Queries and their output:

Checking for null values:

```
mysql> SELECT *
    -> FROM sales_data.features_data_set
    -> WHERE MarkDown1 IS NULL
    ->     AND MarkDown2 IS NULL
    ->     AND MarkDown3 IS NULL
    ->     AND MarkDown4 IS NULL
    ->     AND MarkDown5 IS NULL
    ->     AND IsHoliday IS NULL;
Empty set (0.01 sec)
```

```
mysql> SELECT * FROM sales_data.features_data_set WHERE MarkDown1 IS NOT NULL    AND MarkDown2 IS NOT NULL    AND MarkDown3 IS NOT NULL    AND MarkDown4 I
NOT NULL    AND MarkDown5 IS NOT NULL    AND IsHoliday IS NOT NULL LIMIT 10;
+-------+------------+-------------+------------+-----------+-----------+-----------+-----------+-----------+--------------+-----------+
| Store | Date       | Temperature | Fuel_Price | MarkDown1 | MarkDown2 | MarkDown3 | MarkDown4 | MarkDown5 | CPI          | Unemployment | IsHoliday |
+-------+------------+-------------+------------+-----------+-----------+-----------+-----------+-----------+--------------+-----------+
|     1 | 05/02/2010 |       42.31 |      2.572 | NA        | NA        | NA        | NA        | NA        | 211.0963582 |        8.106 | FALSE     |
|     1 | 12/02/2010 |       38.51 |      2.548 | NA        | NA        | NA        | NA        | NA        | 211.2421698 |        8.106 | TRUE      |
|     1 | 19/02/2010 |       39.93 |      2.514 | NA        | NA        | NA        | NA        | NA        | 211.2891429 |        8.106 | FALSE     |
|     1 | 26/02/2010 |       46.63 |      2.561 | NA        | NA        | NA        | NA        | NA        | 211.3196429 |        8.106 | FALSE     |
|     1 | 05/03/2010 |        46.5 |      2.625 | NA        | NA        | NA        | NA        | NA        | 211.3501429 |        8.106 | FALSE     |
|     1 | 12/03/2010 |       57.79 |      2.667 | NA        | NA        | NA        | NA        | NA        | 211.3806429 |        8.106 | FALSE     |
|     1 | 19/03/2010 |       54.58 |       2.72 | NA        | NA        | NA        | NA        | NA        |  211.215635 |        8.106 | FALSE     |
|     1 | 26/03/2010 |       51.45 |      2.732 | NA        | NA        | NA        | NA        | NA        | 211.0180424 |        8.106 | FALSE     |
|     1 | 02/04/2010 |       62.27 |      2.719 | NA        | NA        | NA        | NA        | NA        | 210.8204499 |        7.808 | FALSE     |
|     1 | 09/04/2010 |       65.86 |       2.77 | NA        | NA        | NA        | NA        | NA        | 210.6228574 |        7.808 | FALSE     |
+-------+------------+-------------+------------+-----------+-----------+-----------+-----------+-----------+--------------+-----------+
10 rows in set (0.00 sec)
```

Removing Columns that have null values:

```
mysql> ALTER TABLE sales_data.features_data_set
    -> DROP COLUMN MarkDown1,
    -> DROP COLUMN MarkDown2,
    -> DROP COLUMN MarkDown3,
    -> DROP COLUMN MarkDown4,
DROP COLUMN MarkDown5;
DROP COLUMN MarkDown4,
    -> DROP COLUMN MarkDown5;
ERROR 1091 (42000): Can't DROP 'MarkDown1'; check that column/key exists
mysql> select * from sales_data.features_data_set LIMIT 10;
+-------+------------+-------------+------------+--------------+--------------+-----------+
| Store | Date       | Temperature | Fuel_Price | CPI          | Unemployment | IsHoliday |
+-------+------------+-------------+------------+--------------+--------------+-----------+
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |
|     1 | 12/02/2010 |       38.51 |      2.548 | 211.2421698 |        8.106 | TRUE      |
|     1 | 19/02/2010 |       39.93 |      2.514 | 211.2891429 |        8.106 | FALSE     |
|     1 | 26/02/2010 |       46.63 |      2.561 | 211.3196429 |        8.106 | FALSE     |
|     1 | 05/03/2010 |        46.5 |      2.625 | 211.3501429 |        8.106 | FALSE     |
|     1 | 12/03/2010 |       57.79 |      2.667 | 211.3806429 |        8.106 | FALSE     |
|     1 | 19/03/2010 |       54.58 |       2.72 |  211.215635 |        8.106 | FALSE     |
|     1 | 26/03/2010 |       51.45 |      2.732 | 211.0180424 |        8.106 | FALSE     |
|     1 | 02/04/2010 |       62.27 |      2.719 | 210.8204499 |        7.808 | FALSE     |
|     1 | 09/04/2010 |       65.86 |       2.77 | 210.6228574 |        7.808 | FALSE     |
+-------+------------+-------------+------------+--------------+--------------+-----------+
10 rows in set (0.00 sec)
```

