

LESSON
1-6

Problem Solving
Relations and Functions

The table shows the nutritional values of different types of milk.

1. Is the relation from calories to saturated fat a function? Explain why or why not.

Solution:

Does each calorie value have exactly one fat value?

146 → 4.4, 122 → 3.1,
102 → 1.5, 83 → 0.3

Yes, the relation is a function.

2. Is the relation from calories to carbohydrates a function? Explain why or why not.

Does each _____ value have exactly one _____ value?

146 → _____, 122 → _____,
102 → _____, 83 → _____

Yes, each calorie value has exactly one carbohydrate value.

3. Is the relation from carbohydrates to calories a function? Explain why or why not.

MILK FACTS (1 cup)			
A	B	C	D
Type	Calories	Carbo- hydrates (g)	Saturated Fat (g)
Whole	146	11	4.4
2%	122	11.4	3.1
1%	102	12.2	1.5
Nonfat	83	12.2	0.3

Choose the letter for the best answer.

4. Graphs of some of the relations from the table above can be drawn. Which of these graphs fails the vertical-line test if the data is graphed as follows?
- A column B along the x-axis, column C along the y-axis
 - B column D along the x-axis, column B along the y-axis
 - C column C along the x-axis, column B along the y-axis
5. For the function (B, D) that relates calories to saturated fat, which column shows the domain?
- F column B
 - G column C
 - H column D
6. Which column shows the range of a function that relates the type of milk to the number of calories?
- A column A
 - B column B
 - C column C

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102 → 1.5, 83 → 0.3

Yes, the relation is a function.

2. Is the relation from calories to carbohydrates a function? Explain why or why not.

Does each **calorie** value have exactly one **carbohydrate** value?

146 → **11**, 122 → **11.4**,
102 → **12.2**, 83 → **12.2**

Yes, each calorie value has exactly one carbohydrate value.

3. Is the relation from carbohydrates to calories a function? Explain why or why not.

No; the carbohydrate value 12.2 has two calorie values, 102 and 83.

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