Name _____ Date_____

Relationships in Tables

The table below shows the price, in dollars, for the number of roses indicated.

Number of Roses	3	6	9	12	15
Price (Dollars)	9	18	27	36	45

1. Is the price proportional to the number of roses? How do you know?

2. Find the cost of purchasing 30 roses.

In each table determine if y is proportional to x. Explain why or why not.

1.

x	y
3	12
5	20
2	8
8	32

2.

x	y
3	15
4	17
5	19
6	21

3.

x	y
6	4
9	6
12	8
3	2

4. Kayla made observations about the selling price of a new brand of coffee that sold in three different sized bags. She recorded those observations in the following table:

Ounces of Coffee	6	8	16
Price in Dollars	\$2.10	\$2.80	\$5.60

   a. Is the price proportional to the amount of coffee? Why or why not?

   b. Use the relationship to predict the cost of a 20 oz. bag of coffee?

5. You and your friends go to the movies. The cost of admission is \$9.50 per person. Create a table showing the relationship between the number of people going to the movies and the total cost of admission.

   Explain why the cost of admission is proportional to the amount of people.

6. For every 5 pages Gil can read, his daughter can read 3 pages. Let g represent the number of pages Gil reads and let d represent the number of pages his daughter reads. Create a table showing the relationship between the number of pages Gil reads and the number of pages his daughter reads.

   Is the number of pages Gil's daughter reads proportional to the number of pages he reads? Explain why or why not.

7. The table shows the relationship between the number of parents in a household and the number of children in the same household. Is the number of children proportional to the number of parents in the household? Explain why or why not.

Number of Parents	Number of Children
0	0
1	3
1	5
2	4
2	1

8. The table below shows the relationship between the number of cars sold and the amount of money earned by the car salesperson. Is the amount of money earned, in dollars, proportional to the number of cars sold? Explain why or why not.

Number of Cars Sold	Money Earned
1	250
2	600
3	950
4	1076
5	1555

9. Make your own example of a relationship between two quantities that is NOT proportional. Describe the situation and create a table to model it. Explain why one quantity is not proportional to the other.

The table below shows the price, in dollars, for the number of roses indicated.

Number of Roses	3	6	9	12	15
Price (Dollars)	9	18	27	36	45

1. Is the price proportional to the number of roses? How do you know?

   The quantities are proportional to one another because there is a constant of 3 such that when the number of roses is multiplied by the constant, the result is the corresponding price.

2. Find the cost of purchasing 30 roses.

   If there are 30 roses, then the cost would be $30 \times 3 = \$90$.

In each table, determine if y is proportional to x. Explain why or why not.

1.

x	y
3	12
5	20
2	8
8	32

2.

x	y
3	15
4	17
5	19
6	21

3.

x	y
6	4
9	6
12	8
3	2

1. *Yes, y is proportional to x because the values of all ratios of $\frac{y}{x}$ are equivalent to 4. Each measure of x multiplied by this constant of 4 gives the corresponding measure in y.*
2. *No, y is not proportional to x because the values of all the ratios of $\frac{y}{x}$ are not equivalent. There is not a constant where every measure of x multiplied by the constant gives the corresponding measure in y. The values of the ratios are 5, 4.25, 3.8, and 3.5.*
3. *Yes, y is proportional to x because a constant value of $\frac{2}{3}$ exists where each measure of x multiplied by this constant gives the corresponding measure in y.*

4. Kayla made observations about the selling price of a new brand of coffee that sold in three different sized bags. She recorded those observations in the following table:

Ounces of Coffee	6	8	16
Price in Dollars	$\$2.10$	$\$2.80$	$\$5.60$

   a. Is the price proportional to the amount of coffee? Why or why not?

      Yes, the price is proportional to amount of coffee because a constant value of 0.35 exists where each measure of x multiplied by this constant gives the corresponding measure in y.

   b. Use the relationship to predict the cost of a 20 oz. bag of coffee.

      20 ounces will cost $\$7$.

5. You and your friends go to the movies. The cost of admission is $\$9.50$ per person. Create a table showing the relationship between the number of people going to the movies and the total cost of admission.

   Explain why the cost of admission is proportional to the amount of people.

Number of People	*Cost (dollars)*
1	9.50
2	19
3	28.50
4	38

The cost is proportional to the number of people because a constant value of 9.50 exists where each measure of the number of people multiplied by this constant gives the corresponding measure in y.

6. For every 5 pages Gil can read, his daughter can read 3 pages. Let g represent the number of pages Gil reads, and let d represent the number of pages his daughter reads. Create a table showing the relationship between the number of pages Gil reads and the number of pages his daughter reads.

   Is the number of pages Gil's daughter reads proportional to the number of pages he reads? Explain why or why not.

g	d
5	3
10	6
15	9

Yes, the number of pages Gil's daughter reads is proportional to the number of pages Gil reads because all the values of the ratios are equivalent to 0.6. When I divide the number of pages Gil's daughter reads by the number of pages Gil reads, I always get the same quotient. Therefore, every measure of the number of pages Gil reads multiplied by the constant 0.6 gives the corresponding values of the number of pages Gil's daughter's reads.

7. The table shows the relationship between the number of parents in a household and the number of children in the same household. Is the number of children proportional to the number of parents in the household? Explain why or why not.

Number of Parents	Number of Children
0	0
1	3
1	5
2	4
2	1

No, there is not a proportional relationship because there is no constant such that every measure of the number of parents multiplied by the constant would result in the corresponding values of the number of children. When I divide the number of children by the corresponding number of parents, I do not get the same quotient every time. Therefore, the values of the ratios of children to parents are not equivalent. They are 3, 5, 2, and 0.5.

8. **The table below shows the relationship between the number of cars sold and the amount of money earned by the car salesperson. Is the amount of money earned, in dollars, proportional to the number of cars sold? Explain why or why not.**

Number of Cars Sold	Money Earned (in dollars)
1	250
2	600
3	950
4	1,076
5	1,555

No, there is no constant such that every measure of number of cars sold multiplied by the constant would result in the corresponding values of the earnings because the ratios of money earned to number of cars sold are not equivalent; the values of the ratios are 250, 300, $316\frac{2}{3}$, 269, *and* 311.

9. **Make your own example of a relationship between two quantities that is NOT proportional. Describe the situation and create a table to model it. Explain why one quantity is not proportional to the other.**

Answers will vary but should include pairs of numbers that do not always have the same value $\frac{B}{A}$.