Joins:

```
mysql> SELECT *
    -> FROM sales_data.features_data_set AS features
    -> JOIN sales_data.stores_data_set AS stores ON features.Store = stores.Store
    -> JOIN sales_data.sales_data_set AS sales ON features.Store = sales.StorJOIN sales_data.sales_data_set AS sales ON features.Store = sales.Store
    -> LIMIT 10;
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------
+-----------+
| Store | Date       | Temperature | Fuel_Price | CPI         | Unemployment | IsHoliday | Store | Type | Size   | Store | Dept | Date       | Weekly_Sales
| IsHoliday |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------
+-----------+
|     1 | 26/04/2013 |       59.23 |      3.417 | 225.1701596 |        6.314 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 19/04/2013 |        67.1 |      3.451 | 225.1701596 |        6.314 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 12/04/2013 |       62.72 |      3.529 | 225.1701596 |        6.314 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 05/04/2013 |       58.59 |      3.583 | 225.0865399 |        6.314 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 29/03/2013 |          51 |      3.606 | 225.0029202 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 22/03/2013 |       63.42 |      3.611 | 224.9193005 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 15/03/2013 |       55.33 |      3.622 | 224.8356808 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 08/03/2013 |       50.81 |      3.658 | 224.7087632 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 01/03/2013 |       48.01 |      3.711 | 224.5645263 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 22/02/2013 |       50.25 |      3.597 | 224.4202895 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------
+-----------+
10 rows in set (0.01 sec)
```

Right Join:

```
mysql> SELECT *
    -> FROM sales_data.features_data_set AS features
    -> RIGHT JOIN sales_data.stores_data_set AS stores ON features.Store = stores.Store
    -> RIGHT JOIN sales_data.sales_data_set AS sales ON features.Store = sales.Store
    -> LIMIT 10;
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------
+-----------+
| Store | Date       | Temperature | Fuel_Price | CPI         | Unemployment | IsHoliday | Store | Type | Size   | Store | Dept | Date       | Weekly_Sales
| IsHoliday |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------
+-----------+
|     1 | 12/08/2011 |       90.76 |      3.638 | 215.6057878 |        7.962 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 05/08/2011 |       91.65 |      3.684 |  215.544618 |        7.962 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 29/07/2011 |       86.83 |      3.682 | 215.4834482 |        7.962 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 22/07/2011 |       85.77 |      3.651 | 215.4222784 |        7.962 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 15/07/2011 |       88.54 |      3.575 | 215.3611087 |        7.962 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 08/07/2011 |       85.83 |       3.48 | 215.2771754 |        7.962 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 01/07/2011 |       85.55 |      3.524 | 215.1841368 |        7.962 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 24/06/2011 |       83.58 |      3.594 | 215.0910982 |        7.682 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 17/06/2011 |       86.41 |      3.637 | 214.9980596 |        7.682 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 10/06/2011 |       83.13 |      3.648 | 215.0435229 |        7.682 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------
+-----------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT *
    -> FROM sales_data.features_data_set AS features
    -> LEFT JOIN sales_data.stores_data_set AS stores ON features.Store = stores.Store
    -> LEFT JOIN sales_data.sales_data_set AS sales ON features.Store = sales.Store LIMIT 10;
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------
+-----------+
| Store | Date       | Temperature | Fuel_Price | CPI         | Unemployment | IsHoliday | Store | Type | Size   | Store | Dept | Date       | Weekly_Sales
| IsHoliday |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------
+-----------+
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 06/04/2012 |      13506.8
| FALSE     |
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 30/03/2012 |      13271.3
| FALSE     |
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 23/03/2012 |     12132.99
| FALSE     |
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 16/03/2012 |     11246.66
| FALSE     |
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 09/03/2012 |      8541.45
| FALSE     |
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 02/03/2012 |       5688.7
| FALSE     |
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 24/02/2012 |      4836.58
| FALSE     |
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 17/02/2012 |      3673.37
| FALSE     |
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 10/02/2012 |      4131.49
| TRUE      |
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |     1 |   56 | 03/02/2012 |         2418
| FALSE     |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------
+-----------+
10 rows in set (0.01 sec)
```

