Query 1:

```sql
%%sql
SELECT d.dog_guid AS dogID, d.dimension AS dimension, count(c.created_at) AS numtests
FROM dogs d, complete_tests c
WHERE d.dog_guid=c.dog_guid
GROUP BY dogID LIMIT
100;
```

Query 2:

```sql
%%sql
SELECT d.dog_guid AS dogID, d.dimension AS dimension, count(c.created_at) AS numtests
FROM dogs d JOIN complete_tests c
ON d.dog_guid=c.dog_guid
GROUP BY dogID LIMIT
100;
```

Query 3:

```sql
%%sql
SELECT dimension, AVG(numtests_per_dog.numtests) AS avg_tests_completed
FROM( SELECT d.dog_guid AS dogID, d.dimension AS dimension, count(c.created_at) AS numtests
        FROM dogs d, complete_tests c
        WHERE d.dog_guid=c.dog_guid
        GROUP BY dogID) AS numtests_per_dog
GROUP BY numtests_per_dog.dimension;
```

OR

```sql
%%sql
SELECT dimension, AVG(numtests_per_dog.numtests) AS avg_tests_completed
FROM( SELECT d.dog_guid AS dogID, d.dimension AS dimension, count(c.created_at) AS numtests
        FROM dogs d JOIN complete_tests c
        ON d.dog_guid=c.dog_guid
        GROUP BY dogID) AS numtests_per_dog
GROUP BY numtests_per_dog.dimension;
```

Query 4:

```sql
%%sql
SELECT dimension, COUNT(DISTINCT dogID) AS num_dogs
FROM( SELECT d.dog_guid AS dogID, d.dimension AS dimension
FROM dogs d JOIN complete_tests c
    ON d.dog_guid=c.dog_guid
WHERE d.dimension IS NULL OR d.dimension=''
```

```
GROUP BY dogID) AS dogs_in_complete_tests
GROUP BY dimension;
```

Query 5:
```
%%sql
SELECT d.breed, d.weight, d.exclude, MIN(c.created_at) AS first_test,
MAX(c.created_at) AS last_test,count(c.created_at) AS numtests
FROM dogs d JOIN complete_tests c
   ON d.dog_guid=c.dog_guid
WHERE d.dimension=""
GROUP BY d.dog_guid;
```

Query 6:
```
%%sql
SELECT dimension, AVG(numtests_per_dog.numtests) AS avg_tests_completed,
COUNT(DISTINCT dogID)
FROM( SELECT d.dog_guid AS dogID, d.dimension AS dimension, count(c.created_at)
         AS numtests
       FROM dogs d JOIN complete_tests c
          ON d.dog_guid=c.dog_guid
    WHERE (dimension IS NOT NULL AND dimension!='') AND (d.exclude IS NULL OR
                                                    d.exclude=0)
       GROUP BY dogID) AS numtests_per_dog
GROUP BY numtests_per_dog.dimension;
```

Query 7:
```
%%sql
SELECT d.breed, d.weight, d.exclude, MIN(c.created_at) AS first_test,
MAX(c.created_at) AS last_test,count(c.created_at) AS numtests
FROM dogs d JOIN complete_tests c
   ON d.dog_guid=c.dog_guid
WHERE breed_group IS NULL
GROUP BY d.dog_guid;
```

Query 8:
```
%%sql
SELECT breed_group, AVG(numtests_per_dog.numtests) AS avg_tests_completed,
COUNT(DISTINCT dogID)
FROM( SELECT d.dog_guid AS dogID, d.breed_group AS breed_group,
         count(c.created_at) AS numtests
       FROM dogs d JOIN complete_tests c
          ON d.dog_guid=c.dog_guid
       WHERE d.exclude IS NULL OR d.exclude=0
       GROUP BY dogID) AS numtests_per_dog
GROUP BY breed_group;
```

Query 9:
```sql
%%sql
SELECT breed_group, AVG(numtests_per_dog.numtests) AS avg_tests_completed,
COUNT(DISTINCT dogID)
FROM( SELECT d.dog_guid AS dogID, d.breed_group AS breed_group,
        count(c.created_at) AS numtests
        FROM dogs d JOIN complete_tests c
            ON d.dog_guid=c.dog_guid
        WHERE d.exclude IS NULL OR d.exclude=0
        GROUP BY dogID) AS numtests_per_dog
GROUP BY breed_group
HAVING breed_group IN ('Sporting','Hound','Herding','Working');
```

Query 10:
```sql
%%sql
SELECT breed_type, AVG(numtests_per_dog.numtests) AS avg_tests_completed,
COUNT(DISTINCT dogID)
FROM( SELECT d.dog_guid AS dogID, d.breed_type AS breed_type, count(c.created_at)
        AS numtests
        FROM dogs d JOIN complete_tests c
            ON d.dog_guid=c.dog_guid
        WHERE d.exclude IS NULL OR d.exclude=0
        GROUP BY dogID) AS numtests_per_dog
GROUP BY breed_type;
```

