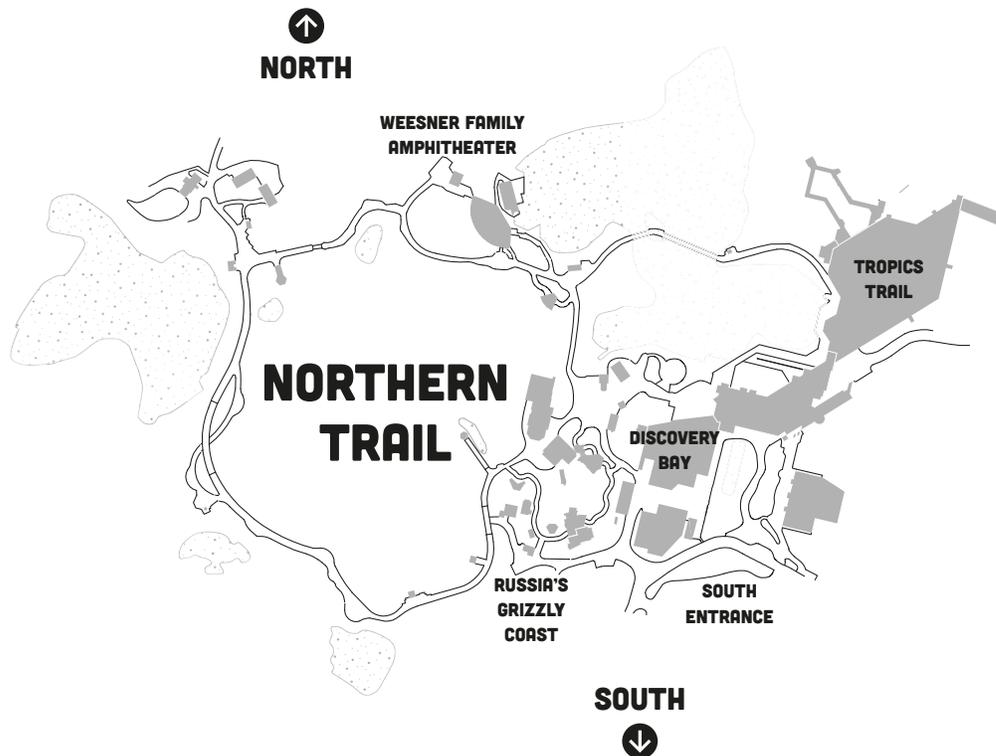**MINNESOTA ZOO®**

NAME_____

Directions: Answer the following questions using the information provided. Show your work. If additional space is needed, please attach a separate piece of paper and correctly identify the problem it correlates to. If you are creating a table or graph, be sure to include titles and labels.

1)   There is an almost circular path around the Northern Trail. If the distance from north to south is 0.4 of a mile, give a good estimate for the length of this path. *(Remember C = πD, where C is the circumference and D is the diameter. You can use 3.14 for π if you do not have a calculator with a π key.)*
Round your answer to two decimal places.

C= (3.14)D WHERE D=0.4 MILE   C=3.14 X 0.4   C=1.256 MILES

NAME_____

2) Discuss with several classmates what the average low temperature is for a Minnesota winter and what the average high temperature is for a Minnesota summer. All of the animals on the Northern Trail remain outside year around.

a. What is the temperature range these animals must endure? *(Remember the range is the higher value minus the lower value.)*

AVG HIGH = 81°F   AVG LOW = 9°F   81−9 = 72° RANGE

b. Brainstorm at least four ways the animals adapt to this range of temperature.

ANSWERS WILL VARY. SOME MIGHT INCLUDE GROWING WINTER COAT THEN SHEDDING IT, EATING MORE CALORIES TO BUILD UP FAT LAYERS, HIBERNATE, SEEK SHELTER.

c. What types of things would an exhibit designer include in an outdoor exhibit to help keep the animals comfortable?

ANSWERS WILL VARY. SOME MIGHT INCLUDE BUILD A SHELTER, PROVIDE SHELTER, INSTALL A HEATER OR FAN IN PARTS OF THE EXHIBIT, INCREASE AREAS FOR THEM TO FEED, PROVIDE BEDDING TO INSULATE AGAINST THE COLD GROUND, ETC..

3) The are four saltwater exhibits in Discovery Bay. The Shark Reef, Monk Seal Habitat, Tide Pool and Estuary have approximately 1.2 million gallons of water in total.
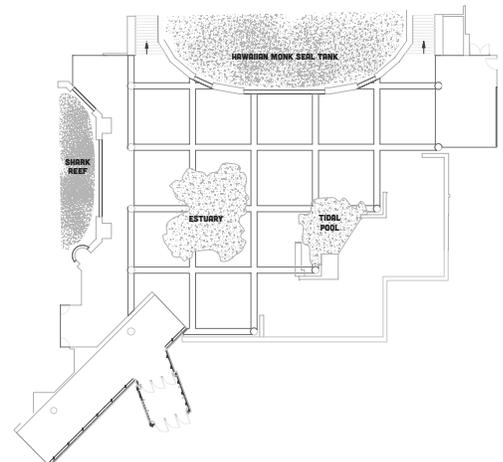
a. If the Estuary is only ½ % (or 0.005%) of the total, how many gallons of water does it have?

1,200,000 X 0.005 = 6000 GALLONS

b. To keep the amount of salt in the water at the proper concentration, the keepers add a powder called "Instant Ocean®", For every two hundred gallons of water they add one box of Instant Ocean®. How many boxes of Instant Ocean® would the zookeepers need for the estuary?

1 BOX = 200 GALLONS

6000 GALLONS / 200 GALLONS = 30 BOXES

NAME_____

4)   The Komodo Dragon is the largest living lizard on the planet. This species lives in Indonesia where the daytime temperature can reach 122°F and the evening lows get down to 72°F.

a. What is the temperature difference for the Komodo dragon's habitat?

122 – 72 = 50°F DIFFERENCE

b. The temperature on the Tropics Trail is set for 72°F. On sunny days the temperature can increase as much as 8%. What would the temperature be on a sunny day? Round answers to the closest whole number.

72 X .08 = 5.76° INCREASE   72 + 5.76 = 77.76 OR 78°F

c. The water in the pool of the Komodo dragon exhibit is 88°F. How much warmer is the water temperature than the air? Express your answer as a percentage.

88 – 78 = 10° WARMER
78/88 = .886 OR 88.6%
100% – 88.6% = 11.4% WARMER.