

Constructing and Intersecting Bar Graphs

Q1.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the names of the subjects at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 2 mark

Step 4: Then the height of the various bars are:

$$\text{Hindi} = 43/2 = 21.5$$

$$\text{English} = 56 = 28$$

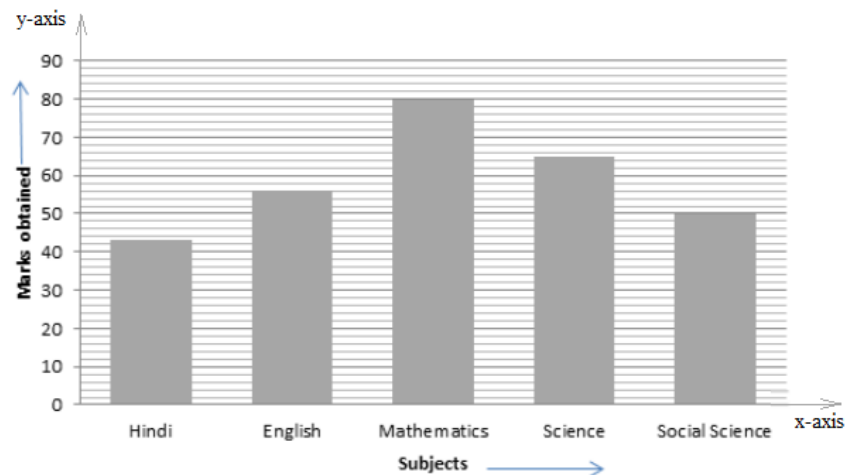
$$\text{Mathematics} = 80 = 40$$

$$\text{Science} = 65 = 32.5$$

$$\text{Social science} = 50 = 25$$

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q2.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the names of the sports at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 2 students

Step 4: Then the height of the various bars are:

$$\text{Cricket} = 75/2 = 37.5$$

$$\text{Football} = 35/2 = 17.5$$

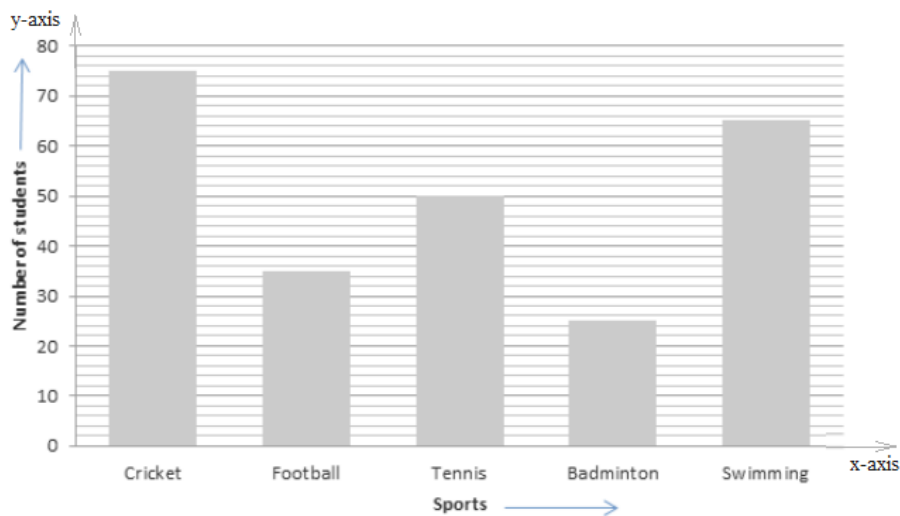
$$\text{Tennis} = 50/2 = 25$$

$$\text{Badminton} = 25/2 = 12.5$$

$$\text{Swimming} = 65/2 = 32.5$$

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q3.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the time intervals in years at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 50 students

Step 4: Then the height of the various bars are:

$$\text{Number of students in the year 2005} - 06 = \left(\frac{1}{50} \times 800\right) = 16 \text{ small divisions}$$

$$\text{Number of students in the year 2006} - 07 = \left(\frac{1}{50} \times 975\right) = 19.5 \text{ small divisions}$$

