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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)

PRONGHORN: (140 LB) 63.64KG, 4 FEET

MOOSE: (1800 LB) 818.2 KG., 10 FEET

CAMEL: 2700 LB., (9.5 FEET) 114 INCHES

TRUMPETER SWAN: 38 LB., (5.17 FEET) 62 INCHES

ASIAN WILD HORSE: 390 LB., (7 FEET) 84 IN

AMUR TIGER:(600 LB) 272.73 KG, (9.1FEET) 110 IN

DHOLE: (40 LB)18 KG, 3.5 FEET

MUSK OX: (900 LB) 409.1KG, 8 FEET

HEAVIEST - LIGHTEST = CAMEL - TRUMPTER SWAN = 2700 - 38 = 2662 LBS

LONGEST - SHORTEST = MOOSE - DHOLE = 10 - 3.5 = 6.5 FEET



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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.

GRAPHS WILL VARY; TEACHER SHOULD CHECK FOR ACCURACY



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.

AVERAGE WEIGHT = 826 POUNDS, AVERAGE LENGTH = 7 FEET

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.)

1.2 MG OF CARPHENTANOL



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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?

ANSWERS WILL VARY.

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 = .3 meters). Which one gives a more accurate comparison of their sizes?

	Weight (ounces)	Weight (pounds)	Weight (kg)	Wingspan (cm)	Wingspan (inches)	Wingspan (feet)	Wingspan (meters)
Hummingbird	0.07	0.0044	0.0088	9	3.6	0.3	0.091
Bald eagle	192	12	5.45	200	80	6.67	2.03
Trumpeter swan	447.04	27.94	12.7	225	90	7.5	2.286

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.

5.5 X 10⁻² KG



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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)

41,250 INCHES AND 3437.5 FEET

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?

220 FISH IF THEY WERE 15 INCHES LONG

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?

30 FISH LEFT AT 38 INCHES