Name _____ Date _____ Class _____

LESSON 4-2

Problem Solving

Multiplying Matrices

Members of the Cooking Club entered a contest. In this contest, the score for each entry is multiplied by an assigned degree of difficulty.

Cooking Club Members Scores			
	Appetizer	**Main Course**	**Dessert**
Beth	25	38	28
Jon	35	29	37
Lupe	20	31	39
Amy	40	32	36

Contest Degrees of Difficulty				
	Beth	**Jon**	**Lupe**	**Amy**
Appetizer	3.1	2.0	3.5	1.5
Main Course	2.1	1.8	3.7	2.8
Dessert	2.3	2.4	3.0	3.5

1. Display each table as a matrix. Matrix *S* should show the scores and matrix *D* should show the degrees of difficulty.

$$S = \begin{bmatrix} 25 & \_\_ & \_\_ \\ \_\_ & \_\_ & 37 \\ \_\_ & \_\_ & \_\_ \\ \_\_ & \_\_ & \_\_ \end{bmatrix} \qquad D = \begin{bmatrix} 3.1 & \_\_ & \_\_ & \_\_ \\ \_\_ & \_\_ & \_\_ & 2.8 \\ \_\_ & \_\_ & \_\_ & \_\_ \end{bmatrix}$$

2. Write an equation using *S*, *D*, and product matrix *P* you could use to evaluate the final scores. _____ × _____ = _____

3. Explain how you know that matrix *S* can be multiplied by matrix *D*.

_____

4. Write the product matrix *P*.

$$P = \begin{bmatrix} & \\ & \\ & \\ & \end{bmatrix}$$

5. Where in matrix *P* do you find the final score for each person?

_____

6. List the contestants and their final scores, in descending order.

Lupe: 301.7; _____: _____; _____: _____; _____: _____

Name _____ Date _____ Class _____

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1. Display each table as a matrix. Matrix *S* should show the scores and matrix *D* should show the degrees of difficulty.

$$S = \begin{bmatrix} 25 & 38 & 28 \\ 35 & 29 & 37 \\ 20 & 31 & 39 \\ 40 & 32 & 36 \end{bmatrix}; \qquad D = \begin{bmatrix} 3.1 & 2.0 & 3.5 & 1.5 \\ 2.1 & 1.8 & 3.7 & 2.8 \\ 2.3 & 2.4 & 3.0 & 3.5 \end{bmatrix}$$

2. Write an equation using *S*, *D*, and product matrix *P* you could use to evaluate the final scores.

S × *D* = *P*

3. Explain how you know that matrix *S* can be multiplied by matrix *D*.

Possible answer: because matrix *S* has the same number of columns (3) as matrix *D* has rows (3); the result will be a 4 × 4 matrix.

4. Write the product matrix *P*.

$$P = \begin{bmatrix} 221.7 & 185.6 & 312.1 & 241.9 \\ 254.5 & 211.0 & 340.8 & 263.2 \\ 216.8 & 189.4 & 301.7 & 253.3 \\ 274.0 & 224.0 & 366.4 & 275.6 \end{bmatrix}$$

5. Where in matrix *P* do you find the final score for each person?

The numbers along the main diagonal of the product matrix give the final scores.

6. List the contestants and their final scores, in descending order.

Lupe: 301.7; Amy : 275.6 ; Beth : 221.7 ; Jon : 211