DATA INTERPRETATION

Learning Objectives

- Introduction
- Type of Data Interpretation

Introduction

The interpretation of data is the process through which Inferences are drawn on the data available for analysis.
In other words, the process of drawing inferences and conclusion through the interpretation of data is all about DI.

Type of Data Interpretation

There are three types of data interpretation.

(i) Pie Chart
(ii) Bar Graph
(iii) Line Graph

Pie Chart

A Pie Chart is a pictorial representation of a numerical data by non-intersecting adjacent sectors of the circle, such that, area of each sector is proportional to the magnitude of the data represented by the sector

(a) The whole circle represents the total and the sectors, individual quantities.
(b) The sectors, are made considering the fact that the central angle is $360°$.
(c) The central angle, $360°$ can be divided in the ratio of quantities given.
(d) Central angle or Angle of the sector is:

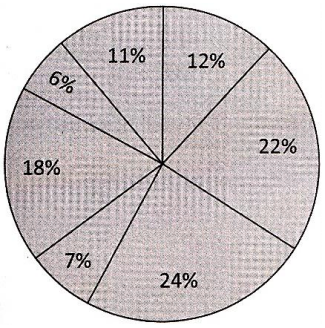
$$\text{Central angle or angle of the sector} = \left(\frac{\text{Value of the component}}{\text{Total Value}} \times 360°\right)$$

Example:

The number of students studying in different faculties in the years 2010 and 2011 from state A is as follows:

Total % of students for year 2010

Total students - 35000

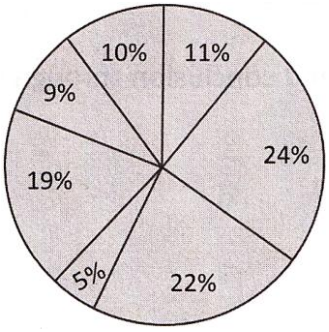


- Arts - 12%
- Commerece - 22%
- Science - 24%
- Agriculture - 7%
- Engineering - 18%

- Pharmacy - 6%
- Medicine - 11%

Total % of students for year 2011

Total students 40000



- Arts - 11%
- Commerece - 24%
- Science - 22%
- Agriculture - 5%
- Engineering - 198%
- Pharmacy - 9%
- Medicine - 10%

Example:

- In which faculty there was decrease in the number of students from 2010 to 2011Rs.
  (a) Arts (b) Agriculture
  (c) Pharmacy (d) All of these
  (e) None of these

  Answer: (b)
  Explanation: For Arts, Number of students in 2010 and 2011

  $$35000 \times \frac{12}{100} = 4200. \qquad 42000 \times \frac{11}{100} = 4400$$

  For Agriculture Number of students in 2010 and 2011

  $$35000 \times \frac{7}{100} = 2450, \qquad 40000 \times \frac{5}{100} = 2000,$$

  For pharmacy % is already more and total number of students are already more in 2011, so correct option will be for Agriculture, option (b) is true.

- What is the ratio between the number of students studying pharmacy in the years 2010 and 2011 respectively?
  (a) 4 : 3 (b) 3 : 2
  (c) 2 : 3 (d) 7 : 12
  (e) None of these

  Answer (d)
  Explanation: Ratio between the number of students studying pharmacy in the years 2010 and 2011

  $$= \frac{35000 \times \frac{6}{100} = \frac{7}{12}}{40000 \times \frac{9}{100}}$$

Option (d) is correct.

- What was the approximate percentage increase in the number of students of Engineering from the year 2010 to 2011?
(a) 17 (b) 15
(c) 20 (d) 23
(e) None of these

Answer (C)
Explanation:

Number of engineering students in $2010 = 35000 \times \frac{18}{100} = 6300$ in 2010

Number of engineering students in $2011 = 40000 \times \frac{19}{100} = 7600$ in 2011

Total increase $= 7600 - 6300 = 1300$

$\%$ increase $= \frac{1300}{6300} \times 100 = 20.63\% \cong 20\%$

- In the year 2010, the number of students studying Arts and Commerce together is what percentage of the number of students studying these subjects together in 2011?
(a) 76 (b) 85
(c) 82 (d) 79
(e) None of these