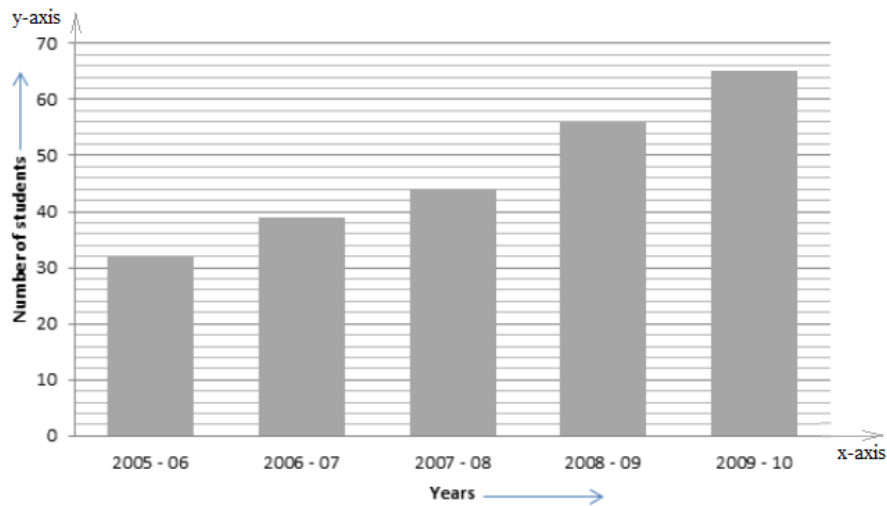
$$\text{Number of students in the year 2007} - 08 = \left(\frac{1}{50} \times 1100\right) = 22 \text{ small divisions}$$

$$\text{Number of students in the year 2008} - 09 = \left(\frac{1}{50} \times 1400\right) = 28 \text{ small divisions}$$

$$\text{Number of students in the year 2009} - 10 = \left(\frac{1}{50} \times 1625\right) = 32.5 \text{ small divisions}$$

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q4.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the time interval in years at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 1000 scooters

Step 4: Then the height of the various bars are:

Number of scooters produced in the year 2004 = $\left(\frac{1}{1000} \times 11000\right) = 11$ small divisions

Number of scooters produced in the year 2005 = $\left(\frac{1}{1000} \times 14000\right) = 14$ small divisions

Number of scooters produced in the year 2006 = $\left(\frac{1}{1000} \times 12500\right) = 12.5$ small divisions

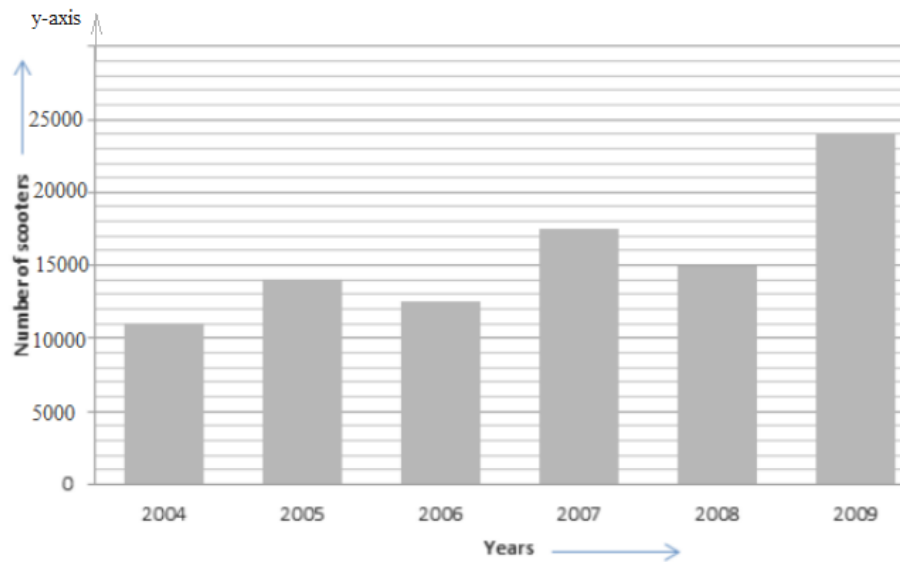
Number of scooters produced in the year 2007 = $\left(\frac{1}{1000} \times 17500\right) = 17.5$ small divisions

Number of scooters produced in the year 2008 = $\left(\frac{1}{1000} \times 15000\right) = 15$ small divisions

Number of scooters produced in the year 2009 = $\left(\frac{1}{1000} \times 24000\right) = 24$ small divisions

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q5.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis respectively.

