MECS #19
Budget Vs. Actual with Variances

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1) **Budget Vs. Actual**
   i. Businesses plan operation by making estimates of what will happen in the unknow future.
   ii. These estimates are called "budgeted" amounts or "forecasted' amounts
   iii. The budgeted amounts are targets that the business thinks that they will achieve.
   iv. Once the actual numbers are known, the differences between Actual and Budgeted amounts are calculated to determine variances. These variances can be used to make adjustments or changes when making plans in the next period. They can help the business to see where things were exactly as planned, batter than expected or less than expected.

2) **Budget Vs. Actual with Excel Worksheet Formulas:**

[1] Formula in cell E4: =SUMIFS($L$4:$L$57376,$J$4:$J$57376,C4,$I$4:$I$57376,">"&EOMONTH(B4,-1),$I$4:$I$57376,"<="&B4)

[2] Formula in cell F4: =E4-D4   [3] Formula in cell G4: =F4/D4

EOMonth	Product	Budget for Sales	[1] Actual Sales	[2] Variance	[3] % Variance		Date	Product	Units	Sales
1/31/19	Aspen	261,026	263,367	2,341	0.90%		10/23/20	Aspen	48	920.16
2/28/19	Aspen	266,139	260,343	-5,796	-2.18%		12/13/20	Aspen	24	498.42
3/31/19	Aspen	242,085	243,498	1,413	0.58%		12/21/19	Quad	3	131.85
4/30/19	Aspen	255,811	255,107	-704	-0.28%		12/2/19	Quad	84	2215.08
5/31/19	Aspen	336,485	294,545	-41,940	-12.46%		11/9/19	Aspen	12	316.31
6/30/19	Aspen	314,706	243,770	-70,936	-22.54%		12/9/20	Aspen	36	747.63
7/31/19	Aspen	301,014	254,449	-46,565	-15.47%		12/11/20	Carlota	12	365.81
8/31/19	Aspen	318,504	266,859	-51,645	-16.21%		11/25/20	Aspen	36	747.63

3) Budget Vs. Actual with the Data Model and DAX Formulas

    i.   The starting tables look like this :

Budget Vs Actual - Grain Problem: Budget = Month by Product Vs Actual = Day-Date by Product

Grain = Month, Product, No Duplicates   Grain = Product Line Transaction with Day Date, Yes Duplicates

Base Budget by Month for Product   Actual by Transactional Product Sale

EOMonth	Product	Budget		Date	Product	Units	Sales		Product	RetailPrice		Date	MonthNumber	Month	Year
1/31/19	Aspen	261,026		10/23/20	Aspen	48	920.16		Quad	43.95		1/1/19	1	Jan	2019
2/28/19	Aspen	266,139		12/13/20	Aspen	24	498.42		Carlota	36.95		1/2/19	1	Jan	2019
3/31/19	Aspen	242,085		12/21/19	Quad	3	131.85		Aspen	31.95		1/3/19	1	Jan	2019
4/30/19	Aspen	255,811		12/2/19	Quad	84	2215.08					1/4/19	1	Jan	2019
5/31/19	Aspen	336,485		11/9/19	Aspen	12	316.31					1/5/19	1	Jan	2019
6/30/19	Aspen	314,706		12/9/20	Aspen	36	747.63					1/6/19	1	Jan	2019
7/31/19	Aspen	301,014		12/11/20	Carlota	12	365.81					1/7/19	1	Jan	2019
8/31/19	Aspen	318,504		11/25/20	Aspen	36	747.63					1/8/19	1	Jan	2019
9/30/19	Aspen	275,060		12/25/20	Aspen	84	1610.28					1/9/19	1	Jan	2019
10/31/19	Aspen	1,375,481		12/11/19	Aspen	24	498.42					1/10/19	1	Jan	2019
11/30/19	Aspen	2,830,525		12/23/19	Aspen	12	316.31					1/11/19	1	Jan	2019

