Constructing and Intersecting Bar Graphs

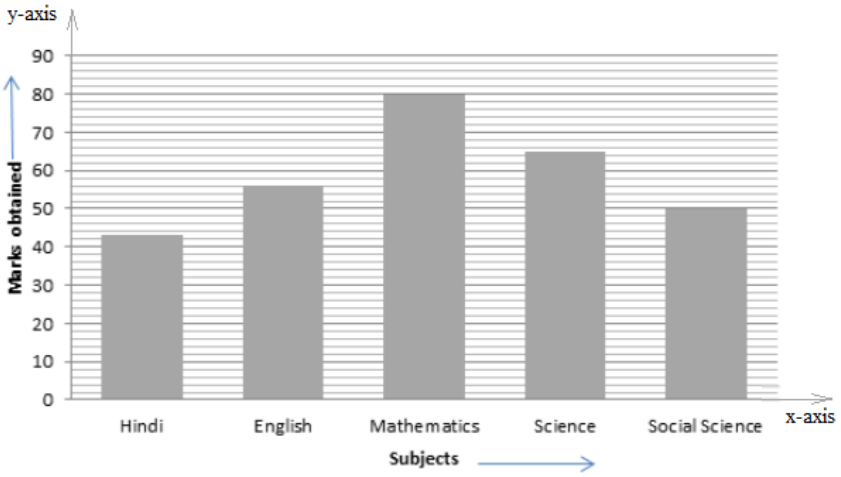
Q1.

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:
Hindi = 43/2 = 21.5
English = 56 = 28
Mathematics = 80 = 40
Science = 65 = 32.5
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.

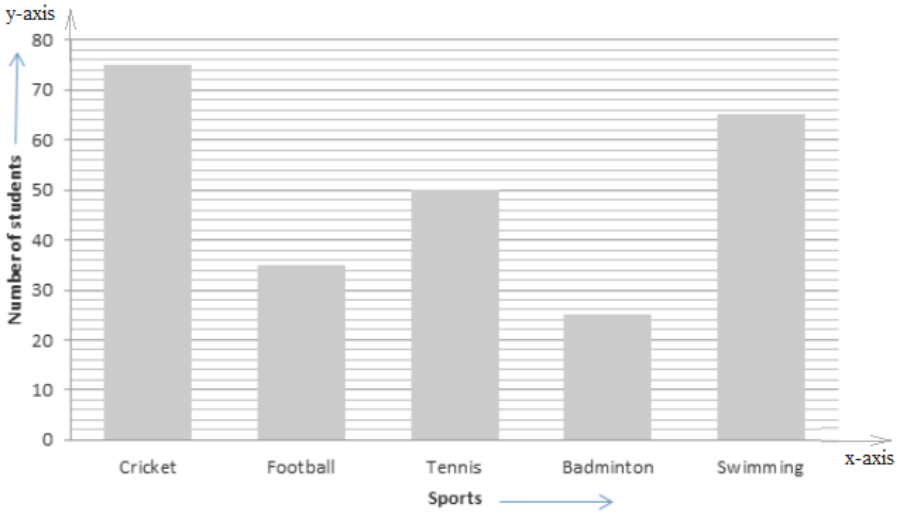
Answer :

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:

Cricket = 75/2 = 37.5
Football = 35/2 = 17.5
Tennis = 50/2 = 25
Badminton = 25/2 = 12.5
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:

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

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

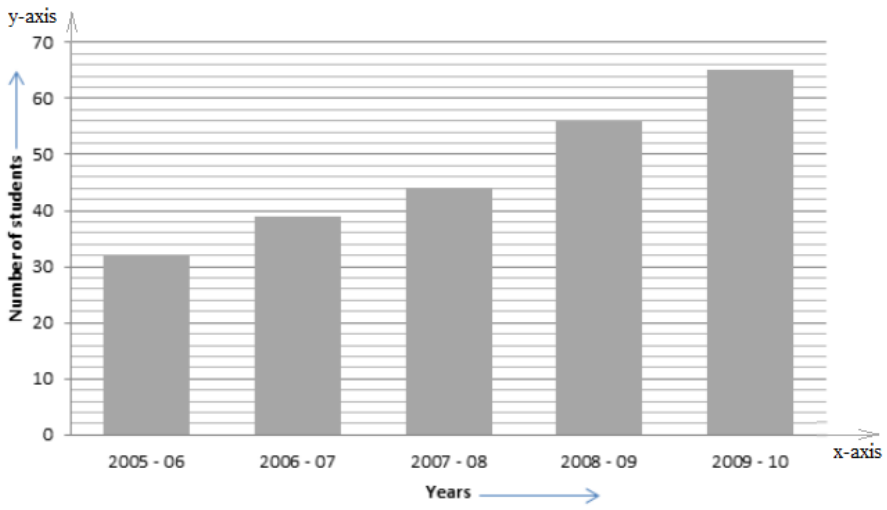
$$\text{Number of students in the year } 2007-08 = \left(\frac{1}{50}\times 1100\right) = 22 \text{ small divisions}$$