Step 2: Along OX, write the names of the countries at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 1 birth per thousand

Step 4: Then the height of the various bars are:

China : 42

India : 35

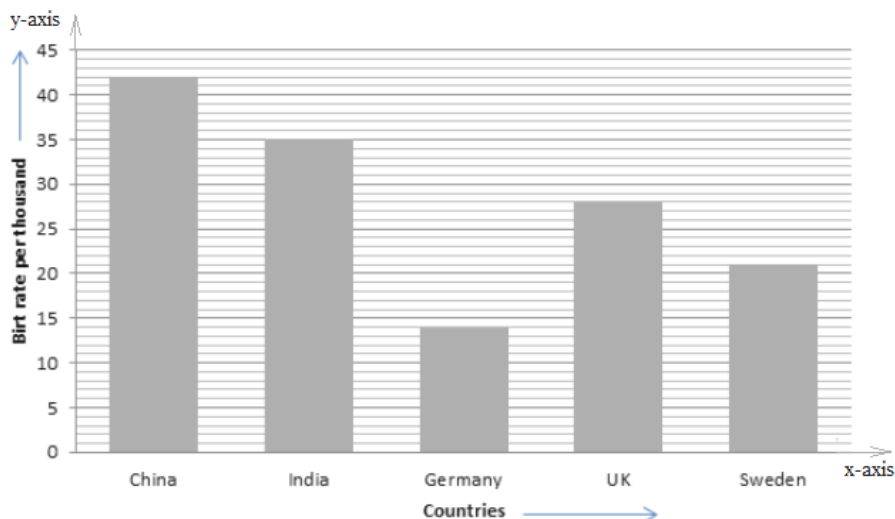
Germany : 14

UK : 28

Sweden : 21

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the modes of transportation at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 20 students

Step 4: Then the height of the various bars are as follows:

$$\text{Number of students using school bus} = \left(\frac{1}{20} \times 640\right) = 32 \text{ small divisions}$$

$$\text{Number of students using private bus} = \left(\frac{1}{20} \times 360\right) = 18 \text{ small divisions}$$

$$\text{Number of students using bicycle} = \left(\frac{1}{20} \times 490\right) = 24.5 \text{ small divisions}$$

$$\text{Number of students using rickshaw} = \left(\frac{1}{20} \times 210\right) = 10.5 \text{ small divisions}$$

$$\text{Number of students going to school by foot} = \left(\frac{1}{20} \times 150\right) = 7.5 \text{ small divisions}$$

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

Q6.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the names of the states of India at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 40 lakhs (population)

Step 4: Then the height of the various bars are:

$$\text{Population in Bihar (in lakhs)} = \left(\frac{1}{40} \times 820\right) = 20.5 \text{ small divisions}$$

$$\text{Population in Jharkhand (in lakhs)} = \left(\frac{1}{40} \times 270\right) = 6.75 \text{ small divisions}$$

$$\text{Population in Uttar Pradesh (in lakhs)} = \left(\frac{1}{40} \times 1060\right) = 26.5 \text{ small divisions}$$

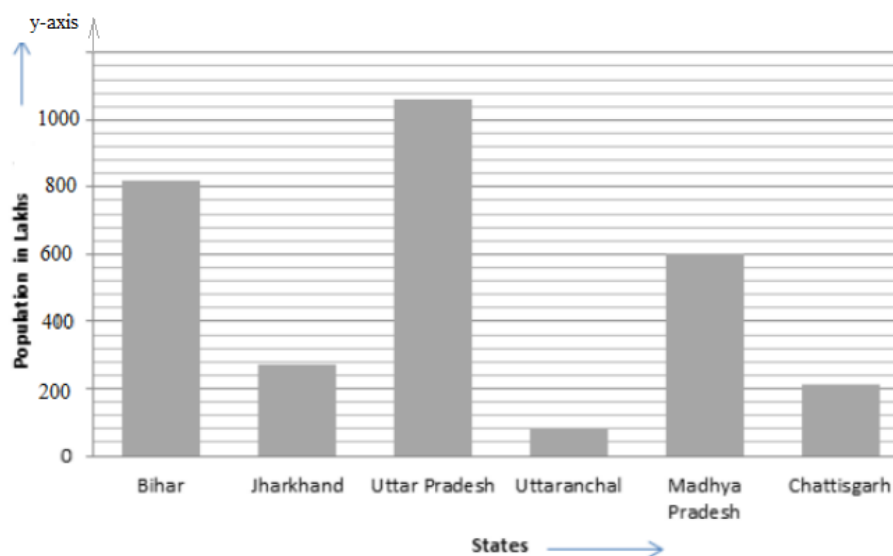
$$\text{Population in Uttaranchal (in lakhs)} = \left(\frac{1}{40} \times 80\right) = 2 \text{ small divisions}$$