Query 11:
```sql
%%sql
SELECT d.dog_guid AS dogID, d.breed_type AS breed_type,
   CASE WHEN d.breed_type='Pure Breed' THEN 'pure_breed'
        ELSE 'not_pure_breed'
END AS pure_breed,
count(c.created_at) AS numtests
FROM dogs d, complete_tests c
WHERE d.dog_guid=c.dog_guid
GROUP BY dogID
LIMIT 50;
```

Query 12:
```sql
%%sql
SELECT numtests_per_dog.pure_breed AS pure_breed,
AVG(numtests_per_dog.numtests) AS avg_tests_completed, COUNT(DISTINCT dogID)
FROM( SELECT d.dog_guid AS dogID, d.breed_type AS breed_type,
        CASE WHEN d.breed_type='Pure Breed' THEN 'pure_breed'
```

```
        ELSE 'not_pure_breed'
    END AS pure_breed,
        count(c.created_at) AS numtests
        FROM dogs d JOIN complete_tests c
            ON d.dog_guid=c.dog_guid
        WHERE d.exclude IS NULL OR d.exclude=0
        GROUP BY dogID) AS numtests_per_dog
GROUP BY pure_breed;
```

Query 13:
```
%%sql
SELECT numtests_per_dog.pure_breed AS pure_breed, neutered,
AVG(numtests_per_dog.numtests) AS avg_tests_completed, COUNT(DISTINCT dogID)
FROM( SELECT d.dog_guid AS dogID, d.breed_group AS breed_type, d.dog_fixed AS
        neutered,
        CASE WHEN d.breed_type='Pure Breed' THEN 'pure_breed'
            ELSE 'not_pure_breed'
    END            AS            pure_breed,
    count(c.created_at)     AS      numtests
    FROM dogs d JOIN complete_tests c
            ON d.dog_guid=c.dog_guid
        WHERE d.exclude IS NULL OR d.exclude=0
        GROUP BY dogID) AS numtests_per_dog
GROUP BY pure_breed, neutered;
```

Query 14:
```
%%sql
SELECT dimension, AVG(numtests) AS avg_tests_completed, COUNT(DISTINCT
dogID),
STDDEV(numtests)
FROM( SELECT d.dog_guid AS dogID, d.dimension AS dimension, count(c.created_at)
        AS numtests
        FROM dogs d JOIN complete_tests c
            ON d.dog_guid=c.dog_guid
        WHERE (dimension IS NOT NULL AND dimension!='') AND (d.exclude IS NULL
        OR d.exclude=0)
        GROUP BY dogID) AS numtests_per_dog
GROUP BY numtests_per_dog.dimension;
```

Query 15:
```
%%sql
SELECT d.breed_type AS breed_type,
AVG(TIMESTAMPDIFF(minute,e.start_time,e.end_time)) AS AvgDuration,
```

```sql
  STDDEV(TIMESTAMPDIFF(minute,e.start_time,e.end_time)) AS StdDevDuration
FROM dogs d JOIN exam_answers e
   ON d.dog_guid=e.dog_guid
WHERE TIMESTAMPDIFF(minute,e.start_time,e.end_time)>0
GROUP BY breed_type;
```

Query 16:
```sql
%%sql
SELECT created_at, DAYOFWEEK(created_at)
FROM complete_tests
LIMIT 49,200;
```

Query 17:
```sql
%%sql
SELECT created_at, DAYOFWEEK(created_at),
(CASE
  WHEN DAYOFWEEK(created_at)=1 THEN "Su"
  WHEN DAYOFWEEK(created_at)=2 THEN "Mo"
  WHEN DAYOFWEEK(created_at)=3 THEN "Tu"
  WHEN DAYOFWEEK(created_at)=4 THEN "We"
  WHEN DAYOFWEEK(created_at)=5 THEN "Th"
  WHEN DAYOFWEEK(created_at)=6 THEN "Fr"
  WHEN DAYOFWEEK(created_at)=7 THEN "Sa"
END) AS daylabel
FROM complete_tests
LIMIT 49,200;
```

Query 18:
```sql
%%sql
SELECT DAYOFWEEK(created_at),COUNT(created_at) AS numtests,
(CASE
  WHEN DAYOFWEEK(created_at)=1 THEN "Su"
  WHEN DAYOFWEEK(created_at)=2 THEN "Mo"
  WHEN DAYOFWEEK(created_at)=3 THEN "Tu"
  WHEN DAYOFWEEK(created_at)=4 THEN "We"
  WHEN DAYOFWEEK(created_at)=5 THEN "Th"
  WHEN DAYOFWEEK(created_at)=6 THEN "Fr"
  WHEN DAYOFWEEK(created_at)=7 THEN "Sa"
END) AS daylabel
FROM complete_tests
GROUP BY daylabel
ORDER BY numtests DESC;
```

Query 19:
```sql
%%sql
SELECT DAYOFWEEK(c.created_at),COUNT(c.created_at) AS numtests,
(CASE
  WHEN DAYOFWEEK(c.created_at)=1 THEN "Su"
  WHEN DAYOFWEEK(c.created_at)=2 THEN "Mo"
  WHEN DAYOFWEEK(c.created_at)=3 THEN "Tu"
  WHEN DAYOFWEEK(c.created_at)=4 THEN "We"
  WHEN DAYOFWEEK(c.created_at)=5 THEN "Th"
  WHEN DAYOFWEEK(c.created_at)=6 THEN "Fr"
  WHEN DAYOFWEEK(c.created_at)=7 THEN "Sa"
END) AS daylabel
FROM complete_tests c JOIN dogs d
   ON c.dog_guid=d.dog_guid
WHERE d.exclude IS NULL OR d.exclude=0
GROUP BY daylabel
ORDER BY numtests DESC;
```

Query 20:
```sql
%%sql
SELECT dog_guid
FROM dogs d INNER JOIN users u
ON d.user_guid=u.user_guid
```

OR
```sql
%%sql
SELECT DISTINCT dog_guid
FROM dogs d JOIN users u
   ON d.user_guid=u.user_guid
```

Query 21:
```sql
%%sql
SELECT DISTINCT dog_guid
FROM dogs d JOIN users u
   ON d.user_guid=u.user_guid
WHERE (u.exclude IS NULL OR u.exclude=0) AND (d.exclude IS NULL OR
d.exclude=0);
```

Query 22:
```sql
%%sql
SELECT DAYOFWEEK(c.created_at) AS dayasnum, YEAR(c.created_at) AS year,
COUNT(c.created_at) AS numtests,
(CASE
  WHEN DAYOFWEEK(c.created_at)=1 THEN "Su"
  WHEN DAYOFWEEK(c.created_at)=2 THEN "Mo"
  WHEN DAYOFWEEK(c.created_at)=3 THEN "Tu"
  WHEN DAYOFWEEK(c.created_at)=4 THEN "We"
  WHEN DAYOFWEEK(c.created_at)=5 THEN "Th"
  WHEN DAYOFWEEK(c.created_at)=6 THEN "Fr"
  WHEN DAYOFWEEK(c.created_at)=7 THEN "Sa"
END) AS daylabel
FROM complete_tests c JOIN
      (SELECT DISTINCT dog_guid
    FROM dogs d JOIN users u
         ON d.user_guid=u.user_guid
       WHERE ((u.exclude IS NULL OR u.exclude=0)
          AND (d.exclude IS NULL OR d.exclude=0))) AS dogs_cleaned
   ON c.dog_guid=dogs_cleaned.dog_guid
GROUP BY daylabel
ORDER BY numtests DESC;
```

Query 23:
```sql
%%sql
SELECT DAYOFWEEK(c.created_at) AS dayasnum, YEAR(c.created_at) AS year,
COUNT(c.created_at) AS numtests,
(CASE
  WHEN DAYOFWEEK(c.created_at)=1 THEN "Su"
  WHEN DAYOFWEEK(c.created_at)=2 THEN "Mo"
  WHEN DAYOFWEEK(c.created_at)=3 THEN "Tu"
  WHEN DAYOFWEEK(c.created_at)=4 THEN "We"
  WHEN DAYOFWEEK(c.created_at)=5 THEN "Th"
  WHEN DAYOFWEEK(c.created_at)=6 THEN "Fr"
  WHEN DAYOFWEEK(c.created_at)=7 THEN "Sa"
END) AS daylabel
FROM complete_tests c JOIN
      (SELECT DISTINCT dog_guid
      FROM dogs d JOIN users u
         ON d.user_guid=u.user_guid
       WHERE ((u.exclude IS NULL OR u.exclude=0)
          AND (d.exclude IS NULL OR d.exclude=0))) AS dogs_cleaned
   ON c.dog_guid=dogs_cleaned.dog_guid
GROUP BY year,daylabel
ORDER BY year ASC, numtests DESC;
```

Query 24:
```sql
%%sql
SELECT DAYOFWEEK(c.created_at) AS dayasnum, YEAR(c.created_at) AS year,
COUNT(c.created_at) AS numtests,
(CASE
  WHEN DAYOFWEEK(c.created_at)=1 THEN "Su"
  WHEN DAYOFWEEK(c.created_at)=2 THEN "Mo"
  WHEN DAYOFWEEK(c.created_at)=3 THEN "Tu"
  WHEN DAYOFWEEK(c.created_at)=4 THEN "We"
  WHEN DAYOFWEEK(c.created_at)=5 THEN "Th"
  WHEN DAYOFWEEK(c.created_at)=6 THEN "Fr"
  WHEN DAYOFWEEK(c.created_at)=7 THEN "Sa"
END) AS daylabel
FROM complete_tests c JOIN
      (SELECT DISTINCT dog_guid
      FROM dogs d JOIN users u
          ON d.user_guid=u.user_guid
      WHERE ((u.exclude IS NULL OR u.exclude=0)
          AND u.country="US"
          AND (u.state!="HI" AND u.state!="AK")
          AND (d.exclude IS NULL OR d.exclude=0))) AS dogs_cleaned
  ON c.dog_guid=dogs_cleaned.dog_guid
GROUP BY year,daylabel
ORDER BY year ASC, numtests DESC;
```

Query 25:
```sql
%%sql
SELECT created_at, DATE_SUB(created_at, interval 6 hour) AS corrected_time
FROM complete_tests
LIMIT 100;
```

Query 26:
```sql
%%sql
SELECT DAYOFWEEK(DATE_SUB(created_at, interval 6 hour)) AS dayasnum,
YEAR(c.created_at) AS year, COUNT(c.created_at) AS numtests,
(CASE
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=1 THEN "Su"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=2 THEN "Mo"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=3 THEN "Tu"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=4 THEN "We"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=5 THEN "Th"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=6 THEN "Fr"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=7 THEN "Sa"
END) AS daylabel
FROM complete_tests c JOIN
      (SELECT DISTINCT dog_guid
       FROM dogs d JOIN users u
         ON d.user_guid=u.user_guid
       WHERE ((u.exclude IS NULL OR u.exclude=0)
          AND u.country="US"
          AND (u.state!="HI" AND u.state!="AK")
          AND (d.exclude IS NULL OR d.exclude=0))) AS dogs_cleaned
   ON c.dog_guid=dogs_cleaned.dog_guid
GROUP BY year,daylabel
ORDER BY year ASC, numtests DESC;
```

Query 27:
```sql
%%sql
SELECT DAYOFWEEK(DATE_SUB(created_at, interval 6 hour)) AS dayasnum,
YEAR(c.created_at) AS year, COUNT(c.created_at) AS numtests,
(CASE
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=1 THEN "Su"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=2 THEN "Mo"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=3 THEN "Tu"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=4 THEN "We"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=5 THEN "Th"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=6 THEN "Fr"
  WHEN DAYOFWEEK(DATE_SUB(created_at, interval 6 hour))=7 THEN "Sa"
END) AS daylabel
FROM complete_tests c JOIN
      (SELECT DISTINCT dog_guid
       FROM dogs d JOIN users u
         ON d.user_guid=u.user_guid
       WHERE ((u.exclude IS NULL OR u.exclude=0)
          AND u.country="US"
          AND (u.state!="HI" AND u.state!="AK")
          AND (d.exclude IS NULL OR d.exclude=0))) AS dogs_cleaned
```

```
    ON c.dog_guid=dogs_cleaned.dog_guid
GROUP BY year,daylabel
ORDER BY year ASC, FIELD(daylabel,'Mo','Tu','We','Th','Fr','Sa','Su');
```

Query 28:
```
%%sql
SELECT dogs_cleaned.state AS state, COUNT(DISTINCT dogs_cleaned.user_guid) AS
numusers
FROM complete_tests c JOIN
      (SELECT DISTINCT dog_guid, u.user_guid, u.state
      FROM dogs d JOIN users u
         ON d.user_guid=u.user_guid
      WHERE ((u.exclude IS NULL OR u.exclude=0)
         AND u.country="US"
         AND (d.exclude IS NULL OR d.exclude=0))) AS dogs_cleaned
   ON c.dog_guid=dogs_cleaned.dog_guid
GROUP BY state
ORDER BY numusers DESC
LIMIT 5;
```

Query 29:
```
%%sql
SELECT dogs_cleaned.country AS country, COUNT(DISTINCT dogs_cleaned.user_guid)
AS numusers
FROM complete_tests c JOIN
      (SELECT DISTINCT dog_guid, u.user_guid, u.country
      FROM dogs d JOIN users u
         ON d.user_guid=u.user_guid
      WHERE ((u.exclude IS NULL OR u.exclude=0)
         AND (d.exclude IS NULL OR d.exclude=0))) AS dogs_cleaned
ON c.dog_guid=dogs_cleaned.dog_guid
GROUP BY country
ORDER BY numusers DESC
LIMIT 10;
```