Lesson - 9 homework

Question 1 : What is row context? Give an example in a calculated column.

Row context is DAX knowing which "row" it's currently on when doing a calculation. It's like Excel automatically filling a formula down a column - it uses the values from that specific row.

Example:

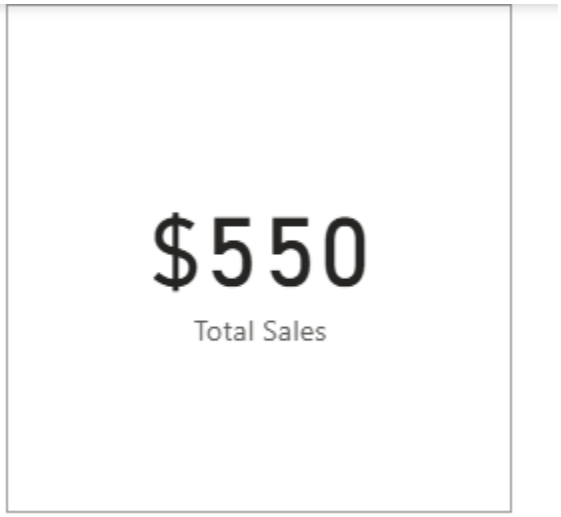
SaleID	ProductID	CustomerID	Quantity	UnitPrice	Category
1	P1	C1	2	100	Electronics
2	P2	C2	1	50	Clothing
3	P1	C1	3	100	Electronics

```
1 Total Sale =
2 Sales[Quantity] * Sales[UnitPrice]
```

SaleID	ProductID	CustomerID	Quantity	UnitPrice	Category	Total Sale
1	P1	C1	2	100	Electronics	200
2	P2	C2	1	50	Clothing	50
3	P1	C1	3	100	Electronics	300

Question 2 : Write a measure that finds total sales

```
Total Sales =
    SUM(
        Sales[Total Sale]
        )
```



SaleID	ProductID	CustomerID	Quantity	UnitPrice	Category	Total Sale
1	P1	C1	2	100	Electronics	200
2	P2	C2	1	50	Clothing	50
3	P1	C1	3	100	Electronics	300

Question 3 : Use RELATED to fetch the Name from the Customers table into the Sales table.

```
Name =
RELATED(
    Customers[Name]
)

```

SaleID	ProductID	CustomerID	Quantity	UnitPrice	Category	Total Sale	Name
1	P1	C1	2	100	Electronics	200	Alice
2	P2	C2	1	50	Clothing	50	Bob
3	P1	C1	3	100	Electronics	300	Alice

Question 4 : What does CALCULATE(SUM(Sales[Quantity]), Sales[Category] = "Electronics") return?

It returns the total quantity sold for all products where the category is "Electronics".

Breakdown:

SUM(Sales[Quantity]) is the calculation.

Sales[Category] = "Electronics" is a filter that overrides any existing filters on the Category column, making sure only "Electronics" rows are included.

```
Electronics total quantity sold = CALCULATE(
    SUM(Sales[Quantity]),
    Sales[Category] = "Electronics")
```

Question 5 : Explain the difference between VAR and RETURN in DAX.

- VAR is for storing a calculation or value. You use it to define variables.
- RETURN is for showing the final result. It's what the measure actually outputs.

Example:

Total Profit Margin =

```
VAR TotalSales = SUM(Sales[Sales])        -- Store sales total
VAR TotalCost = SUM(Sales[Cost])          -- Store cost total
VAR Profit = TotalSales - TotalCost       -- Store profit calculation
RETURN
DIVIDE(Profit, TotalSales)                -- Final result shown
```

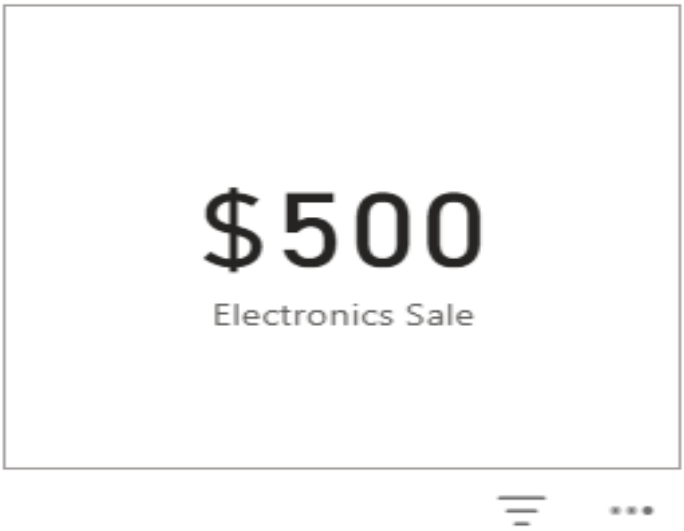
Question 6 : Create a calculated column in Sales called TotalPrice using row context (Quantity * UnitPrice).

```
1 Total Sale =
2 Sales[Quantity] * Sales[UnitPrice]
```

