Red
You have a table of sales for your fruit cart that looks something like this:

Table: fct_sales
dateid (date)
fruit (varchar)
sold (int)

Sample table:

```
+------------+--------+------+
| dateid     | fruit  | sold |
+------------+--------+------+
| 2015-01-01 | Apple  |   31 |
| 2015-01-01 | Orange |   19 |
| 2015-01-02 | Apple  |   37 |
| 2015-01-02 | Orange |   26 |
| 2015-01-03 | Apple  |   21 |
| 2015-01-03 | Orange |   21 |
| 2015-01-04 | Apple  |   35 |
| 2015-01-04 | Orange |   27 |
+------------+--------+------+
```

Assume that the table is well-behaved, and every date has a row for apples and a row for oranges.

Q1: Find the difference in the number of apples and oranges sold each day (apples minus oranges)

This can be done several different ways. The clunky-but-natural is to construct a table for apple sales and a table for orange sales, then to join them together. The end result would look something like this:

```
SELECT a.dateid, pos_sales - neg_sales
from (
  SELECT dateid, pos_sales
  from fct_sales
  where fruit = 'Apple'
  ) a
join (
  SELECT dateid, neg_sales
  from fct_sales
  where fruit = 'Orange'
  ) o
```

```
on a.dateid = o.dateid
```

Q2: Find the difference in the number of apples and oranges sold each day (apples minus oranges), without using a join

```
select dateid,
SUM(CASE WHEN fruit = 'Apple' THEN sold WHEN  fruit = 'Orange' THEN -sold END) AS diff
from fct_sales
group by dateid
```

There are multiple solutions, but this is probably the most elegant. All non-contrived solutions will involve at least one case statement.

Q3: Suppose that we add multiple types of fruit: bannanas, lemons, plums, etc. Find the total number of fruits sold per day, but only including those fruits which sold at least 10 on January 1st, 2015.

We can use a self-join, but a slightly more elegant solution is to use a nested subquery. First, we have to get a list of fruits which sold at least 10 on January 1st, 2015:

```
select distinct fruit
from fct_sales
where dateid = '2015-01-01'
and sold >= 10
```

Then, we write a query to get the total amount of fruit sold per day and stick the latter inside the former:

```
select dateid, sum(sale)
from fct_sales
where fruit in (
  select distinct fruit
  from fct_sales
  where dateid = '2015-01-01'
  and sold >= 10 )
group by 1
```

Notice that this subquery does not need a unique table identifier becasue the table created can't be referred to other than in the where clause that created it.

We can also do this with joins:

```
select dateid, sum(sale)
```

```
from fct_sales fs
join (
select distinct fruit
from fct_sales
where dateid = '2015-01-01'
and sold >= 10
) xxx
on fs.fruit = xxx.fruit
group by 1
```

Note that the distinct is not strictly necessary but is good practice because a table with two rows saying 'Plum' will double-count plums and fail silently.