Answer (b)

Explanation: Number of students studying Arts and Commerce together in $2010 = 35000 \times \frac{34}{100} = 11900$, in 2010

Number of students studying Arts and Commerce together in 2011

$40000 \times \frac{35}{100} = 14000$, in 2011

Required $\% = \frac{11900}{14000} \times = 100 = 85\%$

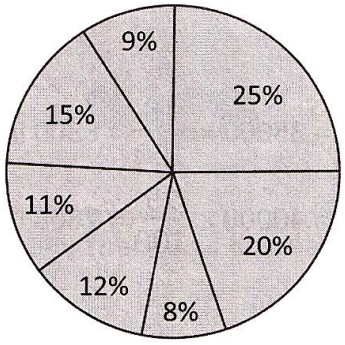
So, option (b) is correct

Commonly Asked Questions

Study the given graph and table and answer the following questions. (Total population of all states given in Pie chart is 25 lakh).

In the year 2004 the data of different states regarding population of states

Population %



- UP - 25%
- Bihar - 20%
- Kerala - 8%
- T.N - 12%
- MH - 11%
- Kar - 15%
- AP - 9%

Sex and literacy wise population ratio

States	Sex		Literacy	
	M	F	Literate	Illiterate
UP	5	3	2	7
Bihar	3	1	1	4
AP	2	3	2	1
Kar	3	5	3	2
MH	3	4	5	1
TN	3	3	7	2
Kerala	3	4	9	4

- Approximately what is the total number of literate people in MH and Kar together?
(a) 3 lakhs (b) 3.5 Lakhs
(c) 4.54 lakhs (d) 6.55 lakhs
(e) None of these

Answer (c)
Explanation: Population of Kar is 15 %

Production of Kar $= \frac{25 \times 15}{100} = \frac{15}{4}$ lakhs

So, total number of literate people in Kar is:

Literates in Kar $= \frac{3}{3+2} \times \frac{15}{4} = 225$

Population of MH is 11%

Population of MH $= \frac{25 \times 11}{100} = \frac{11}{4}$ lakhs

Literates in MH $= \frac{5}{5+1} \times \frac{11}{4} = 2.29$ lakhs

So, number of literate people in MH and Kar together $= 2.29 + 2.25 = 4.54$ laks,

- Approximately what will be the percentage of total male UP, MH and Kerala of the total population of the given states?
(a) 20% (b) 24%
(c) 28% (d) 30%
(e) 25%

Answer (B)
Explanation: Population in UP is 25 %

Population of UP $= \frac{25 \times 25}{100} = \frac{25}{4} = 6.25$ lakhs

Male people in UP $= 6.25 \times \frac{5}{5+3} = 6.25. \times \frac{5}{8} = 3.93$ lakhs

Population in MH $= 2.75$ lakhs

Male people in MH $= 2.75 \times \frac{3}{3+4} = 1.17$ lakhs

Population of Kerala $= 8\%$ lakhs

Population of Kerala $= \frac{25 \times 8}{100} = 2$ lakhs

Male Population of Kerala $= 2 \times \frac{3}{3+4} = 0.58$ lakhs

So, sum of male population of UP, MH and Kerala $= 3.93 + 1.17 + 0.85 = 5.95$ lakhs

