

6 different lawn corporations are trying to find what will be the best deal for each of their orders. There are 3 stores to choose from, Walmart, Home Depot and Menards.

| | Mowers | Edgers | Gasoline (Gallons) |
|----------------------|--------|--------|--------------------|
| Mike's Lawn Care | 5 | 2 | 10 |
| Darnell's Lawn Care | 3 | 5 | 5 |
| Leonardo's Lawn Care | 4 | 3 | 12 |
| Chester's Lawn Care | 5 | 1 | 8 |
| Monica's Lawn Care | 2 | 8 | 7 |
| The Lawn Doctors | 8 | 10 | 88 |

| | Home Depot | Menards | Walmart |
|--------------------|------------|---------|---------|
| Mowers | \$138 | \$126 | \$99 |
| Edgers | \$88 | \$91 | \$138 |
| Gasoline (Gallons) | \$3 | \$4 | \$2.5 |

1. Which store provides Darnell's Lawn Care with the best deal to order his equipment?
2. Which business spends the most money at Menards on mowers, edgers and gasoline?
3. Which store costs the least for all of Mike's Lawn Care's needs?
4. Which business spends the least at Home Depot on mowers, edgers and gasoline?

Amra Lindner
Farhana Islam
Francis Del Mar

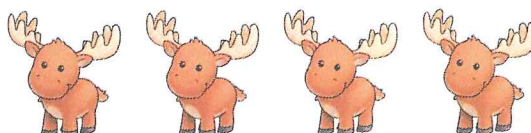


Group 3
Page 1

Reindeer Matrix Activity

| <u>Table 1</u> | Number of Toys Delivered | | |
|----------------|--------------------------|-------------|----------------|
| Reindeer # | Macbook | Teddy Bears | Toy Helicopter |
| 1 | 4 | 13 | 5 |
| 2 | 3 | 17 | 8 |
| 3 | 1 | 9 | 2 |
| 4 | 0 | 21 | 9 |
| 5 | 0 | 28 | 4 |
| 6 | 4 | 5 | 1 |
| 7 | 7 | 20 | 7 |
| 8 | 5 | 12 | 4 |
| 9 | 6 | 12 | 9 |

| <u>Table 2</u> | Candy Cane Revenue | | |
|----------------|--------------------|---------|--------|
| Toy | USA | Germany | Russia |
| Macbook | 100 | 100 | 100 |
| Teddy Bear | 1 | 10 | 5 |
| Toy Copter | 20 | 15 | 5 |



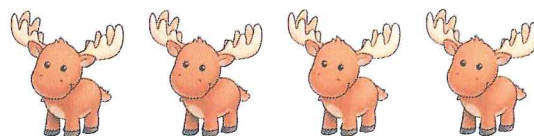


This year, Santa wants to try a new delivery system. He will send each reindeer to send toys separately to each household while he supervises back at the North Pole. For each item sold, there is a number of revenue in candy canes, which goes towards paying the elves for all their hard work.

In table 1 each reindeer is numbered and shows how many of each toy they successfully delivered to children.

In table 2, the candy cane revenue of each item is listed for 3 separate countries.

1. Can you tell how much candy cane revenue each reindeer earned in each of the 3 countries using matrix multiplication?
2. Rudolph had the highest revenue in total. Which reindeer is Rudolph?
3. Dasher was having a rough time and had the least revenue in total. Which reindeer is Dasher?
4. Which country had the least candy cane revenue and which reindeer # brought in that revenue?
5. **Challenge:** Identify the rest of the reindeer by name and number.
 - a. The reindeer in question 2 is Rudolph
 - b. The reindeer in question 3 is Dasher
 - c. The reindeer in question 4 is Blitzen
 - d. Donner had the second highest candy cane revenue in America
 - e. Dancer has never had a candy cane revenue of more than 500, but does have a revenue higher than 350 in each country
 - f. Cupid has 400 less candy cane revenue in Germany than Rudolph
 - g. Vixen has 100 less candy cane revenue in Russia than in Germany
 - h. Comet has 569 more candy cane revenue than Blitzen in America
 - i. Prancer has 5 less candy cane revenue in Russia than Dasher



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2016 Honors Precalculus Chapter 7 Free Response Question

Congratulations! You've been hired by multiple world renowned orchestras as their instruments manager. Your job is to save each orchestra as much money as you can when purchasing the needed instruments, so you start to look at some stores to see which store charges less. You can find the orders from each orchestra in Table 1 and the prices from different stores in Table 2.