$$\text{Population in Madhya Pradesh (in lakhs)} = \left(\frac{1}{40} \times 600\right) = 15 \text{ small divisions}$$

$$\text{Population in Chattisgarh (in lakhs)} = \left(\frac{1}{40} \times 210\right) = 5.25 \text{ small divisions}$$

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q7.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the years of census at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 40 millions (population)

Step 4: Then the height of the various bars are:

$$\text{Population in 1951 (in millions)} = \left(\frac{1}{40} \times 360\right) = 9 \text{ small divisions}$$

$$\text{Population in 1961 (in millions)} = \left(\frac{1}{40} \times 432\right) = 10.8 \text{ small divisions}$$

$$\text{Population in 1971 (in millions)} = \left(\frac{1}{40} \times 540\right) = 13.5 \text{ small divisions}$$

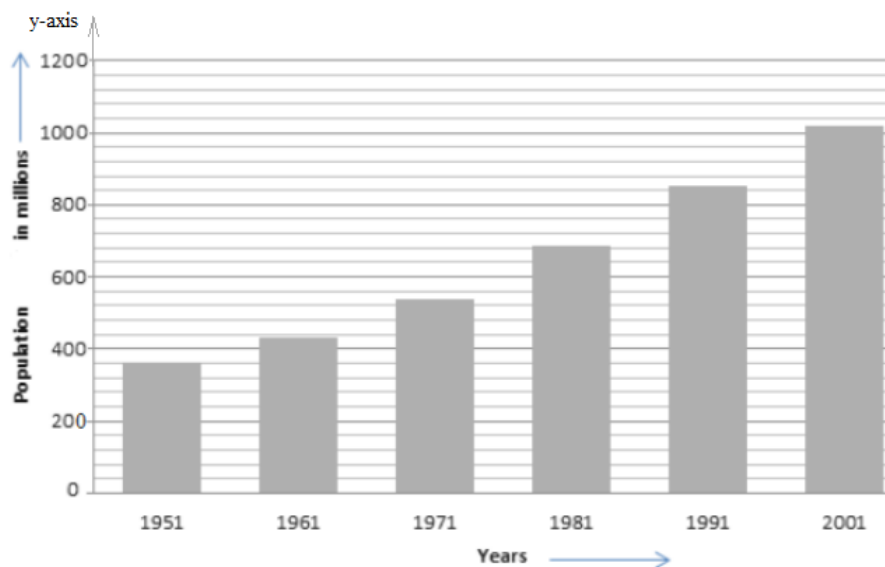
$$\text{Population in 1981 (in millions)} = \left(\frac{1}{40} \times 684\right) = 17.1 \text{ small divisions}$$

$$\text{Population in 1991 (in millions)} = \left(\frac{1}{40} \times 852\right) = 21.3 \text{ small divisions}$$

$$\text{Population in 2001 (in millions)} = \left(\frac{1}{40} \times 1020\right) = 25.5 \text{ small divisions}$$

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q8.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the years at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 4 thousand crore rupees

Step 4: Then the height of the various bars are:

$$\text{Interest in 1998 - 1999 (in thousand crore rupees)} = \frac{70}{4} = 17.5 \text{ small divisions}$$

$$\text{Interest in 1999 - 2000 (in thousand crore rupees)} = \frac{84}{4} = 21 \text{ small divisions}$$

