Name _____ Date _____

Pictures from Outer Space

You and your Team of Data Analysts are going to take the place of NASA computers and decipher an image beamed down from space. (This is an actual image, created in 1979 even though it's been simplified for this activity.) Your team will be responsible for putting together part of the overall picture. Your teacher will pass out a special grid and a stream of numbers sent down by the spacecraft. Encode the grids with the numbers as instructed by the teacher. As you begin, notice what time it is and write the time here. You'll receive several sheets of paper, 4 colors ranging from pure white to pure black. Carefully cut them into squares the size of the grid boxes and attach the correct squares to the grid as explained by your teacher. When you are done, your team will have completed one portion of the image. Again, note the time here. Now, answer the next five questions and when you're finished tell your teacher that your grid is complete.

What was the total amount of time it took your team to complete its assignment_____?

How many pixels were there in your team's grid_____?

How many teams are there in your class_____?

How many total pixels are there in the overall image put together by the class_____?

Now your teacher will collect all the completed portions of the image and put them together so you can see what the spacecraft was seeing.

Finally, consider the following: The total number of pixels in the image that your class assembled was 1,120. Each pixel had one of four numbers assigned to it, designating one of four shades of gray, white and black. That means it took 1,120 x 4, or 4,480 pieces of information to make this picture. That may seem like a lot but an image of Jupiter from the HST's Wide Field Camera would use about 640,000 pixels, each of which can have any one of 2,048 different shades of gray. That makes for a much clearer, smoother picture but it takes much more information to create it. How many pieces of information would it take to make such an image_____?

Based on how long your DAT took to assemble your part of the image, (put together 4,480 pieces of picture information) calculate how long it would take your team to assemble one entire HST image of Jupiter. Write your answer: _____

NASA computers take less than 5 minutes for the same task. Can you see why NASA likes to use computers?