1. List the total number of reported crimes between 2018 and 2022.

```
select
Year(c.reported_crime_date) as years,
count(*) as [Reported Crime]
from Chicago.crime as c
where year(c.reported_crime_date) between 2018 and 2022
group by Year(c.reported_crime_date)
order by Year(c.reported_crime_date)
```

	Reported Crime	years
1	268429	2018
2	260882	2019
3	208431	2021
4	238340	2022

2. List the total number of homicides, batteries and assaults reported between 2018 and 2022.

```
select
crime_type,
count(*) as [Numnber of Crime]
from Chicago.crime
where crime_type in ('homicide', 'battery', 'assault')
group by crime_type
```

	crime_type	Numnber of Crime
1	assault	82105
2	homicide	2615
3	battery	180583

3. Which are the most common crimes reported and what percentage amount are they from the total amount of reported crimes?

```
with percentages
as (
select
crime_type,
count(*) as number
from chicago.crime
group by crime_type
)
select
crime_type,
round(cast(number as float) * 100 /(select sum(number) from percentages),2) as
[Percentage]
from percentages
```

	crime_type	Percentage
1	crim sexual assault	0.24
2	stalking	0.13
3	liquor law violation	0.09
4	weapons violation	3.03
5	non-criminal	0.01
6	public peace violation	0.43
7	robbery	3.54
8	offense involving children	0.88
9	prostitution	0.18
10	arson	0.17
11	deceptive practice	7.42
12	sex offense	0.5
13	motor vehicle theft	5.22
14	burglary	3.64
15	public indecency	0
16	concealed carry license violation	0.07
17	assault	8.41
18	criminal trespass	2.19
19	homicide	0.27
20	obscenity	0.02
21	theft	22.83
22	gambling	0.04
23	criminal damage	10.92
24	human trafficking	0.01
25	interference with public officer	0.36
26	intimidation	0.07
27	criminal sexual assault	0.42
28	non-criminal (subject specified)	0
29	narcotics	3.96
30	kidnapping	0.06
31	other offense	6.4
32	other narcotic violation	0
33	battery	18.5

4. What are the top ten communities that had the MOST number of crimes reported? Include the current population, density, and order by the number of reported crimes.

```
select top 10
n.community_name,
n.population as [population],
n.density,
count(c. crime_type) as [Number of Crimes]
from chicago.crime c
join chicago.community n
on c.community_id = n.community_id
group by n.community_name, n.population, n.density
order by [Number of Crimes] desc
```

	community_name	population	density	Number of Crimes
1	austin	96557	13504.48046875	53851
2	near north side	105481	38496.71875	44584
3	near west side	67881	11929.8798828125	35193
4	loop	42298	25635.150390625	34941
5	south shore	53971	18420.140625	33138
6	north lawndale	34794	10839.25	31860
7	humboldt park	54165	15045.830078125	28303
8	west town	87781	19166.16015625	27481
9	auburn gresham	44878	11903.98046875	27400
10	roseland	38816	8053.10986328125	24820

5. What are the top communities that had the LEAST number of crimes reported? Include the current population, density, and order by the number of reported crimes.

```
select TOP 1
n.community_name,
n.population as [population],
n.density,
count(c. crime_type) as [Number of Crimes]
from chicago.crime c
join chicago.community n
on c.community_id = n.community_id
group by n.community_name, n.population, n.density
order by [Number of Crimes] ASC
```

	community_name	population	density	Number of Crimes
1	edison park	11525	10199.1201171875	1067

6. What month had the most crimes reported and what was the average and median temperature high in the last five years?

```
with subquery as
(select
        w.weather_date,
       c.crime_type,
        temp_high,
   PERCENTILE_DISC(0.5) within group (order by temp_high) over (partition by
(month(w.weather_date))) as mediantemp
    from chicago.crime c
    join chicago.weather w
    on c.reported_crime_date = w.weather_date
    group by w.weather_date,c.crime_type, w.temp_high

)
select top 1
    MONTH(weather_date) AS Mon,
        COUNT(crime_type) OVER (PARTITION BY MONTH(weather_date)) AS crimenum,
        AVG(temp_high) OVER (PARTITION BY MONTH(weather_date)) AS averagehigh,
        AVG(mediantemp) OVER (PARTITION BY MONTH(weather_date)) AS mediantemp
from subquery
group by Month(weather_date), temp_high, mediantemp, crime_type
order by crimenum desc
```