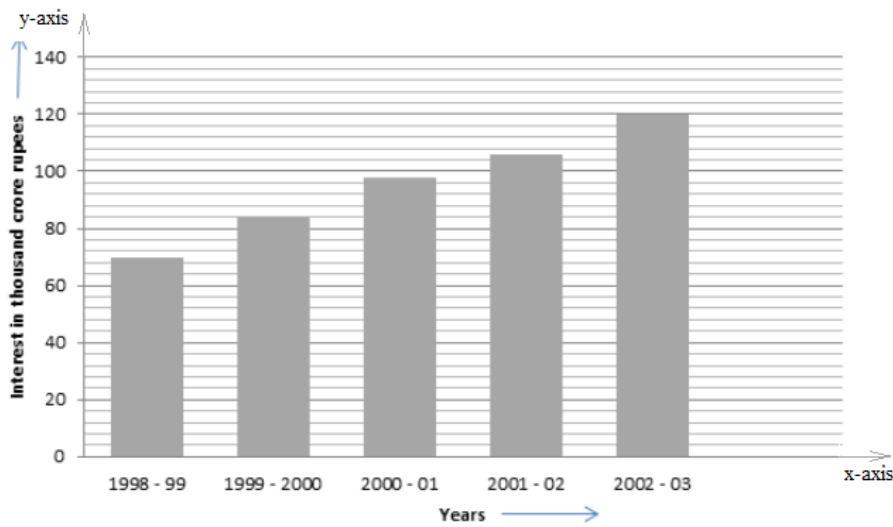
$$\text{Interest in 2000 - 2001 (in thousand crore rupees)} = \frac{98}{4} = 24.5 \text{ small divisions}$$

$$\text{Interest in 2001 - 2002 (in thousand crore rupees)} = \frac{106}{4} = 26.5 \text{ small divisions}$$

$$\text{Interest in 2002 - 2003 (in thousand crore rupees)} = \frac{120}{4} = 30 \text{ small divisions}$$

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q9.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the names of the places at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 40 km

Step 4: Then the height of the various bars are:

$$\text{Distance from Delhi to Kolkata (in km)} = \left(\frac{1}{40} \times 1340\right) = 33.5 \text{ small divisions}$$

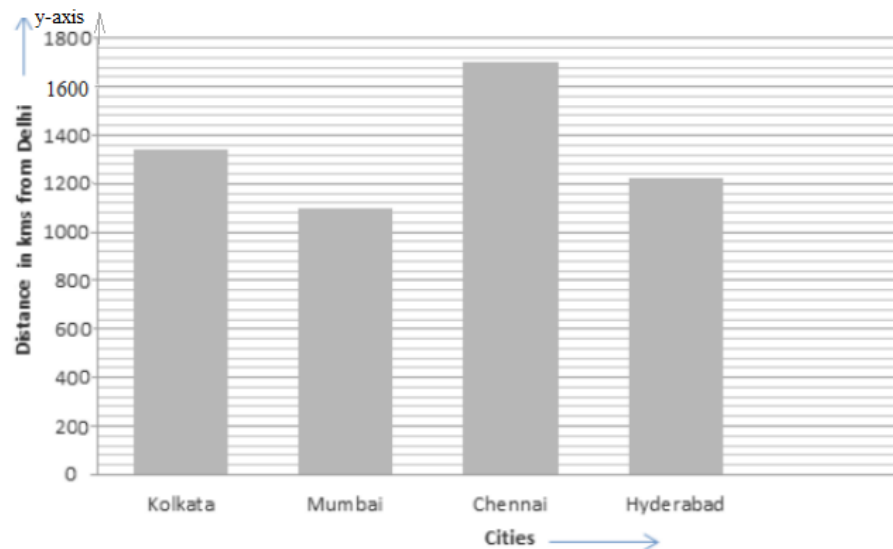
$$\text{Distance from Delhi to Mumbai (in km)} = \left(\frac{1}{40} \times 1100\right) = 27.5 \text{ small divisions}$$

$$\text{Distance from Delhi to Chennai (in km)} = \left(\frac{1}{40} \times 1700\right) = 42.5 \text{ small divisions}$$

$$\text{Distance from Delhi to Hyderabad (in km)} = \left(\frac{1}{40} \times 1220\right) = 30.5 \text{ small divisions}$$

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q10.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the names of the countries at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 2 years.

