

```

SELECT count(1) FROM artist; /* 421*/
SELECT count(1) FROM canvas_size; /* 200*/
SELECT count(1) FROM image_link; /* 14775*/
SELECT count(1) FROM museum_hours; /* 351*/
SELECT count(1) FROM museum; /* 57*/
SELECT count(1) FROM product_size; /* 110347*/
SELECT count(1) FROM subject; /* 6771*/
SELECT count(1) FROM work; /* 14776*/

```

```

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```

1) Fetch all the paintings which are not displayed on any museums?

```
select * from work where museum_id is null;
```

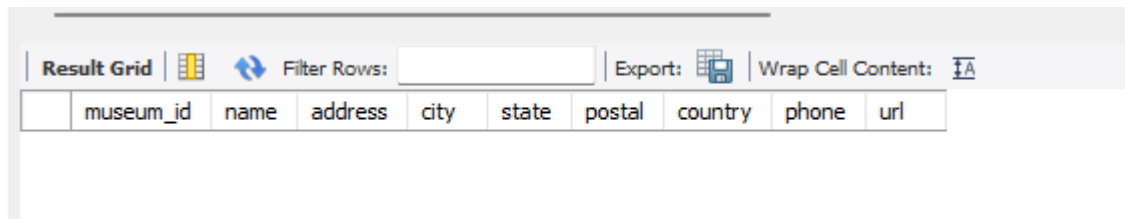
	work_id	name	artist_id	style	museum_id
▶	125752	Arabian Horses at Pasture	757	Baroque	NULL
	125818	Count Halm on His Basedow Estate	757	Baroque	NULL
	125763	Napoleon Before the Burning City of Smolensk	757	Baroque	NULL
	125774	Peasants Resting in the Field	757	Baroque	NULL
	125785	Portrait Oberleutnant Theodor Von Klein	757	Baroque	NULL
	125807	The Stable Yard	757	Baroque	NULL
	24532	Jacob A. Stamler Departing Le Havre	563	NULL	NULL

2) Are there museums without any paintings?

```
select * from museum m
```

```
where not exists (select 1 from work w
```

```
where w.museum_id=m.museum_id)
```



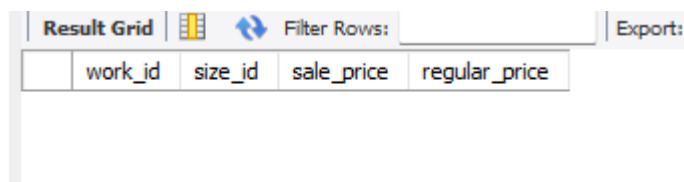
Result Grid

	museum_id	name	address	city	state	postal	country	phone	url
--	-----------	------	---------	------	-------	--------	---------	-------	-----

3) How many paintings have an asking price of more than their regular price?

```
select * from product_size
```

```
where sale_price > regular_price;
```



Result Grid

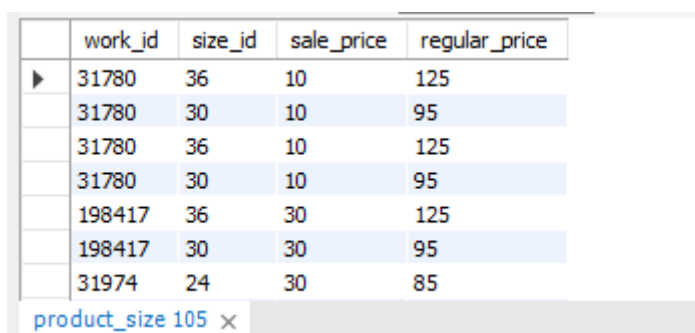
	work_id	size_id	sale_price	regular_price
--	---------	---------	------------	---------------

4) Identify the paintings whose asking price is less than 50% of its regular price

```
select *
```

```
from product_size
```

```
where sale_price < (regular_price*0.5);
```



	work_id	size_id	sale_price	regular_price
▶	31780	36	10	125
	31780	30	10	95
	31780	36	10	125
	31780	30	10	95
	198417	36	30	125
	198417	30	30	95
	31974	24	30	85

product_size 105 x

5) Which canva size costs the most?