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

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

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:

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

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

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

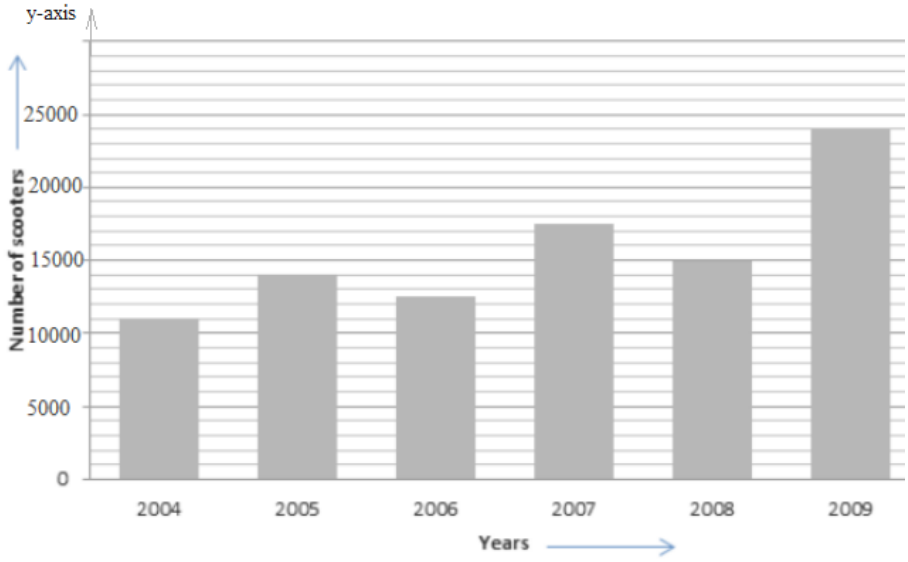
$$\text{Number of scooters produced in the year } 2007 = \left(\frac{1}{1000} \times 17500\right) = 17.5 \text{ small divisions}$$

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

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

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:



Q5.

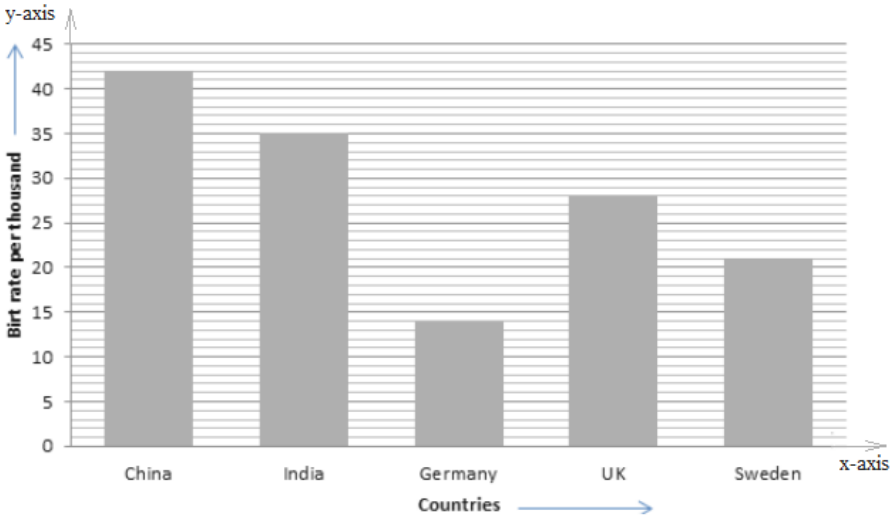
Answer :