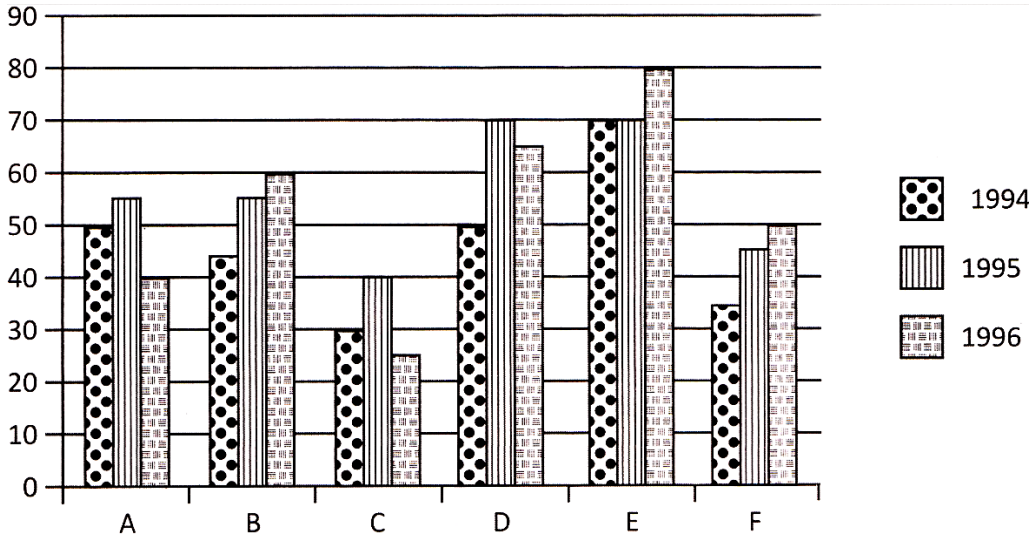
$5.95 = \frac{25x}{100} \Leftrightarrow x = 24\%$ of total, option (b) is correct

Bar Graphs

A barograph displays data visually and is sometimes called a bar chart or a bar graph. Data is displayed either horizontally or vertically and allows viewers to compare items displayed. Data displayed will related to things like amounts, characteristics, times and frequency etc.

Example:

Production of steel by six different companies in three consecutive years 1994 - 95 - 96 (In Lakh Tonnes) are being given.



- What is the difference between average production of the six companies in 1995 and average production of the same companies in 1994?
  (a) 936666 tonnes (b) 906666 tonnes
  (c) 916666 tonnes (d) 926666 tonnes
  (e) None of these

  Answer (c)
  Explanation: Sum of production in $1995 = 55 + 55 + 40 + 70 + 70 + 45 = 335$
  Sum of production in $1994 = 50 + 45 + 30 + 50 + 70 + 35 = 280$
  So, difference $= \frac{335 - 280}{6} = 9.16666667$
  Difference $= 916666$ tonnes.

- What is the % decline in production by company C from 1995 to 1996?
  (a) 32.8% (b) 37.5%
  (c) 32.3% (d) 32.9%
  (e) None of these

  Answer: (b)

Explanation: For company c production in 1995 = 40 and in 1996 = 35

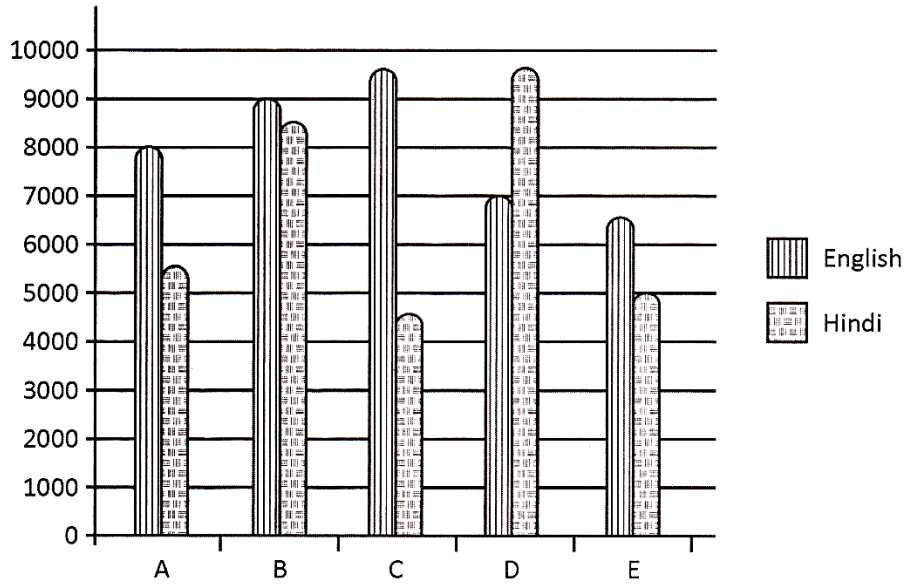
$\%\ \text{Decline} = \frac{40-25}{40} \times 100 = 37.5\%$.

