

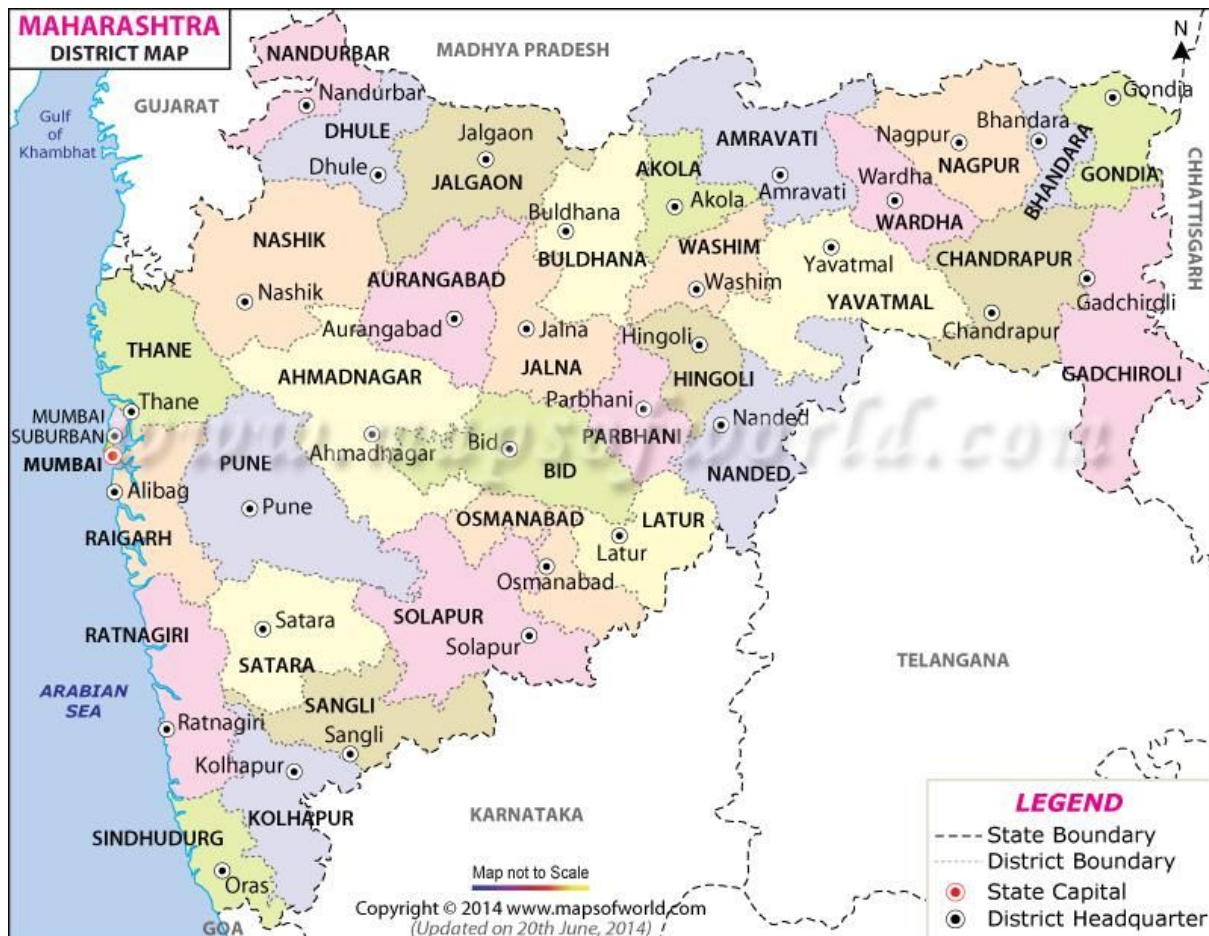
**ACTIVITY 1:** Look at the following picture. It shows a first pass (sweep) of how the “Exchange Step” works. Complete more sweeps to get all the numbers in the blocks arranged from lowest to highest going from left to right.

