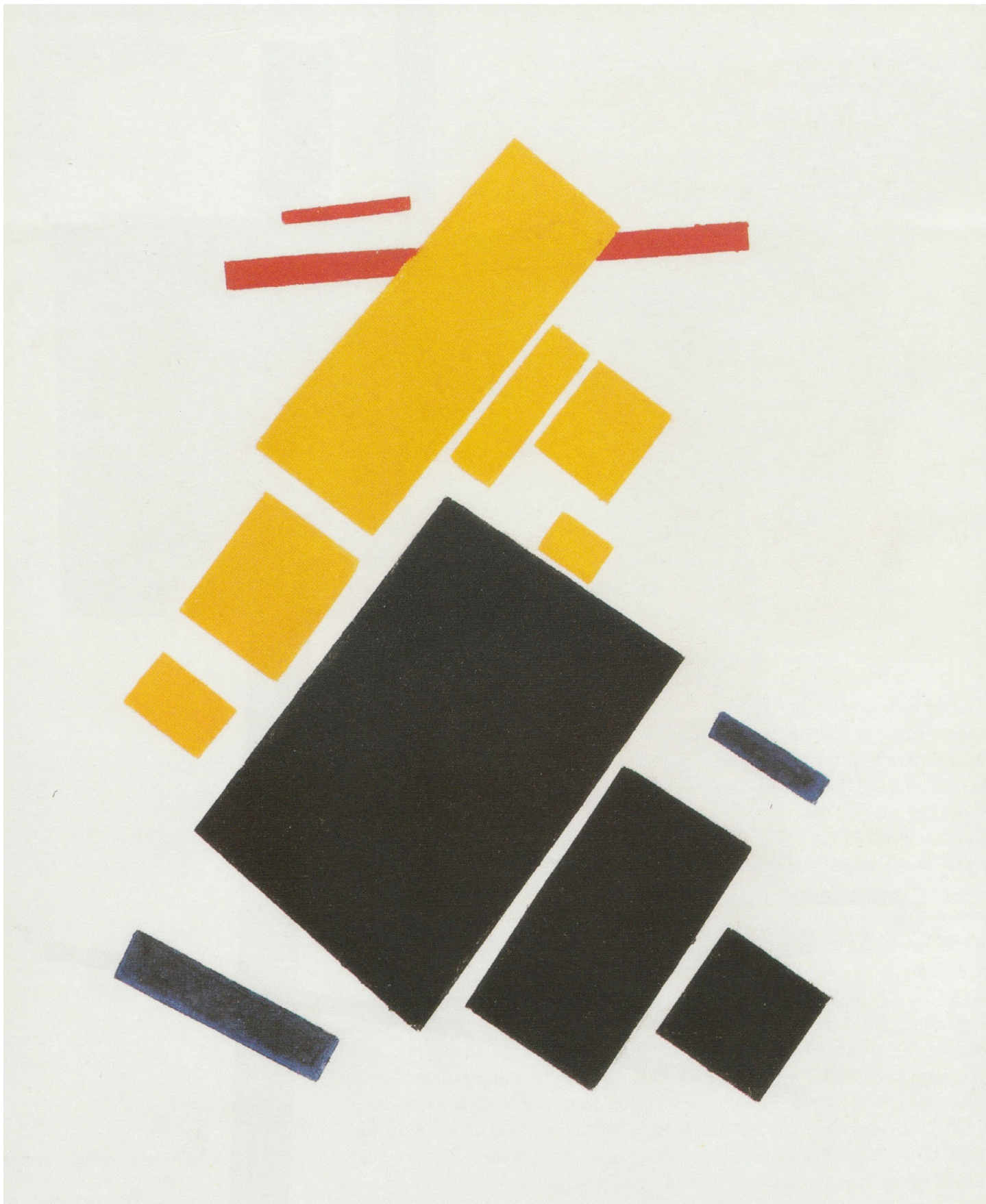
ART ACTIVITY (60 minutes)

- Students choose one of their “expanded” numbers to turn into a collage.
- Assign a color to each place value.
- Students are given construction paper cut into thirds.
 - Students cut the construction paper pieces in half to represent hundreds.
 - Students cut these hundreds into ten strips to represent tens.
 - Students cut these ten strips into ten small squares to represent ones.
- Students paste their items onto black construction paper, using overlapping.
- Students create a new collage showing that same number in its “regrouped” form.

