SQL: Exercises with nulls

1. Suppose we have a table called Runnymede with the following content:

<table>
<thead>
<tr>
<th>name</th>
<th>age</th>
<th>grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>diane</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>will</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>cate</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>tom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>micah</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>jamieson</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

(6 rows)

What is the output of each query below?

(a) `select min(grade), max(grade), sum(grade), avg(grade), count(grade), count(*) from Runnymede;`

(b) `select min(age), max(age), sum(age), avg(age), count(age), count(*) from Runnymede;`

2. We have tables R and T. Their contents are shown below.

<table>
<thead>
<tr>
<th>R</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

(4 rows) 6 | 88
(5 rows)

What is the result of this query:

`select * from R natural join T;`
3. Suppose we have this table:

```sql
create table names(first text, last text, unique (first, last));
```

What will the result of the following be?

(a) Doing this twice: `insert into names values ('Diane', 'Horton');`

(b) Doing this twice: `insert into names values (null, 'Liu');`

4. Suppose we have these tables:

```sql
csc343h-bogdan=> select * from R;
a | b
-----
1 | 2
8 | 7
5 |
   | 6
(4 rows)
csc343h-bogdan=> select * from S;
a | b
-----
3 | 4
8 | 7
5 |
   | 6
(4 rows)
```

What will the result of the following be?

(a) `(SELECT * from R) INTERSECT (SELECT * from S);`

(b) `(SELECT * from R) EXCEPT (SELECT * from S);`