Name $\qquad$

## APPROXIMATION OF $\pi$

1. Seed the random number generator on your calculator with the last four digits of your phone number. Type in the four digits, then press STO-MATH-LEFT ARROW-ENTER. This will give the entire class different random numbers.

| $1301+$ Frand | 1301 |
| :--- | ---: | ---: |
| rand | .9745649252 |
|  |  |

2. Get your calculator ready by setting the window from $(0,0)$ to $(1,1)$. Turn the scatterplot on and clear all equations from the $\mathrm{Y}=$ menu.

3. Use the commands given and fill in the following table. Press $2^{\text {ND }}$-STAT-RIGHT ARROW-5 to access the Sequence command. Press $2^{\text {ND }}$-PRGM-9 to access the Circle command.


| \# of points inside circle | $4 \times \frac{\#}{50}$ |
| :---: | :---: |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

4. What do the numbers in the second column approximate? Explain why this is so.
5. Press STAT-ENTER and enter your data in list 3. Press STAT-RIGHT ARROW-ENTER-2 ${ }^{\text {ND }}$-3-ENTER to find the mean and standard deviation of your data.

$$
\bar{x}=\square \quad S_{x}=
$$

6. Press STAT-LEFT ARROW-2 to run a T-Test. Fill in your answers below.

$$
H_{0}: \quad H_{A}: \square \quad p=
$$

7. Explain what this means.
8. Collect the means from the entire class. Find the average of these means.
9. Does this method give a good approximation of $\pi$ ? Describe some of the weaknesses of this method.
