



# ANIMAL SHAPES, SIZES AND WEIGHTS

Grades 7-12

**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) The values given below are the weights and lengths of some animals that live on the Northern Trail. The weights given are the upper limit for each animal. The lengths are from the tip of the head to the base of the tail.

Pronghorn: 63.64kg, 4 feet

Camel: 2700 lb., 114 inches

Asian Wild Horse: 390 lb., 84 inches

Dhole: 18 kg, 3.5 feet

Moose: 818.2 kg., 10 feet

Trumpeter Swan: 38 lb., 62 inches

Amur Tiger: 272.73 kg., 110 inches

Musk Ox: 409.1kg, 8 feet

- a) What is the difference in weight between the smallest and largest animal on the Northern Trail? What is the difference in length? Round your answers to one decimal place where necessary.

( 1 foot = 12 inches) (1 kg = 2.2 lb)



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b) Using the information above, create a graph with the weight (in pounds) along the x-axis and the length (in feet) up the y-axis. Label each point with the name of the animal.



c) Using the graph only, first estimate the average weight and length of the animals represented. Then use your calculator to determine the average weight and length. How does it differ from your graph estimate? Round answers to the closest whole number.

d) The Northern Trail veterinarians have to tranquilize one of the musk oxen to do a dental check-up. The musk ox weighs 880 lb. The dosage of Carphentanol (a mammalian anesthetic) used is 0.003mg per kg of mass. How many mg of Carphentanol need to be administered? (1 kg = 2.2 lb.)



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2) The Minnesota Zoo is home for many different sizes of birds from all over North America. A ruby-throated hummingbird weighs 0.07 oz and has a wingspan of 9 cm. A male bald eagle weighs 12 lb. and has an average wingspan of 80 inches. A trumpeter swan weighs 12.7 kg and has a wingspan of 2.286 meters.

a) Imagine you are one of the avian zookeepers. It would be easier to make comparisons between these three birds if their weights and wingspans were given in the same units of measurement. Which unit would you choose to compare the bird's weights? Which would you choose for length?

b) Create a table to show all units of weight and length so this information is seen clearly. Round answers to one decimal place where necessary. (16 oz = 1 lb., 1 kg = 2.2 lb., 1 ft = 12 inches, 1 cm = 0.4 inches; 1 foot = .3048 meters). Which one gives a more accurate comparison of their sizes?

c) Each of the three birds is to receive a certain vitamin in their food once a month. The dosage on the label says to use  $0.00025$  kg per  $0.5$  kg of mass. How many kilograms of vitamin will the keepers need in a 6 month period for these three birds? Use exponential form throughout your solution and express your answer in exponential form also.



**NAME** \_\_\_\_\_

3) The coral reef tank on the Tropics Trail has 82,500 gallons of water. The filtration system allows us to support 2.5 inches of fish (in body length) per five gallons of water. Round all answers to the closest whole number.

a) How many inches of fish could be placed in the coral reef tank (i.e. the maximum capacity)? Express your answer in inches and feet. (Hint: 1 foot = 12 inches)

b) In reality, we do not have the maximum number of inches of fish in the tank. If we only have 8% of the maximum capacity and if each of the fish were 15 inches long, how many fish would we have?

c) Not all of the fish are of the same length. Assume we have 200 fish in total in this tank. Twenty percent of them are 6 inches long, 35% are 12 inches long and 30% are 18 inches long. How many fish are left and how long are they?