SaleID	ProductID	CustomerID	Quantity	UnitPrice	Category	Total Sale
1	P1	C1	2	100	Electronics	200
2	P2	C2	1	50	Clothing	50
3	P1	C1	3	100	Electronics	300

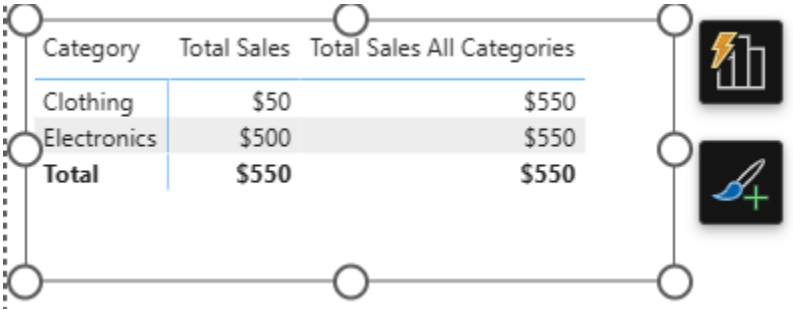
Question 7 : Write a measure Electronics Sales using CALCULATE to sum sales only for the "Electronics" category

```
1 Electronics Sale =
2 CALCULATE(
3     SUMX(Sales, Sales[UnitPrice] * Sales[Quantity]),
4     Sales[Category] = "Electronics"
5 )
```



Question 8 : Use ALL(Sales[Category]) in a measure to show total sales ignoring category filters.

```
Total Sales All Categories =
CALCULATE(
    [Total Sales],
    ALL(Sales[Category])
)
```



Category	Total Sales	Total Sales All Categories
Clothing	$50	$550
Electronics	$500	$550
Total	**$550**	**$550**

Question 9 : Fix this error: A calculated column in Sales uses RELATED(Customers[Region]) but returns blanks.

Check the Relationship: Make sure there's a relationship between Sales and Customers tables

Verify the Relationship Direction: The relationship should be from Sales (many) to Customers (one).

Check for Inactive Relationships: If the relationship is inactive, use USERELATIONSHIP in your formula instead:

DAX:

```
Customer Region =
CALCULATE(
   RELATED(Customers[Region]),
   USERELATIONSHIP(Sales[CustomerID], Customers[CustomerID])
)
```

Question 10 : Why does CALCULATE override existing filters?

CALCULATE doesn't just override filters - it modifies the filter context. It's the only function that can do this.

What happens:

It starts with the existing filters (from slicers, visuals, etc.)

It applies your new filters (Sales[Category] = "Electronics")

If there's a conflict, your new filters replace the old ones for those specific columns

Question 11 : Write a measure that returns average unitprice of products

```
Average Unit Price =
AVERAGEX(
    VALUES(Sales[ProductID]),
    CALCULATE(MAX(Sales[UnitPrice]))
)
```

Since price is only available in sales column which means the same product with the same price might appear multiple times , i used a different method.

How it works:

VALUES(Products[ProductID]) creates a list of unique products

For each product, CALCULATE(MAX(Sales[Price])) gets its price (using MAX to handle multiple entries with same price)

AVERAGEX then averages all these unique product prices

This gives you the true average price across different products, not sales transactions.

Question 12 : Use VAR to store a temporary table of high-quantity sales (Quantity > 2), then count rows.

```
High Quantity Count =
VAR HighQuantitySales = FILTER(Sales, Sales[Quantity] > 2)
RETURN
COUNTROWS(HighQuantitySales)
```

VAR HighQuantitySales creates a temporary table containing only rows where Quantity > 2

RETURN COUNTROWS counts how many rows are in that filtered table

Question 13 : Write a measure `% of Category Sales` that shows each sale's contribution to its category total.

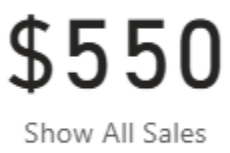
it needs to be a calculated column, not a measure, because we're looking at individual sales rows.

```
% of Category Sales =
DIVIDE(
    Sales[Total Sale],
    CALCULATE(
        SUM(Sales[Total Sale]),
        ALLEXCEPT(Sales, Sales[Category])
    )
)
```

SaleID	ProductID	CustomerID	Quantity	UnitPrice	Category	Total Sale	Name	% of Category Sales
1	P1	C1	2	100	Electronics	200	Alice	40.0%
2	P2	C2	1	50	Clothing	50	Bob	100.0%
3	P1	C1	3	100	Electronics	300	Alice	60.0%

Question 14 : Simulate a "remove filters" button using ALL in a measure.

