Name _____ Date _____ Class _____

TEKS 2A.1.A

LESSON 1-6

Problem Solving

Relations and Functions

In order to make a nutrition plan, Richard wants to compare different types of milk. Use the table for Exercises 1–7.

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

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

_____

_____

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

_____

_____

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

_____

Choose the letter for the best answer.

4. Richard is drawing graphs of some of the relations from the table above. Which of these graphs fails the vertical-line test if he graphs the data 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 D along the *x*-axis, column C along the *y*-axis

D 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 A

G column B

H column C

J 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

D column D

7. Richard makes a mapping diagram from each type of milk to the number of students in his class of 25 who prefer that type of milk. Which is the best statement about this diagram?

F It is a relation, but not a function.

G It is a function, but not a relation.

H It is a function and a relation.

J It is not a relation or a function.

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Nonfat	83	12.2	0.3

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

Yes; each calorie value has only one fat value.

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

Yes; each calorie value has only 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.

Choose the letter for the best answer.

4. Richard is drawing graphs of some of the relations from the table above. Which of these graphs fails the vertical-line test if he graphs the data 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 D along the *x*-axis, column C along the *y*-axis

(D) 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 A

(G) column B

H column C

J 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

D column D

7. Richard makes a mapping diagram from each type of milk to the number of students in his class of 25 who prefer that type of milk. Which is the best statement about this diagram?

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