**Assignment #10 – SAS #4: Association Rules**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

***Instructions: Follow the steps and answer the questions below. Then email this document to your instructor.***

1. **Conducting an Association Analysis**

A store is interested in determining the associations between items purchased from the Health and Beauty Aids department and the Stationery Department. The store chose to conduct a market basket analysis of specific items purchased from these two departments. The **TRANSACTIONS** data set contains information about over 400,000 transactions made over the past three months. The following products are represented in the data set:

* bar soap
* bows
* candy bars
* deodorant
* greeting cards
* magazines
* markers
* pain relievers
* pencils
* pens
* perfume
* photo processing
* prescription medications
* shampoo
* toothbrushes
* toothpaste
* wrapping paper

There are four variables in the data set:

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Model Role** | **Measurement Level** | **Description** |
| **STORE** | Rejected | Nominal | Identification number of the store |
| **TRANSACTION** | ID | Nominal | Transaction identification number |
| **PRODUCT** | Target | Nominal | Product purchased |
| **QUANTITY** | Rejected | Interval | Quantity of this product purchased |

* 1. Create a new diagram. Name the diagram **Transactions**.
	2. Create a new data source using the data set **AAEM.TRANSACTIONS**.
		1. At step 6, assign the variables **STORE** and **QUANTITY** the model role **Rejected**. These variables will not be used in this analysis. Assign the ID model role to the variable **TRANSACTION** and the Target model role to the variable **PRODUCT**. Make sure that both TRANSACTION, PRODUCT, and STORE are set to Nominal for Measurement Level.
		**(BE CAREFUL HERE! MAKE SURE THE SETTINGS MATCH THE TABLE ABOVE!)**
		2. On step 9, make sure the role is set to Transaction.
	3. Add the node for the **TRANSACTIONS** data set and an Association node to the diagram. Connect the data set node to the Association node.
	4. In the Properties tab for the Association node, change the setting for Export Rule by ID to **Yes**.
	5. Leave the remaining default settings for the Association node and run the node.
	6. Examine the results of the association analysis

What is the highest lift value for the resulting rules? **ANSWER:**

Which rule pair has this value? **ANSWER:**

**Include a screenshot of the Rule Description window (similar to page 15 of the In-Class Exercise).**

Your manager comes to you and insists that you put the toothbrushes next to the toothpaste because they “go together” (in other words, they are likely to be purchased together). Is that supported by the data? Explain.

**ANSWER:**

What does seem to “go together” with toothpaste?

**ANSWER:**

What conclusions can you draw from the rule pair of rules 32 and 33 to make decisions (Magazine🡪Toothpaste and Toothpaste🡪Magazine)? Use the appropriate statistics from the rules table to support your answer.

 **ANSWER:**