First Sweep of performing “Exchange Steps”

|    |    |    |    |    |    |    |    |    |                                       |
|----|----|----|----|----|----|----|----|----|---------------------------------------|
| 54 | 26 | 93 | 17 | 77 | 31 | 44 | 55 | 20 | Exchange                              |
| 26 | 54 | 93 | 17 | 77 | 31 | 44 | 55 | 20 | No Exchange                           |
| 26 | 54 | 93 | 17 | 77 | 31 | 44 | 55 | 20 | Exchange                              |
| 26 | 54 | 17 | 93 | 77 | 31 | 44 | 55 | 20 | Exchange                              |
| 26 | 54 | 17 | 77 | 93 | 31 | 44 | 55 | 20 | Exchange                              |
| 26 | 54 | 17 | 77 | 31 | 93 | 44 | 55 | 20 | Exchange                              |
| 26 | 54 | 17 | 77 | 31 | 44 | 93 | 55 | 20 | Exchange                              |
| 26 | 54 | 17 | 77 | 31 | 44 | 55 | 93 | 20 | Exchange                              |
| 26 | 54 | 17 | 77 | 31 | 44 | 55 | 20 | 93 | 93 on the far right after first sweep |

**NOTE:** Use blank sheets of paper to do your work.

Look at the map of Maharashtra below. Some of the cities are listed in the table given. The table also includes: (a) Longitude, (b) Latitude, (c) Height above sea level for those cities. Each city has a number associated with from 1 through 20.



**ACTIVITY 2:** List the cities in the given alphabetical order first.

**ACTIVITY 3:** Use the “Exchange Step” mechanism we use to sort the balls, to sort towns and cities in a way such that city or town having highest altitude is on the top. You can choose any of the 10 cities for your exercise.

**ACTIVITY 4:** List any of the ten from above cities from geographical east to west. Use the “Exchange Step” mechanism to sort the cities for listing them.

**ACTIVITY 5:** List any of the ten from above cities from geographical north to south. Use the “Exchange Step” mechanism to sort the cities for listing them.

**NOTE:** Use a sweep sheet as shown to do your work for Activity 3, 4, and 5. Use the result of Activity #2 (Alphabetically sorted cities) as your starting point for Activity 3, 4, and 5. For example, enter the altitudes in the first column after completing one sweep of “exchange steps”, and so forth.

| No. | City       | Longitude | Latitude | Height Above Sea Level (Meters) |
|-----|------------|-----------|----------|---------------------------------|
| 1   | Mumbai     | 72.86     | 19.01    | 12                              |
| 2   | Raigad     | 73.18     | 18.51    | 25                              |
| 3   | Pune       | 74.03     | 18.68    | 565                             |
| 4   | Thane      | 73.37     | 19.45    | 43                              |
| 5   | Nashik     | 74.03     | 20.16    | 578                             |
| 6   | Dhule      | 74.69     | 21.06    | 287                             |
| 7   | Aurangabad | 75.15     | 19.89    | 541                             |
| 8   | Buldhana   | 76.36     | 20.45    | 597                             |
| 9   | Yavatmal   | 78.11     | 20.12    | 294                             |
| 10  | Bhandara   | 79.82     | 21.07    | 264                             |
| 11  | Nagpur     | 79.2      | 21.32    | 295                             |
| 12  | Wardha     | 78.57     | 20.8     | 293                             |
| 13  | Akola      | 77.1      | 20.7     | 292                             |
| 14  | Jalgaon    | 75.53     | 21.04    | 198                             |
| 15  | Ahmednagar | 74.4      | 19.5     | 715                             |
| 16  | Sangli     | 74.58     | 16.85    | 549                             |
| 17  | Solapur    | 75.53     | 17.7     | 475                             |
| 18  | Kolhapur   | 74.12     | 16.58    | 550                             |
| 19  | Ratnagiri  | 73.37     | 17.25    | 143                             |
| 20  | Osmanabad  | 76.17     | 18.21    | 655                             |



Information Process  
Work Sheet: 06-IP-01-WS



**Sweep Sheet:** E.g. Altitudes of the 10 towns and cities at the end of each sweep of “Exchange Steps” from left to right. Shows us how it works.

| Sweep #1 | Sweep #2 | Sweep #3 | Sweep #4 | Sweep #5 | Sweep #6 | Sweep #7 | Sweep #8 | Sweep #9 | Sweep #10 |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
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Name:

Class:

Div:

Roll. No: