

## Activity Sheet: Irrational Numbers

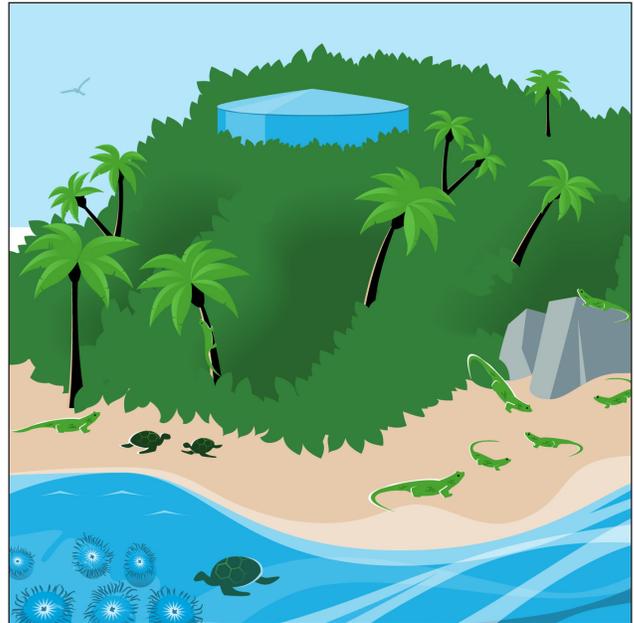
Name: \_\_\_\_\_

Date: \_\_\_\_\_

# It's OK to Be Irrational!

The Living Ocean Institute is a world-renowned oceanographic research organization specializing in Pacific plant and animal life. The Institute is in the process of setting up a new research station on a beautiful uninhabited island in the South Pacific with the goal of accumulating data on beach erosion and developing a population census for a variety of creatures. The scientists' research will provide a foundation for protecting the creatures and their life-sustaining habitat.

Below are some of the calculations the scientists will be making. Use your knowledge of irrational numbers to answer the questions below.



### WORK THE MATH

Record your responses on this sheet as directed in each question.

#### FORMULA BANK

**Pythagorean Theorem:**  $a^2 + b^2 = c^2$

**Volume of a Cylinder:**  $V = \pi r^2 h$

**Area of a Circle:**  $A = \pi r^2$

- 1** One section of the island—to be sampled by researchers to develop a census of tortoises—is a large square, with a side length of 1 kilometer. Researchers intend to place infrared cameras throughout, including along the diagonal of the square. What is the length of the diagonal of this square, expressed in kilometers (rounded to the nearest tenth of a kilometer)? Place the length of the diagonal on the number line below.

- 2** Another circular section of the island to be used to count marine iguanas has a radius of 1 kilometer. Researchers will sample this area to draw conclusions about the iguana population on the entire island. What is the area of this section? Use an approximation of  $\pi$  to *two* decimal places. Place your approximation of the area on the number line below.
- 3** Offshore, the Institute has selected a rectangular area to count sea anemones. If the length of one side is 1 kilometer and the diagonal is 2 kilometers, what is the length of the other side of the rectangle (rounded to the nearest tenth of a kilometer)? Place your approximation of this length on the number line below.
- 4** Fuel for the research vessels will be stored in a cylindrical tank with a radius of 10 meters and a height of 5 meters. Using an approximation of  $\pi$  to *three* decimal places, the volume of the tank is: \_\_\_\_\_. Place your approximation of  $\pi$  on the number line below.