```
SELECT * FROM product_size;
```

```
select size_id from product_size
```

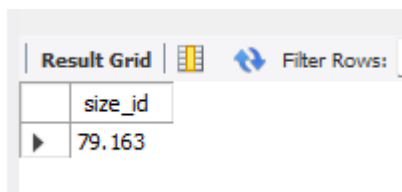
```
where regular_price = (
```

```
SELECT max(regular_price)
```

```
FROM product_size
```

```
where size_id != "#VALUE!"
```

```
);
```



Result Grid	
	size_id
▶	79.163

6. Delete duplicate records from work, product_size, subject and image_link tables

```
SELECT * FROM image_link;
```

```
SELECT * FROM product_size;
```

```
SELECT * FROM work;
```

```
SET SQL_SAFE_UPDATES = 0;
```

```
WITH sub AS (
```

```
SELECT work_id
```

```
FROM (  
    SELECT MIN(work_id) AS work_id  
    FROM work  
    GROUP BY work_id  
    ) AS subquery  
)  
DELETE FROM work  
WHERE work_id NOT IN (SELECT * FROM sub);
```

```
WITH sub AS (  
    SELECT work_id  
    FROM (  
        SELECT MIN(work_id) AS work_id, MIN(size_id) AS size_id  
        FROM product_size  
        GROUP BY work_id, size_id  
    ) AS subquery  
)  
DELETE FROM work  
WHERE work_id NOT IN (SELECT * FROM sub);
```

```
WITH sub AS (  
    SELECT work_id  
    FROM (  
        SELECT MIN(work_id) AS work_id  
        FROM image_link  
        GROUP BY work_id
```

```

) AS subquery
)
DELETE FROM work
WHERE work_id NOT IN (SELECT * FROM sub);

```

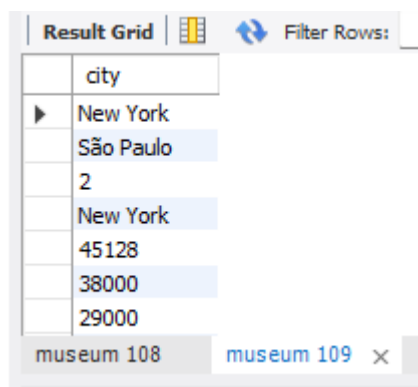
7. Identify the museums with invalid city information in the given dataset

```
select city, country from museum;
```

```

SELECT city
FROM museum
WHERE city not REGEXP '^[A-Za-z]+$';

```



city
New York
São Paulo
2
New York
45128
38000
29000

8. Museum_Hours table has 1 invalid entry. Identify it and remove it.

```

SELECT *
FROM museum_hours
WHERE day NOT IN ('Monday', 'Tuesday', 'Wednesday', 'Thursday', 'Thusday', 'Friday', 'Saturday', 'Sunday');

```

```
SELECT *
```

```
FROM museum_hours
```

```
WHERE open not REGEXP '^((1[0-2]|0?[1-9]):([0-5][0-9]):(AM|PM))$' or close not REGEXP '^((1[0-2]|0?[1-9]):([0-5][0-9]):(AM|PM))$';
```

```
SET SQL_SAFE_UPDATES = 0;
```

```
delete from museum_hours
```

```
where museum_id = 73;
```

```
# check if it was deleted
```

```
SELECT *
```

```
FROM museum_hours
```

```
where museum_id = 73
```

9) Fetch the top 10 most famous painting subject

```
select *
```

```
from (
```

```
    select distincts.subject,count(1) as no_of_paintings
```

```
    ,rank() over(order by count(1) desc) as ranking
```

```
    from work w
```

```
    join subject s on s.work_id=w.work_id
```

```
    group by s.subject ) x
```

```
where ranking <= 10;
```

10) Identify the museums which are open on both Sunday and Monday. Display museum name, city.

```
select distinct m.name as museum_name, m.city, m.state,m.country
```

```
from museum_hours mh
```

```
join museum m on m.museum_id=mh.museum_id
```

```

where day='Sunday'

and exists (select 1 from museum_hours mh2

            where mh2.museum_id=mh.museum_id

            and mh2.day='Monday');

```

Result Grid				
Filter Rows:				
Export:				
Wrap Cell Content:				
	museum_name	city	state	country
▶	The Museum of Modern Art	New York	NY	USA
	Pushkin State Museum of Fine Arts	Moscow	NULL	Russia
	National Gallery of Victoria	Melbourne	Victoria	Australia
	The Metropolitan Museum of Art	New York	NY	USA
	Museum of Grenoble	38000	Grenoble	France
	Nelson-Atkins Museum of Art	Kansas City	MO	USA
	Musée du Louvre	75001	Paris	France

11) How many museums are open every single day?

```

select count(1)

from (select museum_id, count(1)

      from museum_hours

      group by museum_id

      having count(1) = 7) x;

```

Result Grid	
	count(1)
▶	18

12) Which are the top 5 most popular museum? (Popularity is defined based on most no of paintings in a museum)

```

select m.name as museum, m.city,m.country,x.no_of_painintgs

from ( select m.museum_id, count(1) as no_of_painintgs

      , rank() over(order by count(1) desc) as rnk

      from work w

      join museum m on m.museum_id=w.museum_id

```

```

        group by m.museum_id) x

join museum m on m.museum_id=x.museum_id

where x.rnk<=5;

```

1/4
175

176 12) Which are the top 5 most popular museum? (Popularity is defined based on most no of paintings in a museum)

177 select m.name as museum, m.city,m.country,x.no_of_painintgs

178 from (select m.museum_id, count(1) as no_of_painintgs

179 , rank() over(order by count(1) desc) as rnk

180 from work w

181 join museum m on m.museum_id=w.museum_id

182 group by m.museum_id) x

183 join museum m on m.museum_id=x.museum_id

184 where x.rnk<=5;

185

186

Result Grid

	museum	city	country	no_of_painintgs
▶	The Metropolitan Museum of Art	New York	USA	938
	Rijksmuseum	Amsterdam	Netherlands	446
	National Gallery of Art	Washington	USA	372
	National Gallery	London	UK	416
	The Barnes Foundation	Philadelphia	USA	350

13) Who are the top 5 most popular artist? (Popularity is defined based on most no of paintings done by an artist)

```

select a.full_name as artist, a.nationality,x.no_of_painintgs

from ( select a.artist_id, count(1) as no_of_painintgs

, rank() over(order by count(1) desc) as rnk

from work w

join artist a on a.artist_id=w.artist_id

group by a.artist_id) x

join artist a on a.artist_id=x.artist_id

where x.rnk<=5;

```


Result Grid				Filter Rows:	Export:	Wrap Cell Content:
	artist	nationality	no_of_paintings			
▶	Pierre-Auguste Renoir	French	468			
	Claude Monet	French	371			
	Albert Marquet	French	233			
	Maurice Utrillo	French	253			
	Vincent Van Gogh	Dutch	302			

14) Display the 3 least popular canvas sizes

```

SELECT label, ranking, no_of_paintings
FROM (
  SELECT size_id, label, no_of_paintings,
    @rank := @rank + 1 AS ranking
  FROM (
    SELECT cs.size_id, cs.label, COUNT(*) AS no_of_paintings
    FROM work w
    JOIN product_size ps ON ps.work_id = w.work_id
    JOIN canvas_size cs ON cs.size_id = CAST(ps.size_id AS CHAR)
    GROUP BY cs.size_id, cs.label
    ORDER BY COUNT(*) DESC
  ) x, (SELECT @rank := 0) r
) ranked
WHERE ranking <= 3;

```

Result Grid				Filter Rows:	Export:	Wrap Cell Content:
	label	ranking	no_of_paintings			
▶	30" x 40" (76 cm x 102 cm)	1	4648			
	36" x 48" (91 cm x 122 cm)	2	4648			
	29" x 36" (74 cm x 91 cm)	3	4620			

15) Which museum is open for the longest during a day. Display museum name, state and hours open and which day?

```

SELECT museum_name, state AS city, day, open, close, duration
FROM (

```

```

SELECT m.name AS museum_name, m.state, day, open, close,
       STR_TO_DATE(open, '%h:%i %p') AS open_time,
       STR_TO_DATE(close, '%h:%i %p') AS close_time,
       TIMEDIFF(STR_TO_DATE(open, '%h:%i %p'), STR_TO_DATE(close, '%h:%i %p')) AS duration,
       @rank := @rank + 1 AS rnk
FROM museum_hours mh
JOIN museum m ON m.museum_id = mh.museum_id
CROSS JOIN (SELECT @rank := 0) AS r
) AS x
WHERE x.rnk = 1;

```

Result Grid						
Filter Rows: <input type="text"/>						
Export: Wrap Cell Content:						
	museum_name	city	day	open	close	duration
▶	The Museum of Modern Art	NY	Sunday	10:30:AM	05:30:PM	NULL

16) Which museum has the most no of most popular painting style?

```

with pop_style as
    (select style
     ,rank() over(order by count(1) desc) as rnk
    from work
    group by style),
cte as
    (select w.museum_id,m.name as museum_name,ps.style, count(1) as
no_of_paintings
     ,rank() over(order by count(1) desc) as rnk
    from work w
    join museum m on m.museum_id=w.museum_id
    join pop_style ps on ps.style = w.style

```

```

        where w.museum_id is not null

        and ps.rnk=1

        group by w.museum_id, m.name,ps.style)

select museum_name,style,no_of_paintings

from cte

where rnk=1;

```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
	museum_name	style	no_of_paintings
▶	The Metropolitan Museum of Art	Impressionism	243

17. Identify the artists whose paintings are displayed in multiple countries

SQL Case Study - Paintings 2

```
SELECT * FROM artist;
```

```
SELECT * FROM museum;
```

```
SELECT * FROM work;
```

```

SELECT ar.artist_id, ar.full_name, count(distinct mu.country) as number_of_countries FROM artist ar
left join work wk
on ar.artist_id = wk.artist_id
left join museum mu
on mu.museum_id = wk.museum_id
group by ar.artist_id, ar.full_name
having number_of_countries > 1
order by number_of_countries desc

```

Result Grid			
		Filter Rows:	
		Export:	
		Wrap Cell Content:	
	artist_id	full_name	number_of_countries
▶	677	Vincent Van Gogh	8
	550	Claude Monet	7
	782	Paul Gauguin	7
	500	Pierre-Auguste Renoir	6
	595	Francois Boucher	6
	920	Rembrandt Van Rijn	6
	531	Camille Pissarro	5
	544	Peter Paul Rubens	5

18) Display the country and the city with most no of museums. Output 2 separate columns to mention the city and country. If there are multiple value, seperate them with comma.

with cte_country as

```
(select country, count(1)
, rank() over(order by count(1) desc) as rnk
from museum
group by country),
```

cte_city as

```
(select city, count(1)
, rank() over(order by count(1) desc) as rnk
from museum
group by city)
```

```
select string_agg(distinct country.country,', '), string_agg(city.city,', ')
from cte_country country
cross join cte_city city
where country.rnk = 1
and city.rnk = 1;
```

19) Identify the artist and the museum where the most expensive and least expensive painting is placed.

Display the artist name, sale_price, painting name, museum name, museum city and canvas label

with cte as

```
(select *
```

```

, rank() over(order by sale_price desc) as rnk
, rank() over(order by sale_price ) as rnk_asc
from product_size )

select w.name as painting
, cte.sale_price
, a.full_name as artist
, m.name as museum, m.city
, cz.label as canvas
from cte

join work w on w.work_id=cte.work_id

join museum m on m.museum_id=w.museum_id

join artist a on a.artist_id=w.artist_id

join canvas_size cz on cz.size_id = cte.size_id::NUMERIC

where rnk=1 or rnk_asc=1;

```

20) Which country has the 5th highest no of paintings?

