Name _____ Date _____ Class _____

CHAPTER 4

Performance Assessment Teacher Support

Matrices

Purpose:
To assess student understanding of organizing data into matrices, operating with matrices, and solving systems of equations by using matrices.

Time:
20–30 minutes

Grouping:
Individuals or partners

Preparation Hints:
Review the basic row operations.

Introduce the Task:
Students are presented with data from a game involving certain combinations of unknown values. They are asked to organize the data into a matrix. This allows them to use matrix row operations to find the unknown values.

Performance Indicators:

____ Creates a chart that matches data.

____ Writes an augmented matrix that matches chart.

____ Does row reduction correctly.

____ Correctly interprets reduced row matrix.

Scoring Rubric:

Level 4: Student solves problems correctly and gives good explanations.

Level 3: Student solves problems but does not give satisfactory explanations.

Level 2: Student solves some problems but does not give satisfactory explanations.

Level 1: Student is not able to solve any of the problems.

Name _____ Date _____ Class _____

CHAPTER 4

Performance Assessment

Matrices

Three friends are playing a game with colored cards in which they receive points for the cards they hold at the end of the game. The cards are blue, green, and red, and each color is worth a different number of points.

Robin has 5 blue cards, 3 green cards, and 2 red cards, for a total of 25 points. Kim has 4 red cards, 4 green cards, and 2 blue cards, for a total of 19 points. Pat has no red cards, 7 green cards, and 3 blue cards, for a total of 34 points.

1. Organize the data into a chart.

2. Create an augmented matrix from the data in the chart.

3. Use row operations to put this matrix into reduced row-echelon form.

4. How much is each color worth?

2. $\begin{bmatrix} -10 & -11 & 15 \\ 5 & 7 & -15 \end{bmatrix}$

3. $\begin{bmatrix} 11 & -19 \\ 23 & 6 \\ -20 & 29 \end{bmatrix}$

4. *VS*

5. $\begin{bmatrix} 24 & 15 & 0 \\ -8 & 18 & 0 \\ 2 & 7 & -4 \end{bmatrix}$

6. $\begin{bmatrix} 1 & 0 \\ 1 & -1 \end{bmatrix}$

7. $\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$

8. $A'(3, -3)$, $B'(7, -2)$, and $C'(4, -4)$

9. -2

10. 18

11. $x = -5$, $y = -7$

12. $\pm\sqrt{12}$

13. $\begin{bmatrix} -\frac{1}{\pi} & 1 \\ 2 & -\pi \end{bmatrix}$

14. $\left[\begin{array}{cc|c} 4 & 3 & 7 \\ -5 & -1 & -2 \end{array}\right]$

15. $\left[\begin{array}{cc|c} 1 & 0 & 11 \\ 0 & 1 & 8 \end{array}\right]$

16. apple: \$0.75, pear: \$0.85, orange: \$0.55.

Performance Assessment

1.

	Blue	Green	Red	Points
Kim	4	4	2	54
Pat	3	7	0	56
Robin	5	3	2	56

2. $\left[\begin{array}{ccc|c} 4 & 4 & 2 & 54 \\ 3 & 7 & 0 & 56 \\ 5 & 3 & 2 & 56 \end{array}\right]$

3. $\left[\begin{array}{ccc|c} 1 & 0 & 0 & 7 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & 3 \end{array}\right]$

4. blue, 7; green, 5; red, 3.

Cumulative Test

1. D
2. G
3. B
4. F
5. D
6. J
7. C
8. G
9. B
10. H
11. D
12. G
13. A
14. H
15. D
16. F
17. D
18. F
19. A
20. F
21. D
22. H
23. B
24. J
25. C
26. H
27. A
28. H
29. C
30. H
31. A
32. G
33. C
34. H
35. B