Left Join:

```
mysql> SELECT *
    -> FROM sales_data.features_data_set AS features
    -> LEFT JOIN sales_data.stores_data_set AS stores ON features.Store = stores.Store
    -> UNION
    -> SELECT *
    -> FROM sales_data.features_data_set AS features
    -> RIGHT JOIN sales_data.stores_data_set AS stores ON features.Store = stores.Store
    -> LIMIT 10;
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+
| Store | Date       | Temperature | Fuel_Price | CPI         | Unemployment | IsHoliday | Store | Type | Size   |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 12/02/2010 |       38.51 |      2.548 | 211.2421698 |        8.106 | TRUE      |     1 | A    | 151315 |
|     1 | 19/02/2010 |       39.93 |      2.514 | 211.2891429 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 26/02/2010 |       46.63 |      2.561 | 211.3196429 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 05/03/2010 |        46.5 |      2.625 | 211.3501429 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 12/03/2010 |       57.79 |      2.667 | 211.3806429 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 19/03/2010 |       54.58 |       2.72 |  211.215635 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 26/03/2010 |       51.45 |      2.732 | 211.0180424 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 02/04/2010 |       62.27 |      2.719 | 210.8204499 |        7.808 | FALSE     |     1 | A    | 151315 |
|     1 | 09/04/2010 |       65.86 |       2.77 | 210.6228574 |        7.808 | FALSE     |     1 | A    | 151315 |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+
10 rows in set (0.00 sec)
```

Inner Join

```
mysql> SELECT *
    -> FROM sales_data.features_data_set AS features
    -> INNER JOIN sales_data.stores_data_set AS stores ON features.Store = stores.Store
    -> INNER JOIN sales_data.sales_data_set AS sales ON features.Store = sales.Store LIMIT 10;
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------+
| Store | Date       | Temperature | Fuel_Price | CPI         | Unemployment | IsHoliday | Store | Type | Size   | Store | Dept | Date       | Weekly_Sales |
| IsHoliday |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------+
+-----------+
|     1 | 26/04/2013 |       59.23 |      3.417 | 225.1701596 |        6.314 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 19/04/2013 |        67.1 |      3.451 | 225.1701596 |        6.314 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 12/04/2013 |       62.72 |      3.529 | 225.1701596 |        6.314 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 05/04/2013 |       58.59 |      3.583 | 225.0865399 |        6.314 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 29/03/2013 |          51 |      3.606 | 225.0029202 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 22/03/2013 |       63.42 |      3.611 | 224.9193005 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 15/03/2013 |       55.33 |      3.622 | 224.8356808 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 08/03/2013 |       50.81 |      3.658 | 224.7087632 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 01/03/2013 |       48.01 |      3.711 | 224.5645263 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
|     1 | 22/02/2013 |       50.25 |      3.597 | 224.4202895 |        6.525 | FALSE     |     1 | A    | 151315 |     1 |    1 | 05/02/2010 |      24924.5
| FALSE     |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+-------+------+------------+--------------+
+-----------+
10 rows in set (0.01 sec)
```

Full outer Join (since my version is not supported, I'm using unions to demonstrate that functionality:

```
mysql> SELECT *
    -> FROM sales_data.features_data_set AS features
    -> LEFT JOIN sales_data.stores_data_set AS stores ON features.Store = stores.Store
    -> UNION
    -> SELECT *
    -> FROM sales_data.features_data_set AS features
    -> RIGHT JOIN sales_data.stores_data_set AS stores ON features.Store = stores.Store
    -> LIMIT 10;
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+
| Store | Date       | Temperature | Fuel_Price | CPI         | Unemployment | IsHoliday | Store | Type | Size   |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+
|     1 | 05/02/2010 |       42.31 |      2.572 | 211.0963582 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 12/02/2010 |       38.51 |      2.548 | 211.2421698 |        8.106 | TRUE      |     1 | A    | 151315 |
|     1 | 19/02/2010 |       39.93 |      2.514 | 211.2891429 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 26/02/2010 |       46.63 |      2.561 | 211.3196429 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 05/03/2010 |        46.5 |      2.625 | 211.3501429 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 12/03/2010 |       57.79 |      2.667 | 211.3806429 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 19/03/2010 |       54.58 |       2.72 |  211.215635 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 26/03/2010 |       51.45 |      2.732 | 211.0180424 |        8.106 | FALSE     |     1 | A    | 151315 |
|     1 | 02/04/2010 |       62.27 |      2.719 | 210.8204499 |        7.808 | FALSE     |     1 | A    | 151315 |
|     1 | 09/04/2010 |       65.86 |       2.77 | 210.6228574 |        7.808 | FALSE     |     1 | A    | 151315 |
+-------+------------+-------------+------------+-------------+--------------+-----------+-------+------+--------+
10 rows in set (0.00 sec)
```