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:

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

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

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

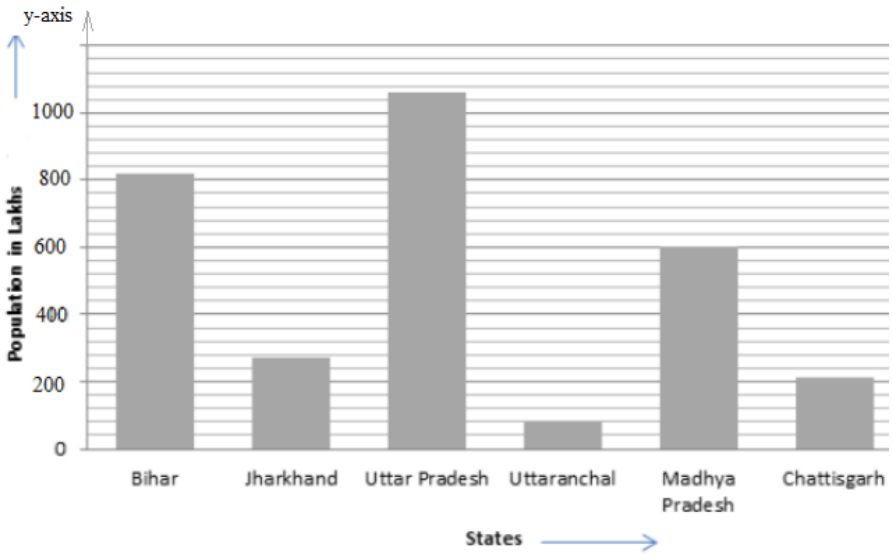
$$\text{Population in Uttaranchal } (\text{in lakhs}) = \left(\frac{1}{40} \times 80\right) = 2 \text{ small divisions}$$

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

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

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:

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

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

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

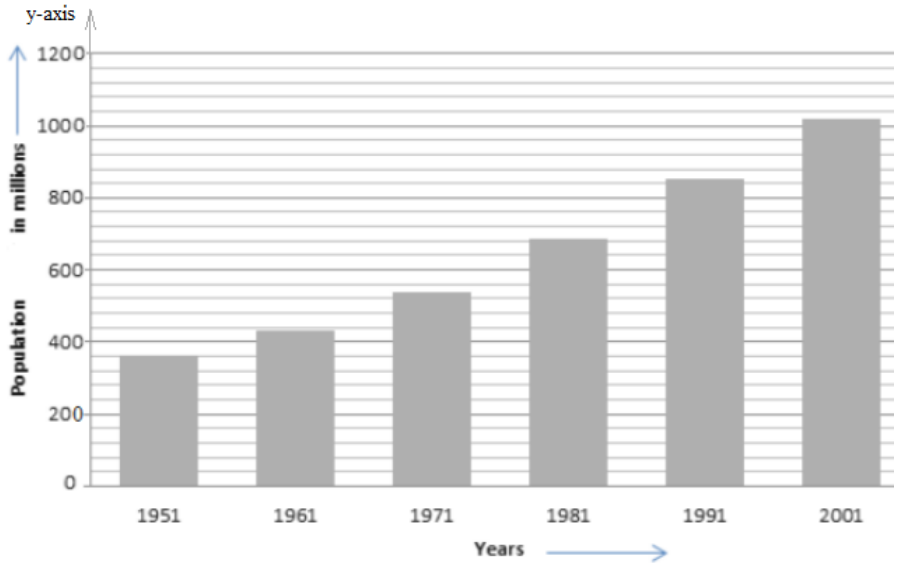
$$\text{Population in } 1981 \left(\text{in millions}\right) = \left(\frac{1}{40} \times 684\right) = 17.1 \text{ small divisions}$$

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

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

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:

