```
CREATE VIEW forestation AS (
   SELECT r.region AS region_name,
         r.country_name AS country_name,
         r.country_code AS country_code,
         f.year AS years,
         l.total_area_sq_mi AS total_area_sq_mi,
         l.total_area_sq_mi * 2.59 AS total_land_area_sqkm,
         f.forest_area_sqkm AS forest_area_sqkm,
         (f.forest_area_sqkm / (l.total_area_sq_mi * 2.59)) * 100 AS
        percent_land_forest_area
   FROM land_area AS l
   JOIN forest_area AS f
      ON f.country_code = l.country_code AND f.year = l.year
   JOIN regions AS r
      ON r.country_code = l.country_code
);
```

Part 1- a

```
SELECT *
FROM forest_area
WHERE year = 1990 AND country_name = 'World'
```

Part 1- b

```
SELECT *
FROM forest_area
WHERE year = 2016 AND country_name = 'World'
```

Part 1- c

```
SELECT *,
      LAG(forest_area_sqkm) OVER (ORDER BY year) AS lag_column,
      forest_area_sqkm - LAG(forest_area_sqkm) OVER (ORDER BY year) AS
      change_between_years
FROM forest_area
WHERE year IN (1990, 2016) AND country_name = 'World'
```

Part 1- d

```
SELECT *,
      LAG(forest_area_sqkm) OVER (ORDER BY year) AS lag_column,
      forest_area_sqkm - LAG(forest_area_sqkm) OVER (ORDER BY year) AS
      change_between_years,
      (forest_area_sqkm - LAG(forest_area_sqkm) OVER (ORDER BY year)) * 100 /
      forest_area_sqkm AS percentage
FROM forest_area
```

```
WHERE year IN (1990, 2016) AND country_name = 'World'
```

Part 1- e

```
SELECT
    land_area.country_code,
    land_area.country_name,
    total_land_area_sqkm
FROM land_area
WHERE total_land_area_sqkm > 1200000 AND total_land_area_sqkm < 1400000
GROUP BY land_area.country_code, land_area.country_name,
land_area.total_land_area_sqkm
ORDER BY total_land_area_sqkm DESC
LIMIT 1
```

Part 2-a

```
SELECT *
FROM forestation
WHERE years IN (2016) AND country_name = 'World'


SELECT
    region_name,
    ROUND((SUM(forest_area_sqkm) / SUM(total_land_area_sqkm) *
    100)::NUMERIC, 2) AS percentage
FROM forestation
WHERE years IN (2016) AND country_name != 'World'
GROUP BY region_name
ORDER BY percentage DESC
LIMIT 1

SELECT
    region_name,
    ROUND((SUM(forest_area_sqkm) / SUM(total_land_area_sqkm) *
    100)::NUMERIC, 2) AS percentage
FROM forestation
WHERE years IN (2016) AND country_name != 'World'
GROUP BY region_name
ORDER BY percentage ASC
LIMIT 1
```

Part 2-b

```
SELECT
      region_name,
      ROUND((SUM(forest_area_sqkm) / SUM(total_land_area_sqkm) *
      100)::NUMERIC, 2) AS percentage
FROM forestation
WHERE years IN (1990)
     AND country_name = 'World'
GROUP BY region_name
ORDER BY percentage ASC
LIMIT 1;

SELECT
      region_name,
      ROUND((SUM(forest_area_sqkm) / SUM(total_land_area_sqkm) *
      100)::NUMERIC, 2) AS percentage
FROM forestation
WHERE years IN (1990)
     AND country_name = 'World'
GROUP BY region_name
ORDER BY percentage DESC
LIMIT 1;


SELECT
      region_name,
      ROUND((SUM(forest_area_sqkm) / SUM(total_land_area_sqkm) *
      100)::NUMERIC, 2) AS percentage
FROM forestation
WHERE years IN (1990)
     AND country_name != 'World'
GROUP BY region_name
ORDER BY percentage ASC
LIMIT 1;
```

Part 2-c

```
SELECT
    years
   ,region_name
   ,SUM(forest_area_sqkm) AS sum_forest_area_sqkm
   ,SUM(total_land_area_sqkm)  AS sum_total_land_area_sqkm
   ,ROUND((SUM(forest_area_sqkm)/SUM(total_land_area_sqkm)* 100) ::
   NUMERIC, 2) AS percentage
FROM forestation
```

```
WHERE years IN (2016, 1990)
   AND region_name != 'World'
GROUP BY years, region_name
ORDER BY region_name ASC
LIMIT 10;
```

