

Number Munching

OBJECTIVES

The student will create and use simple algebraic equations to calculate types and weights of food needed to feed a collection of marine mammals.

MATERIALS

- Number Munching* funsheet on page 17 (one per student)
- pencils
- calculators (optional)

BACKGROUND

Zoo curators often order animal food in large quantities, stocking at least a one-month supply. Storing frozen food provides the flexibility to feed a variety of foods throughout the year, not just when they are seasonally available. In determining how much food to order, curators take into account the number of animals and each animal's average food intake. Based on a daily food consumption of 6,350 kg (7 tons), SeaWorld parks purchase about 196,850 kg (217 tons) of seafood a month.



ACTION

1. Curators are responsible for the health and well-being of the animals in their care. Discuss sources of seafood, shipping methods that reduce spoilage or contamination, and storage facilities for keeping stock on hand.
2. Distribute *Number Munching* funsheets and pencils. Students work in groups or individually. Before they begin, discuss any questions. *(Depending on the level of your students, you may give them equations or create them together.)*
3. Students present and discuss their results and problem-solving methods.

DEEPER DEPTHS

Veterinarians prescribe vitamins on a per-pound-of-food-intake basis. One multivitamin is given with every 2.3 kg of food. How many multivitamins should you order?

ANSWERS

For example, to calculate the total weight of herring for one month...

n = days in the month

h_k = daily amount of herring for 1 killer whale

h_s = daily amount of herring for 1 sea lion

h_w = daily amount of herring for 1 walrus

h_b = daily amount of herring for 1 bottlenose dolphin

h_T = total amount of herring for one 31-day month

$$h_T = n (2h_k + 13h_s + 2h_w + 9h_b)$$

For a 31-day month...

$herring_T = 4,511$ kg herring

$squid_T = 1,442$ kg squid

$smelt_T = 6,231$ kg smelt

$salmon_T = 434$ kg salmon

$clams_T = 558$ kg clams

Name _____

Number Munching

Congratulations! You are the new curator for XYZ Zoo. Your zoo has 2 killer whales, 13 California sea lions, 2 Pacific walruses, and 9 bottlenose dolphins.

Your assistant has just given you the average food quantity given to each animal each day (see chart below).

In one hour, Mr. Guppy from the Fantastic Frozen Fish Company, a leading distributor of high-quality fish, is calling for next month's order. What will you tell him?

	FOOD TYPE (PER DAY)				
	<i>herring</i>	<i>squid</i>	<i>smelt</i>	<i>salmon</i>	<i>clams</i>
<i>killer whale</i>	23 kg	7 kg	32 kg	7 kg	—
<i>California sea lion</i>	3 kg	1 kg	5 kg	—	—
<i>Pacific walrus</i>	10 kg	3 kg	—	—	9 kg
<i>bottlenose dolphin</i>	4.5 kg	1.5 kg	8 kg	—	—

Create algebraic equations that will help you solve this problem.