To get each store's average temperature, fuel price, CPI, and weekly sales, you can modify the SQL query to include the "Store" column.

```
mysql> SELECT     f.Store,     AVG(f.Temperature) AS Avg_Temperature,     AVG(f.Fuel_Price) AS Avg_Fuel_Price,     AVG(f.CPI) AS Avg_CPI,     AVG(s.Weekly_S
ales) AS Avg_Weekly_Sales FROM     sales_data.features_data_set f JOIN     sales_data.sales_data_set s ON f.Store = s.Store AND f.Date = s.Date GROUP BY
 f.Store ORDER BY     f.Store LIMIT 20;
+-------+--------------------+--------------------+--------------------+--------------------+
| Store | Avg_Temperature    | Avg_Fuel_Price     | Avg_CPI            | Avg_Weekly_Sales   |
+-------+--------------------+--------------------+--------------------+--------------------+
|     1 |  68.22446310035099 |  3.218810523233109 | 215.99552501145163 | 21710.543620655928 |
|     2 |  68.10543465520531 | 3.2198982223090438 | 215.65186905915527 | 26898.070031256142 |
|     3 |  71.29862660469198 | 3.2191123284639156 | 219.40284298507845 |  6373.033982957042 |
|     4 | 62.176867211837305 |  3.216237246884735 | 128.68007016234404 |  29161.21041471962 |
|     5 |  69.20361929103296 |  3.220912101344592 | 216.57651613630387 |  5053.415812868114 |
|     6 |   69.6399353638232 | 3.2209771814709613 | 217.56494552918403 | 21913.243623543225 |
|     7 |  39.60281499692705 |  3.239985146486335 | 193.67174027215873 |  8358.766148330214 |
|     8 |  62.44743405760482 |  3.219253764527535 |  219.4384744387085 | 13133.014768064626 |
|     9 |  67.64658621856432 |  3.223913273937069 | 219.68364131025965 |  8772.890378933093 |
|    10 |  72.14783131362236 | 3.5724896752303468 | 128.66416181404742 | 26332.303818710607 |
|    11 |  72.46221725303063 |  3.222244782349429 | 219.42586008022977 |  19276.76275094412 |
|    12 |  70.14044100978884 | 3.6074158681093027 | 128.68969150253437 | 14867.308619268337 |
|    13 |  53.60304659155927 | 3.2845809623830062 | 128.67421433683393 |  27355.13689134987 |
|    14 |  57.79178984063756 | 3.4177022908366186 | 186.28784981125438 | 28784.851727091544 |
|    15 |  51.75050600949374 | 3.5788230481769903 | 135.09456963278572 |   9002.49307342695 |
|    16 | 45.006925765116954 |  3.248837445726954 | 193.74579094175732 |  7863.224123689504 |
|    17 | 46.329893552312114 | 3.2884945255474087 | 128.69841028928403 | 12954.393636455781 |
|    18 | 53.291596510801575 | 3.4441378435946994 | 135.10867884898164 | 15733.313136220786 |
|    19 |  52.19593220338943 | 3.5774792077257036 | 135.08713003176126 | 20362.126734331836 |
|    20 |  55.35151556686963 |  3.418722537693321 | 209.04786308028733 | 29508.301591932563 |
+-------+--------------------+--------------------+--------------------+--------------------+
20 rows in set (0.83 sec)
```

sales_data.sales_data_set table where the Date column falls within the specified date range

```
mysql> SELECT     Store,     Date,     Weekly_Sales FROM     sales_data.sales_data_set WHERE     Date BETWEEN '01-01-2010' AND '31-12-2012'     LIMIT 10;
+-------+------------+--------------+
| Store | Date       | Weekly_Sales |
+-------+------------+--------------+
|     1 | 05/02/2010 |      24924.5 |
|     1 | 12/02/2010 |     46039.49 |
|     1 | 19/02/2010 |     41595.55 |
|     1 | 26/02/2010 |     19403.54 |
|     1 | 05/03/2010 |      21827.9 |
|     1 | 12/03/2010 |     21043.39 |
|     1 | 19/03/2010 |     22136.64 |
|     1 | 26/03/2010 |     26229.21 |
|     1 | 02/04/2010 |     57258.43 |
|     1 | 09/04/2010 |     42960.91 |
+-------+------------+--------------+
10 rows in set (0.00 sec)
```