- In which of the following pairs of companies the difference between average productions for the three years is maximum?
  (a) E and F (b) D and F
  (c) E and C (d) A and E
  (e) None of these

Answer (c)
Explanation: From the graph we can see that highest production average is for company E and lowest production average is for company C so difference between average productions for the three years is maximum for company E and C So, option (c) is correct.

Commonly Asked Questions

Total sale of English and Hindi Newspapers in five different localities of a city are given



- What is the difference between the total sale of English Newspapers and total sale of Hindi newspapers in all the localities together?
  (a) 6000 (b) 6500
  (c) 7000 (d) 7500
  (e) None of these

Answer: (b)
Explanation: Total Sum of all the English Newspapers
$= 7500 + 9000 + 9500 + 7000 + 6500 = 39500$
Total Sum of all the Hindi Newspapers
$= 5500 + 8500 + 4500 + 9500 + 5000 = 33000$
Difference $= 39500 - 33000 = 6500$, so option (b) is correct.

- What is the respective ratio of the sale of Hindi Newspapers in locality A to the sale of Hindi Newspapers in locality D?
  (a) 11 : 19 (b) 6 : 5
  (c) 5 : 6 (d) 19 : 11
  (e) None of these

Answer (a)
Explanation: sale of Hindi Newspapers in locality $A = 5500$
sale of Hindi Newspapers in locality $D = 9500$
Required $= \frac{5500}{9500} = \frac{11}{19}$
So, option (a) is correct.

- The sale of English Newspaper in localities B and D together is approximately what % of the sale English Newspaper in localities A, C and E together.
(a) 162 (b) 84
(c) 68 (d) 121
(e) None of these

Answer; (c)
Explanation: Sum of the sale of English Newspaper in localities B and D together
$= 9000 + 7000 = 16000$
Sum of the sale of English Newspaper in localities A, C and E together $= 7500 + 9500 + 6500 = 23500$

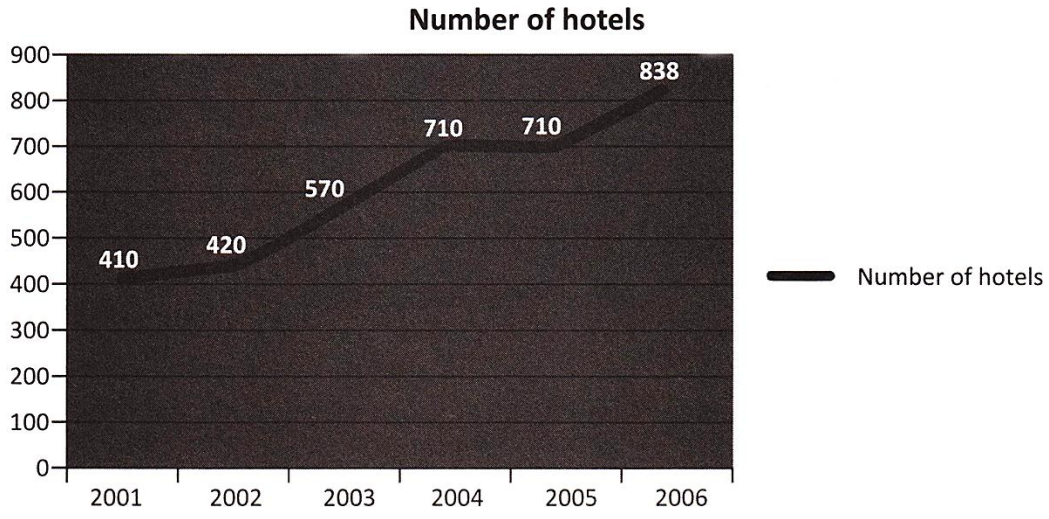
$\therefore$ Required % $= \frac{16000}{23500} \times 100 = 68\%$
So, option (c) is correct.

Line Graphs

A diagram of lines made by connected points which represent successive in the value of a variable quantity or quantities.

Example:

- Number of hotels in a state, according to years are given (Study the given chart carefully and then answer the questions accordingly).



- The approximate % increase in hotels from year 2001 to 2006 was:
(a) 75 (b) 100
(c) 125 (d) 150
(e) None of these

Answer (b)

Explanation: % increase $= \frac{838 - 410}{410} \times 100 = 104.3 \approx 100\%$. Option (b) is correct.

