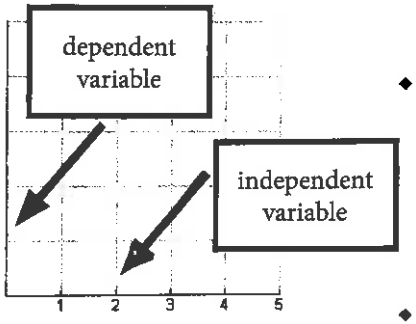
A few things to remember when creating tables and graphing:



- Always put the **independent variable** in the first column of a tabl the x-axis of a graph. The independent variable is the variable the is dependent on. The y-axis corresponds to the **dependent variab**
- Most real-world situations take place in the first quadrant. Think your situation before graphing and decide if negative numbers wc ever make sense. For example, you will not have a negative amou for the cost of a cell phone bill, so you will only need to use the first quadrant.
- Choose a range (lowest to the highest number) for the y-axis that allows the viewer of your graph to see all points easily. Also, make sure your increments on the y-axis are reasonable.

EXERCISES

Determine an appropriate range for the y-axis. State what increments you would use on the graph.

1.

Minutes	Distance Traveled
0	8
1	20
2	32
3	44
4	56
5	68

2.

Sales Made	Salary
0	$120
1	$150
2	$180
3	$210
4	$240
5	$270

3.

Years	Car's Worth
0	$12,000
1	$10,500
2	$9,000
3	$7,500
4	$6,000
5	$4,500

4. Jackson got his driving license one year ago. When Jackson got his driver's license, his car insurance cost $82 per month. Each time he gets a speeding ticket, his insurance goes up $26 per month.

- **a.** Write a recursive routine that describes Jackson's monthly car insurance bill based on the number of tickets he has received.
- **b.** Create an input-output table for 0 to 5 speeding tickets.
- **c.** Create a linear plot that shows his total monthly bill through the first five tickets.
- **d.** Jackson has received 12 speeding tickets. How much is his monthly bill? Show all work necessary to justify your answer.

5. Maggie bought a laptop computer for $799. Each year, the value of her laptop d by $70.

- **a.** Write a recursive routine that describes the value of Maggie's laptop based number of years she has owned it.
- **b.** Create an input-output table for the value of the laptop for 0 to 5 years.
- **c.** Create a linear plot that shows the value of the laptop through the first five
- **d.** How many years will it take before the laptop is not worth anything? Use and/or numbers to show how you determined your answer.

6. Frank borrowed $200 from his parents to buy a mountain bike. Each week, he uses $14 of his allowance to pay back his parents.

a. Write a recursive routine that describes the total amount Frank owes his parents based on the number of weeks that have passed since he borrowed the money.
b. Create an input-output table that shows the amount he still owes for 0 to 5 weeks.
c. Create a linear plot that shows the amount Frank still owes his parents through the first five weeks.
d. How much will Frank's last payment be? Show all work necessary to justify your answer.

7. Quincy hiked up a slope in Desert Shores, California (one of the few places below sea level in the United States). He began at an elevation 61 feet below sea level. Each minute that he hiked, he rose 7 feet in elevation.
a. Write a recursive routine that describes Quincy's elevation based on the number of minutes he hiked.
b. Create an input-output table to find his elevation for 0 to 10 minutes of hiking.
c. Create a linear plot that shows Quincy's change in elevation through the first 10 minutes.
d. How many minutes did it take for Quincy to get above sea level? Support your answer with mathematics.

8. Victor and Mike had a pizza-eating contest. Victor had already eaten three pieces when the competition started. Mike had only eaten one piece. Once the competition started, Victor was able to eat $\frac{1}{2}$ of a piece every minute. Mike was able to eat a little faster. He ate $\frac{3}{4}$ of a piece every minute.

a. Write two recursive routines, one that describes Victor's pizza-eating and the other describing Mike's pizza-eating. Label them accordingly.
b. The pizza-eating competition lasted for 8 minutes. Create two input-output tables that show the number of pieces each boy had eaten for each of the first 8 minutes.
c. Who won the competition at the end of 8 minutes?

9. When Kathy was born, her grandparents started an account for her college education with $1,000 in it. Each year, on her birthday, they add $250.
a. Write a recursive routine that gives the amount of money in Kathy's account based on her age, not including interest.
b. Determine the total amount her grandparents will have contributed after her 18th birthday.
c. Overall, the entire account earned 28% interest. Determine the total amount the account was worth when she withdrew it after her 18th birthday. Show all work necessary to justify your answer.

10. Marin and Jimmy's father asked them to figure out a problem about an antique desk he owned. The antique desk was currently worth $200. Each year that passed, it was worth $45 more. He wanted to know how many years it would take before the desk would be worth over $500. They created a recursive sequence shown below:

200, 245, 290, 335, 380, 425, 470, 515

Jimmy says it will take 8 years but Marin says it will only take 7 years. Who do you agree with? Explain your reasoning.