Creating a view that includes relevant information from both tables:

```
mysql> CREATE VIEW SalesAndFeaturesView AS
    -> SELECT
    ->     s.Store,
    ->     s.Dept,
    ->     s.Date,
    ->     s.Weekly_Sales,
    ->     s.IsHoliday,
    ->     f.Temperature,
    ->     f.Fuel_Price,
    ->     f.CPI
    -> FROM
    ->     sales_data.sales_data_set s
    -> JOIN
    ->     sales_data.features_data_set f ON s.Store = f.Store AND s.Date = f.Date;
ERROR 1046 (3D000): No database selected
mysql> select * from sales_data.salesandfeaturesview LIMIT 10;
+-------+------+------------+--------------+-----------+-------------+------------+-------------+
| Store | Dept | Date       | Weekly_Sales | IsHoliday | Temperature | Fuel_Price | CPI         |
+-------+------+------------+--------------+-----------+-------------+------------+-------------+
|     1 |    1 | 05/02/2010 |      24924.5 | FALSE     |        42.31 |      2.572 | 211.0963582 |
|     1 |    1 | 12/02/2010 |     46039.49 | TRUE      |        38.51 |      2.548 | 211.2421698 |
|     1 |    1 | 19/02/2010 |     41595.55 | FALSE     |        39.93 |      2.514 | 211.2891429 |
|     1 |    1 | 26/02/2010 |     19403.54 | FALSE     |        46.63 |      2.561 | 211.3196429 |
|     1 |    1 | 05/03/2010 |      21827.9 | FALSE     |         46.5 |      2.625 | 211.3501429 |
|     1 |    1 | 12/03/2010 |     21043.39 | FALSE     |        57.79 |      2.667 | 211.3806429 |
|     1 |    1 | 19/03/2010 |     22136.64 | FALSE     |        54.58 |       2.72 |  211.215635 |
|     1 |    1 | 26/03/2010 |     26229.21 | FALSE     |        51.45 |      2.732 | 211.0180424 |
|     1 |    1 | 02/04/2010 |     57258.43 | FALSE     |        62.27 |      2.719 | 210.8204499 |
|     1 |    1 | 09/04/2010 |     42960.91 | FALSE     |        65.86 |       2.77 | 210.6228574 |
+-------+------+------------+--------------+-----------+-------------+------------+-------------+
10 rows in set (0.01 sec)
```

Create a view that shows information only for stores with weekly sales above a certain threshold:

```
mysql> CREATE VIEW HighSalesStores AS
    -> SELECT
    ->     s.Store,
    ->     s.Date,
    ->     s.Weekly_Sales,
    ->     f.Temperature,
    ->     f.Fuel_Price,
    ->     f.CPI
    -> FROM
    ->     sales_data.sales_data_set s
    -> JOIN
    ->     sales_data.features_data_set f ON s.Store = f.Store AND s.Date = f.Date
    -> WHERE
    ->     s.Weekly_Sales > 50000;
ERROR 1046 (3D000): No database selected
mysql> select * from sales_data.HighSalesStores LIMIT 10;
+-------+------------+--------------+-------------+------------+------------+
| Store | Date       | Weekly_Sales | Temperature | Fuel_Price | CPI        |
+-------+------------+--------------+-------------+------------+------------+
|     1 | 02/04/2010 |     57258.43 |       62.27 |      2.719 | 210.8204499 |
|     1 | 24/12/2010 |     55931.23 |       52.33 |      2.886 | 211.4051222 |
|     1 | 22/04/2011 |     50510.31 |       72.99 |      3.807 | 215.4599053 |
|     1 | 17/02/2012 |      54060.1 |       45.32 |       3.51 | 220.4257586 |
|     1 | 06/04/2012 |     57592.12 |       70.43 |      3.891 | 221.4356112 |
|     1 | 05/02/2010 |     50605.27 |       42.31 |      2.572 | 211.0963582 |
|     1 | 06/08/2010 |     50031.73 |       87.16 |      2.627 | 211.5046621 |
|     1 | 24/12/2010 |     59889.32 |       52.33 |      2.886 | 211.4051222 |
|     1 | 04/03/2011 |     53035.54 |       59.58 |      3.288 | 213.8233327 |
|     1 | 06/05/2011 |     50139.92 |       64.61 |      3.906 | 215.7960035 |
+-------+------------+--------------+-------------+------------+------------+
10 rows in set (0.01 sec)
```

