



Review Day

Midterm Review

Warm-Up

In the Midterm Review Packet,
do Unit 1 #2, 6, 10, 12, 14, 18

AND


Using the tiles in #14, find the probability that the second tile is white given that the first tile is white

AND

In how many ways can you rearrange WORKROOM?



Phones OFF
& in the
pockets!!



**Homework Questions
from last night?!**
Midterm Review Units 1 and 2 Odds



Tonight's Homework

- Complete Midterm Review Packet
 - Study for Midterm

Practice

Suppose that Sol and Tina change their game. Now, Sol will win 3 cents if both players show Heads, Sol will win 1 cent if both players show Tails, and Sol will pay 2 cents if one shows Heads and the other shows Tails. **Express your answers as sentences.**

- Write a payoff matrix for this scenario.
- Use the row matrix $\begin{bmatrix} p & 1-p \end{bmatrix}$ to find Sol's best strategy for this game.
- Use the column matrix $\begin{bmatrix} q \\ 1-q \end{bmatrix}$ to find Tina's best strategy for this game.
- Find Sol's expectation for this game.

Done early?
Start Unit 2
Evans

Practice Answers

a. $\begin{bmatrix} 3 & -2 \\ -2 & 1 \end{bmatrix}$

b. Sol should play heads 3 of 8 times and tails 5 of 8 times.

c. Tina should play heads 3 of 8 times and tails 5 of 8 times.

$$\begin{bmatrix} \frac{3}{8} & \frac{5}{8} \end{bmatrix} \begin{bmatrix} 3 & -2 \\ -2 & 1 \end{bmatrix} \begin{bmatrix} \frac{3}{8} \\ \frac{5}{8} \end{bmatrix} = \begin{bmatrix} -\frac{1}{8} \end{bmatrix} \approx [-.125]$$

d. Sol is expected to lose 1 penny for every 8 games he plays.

Midterm Review: Matrix Applications

The inventories of a designer's most popular items in all three stores are recorded in the table.

	T-shirts	Jackets	Cardigans
Target	15	20	23
Old Navy	18	23	21
Kohl's	17	26	19

Label your rows and columns in your work and your answer.

1. The designer sells the T-shirts to the stores for \$13, the jackets for \$18, and the cardigans for \$16. Use matrices to calculate the income, I , that the designer makes from selling these popular items to the stores.

Annette, Barb, and Carlita work in a clothing shop. One day the three had combined sales of \$1480. Annette sold \$120 more than Barb. Barb and Carlita combined sold \$280 more than Annette. How much did each person sell?

2. Create a system of equations for the problem.
3. Write a matrix equation to represent the scenario.
4. Use matrices to solve the problem.

Test Review: Station A ANSWERS (continued)

A local designer clothes manufacturer tries to keep up with her sales in Target, Old Navy, and Kohl's. The inventories of her most popular items in all three stores are recorded in the table.

	T-shirts	Jackets	Cardigans
Target	15	20	23
Old Navy	18	23	21
Kohl's	17	26	19

Label your rows and columns in your work and your answer.

1. The designer sells the T-shirts to the stores for \$13, the jackets for \$18, and the cardigans for \$16. Use matrices to calculate the income, I , that the designer makes from selling these popular items to the stores.

$$\begin{array}{l} \text{Target} \\ \text{Old Navy} \\ \text{Kohl's} \end{array} \begin{matrix} T & J & C \\ \left[\begin{array}{ccc} 15 & 20 & 23 \\ 18 & 23 & 21 \\ 17 & 26 & 19 \end{array} \right] \end{matrix} \cdot \begin{matrix} \text{Income} \\ \text{T} \\ \text{J} \\ \text{C} \\ \left[\begin{array}{c} 13 \\ 18 \\ 16 \end{array} \right] \end{matrix} = \begin{matrix} \text{Target} \\ \text{Old Navy} \\ \text{Kohl's} \end{matrix} \begin{matrix} \text{Income} \\ \left[\begin{array}{c} 923 \\ 984 \\ 993 \end{array} \right] \end{matrix} = I$$

Midterm Review: Matrix Application ANSWERS

Annette, Barb, and Carlita work in a clothing shop. One day the three had combined sales of \$1480. Annette sold \$120 more than Barb. Barb and Carlita combined sold \$280 more than Annette. How much did each person sell?