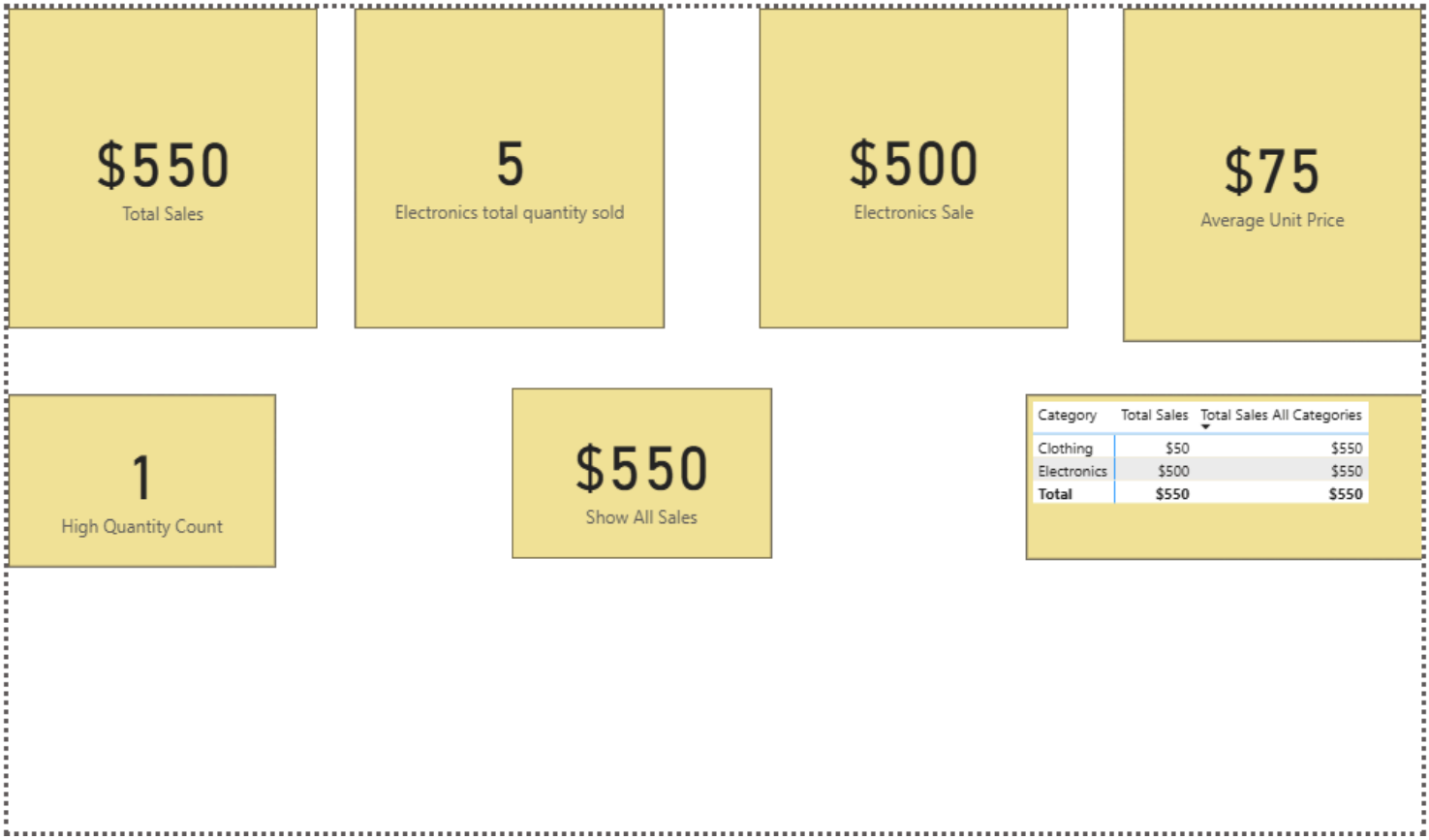
```
Show All Sales =
CALCULATE(
    [Total Sales],
    ALL(Sales)
)
```



Question 15 : Troubleshoot: A CALCULATE measure ignores a slicer. What's the likely cause?

Using ALLEXCEPT() that removes the slicer's filter

Quick fix: Check your CALCULATE for hardcoded filters or ALL functions that might be conflicting with your slicer.


$550
Total Sales
5
Electronics total quantity sold
$500
Electronics Sale
$75
Average Unit Price
1
High Quantity Count
$550
Show All Sales
Category
Total Sales
Total Sales All Categories
Clothing
$50
$550
Electronics
$500
$550
Total
$550
$550