Create a view that summarises total weekly sales during holidays:

```
CREATE VIEW HolidaySalesSummary AS
SELECT
    s.Date,
    SUM(s.Weekly_Sales) AS Total_Weekly_Sales,
    AVG(f.Temperature) AS Avg_Temperature
FROM
    sales_data.sales_data_set s
JOIN
    sales_data.features_data_set f ON s.Store = f.Store AND s.Date = f.Date
WHERE
    s.IsHoliday = 'TRUE'
GROUP BY
    s.Date
ORDER BY
    s.Date;
```

```
mysql> select * from sales_data.HolidaySalesSummary LIMIT 10;
+------------+--------------------+--------------------+
| Date       | Total_Weekly_Sales | Avg_Temperature    |
+------------+--------------------+--------------------+
| 07/09/2012 |  48330059.30999995 |  77.61360755225765 |
| 09/09/2011 |  46763227.53000005 |  72.93118661257526 |
| 10/02/2012 |  50009407.91999999 |  39.21603798733758 |
| 10/09/2010 | 45634397.840000056 |  71.92922710248492 |
| 11/02/2011 |  47336192.78999979 |  31.44570456092573 |
| 12/02/2010 |  48336677.63000006 |  33.36180987821413 |
| 25/11/2011 |  66593605.25999993 | 49.118040383979185 |
| 26/11/2010 | 65821003.240000084 |  47.33594622192026 |
| 30/12/2011 |  46042461.03999984 |  37.49710955711006 |
| 31/12/2010 | 40432519.000000075 |  36.08826367652051 |
+------------+--------------------+--------------------+
10 rows in set (0.38 sec)
```

stores with total weekly sales above 100,000 in "sales_data.sales_data_set" and then calculates average temperature, fuel price, and CPI for those stores in "sales_data.features_data_set."

```
mysql> SELECT
    ->     f.Store,
    ->     AVG(f.Temperature) AS Avg_Temperature,
    ->     AVG(f.Fuel_Price) AS Avg_Fuel_Price,
    ->     AVG(f.CPI) AS Avg_CPI
    -> FROM
    ->     sales_data.features_data_set f
    -> WHERE
    ->     f.Store IN (
    ->         SELECT Store
    ->         FROM sales_data.sales_data_set
    ->         GROUP BY Store
    ->         HAVING SUM(Weekly_Sales) > 100000
    ->     )
    -> GROUP BY
    ->     f.Store;
+-------+-------------------+-------------------+-------------------+
| Store | Avg_Temperature   | Avg_Fuel_Price    | Avg_CPI           |
+-------+-------------------+-------------------+-------------------+
|     1 |  66.13804733727807 |  3.243479289940828 | 217.27167916982236 |
|     2 |   65.9145562130177 |  3.243479289940828 | 216.91863970828388 |
|     3 |  69.69071005917158 |  3.243479289940828 | 220.69012232899402 |
|     4 |  60.28988165680473 |  3.240994082840238 | 129.19709142485203 |
|     5 |  67.42905325443786 |  3.243479289940828 |  217.8443565041419 |
|     6 |  67.70544378698227 |  3.243479289940828 | 218.83889749940838 |
|     7 |  36.81804733727811 |  3.263349112426036 | 194.71862115502964 |
|     8 |  60.12118343195266 |  3.243479289940828 | 220.73795032781075 |
|     9 |  65.39781065088755 |  3.243479289940828 |  220.9269292349112 |
|    10 |  70.23053254437872 |  3.603136094674557 | 129.19709142485203 |
+-------+-------------------+-------------------+-------------------+
```