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

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

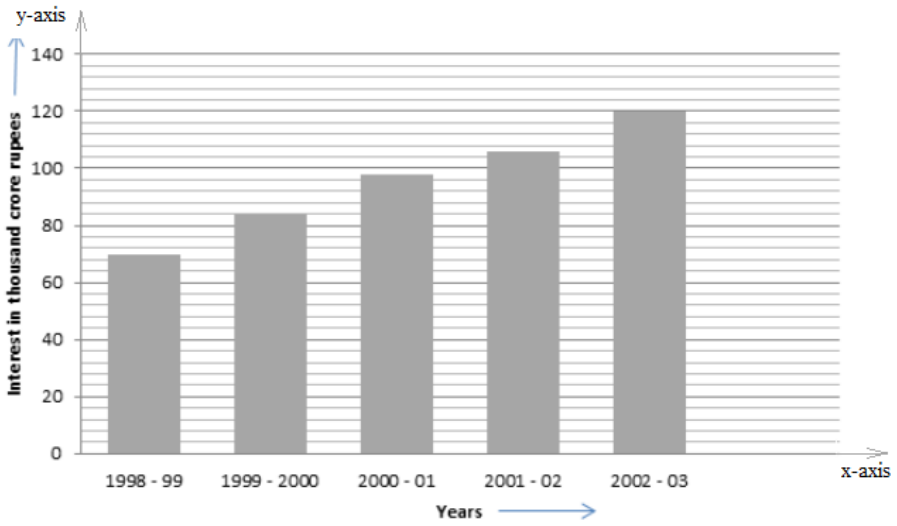
$$\text{Interest in } 2000 - 2001 \left(\text{in thousand crore rupees}\right) = \frac{98}{4} = 24.5 \text{ small divisions}$$

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

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

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:

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

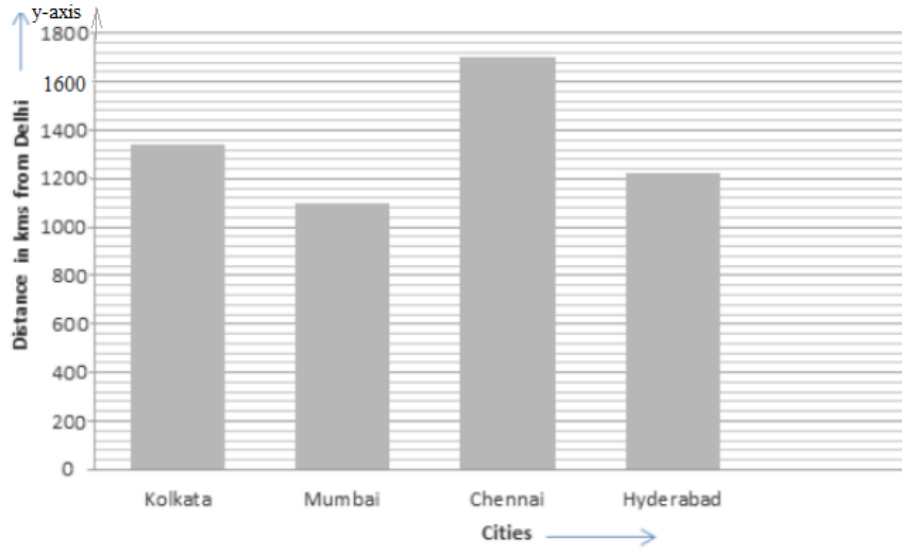
$$Distance\ from\ Delhi\ to\ Mumbai\ (in\ km) = \left(\frac{1}{40} \times 1100\right) = 27.5\ small\ divisions$$

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

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

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 : $\frac{57}{2} = 28.5\ small\ divisions$

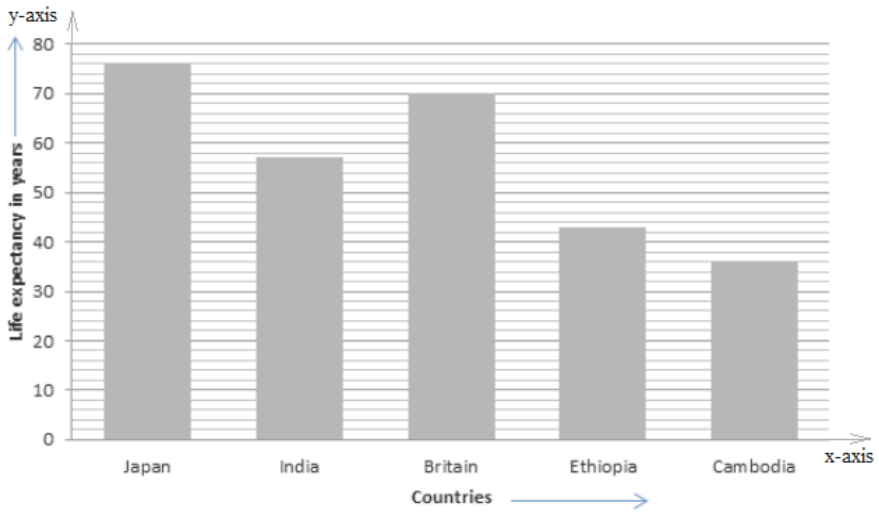
Life expectancy in Britain : $\frac{70}{2} = 35\ small\ divisions$