	Mon	crimenum	averagehigh	mediantemp
1	5	1089	70	72

7. What month had the most homicides reported and what was the average and median temperature high in the last five years?

```
with subquery as (
select
    w.weather_date,
    c.crime_type as homicide,
    w.temp_high
    from chicago.crime c
    join chicago.weather w
    on c.reported_crime_date = w.weather_date
    where c.crime_type = 'homicide'
)
select top 1
    MONTH(weather_date) as Mon,
    count(homicide) over (partition by (MONTH(weather_date))) as homicount,
    AVG(temp_high) OVER (PARTITION BY MONTH(weather_date)) AS averagehigh,
    PERCENTILE_DISC(0.5) within group (order by temp_high) over (partition by
(month(weather_date))) as mediantemp
    from subquery
    group by MONTH(weather_date), temp_high, homicide
    order by homicount desc
```

	Mon	homicount	averagehigh	mediantemp
1	5	43	70	70

8. List the most violent year and the number of arrests with percentage. Order by the number of crimes in descending order. Determine the most violent year by the number of reported Homicides, Assaults and Battery for that year.

```
select
   Year(reported_crime_date) as Years,
   count(crime_type)  as[Violentnum],
   sum(cast(arrest as float)) as arrest,
   round(sum(cast(arrest as float)) * 100/ count(crime_type),2) as percentages
from
    chicago.crime
where crime_type in ('homicide', 'assault', 'battery')
group by Year(reported_crime_date)
```

	Years	Violentnum	arrest	percentages
1	2021	61573	7850	12.75
2	2022	62369	8154	13.07
3	2019	70589	14322	20.29
4	2018	70772	13889	19.62

9. List the day of the week, year, average precipitation, average high temperature and the highest number of reported crimes for days with and without precipitation.

```
select
```

```
day(c.reported_crime_date) as daayofmonth,
DATEPART(WEEKDAY, c.reported_crime_date) as weekdays,
DATEPART(DAYOFYEAR, c.reported_crime_date) as [Day of Year],
AVG(w.precipitation) as avgprecip,
avg(w.temp_high) as avgtemp,
count(c.crime_type) as [reportednum]
from chicago.crime c
join chicago.weather w
on c.reported_crime_date = w.weather_date
group by reported_crime_date
order by reportednum
```

	daayofmonth	weekdays	Day of Year	avgprecip	avgtemp	reportednum
1	15	2	46	0.189999997615814	12	337
2	30	4	30	0	NULL	341
3	31	1	31	0.28999999165535	32	341
4	16	3	47	0.00999999977648258	20	366
5	7	1	38	0	5	382
6	24	7	358	0	14	393
7	2	4	33	0.300000011920929	33	396
8	14	1	45	0.0299999993294477	4	402
9	6	7	37	0.0700000002980232	12	404
10	2	1	2	0.0399999991059303	28	405
11	25	5	329	0	48	411
12	25	1	359	0	14	412
13	23	6	357	0	NULL	413

10. List the days with the most reported crimes when there is zero precipitation and the day when precipitation is greater than 5. Including the day of the week, high temperature, amount and precipitation and the total number of reported crimes for that day.

```
select
DATEPART(WEEKDAY, c.reported_crime_date) as [Day of Week],
w.temp_high,
count(temp_high) as [Crime Amount],
sum(cast(w.precipitation as float)) as Precipitation
from chicago.crime c
join chicago.weather w
on c.reported_crime_date = w.weather_date
group by DATEPART(WEEKDAY, c.reported_crime_date), temp_high
having sum(cast(w.precipitation as float)) <>0 and sum(cast(w.precipitation as
float)) > 5
```

	Day of Week	temp_high	Crime Amount	Precipitation
1	3	50	2690	1311.29996152222
2	2	57	1589	15.6399996504188
3	2	34	3098	302.929985493422
4	4	68	2152	1527.67998760939
5	4	91	1456	172.079996153712
6	6	79	1393	71.1599984094501
7	7	66	1918	132.99999833107
8	7	95	1577	66.1599985212088
9	6	56	1818	323.29998254776
10	7	43	1868	381.740000691265
11	5	38	2596	106.740004241467
12	4	37	1271	283.19999717921
13	3	67	2148	7.16999983973801