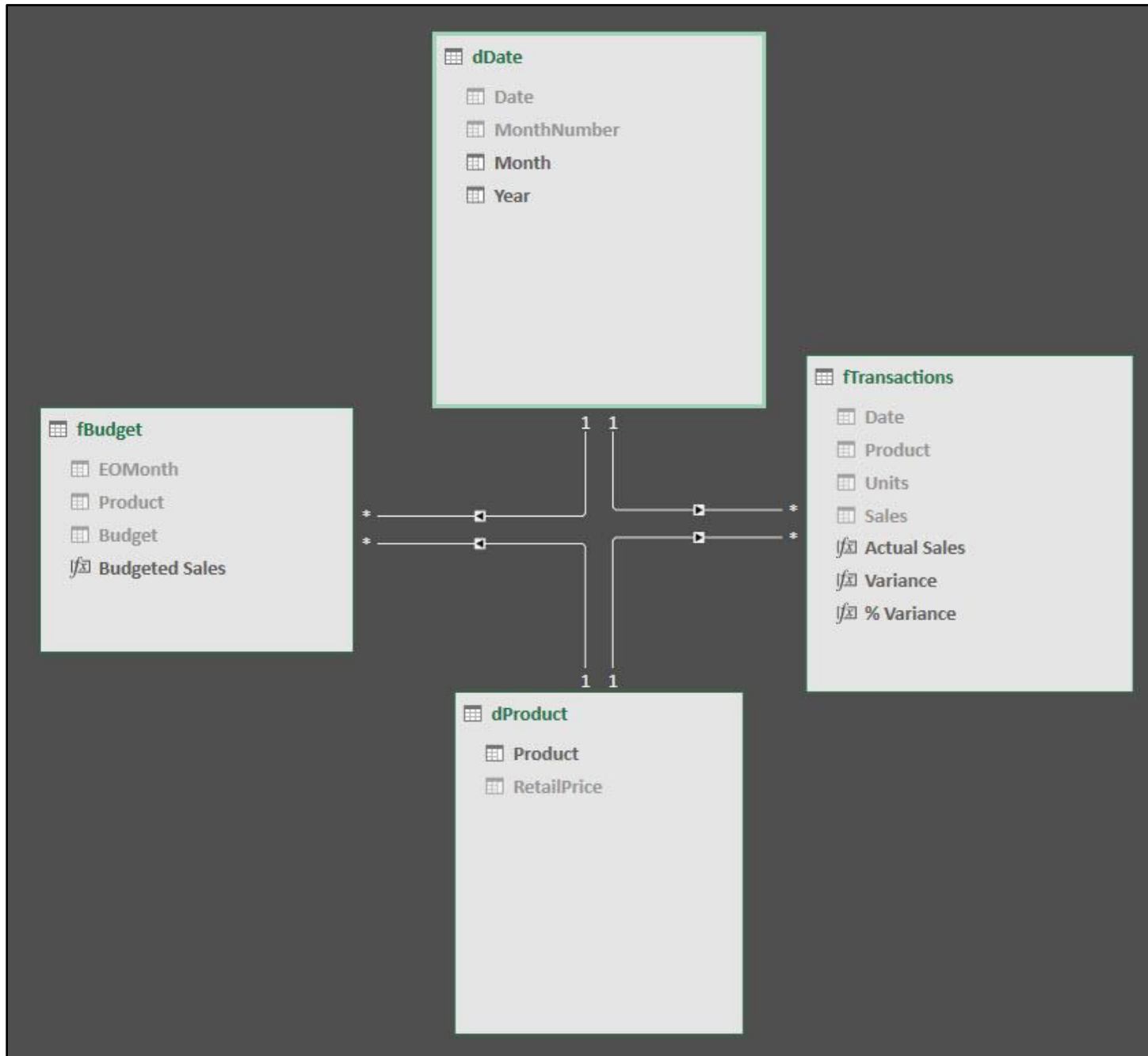   ii.   The Measures we created look like this:

Budgeted Sales:=SUM(fBudget[Budget])

Actual Sales:=SUM(fTransactions[Sales])

Variance:=[Actual Sales]-[Budgeted Sales]

% Variance:=DIVIDE([Variance],[Budgeted Sales])

iii. The Final Data Model with Tables, Relationships, Measure and Hidden Columns looks like this :

iv. The Final Data Model PivotTable looks like this :