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:

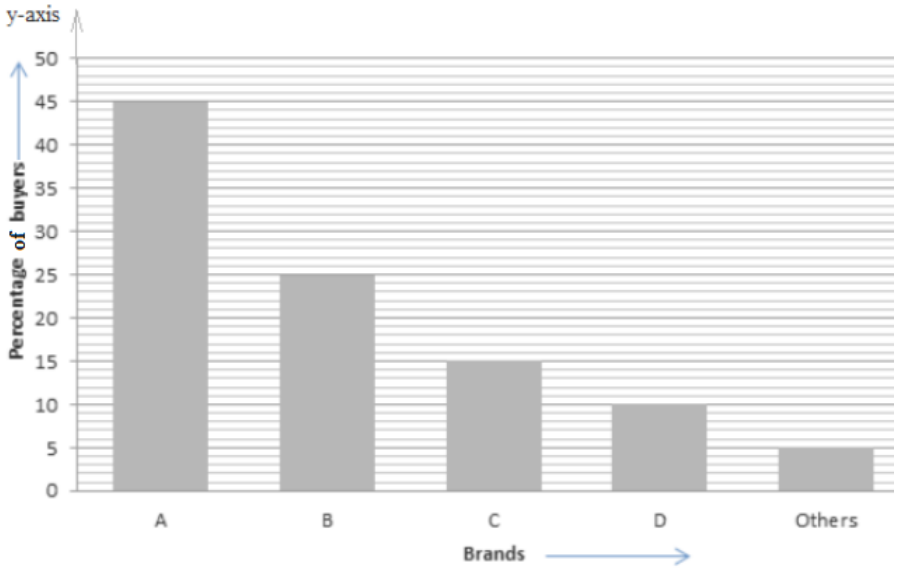


Q11.

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:

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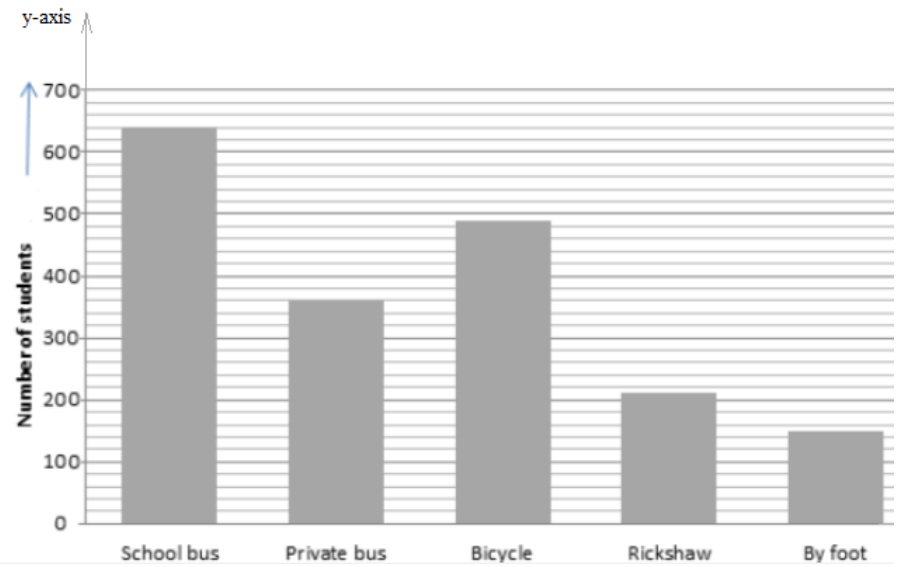

Q13.

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

$$\begin{aligned}\text{Mount Everest} &: \text{Kanchenjunga}\\ \text{or } 8800 &: 8200\\ \text{or } 44 &: 41\end{aligned}$$

(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