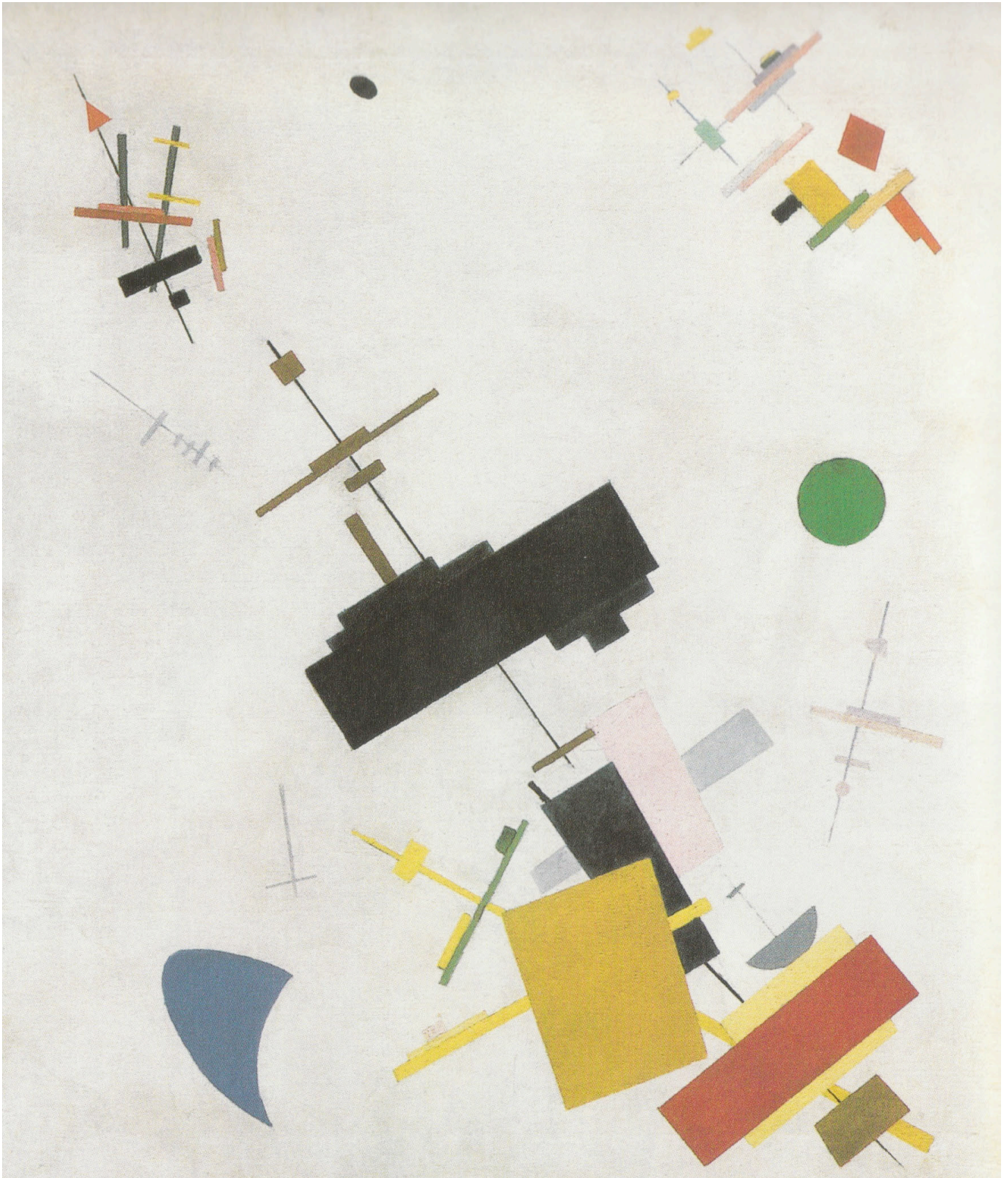
CLOSURE (20 min)

Students share and describe their collages with the class.

