

Calculating Sharks

OBJECTIVES

- (1) Given data about sharks and the amount of food they eat, the student will be able to solve for the unknown in percentage problems.
- (2) Given information about a shark's growth, the student will be able to graph coordinates and interpret a linear graph.
- (3) Given the conversion factor, the student will be able to convert from metric to English units.

MATERIALS

- copies of *Calculating Sharks* funsheet on pages 15–16
- pencils
- graph paper
- calculators (optional)

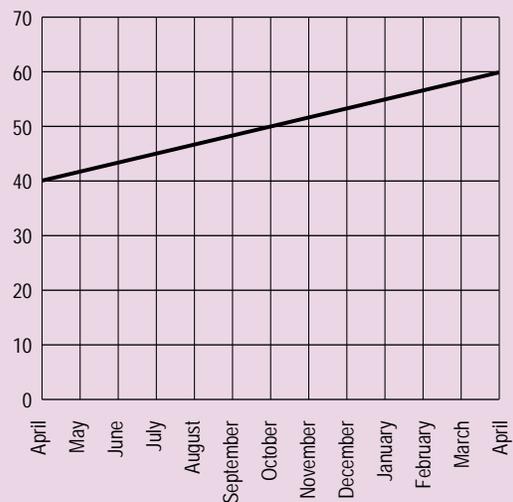
ACTION

1. Distribute *Calculating Sharks* funsheets to students. Students may work individually or in cooperative learning groups.
2. After the students complete their calculations, review the problems together. How did students go about solving the problems?

ANSWERS

1. $650 \text{ lb.} \times 0.25 = \mathbf{162.5 \text{ lb.}}$
2. nurse shark $350 \text{ lb.} \times 0.10 = 35 \text{ lb.} = \mathbf{15.9 \text{ kg}}$
 sandtiger shark $250 \text{ lb.} \times 0.10 = 25 \text{ lb.} = \mathbf{11.3 \text{ kg}}$
 lemon shark $300 \text{ lb.} \times 0.10 = 30 \text{ lb.} = \mathbf{13.6 \text{ kg}}$
 brown shark $150 \text{ lb.} \times 0.10 = 15 \text{ lb.} = \mathbf{6.8 \text{ kg}}$
3. $7 \text{ lb. bluefish} + 2 \text{ lb. mackerel} + 5 \text{ lb. herring} = \mathbf{14 \text{ lb.}}$ total food fish
 bluefish $7 \text{ lb.} \div 14 \text{ lb.} = 0.50$ or $\mathbf{50\%}$
 mackerel $2 \text{ lb.} \div 14 \text{ lb.} = 0.143$ or $\mathbf{14.3\%}$
 herring $5 \text{ lb.} \div 14 \text{ lb.} = 0.357$ or $\mathbf{35.7\%}$
 weight of shark = n
 $n \times 0.10 = 14 \text{ lb.}$
 $n = 14 \div 0.10 \text{ lb.}$
 $n = \mathbf{140 \text{ lb.}}$
4. shrimp $8 \text{ lb.} \div 129 \text{ lb.} = 0.062$ or $\mathbf{6.2\%}$
 clams $8 \text{ lb.} \div 129 \text{ lb.} = 0.062$ or $\mathbf{6.2\%}$
 brine shrimp $42 \text{ lb.} \div 129 \text{ lb.} = 0.326$ or $\mathbf{32.6\%}$
 whitebait $12 \text{ lb.} \div 129 \text{ lb.} = 0.093$ or $\mathbf{9.3\%}$
 mackerel $8 \text{ lb.} \div 129 \text{ lb.} = 0.062$ or $\mathbf{6.2\%}$
 squid $16 \text{ lb.} \div 129 \text{ lb.} = 0.124$ or $\mathbf{12.4\%}$
 lettuce $35 \text{ lb.} \div 129 \text{ lb.} = 0.271$ or $\mathbf{27.1\%}$

5. a. about $\mathbf{48 \text{ kg}}$
 b. $\mathbf{60 \text{ kg}}$
 c. about $\mathbf{132 \text{ lb.}}$



Calculating Sharks

1. A shark's liver is extremely large. It makes up as much as 25% of the shark's total body weight. If a bull shark (*Carcharhinus leucas*) weighs 650 pounds, what is the maximum weight its liver might be?

2. The sharks of SeaWorld eat approximately 10% of their body weight in food per week. SeaWorld aquarists (people who take care of fishes) weigh the food fish before they feed it to the sharks. They record the amount and total weight of food fish each shark eats during a feeding. Here are estimated weights of some SeaWorld sharks. Calculate how many pounds of fish each of the following sharks eats in one week. There are 2.2046 pounds in one kilogram. How many kilograms of fish does each shark eat in one week?

<i>shark</i>	<i>weight</i>	<i>weekly food amount</i>	
		<i>in pounds</i>	<i>in kilograms</i>
nurse shark	350 lb.	_____	_____
sandtiger shark	250 lb.	_____	_____
lemon shark	300 lb.	_____	_____
brown shark	150 lb.	_____	_____

3. A shark eats 7 pounds of bluefish, 2 pounds of mackerel, and 5 pounds of herring in one week.
 - a. What percent of the weekly total is each type of fish?

 - b. Estimate how much this shark weighs if its weekly food consumption is about 10% of its body weight.

4. As a group, 2,000 fish in the Coral Reef Aquarium at SeaWorld eat the following amounts of food per week:

8 lb. shrimp
8 lb. clams
42 lb. brine shrimp
12 lb. whitebait
8 lb. mackerel
16 lb. squid
35 lb. lettuce

What percent (by weight) of the weekly total is each food type?

5. As sharks grow, their weight increases in proportion to the amount of food they eat. A brown shark (*Carcharhinus plumbeus*) weighs 40 kilograms in April and 55 kilograms in January. Graph these two measurements on graph paper. Plot weight on vertical axis and months on the horizontal axis. Then use your graph to answer the questions below.

- a. Estimate the brown shark's weight in September.

- b. If the brown shark's weight increases at the same rate, what will its weight be next April (in kg)?

- c. There are 2.2046 lb. in one kilogram. What will the brown shark's weight be next April in pounds?