Table 1:

| | Violins | Tubas | Triangles | Ukuleles | Clarinets |
|--------------------|---------|-------|-----------|----------|-----------|
| New York Orchestra | 13 | 27 | 16 | 31 | 21 |
| Chicago Orchestra | 26 | 13 | 18 | 15 | 42 |
| London Orchestra | 15 | 36 | 45 | 12 | 23 |

Table 2:

| | Guitar Center | Tim's Music Store | Cosco |
|-----------|---------------|-------------------|--------|
| Violins | \$846 | \$957 | \$683 |
| Tubas | \$1248 | \$1379 | \$1227 |
| Triangles | \$56 | \$74 | \$29 |
| Ukuleles | \$238 | \$452 | \$138 |
| Clarinets | \$674 | \$782 | \$357 |

1. Compute $[A][B]$. Record your answer below and clearly label the rows and columns.
2. Which store charges the cheapest for the Chicago Orchestra's total order?
3. Which ~~team~~ orchestra has been charged the most and at which store was it?



Christmas Decorations

Five friends are looking for the cheapest place to buy Christmas decorations. They decide to compare the prices from Target, Walmart, and JoAnn's Fabrics.

| | Red Balls | Lights | Stockings |
|--------|-----------|--------|-----------|
| Nathan | 20 | 5 | 0 |
| Lucas | 17 | 30 | 9 |
| Peyton | 25 | 23 | 28 |
| Brooke | 5 | 1 | 33 |
| Haley | 3 | 12 | 22 |

| | Target | Walmart | JoAnn's |
|-----------|--------|---------|---------|
| Red Balls | \$5 | \$7 | \$4 |
| Stockings | \$7 | \$10 | \$9 |
| Lights | \$13 | \$6 | \$21 |

1. If everyone buys their decorations at Target, who spends the most money? The least?
2. How much more or less would Lucas, who shopped at JoAnn's Fabrics, have to pay if he shopped at Target?
3. Who spends the least amount of money and at what store?

Grant Adams
Gavin Atack
Radosław Chrzanowski
Emma Godwin

2016 Honors Precalculus Chapter 7 Free- Response Question

You and your friend are students at Lane Tech looking to buy a few things for lunch. Since you guys are high school students, you are on a tight budget, so you need to figure out the cheapest way to get the items you want to eat. Look at the table and create matrices in order to solve numbers one through four.

| | Jewel | Mariano's | Walgreens |
|-----------|--------|-----------|-----------|
| Ice Cream | \$3.25 | \$3.10 | \$3.30 |
| Candy | \$1.25 | \$1.20 | \$1.15 |
| Chips | \$2.50 | \$2.75 | \$2.65 |

| | Ice Cream | Candy | Chips |
|-----------|-----------|-------|-------|
| Order One | 1 | 3 | 2 |
| Order Two | 2 | 5 | 1 |

1. Which place would be the cheapest option for order one? What is the total price there?
2. Which place would be the cheapest option for order two? What is the total price there?
3. Which place offers the cheapest option for buying both orders together? How much will it cost?
4. Which combination of places would be the cheapest option for any order?

Tony Acosta
 Jimmy Mulvaney
 Edgar Ruiz
 Period 3

Group 7

2016 Honors Precalculus Chapter 7 Free-Response Question

You and your friends want to go out to eat for lunch but are also trying to save money for Christmas gifts. You guys decide to find the prices of each of your orders to decide where each of you wants to eat. Below, you are given the cost of each item at your choice of restaurants (McDonald's, Wendy's and Burger King), and also what each of your orders consists of.

| | Cheese Burger | Fries | Chicken Nuggets | Chicken Sandwich | Shake | Ice Cream | Soda | Cookie | Bacon Burger | Salad |
|----------|---------------|-------|-----------------|------------------|-------|-----------|------|--------|--------------|-------|
| Order #1 | 2 | 3 | 1 | 0 | 1 | 2 | 0 | 3 | 0 | 1 |
| Order #2 | 0 | 1 | 1 | 1 | 3 | 3 | 2 | 4 | 1 | 0 |
| Order #3 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 3 | 2 | 0 |

| | McDonald's | Wendy's | Burger King |
|------------------|------------|---------|-------------|
| Cheeseburger | \$4 | \$3 | \$5 |
| Fries | \$3 | \$2 | \$1 |
| Chicken nuggets | \$2 | \$4 | \$3 |
| Chicken sandwich | \$4 | \$3 | \$5 |
| Shake | \$3 | \$4 | \$3 |
| Ice Cream | \$5 | \$3 | \$4 |
| Soda | \$4 | \$5 | \$3 |
| Cookies | \$3 | \$6 | \$2 |
| Bacon burger | \$6 | \$5 | \$7 |
| Salad | \$4 | \$5 | \$3 |

Question #1

Multiply the matrices together. Clearly label the rows and columns. What does the product of the matrices mean?

Question #2

Which restaurant has the greatest price for Order #1, Order #2, and Order #3?

Question #3

Which restaurant has the cheapest price for Order #1, Order #2, and Order #3?