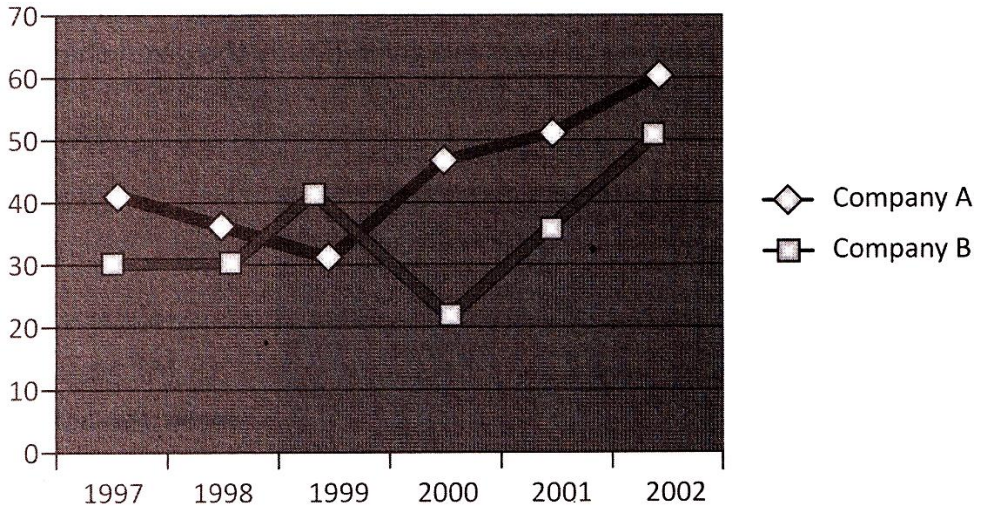
- If the % increase in the number of hotels from 2005 to 2006 continued up to 2007 then what is the number of hotels built in 2007Rs.
  (a) Minimum 75 (b) Minimum 70
  (c) Minimum 50 (d) Minimum 139
  (e) None of these

  Answer: (d)
  Explanation: First find % increase in 2006 from 2006
  $\%\text{ increase } = \frac{838-710}{710}\times 100 = 18\%$
  Now 18% of 838 = 150. So, option (d) is correct.

Commonly Asked Questions

% profit earned by two companies over the years is given in graph.

$$\text{Also}\,\%\,\text{profit} = \frac{\text{Income - Expenditure}}{\text{Expenditure}}\times 100.$$



- If the expenditure of Company B in 2000 was Rs.200 crores, what was its income?
  (a) Rs. 240 crores (b) Rs. 220 crores
  (c) Rs. 160 crores (d) Rs. 125 crores
  (e) None of these

  Answer (a)
  Explanation: Let income be Rs. x crores so, we can use the above formula as
  $20 = \frac{x-200}{200}\times 100$
  $40 = x - 200$
  $x = 240$ crores

- If the income of company A in 2002 was Rs.600 crores. What was its expenditure?
  (a) Rs. 360 crores (b) Rs. 480 crores
  (c) Rs. 375 crores (d) Rs. 555 crores
  (e) None of these

  Answer (c)
  Explanation: For company A in 2002% profit was 60%, Let expenditure be x crores, so

$$60 = \frac{600 - x}{x} \times 100 \Leftrightarrow x = 375 \text{ crores}$$

- If the Incomes of the two companies in 1998 were equal, what was the ratio of their Expenditure?
  (a) 1 : 2 (b) 26 : 27
  (c) 100 : 67 (d) 28 : 19
  (e) None of these

Answer: (b)
Explanation: Let, the income of both companies be P, expenditure of A is E_1 and expenditure of B is E_2 Now we can write,

$$35 = \frac{P - E_1}{E_1} \Leftrightarrow E_1 = \frac{100P}{135}$$
$$30 = \frac{P - E_2}{E_2} \Leftrightarrow E_2 = \frac{100P}{135}$$
$$\frac{E_1}{E_2} = \frac{130}{135} = \frac{26}{27}$$
So, option (b) is correct.