stores with total weekly sales above 50,000 on holidays in "sales_data.sales_data_set" and then calculates average temperature, fuel price, and CPI for those stores in "sales_data.features_data_set."

```
mysql> SELECT
    ->     f.Store,
    ->     AVG(f.Temperature) AS Avg_Temperature,
    ->     AVG(f.Fuel_Price) AS Avg_Fuel_Price,
    ->     AVG(f.CPI) AS Avg_CPI
    -> FROM
    ->     sales_data.features_data_set f
    -> WHERE
    ->     f.Store IN (
    ->         SELECT Store
    ->         FROM sales_data.sales_data_set
    ->         WHERE IsHoliday = 'TRUE'
    ->         GROUP BY Store
    ->         HAVING SUM(Weekly_Sales) > 50000
    ->     )
    -> GROUP BY
    ->     f.Store;
+-------+-------------------+-------------------+-------------------+
| Store | Avg_Temperature   | Avg_Fuel_Price    | Avg_CPI           |
+-------+-------------------+-------------------+-------------------+
|     1 |  66.13804733727807 |  3.243479289940828 | 217.27167916982236 |
|     2 |   65.9145562130177 |  3.243479289940828 | 216.91863970828388 |
|     3 |  69.69071005917158 |  3.243479289940828 | 220.69012232899402 |
|     4 |  60.28988165680473 |  3.240994082840238 | 129.19709142485203 |
|     5 |  67.42905325443786 |  3.243479289940828 |  217.8443565041419 |
|     6 |  67.70544378698227 |  3.243479289940828 | 218.83889749940838 |
|     7 |  36.81804733727811 |  3.263349112426036 | 194.71862115502964 |
|     8 |  60.12118343195266 |  3.243479289940828 | 220.73795032781075 |
|     9 |  65.39781065088755 |  3.243479289940828 |  220.9269292349112 |
|    10 |  70.23053254437872 |  3.603136094674557 | 129.19709142485203 |
+-------+-------------------+-------------------+-------------------+
```

The ratio of holiday sales to total sales for each store provides insights into the impact of holidays on overall sales.

```
mysql> SELECT
    ->     s.Store,
    ->     SUM(CASE WHEN s.IsHoliday = 'TRUE' THEN s.Weekly_Sales ELSE 0 END) / SUM(s.Weekly_Sales) AS Holiday_Sales_Ratio
    -> FROM
    ->     sales_data.sales_data_set s
    -> GROUP BY
    ->     s.Store
    -> ORDER BY
    ->     s.Store LIMIT 20;
+-------+----------------------+
| Store | Holiday_Sales_Ratio  |
+-------+----------------------+
|     1 | 0.07489777960149198  |
|     2 | 0.07550470148352736  |
|     3 | 0.07602637125855749  |
|     4 |  0.0748839226660808  |
|     5 | 0.07905358130814351  |
|     6 |  0.0751223183111083  |
|     7 | 0.08240373510914933  |
|     8 | 0.07505363564370429  |
|     9 | 0.07571111121140225  |
|    10 |  0.0778209903443937  |
|    11 | 0.07467383351701781  |
|    12 | 0.07888019049342099  |
|    13 |  0.0737491532975217  |
|    14 | 0.07337659683587945  |
|    15 | 0.07925242028973213  |
|    16 | 0.07632527058166638  |
|    17 | 0.07667714595883496  |
|    18 | 0.07539078521172513  |
|    19 | 0.07632045812467013  |
|    20 | 0.07462015772058063  |
+-------+----------------------+
20 rows in set (0.39 sec)
```

The average weekly sales per unit of store size helped to identify the efficiency of sales relative to the store's size.

```
mysql> SELECT
    ->     s.Store,
    ->     AVG(s.Weekly_Sales) / st.Size AS Sales_Per_Size
    -> FROM
    ->     sales_data.sales_data_set s
    -> JOIN
    ->     sales_data.stores_data_set st ON s.Store = st.Store
    -> GROUP BY
    ->     s.Store, st.Size
    -> ORDER BY
    ->     s.Store
    -> LIMIT 20;
+-------+---------------------+
| Store | Sales_Per_Size      |
+-------+---------------------+
|     1 | 0.14347912381889455 |
|     2 |  0.1329566946831113 |
|     3 | 0.17043843557330624 |
|     4 | 0.14165348029864291 |
|     5 | 0.14490081183851208 |
|     6 | 0.10821087688473509 |
|     7 | 0.11820692303155393 |
|     8 | 0.08468651109805844 |
|     9 | 0.06971851882203506 |
|    10 |  0.2081407599177204 |
|    11 | 0.09290050916363024 |
|    12 |   0.132462344475743 |
|    13 |  0.1245555403891686 |
|    14 | 0.14328092727200614 |
|    15 | 0.07275506173114683 |
|    16 | 0.13747616349964997 |
|    17 | 0.13901353861501256 |
|    18 | 0.13040134216489188 |
|    19 | 0.09990298615110423 |
|    20 | 0.14483170672680395 |
+-------+---------------------+
20 rows in set (0.65 sec)
```