Naweed
Salma
Dante

Group 8

You and five other friends decide to go grocery shopping for fruits in order to make fruit salads for this year's Christmas party. Each of you requires a different combination of fruits and decides to compare prices from three different grocery stores: Mariano's, Jewel, and Whole Foods.

| | Banana | Strawberry | Grape |
|-------|--------|------------|-------|
| John | 10 | 3 | 8 |
| Jane | 9 | 7 | 5 |
| David | 5 | 5 | 5 |
| Mary | 4 | 0 | 8 |
| Lopez | 3 | 10 | 1 |
| Danja | 10 | 10 | 10 |

| | Mariano's | Jewel Osco | Whole Foods |
|------------|-----------|------------|-------------|
| Banana | \$6 | \$3 | \$10 |
| Strawberry | \$6 | \$9 | \$8 |
| Grape | \$5 | \$4 | \$2 |

Questions

1. What is the total price of the combination of fruits from each person's grocery list from the various stores?
2. Who spends the most money on strawberries and where does he/she buy them from?
3. What is the expensive store to purchase bananas?
4. If Mary was to do her grocery shopping at Mariano's compared to Whole Foods, how much money will she be saving/losing?
5. Who spends the least purchasing grapes at Jewel and bananas at Whole Foods?

Group 9

Jacob Berry, Melanie Kirby; Mickey Lang; Maya Lilly
Period 3

Scenario: You just recently bought a restaurant CONGRATS! In order for it to thrive you need to find the cheapest deals. The restaurants around you are currently buying the following produce: bread, cheese, and meat.

| Restaurants | Bread | Cheese (lbs) | Meat (lbs) |
|-------------------|-------|--------------|------------|
| PiHi | 30 | 5 | 50 |
| Subway | 45 | 10 | 40 |
| Potbelly's | 47 | 15 | 43 |
| Hero's | 20 | 7 | 36 |
| (Your Restaurant) | | | |

| Produce | Mariano's | Jewel | Tony's |
|---------|-----------|-------|--------|
| Bread | 6 | 4 | 2 |
| Cheese | 5 | 2 | 2 |
| Meat | 12 | 10 | 7 |

Questions:

Create your own restaurant and fill out the first table.

Make two matrices from the tables above.

Find the cheapest place to get your produce.

Group 10

James, Dylan, Nathan

Period 3 PreCalc FRQ

Joey and his friends want to dream big. They all talk about how many XBOX1, PS4, and Wii U they wish they could have. So, they look up how much each console would cost at either GameStop, Play-n-Trade, and Best Buy.

Table 1: The Name of Kids and how many consoles they want

| | XBOX1 | PS4 | Wii U |
|---------|-------|-----|-------|
| Joey | 1 | 1 | 1 |
| James | 3 | 5 | 6 |
| Dylan | 3 | 3 | 2 |
| Michael | 5 | 0 | 4 |
| Nathan | 1 | 2 | 6 |
| Grant | 4 | 2 | 5 |

Table 2: The prices of consoles in each store

| | GameStop | Play n' Trade | Best Buy |
|-------|----------|---------------|----------|
| XBOX1 | \$249.99 | \$299.99 | \$275.99 |
| PS4 | \$299.99 | \$275.99 | \$249.99 |
| Wii U | \$179.99 | \$129.99 | \$149.99 |

- 1) Make a matrix of table 1 and 2 and then multiply matrix 1 to matrix 2
- 2) Which kid wants to spend the most money ?
- 3) Which store offers the cheapest price option between the kids ?

You are a young, traveling sailor sailing on the S.S. Titanic, but your ship has sunken. You go into several shops to see how much it costs to rebuild your ship.

| | Rudder | Sail | Wheel | Mast | Bow | Ladder |
|--------------------|--------|------|---------|----------|-------|---------|
| <i>Shipwrecked</i> | \$12 | \$9 | \$312 | \$124 | \$8 | \$10 |
| <i>Ship Parts</i> | \$17 | \$11 | \$444 | \$2,123 | \$123 | \$29 |
| <i>Ship Inc.</i> | \$19 | \$12 | \$2,345 | \$17,293 | \$192 | \$1,928 |
| <i>Home Depot</i> | \$17 | \$15 | \$567 | \$782 | \$12 | \$72 |
| <i>Menard's</i> | \$22 | \$16 | \$921 | \$181 | \$450 | \$98 |
| <i>Stuff Inc.</i> | \$20 | \$10 | \$1,722 | \$1,829 | \$67 | \$492 |

| | |
|--------|----|
| Rudder | 7 |
| Sail | 1 |
| Wheel | 12 |
| Mast | 9 |
| Bow | 81 |
| Ladder | 92 |

- 1) Which store will let you build your ship for the cheapest?
- 2) How much will all the wheels cost from Shipwrecked compared to the wheels from Ship Parts?
- 3) How much cheaper is the ladder from Shipwrecked Compared to Ship Part?