

Bird-Brained Foraging Worksheet

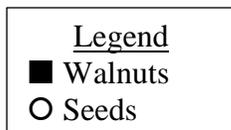
Name _____ Date _____

1. In the Data Table, record the quantity of walnuts and quantity of seeds that you ate while you were a crow. (5 pts)
2. Calculate how many energy units that you gained, and record this in the data table. (5 pts)
3. Determine your efficiency (energy units you gained per piece of food) for each day, and record this information in the data table. (5 pts)
4. Calculate the totals and averages for how many pieces of food that you ate, how many energy units you gained, and your efficiency. (5 pts)

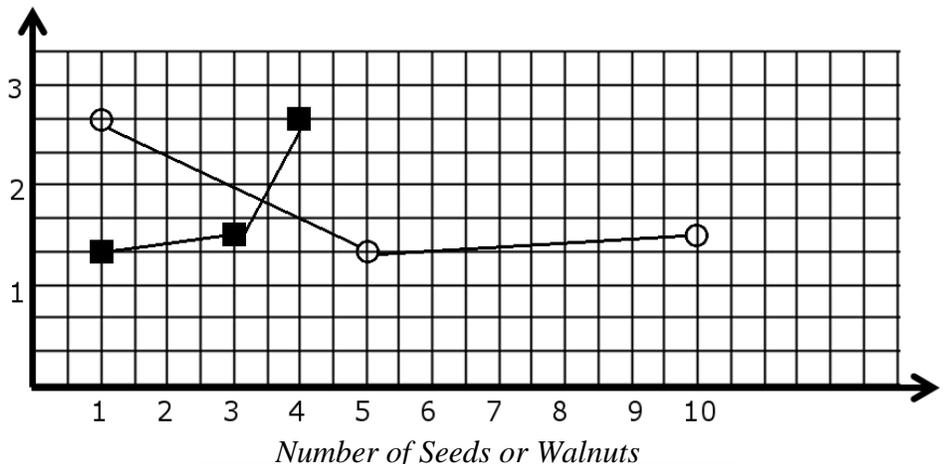
Data Table

Foraging Day	Quantity of Walnuts (a)	Quantity of Seeds (b)	Energy Units $(a \times 3) + (b \times 1) = (c)$	Efficiency $c \div (a + b)$
Day 1	1	5	$3 + 5 = 8$	$8 \div (1 + 5) = 1.33$
Day 2	3	10	$9 + 10 = 19$	$19 \div (3 + 10) = 1.46$
Day 3	4	1	$12 + 1 = 13$	$13 \div (4 + 1) = 2.60$
Total	8	16	40	1.67
Average	2.67	5.33	13.33	1.80

5. Label the x-axis and y-axis. Graph the relationship between the quantity (x-axis) of each type of food that you ate and your foraging efficiency (y-axis) for that day. You should have 6 points on the graph, and will use each efficiency value twice (once for each food). Connect the points for each type of food. (20 pts)



Efficiency



6. Describe the strategy that made you the best crow forager. Explain how/if your foraging strategy changed between rounds, and explain whether or not your new strategies were better. (5 pts)

The most efficient strategy was to eat mostly walnuts and not many seeds, which is what I did in the last round. I ate a lot of seeds in the second round and was able to get more energy overall though, so that might be better. I think my last strategy was best because I didn't have to find as much food for the almost the same amount of energy.

7. Was eating walnuts or seeds more efficient? Explain why. (5 pts)

Eating walnuts was more efficient, because I got 3 energy for 1 walnut instead of 1 energy for 1 seed.

8. Why do crows sometimes share information with each other instead of always being selfish? Why did you choose to share (or not share) with your classmates? If your class did a similar activity each week, how would your sharing strategy change? (15 pts)

Crows share information because they can't find out about everything on their own. Other birds sometimes find food in an area that they didn't look, or they find better food. If they share one day, then the other bird might share on a different day and they will both be stronger or safer because they are together. I didn't share information after the first round because I thought I knew what was best, but I shared the second time because I saw that other kids got more walnuts by searching in the piles of seeds. I'd definitely share if we did something every week, because then my friends would share with me.

9. List 3 factors that crows (or ravens) use when choosing what to eat, and describe a situation where each is the most important factor. (20 pts) **[extra examples provided]**

Calories, difficulty (handling time), safety, searching time/distance, experience
- calories would be most important if food is hard to find
- handling time would be important if they also spend a lot of energy getting the food, or if they might be injured trying to get the food
- safety would definitely be most important if they are alone or if there are a lot of predators in the area
- search time/distance would be very important on days with bad weather because it would be more difficult to fly and would take a lot of energy
- experience would be most important if some things looked like food but might actually be poisonous

10. Challenge: Imagine that you are a raven who is terrible at finding food but good at breaking into tough food and defending it afterward. Decide whether you would be more or less likely to share information with your fellow raven, as compared to a bird that is good at finding food. Explain why. (10 pts)

I think that I would be more likely to share with the other ravens because there would be many times that they would find food and I wouldn't. If I help break into the food on one day, they are more likely to let me follow them other times. But if I don't share, then I could end up finding terrible food or being attacked.