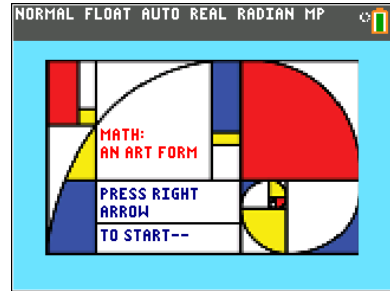


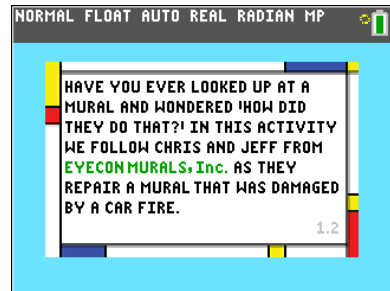


Art at the intersection of Light, Paint and Ratios

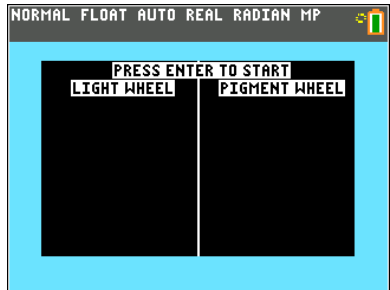
1. Run (execute) the program “MTHARTFM”.
2. Read the opening screen. Press to proceed to the next screen.



3. Read pages 1.2 to 1.5 and make notes as needed. Use and to navigate between pages.



4. Navigate to page 1.6. Press to start the simulation and use the arrow keys to move the cursor over each button then press to show the light and pigment color wheels. Be sure to pay attention to the combinations of colors for light and for pigment.



- a. Based on the light wheel, what are the secondary colors of light?
- b. Based on the pigment wheel, what are the secondary colors of pigment?
- c. Describe how the colors of pigment and light are related.

Once you have shown both wheels, use or to continue.



Math: An Artform

Student Activity

Name _____

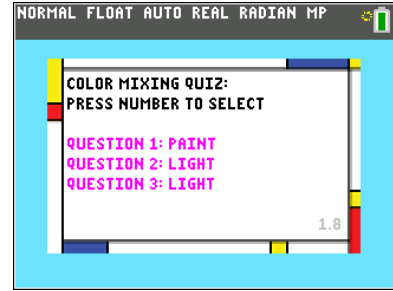
Class _____

5. Read page 1.7 and then navigate to the color mixing quiz questions on page 1.8. Use the corresponding numbers to select each question and write your answers below.

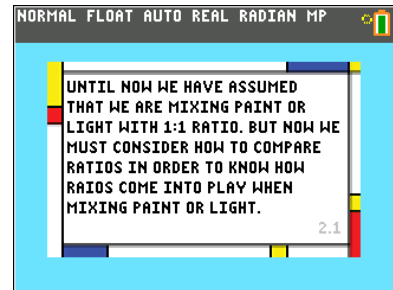
a. Question 1:

b. Question 2:

c. Question 3:



6. Read pages 2.1 and 2.2



7. On page 2.3 press to start the simulation. Use or to change sides and or to change the number of cans of paint in each mixture.





8. Use the simulation on page 2.3 to answer the following questions.

- a. What are the ratios for the mixtures of paint?
- b. Use the up and down arrows to change the mixture on the left. Choose 3 mixtures and fill in the table below.

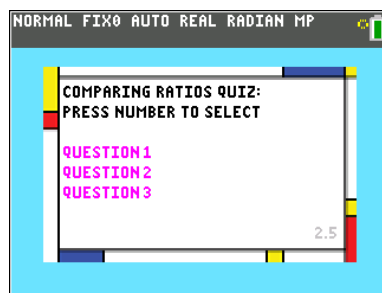
Red	Blue

Which of the ratios above is “redder”?

- c. Change the number of cans of red on the left mixture to be 20 by pressing the up or down arrow. Then determine how you can add rows to the right hand mixture to determine which mixture is “redder.” Explain your method and state which is redder.
- d. Explain at least one other method for determining which of two mixtures is redder.