Part 3-a

```
CREATE VIEW countries_2016 AS
   SELECT f.country_name, f.forest_area_sqkm, f.year, r.region
   FROM forest_area AS f
   JOIN regions r ON f.country_code = r.country_name
   WHERE year = 2016;

CREATE VIEW countries_1990 AS
   SELECT
   f.country_name, f.forest_area_sqkm, f.year, r.region
   FROM
   forest_area AS f
   JOIN
   regions r ON f.country_code = r.country_name
   WHERE
   year = 1990;

SELECT
   countries_1990.country_name,
   countries_1990.forest_area_sqkm AS forest_1990,
   countries_2016.forest_area_sqkm AS  forest_2016,
   ROUND((countries_1990.forest_area_sqkm -
countries_2016.forest_area_sqkm)::NUMERIC,2) AS Difference
FROM
   countries_2016
JOIN
   countries_1990 ON countries_1990.country_name =
countries_2016.country_name
WHERE
   countries_1990.country_name != 'World'
   AND countries_1990.forest_area_sqkm IS NOT NULL
   AND countries_2016.forest_area_sqkm IS NOT NULL
ORDER BY
   Difference DESC
LIMIT 5;
```

```
SELECT
    countries_1990.country_name,
    countries_1990.forest_area_sqkm AS forest_1990,
    countries_2016.forest_area_sqkm AS forest_2016,
    ROUND((countries_2016.forest_area_sqkm -
countries_1990.forest_area_sqkm)::NUMERIC, 2) AS Difference
FROM
    countries_2016
JOIN
    countries_1990 ON countries_1990.country_name =
countries_2016.country_name
WHERE
    countries_1990.country_name != 'World'
    AND countries_1990.forest_area_sqkm IS NOT NULL
    AND countries_2016.forest_area_sqkm IS NOT NULL
ORDER BY
    Difference DESC
LIMIT
    5;

SELECT
    countries_1990.country_name,
    countries_1990.forest_area_sqkm AS forest_1990,
    countries_2016.forest_area_sqkm AS forest_2016,
    ROUND((countries_2016.forest_area_sqkm -
countries_1990.forest_area_sqkm)::NUMERIC, 2) AS Difference,
    ROUND((100*(countries_2016.forest_area_sqkm -
countries_1990.forest_area_sqkm) /
countries_1990.forest_area_sqkm)::NUMERIC, 2) AS diff_percentage
FROM
    countries_2016
JOIN
    countries_1990 ON countries_1990.country_name =
countries_2016.country_name
WHERE
    countries_1990.country_name != 'World'
    AND countries_1990.forest_area_sqkm IS NOT NULL
    AND countries_2016.forest_area_sqkm IS NOT NULL
ORDER BY
    diff_percentage DESC;
```

Part 3-b

```
SELECT
    countries_1990.country_name,
    countries_1990.forest_area_sqkm AS forest_1990,
    countries_2016.forest_area_sqkm AS forest_2016,
    ROUND((countries_2016.forest_area_sqkm -
countries_1990.forest_area_sqkm)::NUMERIC, 2) AS Difference,
    ROUND((100*(countries_2016.forest_area_sqkm -
countries_1990.forest_area_sqkm) /
countries_1990.forest_area_sqkm)::NUMERIC, 2) AS diff_percentage
FROM
    countries_2016
JOIN
    countries_1990 ON countries_1990.country_name =
countries_2016.country_name
WHERE
    countries_1990.country_name != 'World'
    AND countries_1990.forest_area_sqkm IS NOT NULL
    AND countries_2016.forest_area_sqkm IS NOT NULL
ORDER BY
    diff_percentage ASC;
```

Part 3-c

```
SELECT
    COUNT(*) AS count,
    CASE
        WHEN percent_land_forest_area BETWEEN 0 AND 25 THEN '1'
        WHEN percent_land_forest_area BETWEEN 25 AND 50 THEN '2'
        WHEN percent_land_forest_area BETWEEN 50 AND 75 THEN '3'
        ELSE '4'
    END AS quartiles
FROM
    forestation
WHERE
    years = 2016
    AND country_name != 'World'
    AND percent_land_forest_area IS NOT NULL
GROUP BY
    quartiles
ORDER BY
    quartiles;
```

Part 3-d

```
SELECT
   country_name,
   region_name,
   years,
   ROUND(percent_land_forest_area::NUMERIC, 2) AS percent_land_forest_area
FROM
   countries_2016
WHERE
   country_name != 'World'
   AND percent_land_forest_area IS NOT NULL
   AND percent_land_forest_area BETWEEN 75 AND 100
ORDER BY
   percent_land_forest_area DESC;
```

Part 3- e

```
SELECT COUNT(*)
FROM countries_2016
WHERE percent_land_forest_area > (SELECT percent_land_forest_area
                                  FROM countries_2016
                                  WHERE country_name = 'United States');
```