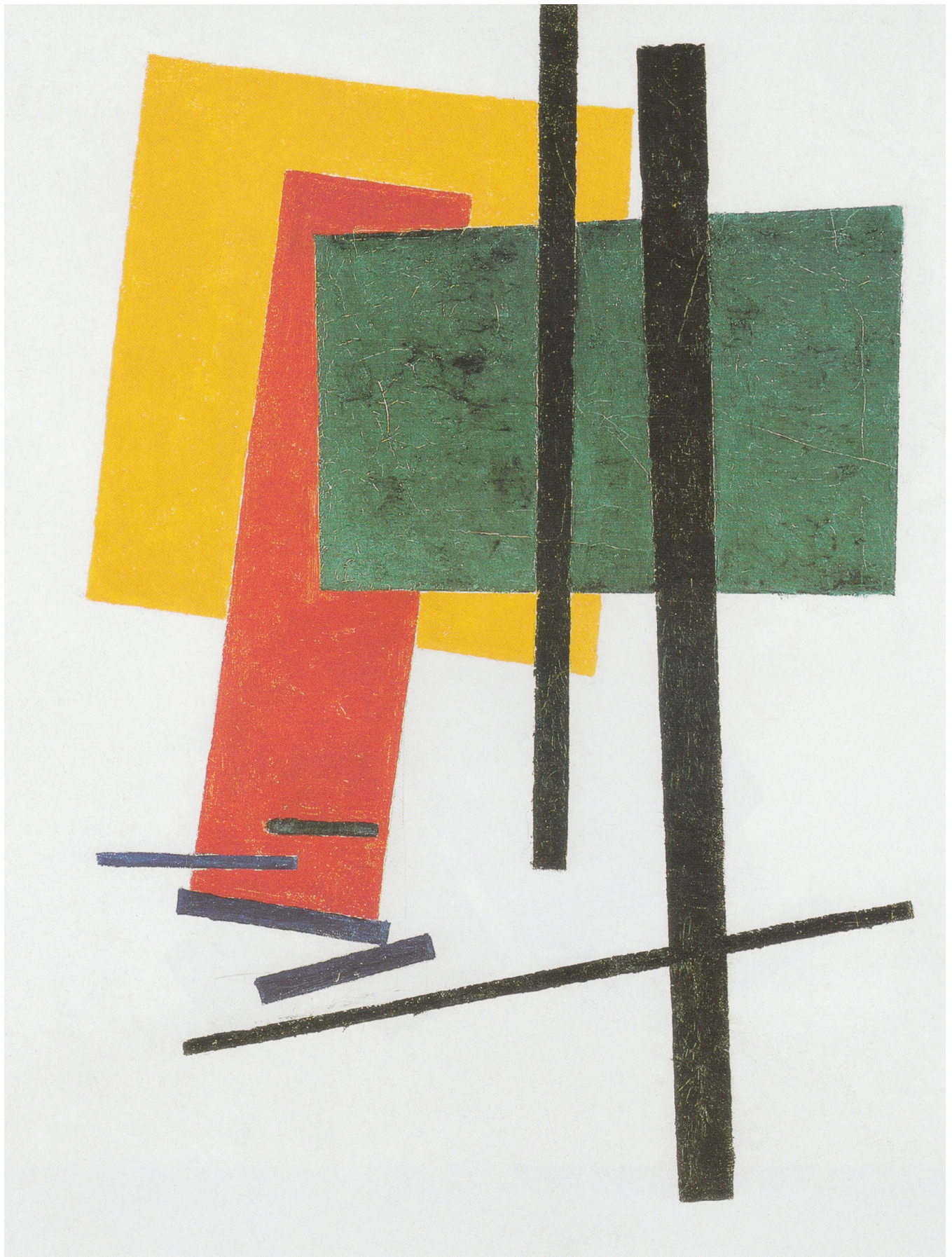
- What did you learn today about how to add numbers using regrouping?
- How does your collage relate to the artists work that you saw?
- How does your collage differ from a classmate’s collage?
- Discuss student’s choices for where and how they placed their shapes.
(e.g. Which part of the paper seems heavier? lighter? Which part of the collage seems to be coming toward you? Moving away from you?)
- What worked well in someone else’s collage?
- What would you do differently if you were to do this again?
- If you could give a title to this work, what would it be?