9. Read page 2.4 and then navigate to the comparing ratios quiz questions on page 2.5. Select a question by pressing the corresponding number. Use the number keys to respond to the questions on the calculator. Write your answers below.

- a. Question 1: Which mixture is “bluer”? Explain your answer.
- b. Question 2: Which mixture is “bluer”? Explain your answer.
- c. Question 3: Which mixture is “bluer”? Explain your answer.

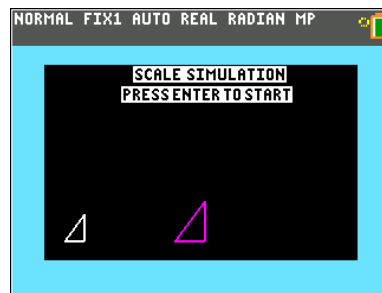




10. Read pages 3.1 and 3.2 and make notes as needed.



11. On page 3.3, press enter to start the scaling simulation. Use the + and – keys to change the size of the magenta figure. If you need a calculator press [calc].

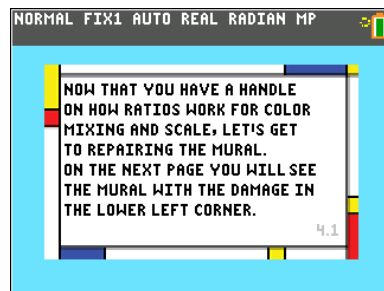


- What is the value of the ratio of the length of the hypotenuse of the magenta triangle to the length of the hypotenuse of the white triangle?
- How are the lengths of the sides of the white triangle related to the lengths of the corresponding sides of the magenta triangle?
- Press to show the scale factor. What does the scale factor tell you? Verify your thinking by trying different scale factors.
- AB and A'B' are corresponding sides of two similar figures. If AB and A'B' have lengths 4 and 18, respectively, what is the scale factor that relates the two figures?
- If the scale factor 12 is applied to a triangle with side lengths 3, 4, and 5 units, what are the new lengths?

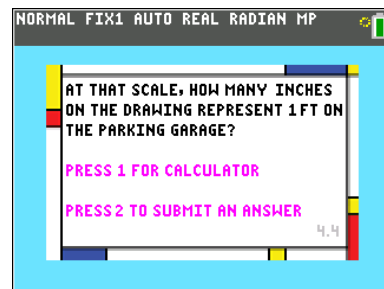


- f. Set the scale factor to 2. Suppose the units for length on the magenta triangle are feet and the units for length on the white triangle are inches. Write a ratio including units that shows the relationship between inches on the white triangle and feet on the magenta triangle.


12. Move to page 4.1 and read page 4.1 – 4.3 making notes if necessary.

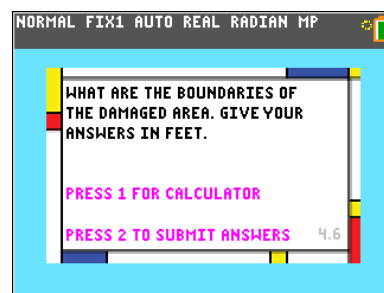


13. On page 4.4 press 2 to answer the question below. If you need a calculator, press 1.



- a. The mural is 120 feet tall and 160 feet wide. If the original reference rendering was drawn on a sheet of paper 22.5 inches by 30 inches, how many inches on the drawing represent 1 foot on the parking garage?
- b. By what number could you multiply a 1 inch line on the drawing to figure out how long it would be on the mural?

14. Press  and answer the question below. Input your responses on the calculator by pressing 2 to submit a response.



The lower left corner of the parking garage is labeled (0, 0). On the rendering, the rectangular damaged area boundaries: Left boundary $\frac{3}{2}$ in, right boundary $\frac{21}{4}$ in, bottom boundary 0 in, top boundary 9 in. Use the scale computed in part 13 to give the boundaries of the damaged area in feet.



15. Read page 4.7 and make notes. Answer the question below.

All the colors for fixing the damage are mixed except the orange for the background. If the original ratio of yellow to red was 5:3 and we need 64 ounces of orange paint, how many ounces of each are needed?

