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1st Period

Honors Pre-Calculus Matrices Free Response Question

You are in charge of the budget for the 2016-2017 school year at Lane Tech High School. Before the year begins, 6 staff members approach you stating that they have yet to receive the supplies needed for their classes during the year. The table below organizes the demand of supplies from each teacher:

Table A:

Teachers	# of Pencil Packs	# of Rulers	# of Pen Packs	# of Dry Erase Markers	# of Packs of Loose-leaf Paper
Ms. Delisle	20	50	10	8	20
Mr. Logalbo	5	15	15	4	35
Mr. Fine	13	15	25	9	50
Ms. Onken	10	20	10	4	25
Mr. Doll	7	10	5	3	20
Mr. Yadao	6	20	12	7	30

Wanting to know how much money you must spend as well as how you can save the most money, you look up the prices at three stores that provide the items you need. Below is a table exhibiting the prices of each item needed from each store.

Table B:

Supplies	Office Depot Price	Staples Price	Target Price
Packs of Pencils (12)	\$2	\$2	\$3
Rulers	\$2	\$1	\$1
Packs of Pens (10)	\$4	\$1	\$1
Dry Erase Markers (4)	\$8	\$6	\$4
Packs of Loose-leaf Paper	\$4	\$3	\$2

1. Turn these tables into matrices and compute the product $[A][B]$ in your calculator. Explain the meaning of the rows and columns concerning the problem in the final product.
2. Which store would offer Ms. Delisle the cheapest price for her list of supplies? What is the price?
3. Which store would be the most expensive place to buy school supplies?

Group 2

Several families are shopping for Christmas decorations. These are their orders and the prices from different stores:

Families	Lights	Candy Canes	Inflatable Santas	Ugly Sweaters
Smith	2	25	2	3
Lee	3	5	1	6
Torres	3	30	0	13
Dixon	5	10	0	8

	Target	Walmart	Home Depot
Lights	\$10	\$7	\$15
Candy Canes	\$5	\$4	\$4
Inflatable Santas	\$40	\$38	\$50
Ugly Sweaters	\$14	\$17	\$12

1. Multiply the two tables together to get a new, total matrix. What is this matrix and what does it represent?
2. What family and store combination gives the lowest prices, and what is that price?
3. What family would potentially spend the least amount of money at Home Depot, and how much did they spend?

Aidan Lallas, Vica Otrubina, Jake Herman, Kathleen Murphy

Scenario: Mr. Golden accidentally set the math department supplies on fire while trimming his beard in the department's office. Sympathetic students decided to help the teachers out and compile the number of supplies they will need to get back and the suggestions to where buy them from.

Table A:

	Pencils	Line Paper	Calculators
Delisle	12	200	3
Becker	14	135	2
Chambers	7	145	4
Golden	15	210	2
Kim	9	190	3
Marzec	3	100	2

Table B:

Office Depot	OfficeMax	Staples	Target	
\$1	\$1	\$2	\$1	Pencils
\$4	\$5	\$4	\$3	Line Paper
\$87	\$85	\$75	\$60	Calculators

1. Calculate and record [A][B]. *out of 24 pts*
2. Which Teacher ends up spending the most on the supplies? *out of 3 pts*
3. Which store provides the best deal for the math department? *out of 3 pts*

Kelly Pezan, Ramon, Jacob Clohisy
Honors Precalculus
Ms. Delisle

Free Response Question

You are hired as the equipment manager of the National Basketball Association. You have to purchase supplies for each team. You check different stores to get equipment for the teams, so that you can save the highest amount of money possible. The list of required equipment from each team are found in Table 1, and the prices from each store are found in Table 2.

Table 1

	Balls	Shoes	Practice Pinnies
Warriors	55	15	20
Cavaliers	43	16	23
Lakers	48	19	27
Bulls	37	20	30
Thunder	60	18	31
Celtics	53	21	25
Heat	50	23	33

Table 2

	Dick's Sporting Goods	Champs	Nike
Basketballs	\$60	\$65	\$50
Shoes	\$105	\$110	\$140
Practice Pinnies	\$25	\$25	\$20

Problems

1. What team spends the most money on equipment, given that they shop at the most expensive store for them?
2. Which store gives the Lakers the best deal?
3. What team needs the most amount of supplies?
4. What team, besides the Oklahoma City Thunder, saves the highest amount of money when shopping at Nike instead of Dick's Sporting Goods?

Ryan, Yoss, Sydney, Jazmin

Group 5

Fashion Matrix

Ryan and his friends got lots of holiday money this holiday season. In order to start the new year with a new version of themselves Ryan and his friends decide to buy new clothes. This is their story...

