Name: _____ Class: _____ Date: _____ W

J2.3 Counting Galaxies Activity

Background Information: Go to gatelyscience.com to see the picture taken from the Hubble Telescope. It would take ***2 million*** of these pictures (squares) to cover the entire celestial area surrounding the Earth.

Purpose: To use a method called *sampling* to estimate the number of galaxies in the entire celestial sphere.

Directions:

1. Count the number of galaxies in the block you are assigned (A, B, etc) by the teacher.
2. Into your labeled block, using the table below, fill in the number of galaxies you counted.
3. In the **calculations** section, determine the total number of galaxies visible in this 1 snapshot of Earth's celestial sphere.
4. Realize this is an estimate of the number of galaxies visible from the Hubble Telescope data.

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

Data:

1. Letter of my assigned block: _____

2. The total number of galaxies in my **one assigned square**: _____

3. (**Whole class data)** the total number of galaxies counted in this sample of **16 squares**
   A + B + C +……..P = total number of galaxies in the 16 squares sample

____+____+____+____+____+____+____+____+____+____+____+____+____+____+____+____= _____
A B C D E F G H I J K L M N O P total

Calculations: (show your math)

4. The average # of galaxies per square = $\frac{\text{total from \#3}}{16}$ = $\frac{\quad}{16}$ = _____galaxies/ square

5. It has been determined that the total number of squares from the Hubble pictures is **2,000,000 squares!**

6. Using this *sampling method* the total number of galaxies that we can see on Earth from the Hubble Telescope is:

   2,000,000 squares X ***average from #4*** = ***total # of galaxies***

   2,000,000 squares X $\frac{\quad}{\text{avg. from \#4}}$ = _____ total galaxies

Conclusion: Do you think that there are more, less, or an equal # of real galaxies compared to the class answer? Why??