2. Create a system of equations for the problem.

Let a = Annette's sales, b = Barb's sales, and c = Carlita's sales

$$a + b + c = 1480$$

$$a + b + c = 1480$$

$$a = 120 + b$$

→

$$a - b + 0c = 120$$

$$b + c = a + 280$$

$$-a + b + c = 280$$

Midterm Review: Matrix Application ANSWERS

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$$a + b + c = 1480$$

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$$a = 120 + b$$

→

$$a - b + 0c = 120$$

$$b + c = a + 280$$

$$-a + b + c = 280$$

3. Write a matrix equation to represent the scenario.

$$\begin{bmatrix} 1 & 1 & 1 \\ 1 & -1 & 0 \\ -1 & 1 & 1 \end{bmatrix} \bullet \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 1480 \\ 120 \\ 280 \end{bmatrix}$$

$$\mathbf{A} \bullet \mathbf{X} = \mathbf{B}$$

→ type in A and B in calc.

$$\mathbf{A} \bullet \mathbf{X} = \mathbf{B}$$

Midterm Review: Matrix Application ANSWERS

Let a = Annette's sales, b = Barb's sales, and c = Carlita's sales

$$\begin{bmatrix} 1 & 1 & 1 \\ 1 & -1 & 0 \\ -1 & 1 & 1 \end{bmatrix} \bullet \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 1480 \\ 120 \\ 280 \end{bmatrix}$$

$$\mathbf{A} \bullet \mathbf{X} = \mathbf{B}$$

→ type in A and B in calc.

4. Use matrices to solve the problem.


Do $\mathbf{A}^{-1} \bullet \mathbf{B}$ in calc to solve for X (to find a , b , and c)

$$\mathbf{A}^{-1} \bullet \mathbf{B} = \begin{bmatrix} 600 \\ 480 \\ 400 \end{bmatrix}$$

**That day, Annette sold \$600,
Barb sold \$480, and Carlita
sold \$400 of merchandise.**

Unit 4 Test Corrections

- On NEW Notebook paper
- Use the table format (see side board)
- When done, work on Unit 4 in Midterm Review packet



Did not use next slides for Fall '18...could be
extra practice

Practice

**In the Midterm Review Packet,
do Unit 2 #2, 4, 6, 8**

Phones OFF
& in the
pockets!!

Markov Practice

There are 20 students in student council and every week they bring snacks to their meeting. This week 8 brought chips, 7 brought drinks and 5 brought dessert. 18% of those who brought chips to the first meeting brought chips again and 42% brought drinks. Of those that brought drinks, 35% brought drinks again and the rest brought dessert to the next meeting. And of those that brought dessert to the first meeting, 26% brought dessert again and 48% brought chips.

- What is the initial matrix for the student council?
- What is the transition matrix for the student council?
- Approximately how many students will bring drinks to the 4th meeting??
- In the long run, how many of these students will bring each item to a meeting?

Markov Practice Answers

There are 20 students in student council and every week they bring snacks to their meeting. This week 8 brought chips, 7 brought drinks and 5 brought dessert. 18% of those who brought chips to the first meeting brought chips again and 42% brought drinks. Of those that brought drinks, 35% brought drinks again and the rest brought dessert to the next meeting. And of those that brought dessert to the first meeting, 26% brought dessert again and 49% brought drinks.

a. What is the initial matrix for the student council?

$$D_0 = \begin{bmatrix} 8 & 7 & 5 \end{bmatrix}$$

b. What is the transition matrix for the student council?

$$T = \begin{matrix} & \begin{matrix} \text{Drinks} & \text{Chips} & \text{Dessert} \end{matrix} \\ \begin{matrix} \text{Drinks} \\ \text{Chips} \\ \text{Dessert} \end{matrix} & \begin{bmatrix} 0.35 & 0 & 0.65 \\ 0.42 & 0.18 & 0.40 \\ 0.49 & 0.25 & 0.26 \end{bmatrix} \end{matrix}$$

c. Approximately how many students will bring desserts to the 4th meeting?

8.86 so approximately 8-9 students (Find D_4 , then its dessert column.)

d. In the long run, how many of these students will bring each item to a meeting?

Around 8.43 (8-9) will bring drinks, 2.70 (2-3) will bring chips, and 8.86 (8-9) will bring desserts