Table A: Group members orders

	Shirts	Pants	Shoes
Ryan	12	3	12
Yoss	7	1	1
Sydney	6	4	9
Jazmin	8	2	1

Table B: Cost of merchandise at different stores

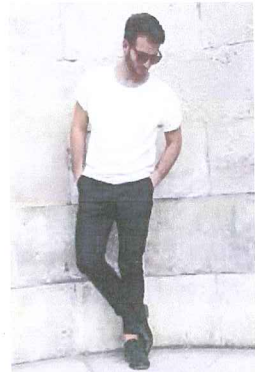
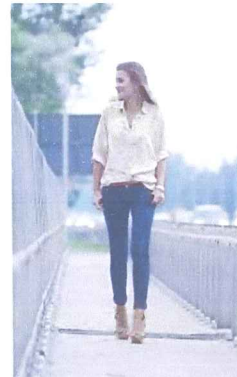
	Marshalls	Target	Nordstrom
Shirts	10	20	40
Pants	15	30	55
Shoes	30	20	70

Part A:

At what store will Sydney spend the least amount of money?

Part B:

Jazmin has \$250 to spend, what stores can she shop at if any?



Part C:

If Yoss shops at Nordstrom and Ryan shops at Marshalls, who is spending more money?

~~Christmas~~ Holiday Shopping Free REsponse Question

People are preparing for ~~Christmas~~ the holidays and need to buy supplies in time for the ~~Christmas~~ holiday season, such as trees, ornaments, wrapping paper, and candy canes. Jewel, Walmart, and Target happen to sell all of these supplies. Each student and their school needs a different amount of supplies, and each store offers different prices. Determine [A][B] to answer the questions.

Names x Items Needed (A)

	Trees	Ornaments	Wrapping Paper	Candy Canes
Wojciech	5	56	9	73
Joe	2	34	11	34
Hope	7	67	5	45
Daniel	3	45	7	87
All of Lane Tech	8,817	196,654	34,758	223,765

Items Needed x Price (B)

	Jewel	Walmart	Target
Trees	\$21	\$19	\$17
Ornaments	\$3	\$4	\$2
Wrapping Paper	\$7	\$6	\$11
Candy Canes	\$.50	\$.45	\$.30

Questions:

1. Which person spent the most money in total?
2. What store offered the most expensive prices?
3. What combination of person and store gives the most expensive price?

Group 7

Yeabeen Cha
Jessica Hofner
Marcelo Muro
Octavia Tey

An event planner has a list of upcoming events and the number of food option serving for each event. He has another chart with possible vendors for these items and how much an individual item costs.

Events x food needed	Pasta (# of servings)	Fruit Salad (# of servings)	Cake (# of servings)
Wedding	350	200	400
Christmas Party	70	70	100
High School Reunion	1000	1000	0
Prom	800	750	500
Funeral Reception	100	120	0
Birthday Party	90	95	100

	Jewel Osco	Mariano's	Whole Foods
Pasta	\$8	\$7	\$8
Fruit Salad	\$5	\$6	\$9
Cake	\$11	\$10	\$12

Questions:

1. Which store would the event planner spend the least for Prom?
2. What's more expensive, the High School Reunion with food from Whole Foods or Prom with food from Jewel Osco
3. Which event at which store will the event planner spend the least amount of money?

Cassidy Barth and Imaan Yousuf

Scenario: You and your friends are each throwing a holiday pizza party. You have different ideas about the pizzas to order from the different chain restaurants.

Table A:

	Cheese	Pepperoni	Sausage	Veggie
Cassidy	4	3	5	10
Imaan	2	6	4	8
George	3	7	9	11
Billy Bob	0	5	3	9

Table B:

	Pizza Hut	Papa John's	Domino's	Little Caesar's
Cheese	\$10	\$12	\$11	\$5
Pepperoni	\$12	\$13	\$14	\$5
Sausage	\$12	\$13	\$14	\$5
Veggie	\$15	\$20	\$17	\$5

Questions:

1. Calculate and Record $[A][B]$
2. At which pizza chain will Imaan spend the most money?
3. Which store will offer Cassidy the best deal on cheese pizza?

Group 9
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6 friends are holiday shopping for each others' presents. All 6 friends like Gucci and Supreme. However, since they are on a budget some friends will be stuck with knockoffs. Luckily for the 6 friends they can get all the items they desire from Urban Outfitters and Walmart. The matrix below shows the total number of items desired by each friend. The matrix below that shows the prices at the different stores.

Names	Supreme	Gucci	Knockoff
Tom	1	10	7
Steve	9	1	3
Linda	0	12	0
Rachel	11	2	1
Shareef	0	0	18
Terrell	5	5	5



Urban Outfitters	Walmart	Brands
\$50	\$20	Supreme
\$150	\$50	Gucci
\$5	\$40	Knockoff

1. Multiply Matrix $[A][B]$ (use calculator to do it) Record the results below. Clearly label the row and column of the resulting matrix with its meaning in the context of the problem.
2. Which store would be cheapest for Tom to shop at?
3. What is the most expensive price for these brands? What combination of person and store gives this price?