Kazimir Malevich, "Suprematist Painting. Aeroplane in Flight," 1915, oil on canvas, 23 x 19



Kazimir Malevich, "Supremus no. 56," 1916, oil on canvas, 32 x 28 inches



Kazimir Malevich, "Suprematism," 1915, oil on canvas, 17 1/2 x 14 inches



Kazimir Severinovich Malevich (23 February 1879—15 May 1935) was a Russian painter and art theoretician. He was a pioneer of geometric abstract art and the originator of the avant-garde, Suprematist movement

Kazimir Malevich was born near Kiev in the Kiev Governorate of the Russian Empire (today Ukraine). His parents, Ludwika and Seweryn Malewicz, were ethnic Poles. His native languages were Russian and Polish.

Kazimir's father managed a sugar factory. Kazimir was the first of fourteen children, only nine of whom survived into adulthood. His family moved often and he spent most of his childhood in the villages of Ukraine, amidst sugar-beet plantations, far from centers of culture. Until age twelve he knew nothing of professional artists, although art had surrounded him in childhood. He delighted in peasant embroidery, and in decorated walls and stoves. He was able to paint in the peasant style. He studied drawing in Kiev from 1895 to 1896.

He also was interested in aerial photography and aviation, which led him to abstractions inspired by or derived from aerial landscapes. As Professor Julia Bekman Chadaga (now of Macalaster College) writes:

In his later writings, Malevich defined the "additional element" as the quality of any new visual environment bringing about a change in perception... In a series of diagrams illustrating the "environments" that influence various painterly styles, the Suprematist is associated with a series of aerial views rendering the familiar landscape into an abstraction... (excerpted from Ms. Bekman Chadaga's paper delivered at Columbia University's 2000 symposium, "Art, Technology, and Modernity in Russia and Eastern Europe")

Regrouping Collage Rubric

Student Name: _____

	1 Does not meet Expectations	2 Approaching Expectations	3 Meets Expectations	4 Exceeds Expectations	Score
A. All shapes representing the same place value are the same color.	Colors are not designated to shapes in any systemic way.	Some shapes are cut from their designated color.	Most shapes are cut from their designated color.	Each kind of shape size has a unique color .	
B. The amount of shapes corresponds to the number.	No place value is depicted correctly.	Two place values are depicted correctly.	All three place values are depicted correctly.	All place values are depicted correctly and number is written in all three forms.	
C. Artwork demonstrates an ability to trace and cut carefully.	Shapes cannot be identified as circles.	Some shapes can be identified as big squares, rectangles, and small squares.	Most shapes can be identified as big squares, rectangles, and small squares.	Each shape is traced and cut as near perfect big squares, rectangles, and small squares.	
D. Artwork shows an understanding of overlapping.	No overlapping is evident.	Some overlapping is evident.	Most shapes overlap.	Overlapping creates a sense of visual depth in artwork.	

Total: _____