Step 4: Then the height of the various bars are:

Life expectancy in Japan : $\frac{76}{2} = 38$ *small divisions*

Life expectancy in India : $\frac{57}{2} = 28.5$ *small divisions*

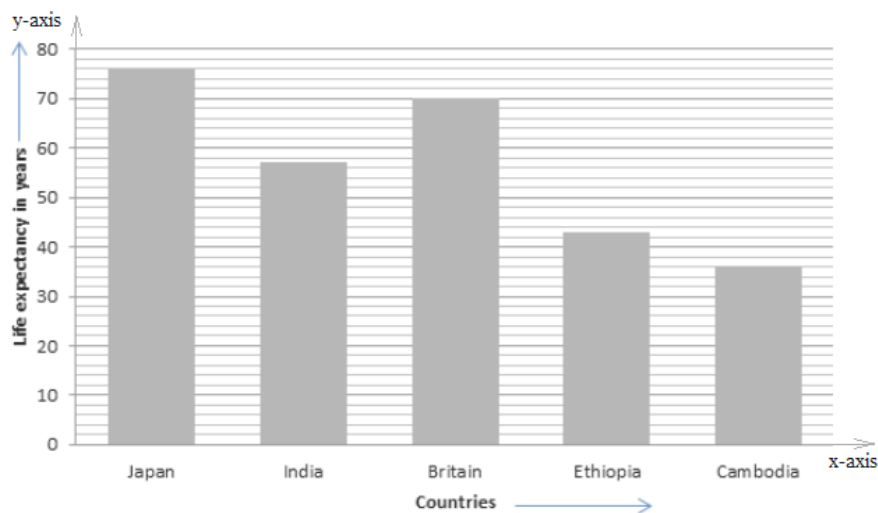
Life expectancy in Britain : $\frac{70}{2} = 35$ *small divisions*

Life expectancy in Ethiopia : $\frac{43}{2} = 8.6$ *small divisions*

Life expectancy in Cambodia : $\frac{36}{2} = 18$ *small divisions*

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q11.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the names of the soap brands at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 1% buyer

Step 4: Then the height of the various bars are:

Percentage of buyers of brand A = 45 divisions

Percentage of buyers of brand B = 25 divisions

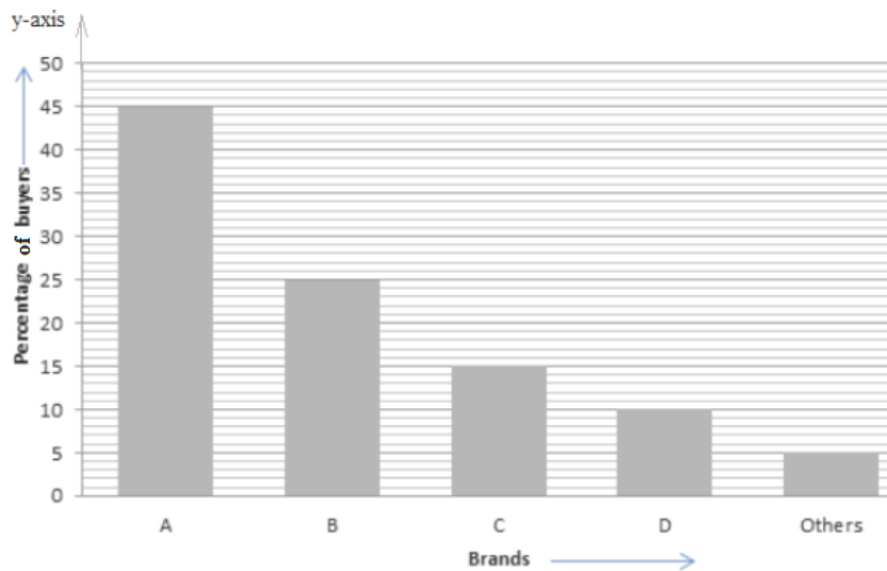
Percentage of buyers of brand C = 15 divisions

Percentage of buyers of brand D = 10 divisions

Percentage of buyers of other brand = 5 divisions

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:



Q12.

Answer :

The following steps are followed while drawing the bar graph:

Step 1: On a graph paper, draw a horizontal line OX and a vertical line OY, representing the x-axis and y-axis, respectively.