Calculate the total sales for each month.

```
mysql> SELECT
    ->     YEAR(STR_TO_DATE(Date, '%d/%m/%Y')) AS Year,
    ->     MONTH(STR_TO_DATE(Date, '%d/%m/%Y')) AS Month,
    ->     SUM(Weekly_Sales) AS Monthly_Sales
    -> FROM
    ->     sales_data.sales_data_set
    -> WHERE
    ->     Date IS NOT NULL
    -> GROUP BY
    ->     YEAR(STR_TO_DATE(Date, '%d/%m/%Y')), MONTH(STR_TO_DATE(Date, '%d/%m/%Y'))
    -> ORDER BY
    ->     YEAR(STR_TO_DATE(Date, '%d/%m/%Y')), MONTH(STR_TO_DATE(Date, '%d/%m/%Y'))
    -> LIMIT 20;
+------+-------+---------------------+
| Year | Month | Monthly_Sales       |
+------+-------+---------------------+
| 2010 |     2 | 190332983.03999746 |
| 2010 |     3 |  181919802.4999992 |
| 2010 |     4 |   231412368.049999 |
| 2010 |     5 | 186710934.34000024 |
| 2010 |     6 | 192246172.35999984 |
| 2010 |     7 | 232580125.98000094 |
| 2010 |     8 | 187640110.88999906 |
| 2010 |     9 |  177267896.3699998 |
| 2010 |    10 | 217161824.01999956 |
| 2010 |    11 | 202853370.13999915 |
| 2010 |    12 | 288760532.71999896 |
| 2011 |     1 | 163703966.82999948 |
| 2011 |     2 | 186331327.87000024 |
| 2011 |     3 | 179356448.28999937 |
| 2011 |     4 |  226526510.9699993 |
| 2011 |     5 |  181648158.1599995 |
| 2011 |     6 | 189773385.18999898 |
| 2011 |     7 | 229911398.86999974 |
| 2011 |     8 |  188599332.2499994 |
| 2011 |     9 |  220847738.4199997 |
+------+-------+---------------------+
20 rows in set (0.53 sec)
```

Calculate the average weekly sales per unit of store size

```
mysql> SELECT
    ->     Date,
    ->     DAYOFWEEK(STR_TO_DATE(Date, '%d/%m/%Y')) AS Day_of_Week,
    ->     AVG(COALESCE(Weekly_Sales, 0)) AS Avg_Weekly_Sales
    -> FROM
    ->     sales_data.sales_data_set
    -> WHERE
    ->     Date IS NOT NULL
    -> GROUP BY
    ->     Date, DAYOFWEEK(STR_TO_DATE(Date, '%d/%m/%Y'))
    -> ORDER BY
    ->     Date
    -> LIMIT 20;
+------------+-------------+--------------------+
| Date       | Day_of_Week | Avg_Weekly_Sales   |
+------------+-------------+--------------------+
| 01/04/2011 |           6 | 14726.869261267379 |
| 01/06/2012 |           6 | 16405.589439347623 |
| 01/07/2011 |           6 | 16232.862333674535 |
| 01/10/2010 |           6 | 14391.780534923313 |
| 02/03/2012 |           6 |  15672.58694648831 |
| 02/04/2010 |           6 |  17098.62029840625 |
| 02/07/2010 |           6 |  16769.79242372306 |
| 02/09/2011 |           6 | 15387.122166836201 |
| 02/12/2011 |           6 |  16496.51185370738 |
| 03/02/2012 |           6 | 15480.553607658703 |
| 03/06/2011 |           6 | 16691.305331964417 |
| 03/08/2012 |           6 | 16004.684718570938 |
| 03/09/2010 |           6 |  16129.27464456596 |
| 03/12/2010 |           6 |  16924.05150220416 |
| 04/02/2011 |           6 |  15773.44877648667 |
| 04/03/2011 |           6 |  15882.55704530085 |
| 04/05/2012 |           6 | 15947.275103214915 |
| 04/06/2010 |           6 | 17246.922034364234 |
| 04/11/2011 |           6 |  16471.07119160467 |
| 05/02/2010 |           6 | 16836.121996615864 |
+------------+-------------+--------------------+
20 rows in set (0.92 sec)
```