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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) Moose require a very specific diet. At the Minnesota Zoo the zookeepers feed them a specially formulated pellet that contains all the vitamins and nutrients they need to stay healthy. About 25% of this pellet is made of ground up aspen trees.

a) A full grown bull (male) moose eats 12 kg of pellets once a day. How many pellets will this moose eat in one week? Express your answer in both kg and lb. Round answers to one decimal place. (1 kg = 2.2 lb)

b) We actually have six moose, three juvenile males and three juvenile females. Respectively they eat 70% and 55% of what a bull moose eats in one day. How many pounds of pellets will they each consume in one week? Round off your answer to one decimal place.

c) The moose pellets are sold in 50 lb. bags. How many bags would the keepers have to order to feed these 6 moose for a month? Assume one month is equal to four weeks. Round up to the closest whole number.



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- 2) The fish at the zoo receive a special gel diet that is made in large batches every nine days.

To make **two** large trays of gel diet, the aquarists use the following ingredients:

- 1,500 g shrimp meal
- 1,500 g fish meal
- 15 g vitamins
- 15 g choline chloride (a trace element for the skin and immune system)
- 600 g spirulina algae
- 1 lb. unflavored gelatin (to hold all the components together)

a) What is the total mass of the ingredients (except the gelatin) in mg **and** kg?

b) How many mg of spirulina algae would be used if the keepers actually made **7.5 trays** of food every nine days? Express your answer in exponential form.

c) At the end of the year, the amounts of each ingredient used are totaled so the aquarists know how much to order for the following year. If they make 7.5 trays every nine days, what is the total mass of the gel diet used for one year (excluding the gelatin)? Assume that there are 365 days in one year. Express your answer in kg to two decimal places.

d) There are 25 components to the vitamin portion of the diet. If all 25 components are distributed equally, what percentage is each component of the overall gel diet? Round your answer to two decimal places.



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- 3) The Cotton top tamarin, a primate that lives in the trees of the South American rainforest, eats quite a variety of foods. Its **daily** diet consists of the following:

Morning meal – 40 grams of a specialized dry food, 10g of a specialized wet, canned food, $\frac{1}{4}$ of a hard boiled egg, 2 grapes, and $\frac{1}{2}$ fig –cut up.

Evening meal – 40 grams of specialized dry food, 20g of specialized wet, canned food, 10 mealworms, $\frac{1}{4}$ of a hard boiled egg, 2 grapes, and $\frac{1}{2}$ fig-cut up.

- a) If 1 oz. = 28.34 grams, how many cups of specialized dry food does the tamarin of eat in one week?
Express your answer as a mixed and improper fraction.

- b) The cotton top tamarin also receives a variety of fruits and vegetables, depending on the day of the week. On Wednesdays, it is given 10 grams of orange, 10 grams of banana, and 10 grams of broccoli. How many cups of food does it eat that day?

- c) If the tamarin was already given 200 mealworms this month, how many more do we need to finish the June's ration?

- d) The veterinarian decides that the tamarin needs more mealworms in its diet since they are high in protein. It is to receive an additional 20% of the amount it is currently getting to be given with the evening meal. How many more mealworms are added each day? What's the total now needed for the month of July?



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- 4) The information given below is one of the diet feeds for our three northern sea otters. All values are given in kilograms. (1 kg = 2.2lbs)

DIET FEED FOR SEA OTTERS

	Capers	Jasper	Rocky
Clam	1.9	0.9	1.6
Shrimp	1.0	1.0	1.0
Pollack	0.6	0.4	0.4
Squid	0.6	0.4	0.4
Capelin	0	0.4	0.7

a) Calculate the totals for all columns and rows. Describe a method you could use to double check your answers for accuracy.

b) What percentage of the total amount of fish fed to the sea otters is capelin?

c) Capers is a 10 year old male. He weighs approximately 90 pounds. What percent of his body weight does he eat every day?



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d) Create a bar graph to represent the data displayed in the chart. Plot each sea otter across the x-axis and pounds of seafood up the y-axis. How will you represent the different types of seafood listed? Discuss ideas with your classmates and teacher for suggestions.