11. List the most consecutive days where a homicide occurred between 2018-2022 and the timeframe.

```
WITH homicidedate as (
select
    c.reported_crime_date,
     ROW_NUMBER() over (order by c.reported_crime_date) as rownumber
     from chicago.crime c
     where c.crime_type = 'homicide'
),
consecutive_date as (
select
reported_crime_date,
DATEADD(day, -ROW_NUMBER() over (order by reported_crime_date), reported_crime_date) as
grp
from homicidedate
)
select TOP 1
MIN(reported_crime_date) as [start_date],
MAX(reported_crime_date) as end_date,
DATEDIFF(day, MIN(reported_crime_date), MAX(reported_crime_date)) + 1 as consecutive
from consecutive_date
group by grp
order by consecutive desc
```

	start_date	end_date	consecutive
1	2018-01-11	2021-01-14	1100

12. What are the top 10 most common locations for reported crimes and the number of reported crime (add percentage) depending on the temperature?

```
with subquery as (
select
cast(location_description as nvarchar(max)) as location,
count(crime_type) as reportedcrime,
rank() over (order by count(*) desc) as rank
--count(crime_type) *100/ sum(cast(count(crime_type) as float)) as Percentages
from chicago.crime
group by cast(location_description as nvarchar(max))
```

```
)
select top 10
    location,
   round(reportedcrime * 100 / sum(cast(reportedcrime as float)) over (), 3) as
Percentages
from subquery
group by location ,reportedcrime
order by Percentages desc
```

	location	Percentages
1	street	24.076
2	apartment	16.388
3	residence	15.484
4	sidewalk	6.726
5	small retail store	2.758
6	restaurant	2.342
7	other	2.183
8	alley	2.051
9	vehicle non-commercial	1.634
10	parking lot / garage (non residential)	1.631

13. Calculate the year-over-year growth in the number of reported crimes.

```
with subquery as (
select
    Year(c.reported_crime_date) as [Year],
     cast(count(*) as float) as crimeamount
from chicago.crime c
group by Year(c.reported_crime_date)
)
select
     [Year],
      crimeamount,
      LAG(crimeamount) over (order by [Year]) as prev_year_crimes,
      round((crimeamount-LAG(crimeamount) over (order by [Year])) *100/
NULLIF(LAG(crimeamount) over (order by [Year]),0),2) as YoYgrowth
from subquery
```

	Year	crimeamount	prev_year_crimes	YoYgrowth
1	2018	268429	NULL	NULL
2	2019	260882	268429	-2.81
3	2021	208431	260882	-20.11
4	2022	238340	208431	14.35

14. Calculate the year over year growth in the number of reported domestic violence crimes.

```
with subquery as (
select
    Year(c.reported_crime_date) as [Year],
     sum(cast(c.domestic as int)) as violence

from chicago.crime c
group by Year(c.reported_crime_date)
)
```

```
select
    Year,
     violence,
     LAG(violence) over (order by Year) as pre_year_domes,
     (violence - LAG(violence) over (order by Year)) * 100/ LAG(violence) over (order
by Year) as YoYGrowth
from
    subquery
```

	Year	violence	pre_year_domes	YoYGrowth
1	2018	44072	NULL	NULL
2	2019	43316	44072	-1
3	2021	44993	43316	3
4	2022	42519	44993	-5

15. List the number of crimes reported and seasonal growth for each astronomical season and what was the average temperature for each season in 2022? Use a conditional statement to display either a Gain/Loss for the season and the season over season growth.

```
with subquery as(
select
    c.reported_crime_date,
    case
         when Month( c.reported_crime_date) in (12,1,2) Then 'Winter'
         when Month( c.reported_crime_date) in (3,4,5) Then 'Spring'
         when Month( c.reported_crime_date) in (6,7,8) Then 'Summer'
         else  'Fall'
     end as Season,
     c.crime_type,
     w.average
from chicago.crime c
join chicago.weather w
on c.reported_crime_date = w.weather_date
),
subquery_2 as (
select
     Year(reported_crime_date) as [Year],
      Season,
      count(crime_type) as crimenumber,
      avg(average) as averagetemp
from subquery
--where Year(reported_crime_date) = 2020
group by Season, Year(reported_crime_date)

)
select
    Year,
     Season,
     LAG(crimenumber) over (order by Season) as pre_crime_count,
     (crimenumber - LAG(crimenumber) over (order by Season)) *100/ LAG(crimenumber)
over (order by Season) as SoSgrowth,
     averagetemp
```

```
from subquery_2
WHERE Year = 2022
```

	Year	Season	pre_crime_count	SoSgrowth	averagetemp
1	2022	Fall	NULL	NULL	55.5733753571267
2	2022	Spring	66153	-14	51.1997005245251
3	2022	Summer	56432	15	74.0365840558582
4	2022	Winter	65165	-22	26.8348784344732