Step 2: Along OX, write the modes of transportation at points taken at uniform gaps.

Step 3: Choose the scale: 1 small division = 20 students

Step 4: Then the height of the various bars are as follows:

$$\text{Number of students using school bus} = \left(\frac{1}{20} \times 640 \right) = 32 \text{ small divisions}$$

$$\text{Number of students using private bus} = \left(\frac{1}{20} \times 360 \right) = 18 \text{ small divisions}$$

$$\text{Number of students using bicycle} = \left(\frac{1}{20} \times 490 \right) = 24.5 \text{ small divisions}$$

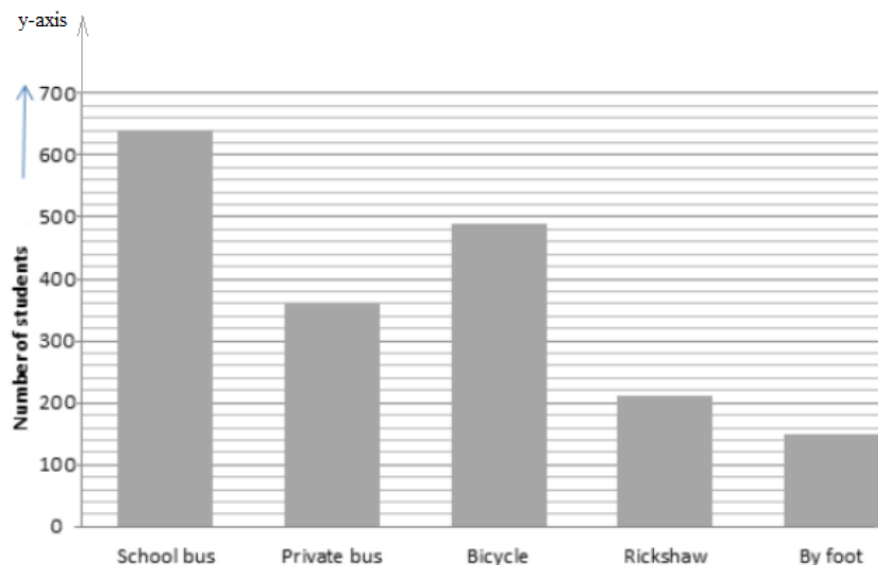
$$\text{Number of students using rickshaw} = \left(\frac{1}{20} \times 210 \right) = 10.5 \text{ small divisions}$$

$$\text{Number of students going to school by foot} = \left(\frac{1}{20} \times 150 \right) = 7.5 \text{ small divisions}$$

Step 5: On the x-axis, draw bars of equal width and of heights obtained in step 4 at the points marked in step 2.

The completed bar graph is as shown below:

The completed bar graph is as shown below:



Q13.

Answer :

- (i) The given bar graph shows the marks scored by a student in five different subjects in his exams.
- (ii) It is clear from the graph that the bar of the maximum height corresponds to mathematics. So, the student is very good in mathematics.
- (iii) It is clear from the graph that the bar of the minimum height corresponds to Hindi. So, the student is poor in Hindi.
- (iv) Average marks scored by the student = $\frac{(60+35+75+50+60)}{5} = \frac{280}{5} = 56$

Q14.

Answer :

- (i) The given bar graph shows the number of families staying in a colony and, also, the number of family members in each family.
- (ii) It is clear from the graph that the bar showing the families with three members corresponds to the reading 40 on the y-axis. Therefore, 40 families have three members each.
- (iii) It is clear from the graph that there is no bar showing the reading that corresponds to 1 on the y-axis. Therefore, no single person in the colony lives alone.
- (iv) It is clear from the graph that the bar showing the families with three members corresponds to the maximum reading. Therefore, a three-member family is the most common. Each family of this kind comprises three members.

Q15.

Answer :

- (i) It is clear from the bar graph that the bar with the maximum height corresponds to Mount Everest. Therefore, Mount Everest is the highest peak and its height is 8800 metres.
- (ii) The ratio of the heights of the highest peak and the second highest peak is

Mount Everest : Kanchenjunga
or 8800 : 8200
or 44 : 41

- (iii) According to the graph, the heights of the given peaks can be arranged in descending order as:
8800 m, 8200 m, 8000 m, 7500 m, 6000 m