```

with cte as

(select m.country, count(1) as no_of_Paintings
, rank() over(order by count(1) desc) as rnk
from work w

join museum m on m.museum_id=w.museum_id

group by m.country)

select country, no_of_Paintings
from cte

where rnk=5;

```

Result Grid			Filter Rows:	Export:	Wrap
	country	no_of_Paintings			
▶	Spain	196			

21) Which are the 3 most popular and 3 least popular painting styles?

with cte as

```
(select style, count(1) as cnt
, rank() over(order by count(1) desc) rnk
, count(1) over() as no_of_records
from work
where style is not null
group by style)
```

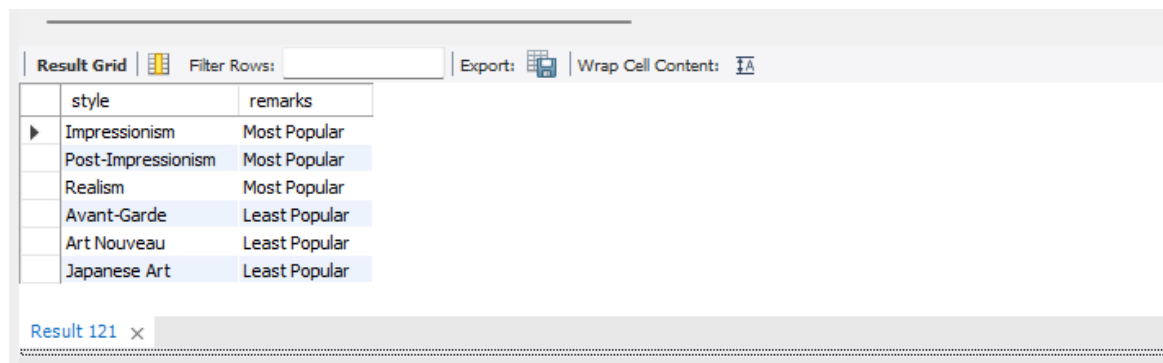
select style

, case when rnk <=3 then 'Most Popular' else 'Least Popular' end as remarks

from cte

where rnk <=3

or rnk > no_of_records - 3;



The screenshot shows a database query result grid with two columns: 'style' and 'remarks'. The results are as follows:

style	remarks
Impressionism	Most Popular
Post-Impressionism	Most Popular
Realism	Most Popular
Avant-Garde	Least Popular
Art Nouveau	Least Popular
Japanese Art	Least Popular

Below the table, there is a tab labeled 'Result 121'.

22) Which artist has the most no of Portraits paintings outside USA?. Display artist name, no of paintings and the artist nationality.

```
select full_name as artist_name, nationality, no_of_paintings
```

```
from (
```

```
select a.full_name, a.nationality
,count(1) as no_of_paintings
,rank() over(order by count(1) desc) as rnk
from work w
join artist a on a.artist_id=w.artist_id
join subject s on s.work_id=w.work_id
```

```
join museum m on m.museum_id=w.museum_id
where s.subject='Portraits'
and m.country != 'USA'
group by a.full_name, a.nationality) x
where rnk=1;
```

Result Grid				Filter Rows:	Export:	Wrap Cell Content:
	artist_name	nationality	no_of_paintings			
▶	Jan Willem Pieneman	Dutch	14			
	Vincent Van Gogh	Dutch	14			