Product	Year	Month	Actual Sales	Budgeted Sales	Variance	% Variance
⊟Aspen	⊟2019	Jan	$263,367.28	$261,026.28	$2,341.00	0.90%
		Feb	$260,343.20	$266,139.20	-$5,796.00	-2.18%
		Mar	$243,497.62	$242,084.62	$1,413.00	0.58%
		Apr	$255,106.62	$255,810.62	-$704.00	-0.28%
		May	$294,545.00	$336,485.00	-$41,940.00	-12.46%
		Jun	$243,769.98	$314,705.98	-$70,936.00	-22.54%
		Jul	$254,449.26	$301,014.26	-$46,565.00	-15.47%
		Aug	$266,859.40	$318,504.40	-$51,645.00	-16.21%
		Sep	$251,428.39	$275,060.39	-$23,632.00	-8.59%
		Oct	$1,329,852.94	$1,375,480.94	-$45,628.00	-3.32%
		Nov	$2,915,804.51	$2,830,524.51	$85,280.00	3.01%
		Dec	$2,436,087.75	$2,345,748.75	$90,339.00	3.85%
	2019 Total		$9,015,111.95	$9,122,584.95	-$107,473.00	-1.18%
	⊟2020	Jan	$248,027.31	$325,463.31	-$77,436.00	-23.79%
		Feb	$269,601.58	$266,471.58	$3,130.00	1.17%
		Mar	$261,363.28	$343,068.28	-$81,705.00	-23.82%
		Apr	$229,029.84	$210,544.84	$18,485.00	8.78%
		May	$221,176.48	$183,812.48	$37,364.00	20.33%
		Jun	$235,682.63	$269,180.63	-$33,498.00	-12.44%
		Jul	$271,730.23	$290,873.23	-$19,143.00	-6.58%
		Aug	$214,267.24	$247,731.24	-$33,464.00	-13.51%
		Sep	$243,814.68	$291,061.68	-$47,247.00	-16.23%
		Oct	$906,926.45	$953,278.45	-$46,352.00	-4.86%
		Nov	$2,634,313.89	$2,542,560.89	$91,753.00	3.61%
		Dec	$3,049,951.89	$3,035,612.89	$14,339.00	0.47%
	2020 Total		$8,785,885.50	$8,959,659.50	-$173,774.00	-1.94%
Aspen Total			$17,800,997.45	$18,082,244.45	-$281,247.00	-1.56%
⊟Carlota	⊟2019	Jan	$202,270.05	$165,161.05	$37,109.00	22.47%
		Feb	$182,750.32	$205,856.32	-$23,106.00	-11.22%
		Mar	$242,907.78	$229,690.78	$13,217.00	5.75%
		Apr	$234,422.17	$242,299.17	-$7,877.00	-3.25%
		May	$224,344.99	$207,926.99	$16,418.00	7.90%

PivotTable Fields

Active   All

Choose fields to add to report:

Search

⊿ Σ fBudget
  ☑ fx Budgeted Sales

⊿ Σ fTransactions
  ☑ fx Actual Sales
  ☑ fx Variance
  ☑ fx % Variance

⊿ ⊞ dDate
  ☑ Month
  ☑ Year

⊿ ⊞ dProduct
  ☑ Product

Drag fields between areas below:

▼ Filters   ‖‖ Columns
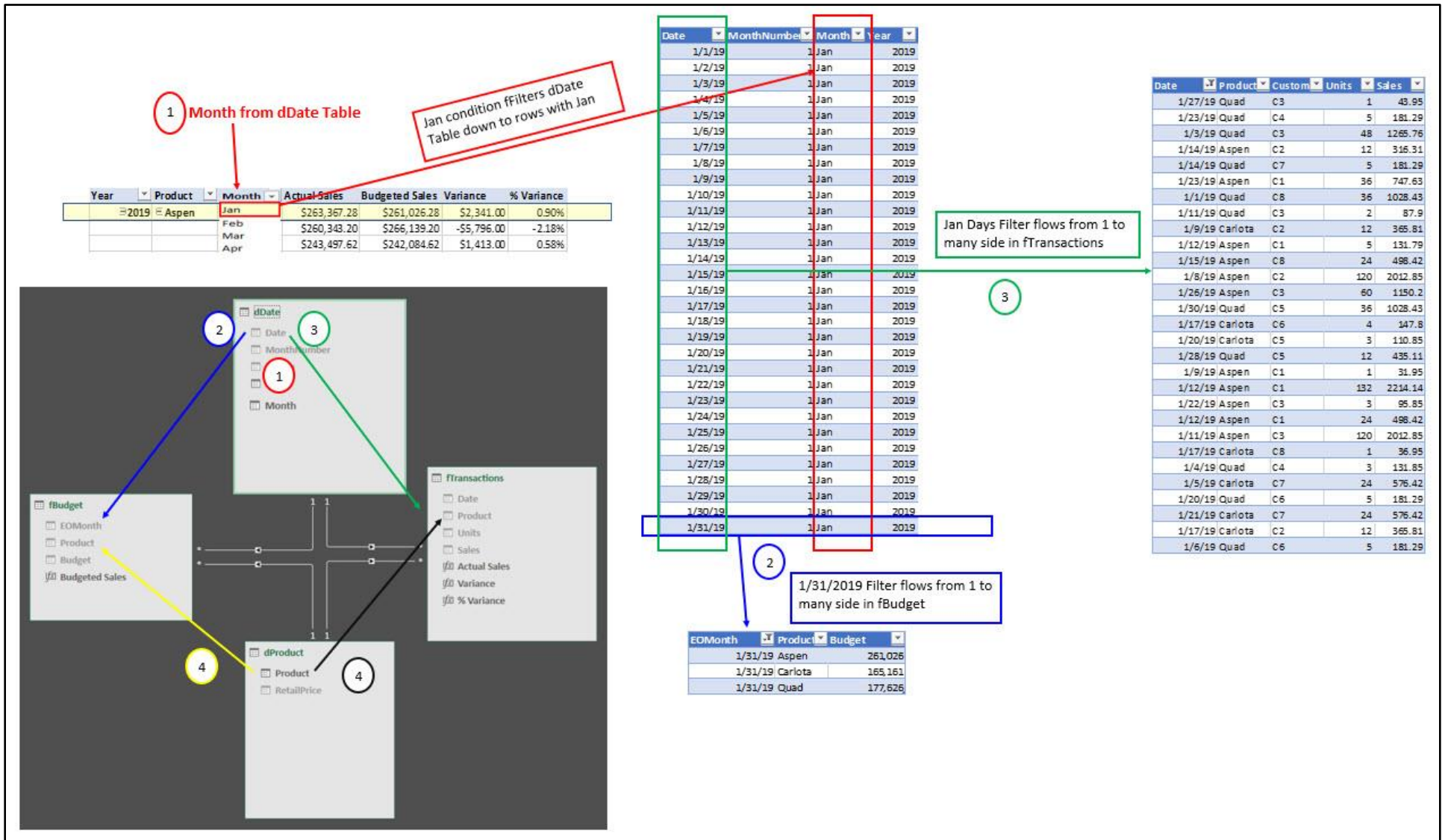   Σ Values

≡ Rows   Σ Values
Product   Actual Sales
Year   Budgeted Sales
Month   Variance
                             % Variance

Not required for class, but related:

4) Actual Vs. Budget with Relationships, use TREATAS Function in CALCULATE

If you do not want a relationship between budget table and other tables, you can simulate the relationship by using the TREATAS function to force the filters from the dimension tables to flow to the budget table:

Budgeted Product by Month Sales:

= CALCULATE(

> **SUM(fBudget[Budget]),**

> **TREATAS(VALUES(dProduct[Product]),fBudget[Product]),**

> **TREATAS(VALUES(dDate[End of Month]),fBudget[EOMonth]))**

5) Alternative if you do not have the TREATAS function:

```
1 BudgetedSales($)NoTREATAS = CALCULATE(
2         SUM(fBudget[Budget]),
3         INTERSECT(VALUES(fBudget[Product]),VALUES(dProduct[Product])),
4         INTERSECT(VALUES(fBudget[EOMonth]),VALUES(dDate[EOMonth])))
```