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SET

State Eligibility Test

Volume - 3

D.I, ICT, People, Development & Environment and Higher Education System

SIERRA INNOVATIONS

SET - VOLUME - 3

7
UNIT

DATA Interpretation

DATA MAPPING

Data mapping is the process of mapping data fields from a source file to their related target fields. The accessibility to required data can make some organization more successful. Somehow, data is easier to use when it can be visualized as well.

Visual data help people to understand how different concepts originate and their relation with each other.

Data mapping helps in all these. For example, "Name, "Email,' and 'Phone' fields from an Excel source are mapped to the relevant fields in a delimited file, which is our destination.

Data mapping helps by providing organizations with procedure links to show how certain tasks are to be utilized. Forty per cent of our nerve fibres linking to the brain are in the retina only. Data mapping helps us to see what makes different pieces of data useful and helpful

The customer trends can be traced in the real time The causes of trends and past data numbers can be analysed and other calculations of information and variables can be done. We can also use data mapping software to compare our date with that of competitors. This should make it easier for your business to grow when chosen right.

They also work by establishing larger maps. Salesforce of any organization has a particularly strong data mapping software program that can be put to use. This helps in real time also. We can get connected to a cloud network to get information in real time.

Data mapping works for all businesses. For example, if we were in the retail sector, then we can use data mapping to calculate how discount sales can influence the overall sales totals in our business. Similarly, financing, investment type decisions can also be made.

Data may be internal or external, but it is getting more dispersed and voluminous, then its data leverage is important and actionable insights are developed.

There are array of data points to collect information. Their language may be quite different. We can develop separate data models.

Data mapping tasks vary in complexity, depending on the hierarchy or disparity between the structure of the source and the target. Every application, on-premise or cloud basis uses metadata to explain data fields.

Microsoft Share Point, Inet Soft Style Intelligence and IBM Congos Business Intelligence help us to review information by generating simple charts and graphs. Depending on the number and schema of the data sources, database mappings can have a varying degree of complexity.

In general, data mapping helps with the following activities.

Data Integration

Data mapping tools to cover differences in the schemas of data source and destination, allowing businesses to consolidate information from different data points easily.

Data Migration

It is moving data from one database to another. Here, using a code-free data mapping solution that can automate the process is important to migrate data to the destination successfully.

Data Warehousing

Data mapping in a data warehouse is the process of creating a connection between the source and target tables or attributes.

Data Transformation

It is essential to break information silos and draw insights. Data mapping is the first step in data transformation.

Data Mapping Techniques

Although an essential step in any data management process, data mapping can be complex and time consuming. Based on the level of automation, data mapping techniques can be divided into two types and they are as follows.

1. **Manual data mapping:** Although hand-coded, manual data mapping process offers unlimited flexibility.
2. **Semi-automated data mapping:** Schema mapping is often classified as a semi-automated data mapping technique. The process involves identifying two data objects that are semantically related and then building mappings between them.

Qualitative Data Interpretation

Qualitative data analysis can be summed up in one word - categorical. With qualitative analysis, data is not described through numerical values or patterns, but through the use of descriptive context (i.e., text). Typically, narrative data is gathered by employing a wide variety of person-to-person techniques. These techniques include:

- **Observations:** detailing behavioral patterns that occur within an observation group. These patterns could be the amount of time spent in an activity, the type of activity, and the method of communication employed.
- **Focus groups:** Group people and ask them relevant questions to generate a collaborative discussion about a research topic.
- **Secondary Research:** much like how patterns of behavior can be observed, different types of documentation resources can be coded and divided based on the type of material they contain.
- **Interviews:** one of the best collection methods for narrative data. Inquiry responses can be grouped by theme, topic, or category. The interview approach allows for highly-focused data segmentation.

Quantitative Data Interpretation

If quantitative data interpretation could be summed up in one word (and it really can't) that word would be "numerical." There are few certainties when it comes to data analysis, but you can be sure that if the research you are engaging in has no numbers involved, it is not quantitative research. Quantitative analysis refers to a set of processes by which numerical data is analyzed. More often than not, it involves the use of statistical modeling such as standard deviation, mean and median. Let's quickly review the most common statistical terms:

- **Mean:** a mean represents a numerical average for a set of responses. When dealing with a data set (or multiple data sets), a mean will represent a central value of a specific set of numbers. It is the sum of the values divided by the number of values within the data set. Other terms that can be used to describe the concept are arithmetic mean, average and mathematical expectation.
- **Standard deviation:** this is another statistical term commonly appearing in quantitative analysis. Standard deviation reveals the distribution of the responses around the mean. It describes the degree of consistency within the responses, together with the mean, it provides insight into data sets.
- **Frequency distribution:** this is a measurement gauging the rate of a response appearance within a data set. When using a survey, for example, frequency distribution has the capability of determining the number of times a specific ordinal scale response appears (ie., agree, strongly agree, disagree, etc.). Frequency distribution is extremely keen in determining the degree of consensus among data points.

DATA AND GOVERNANCE

Data governance is a requirement in today's fast-moving and highly competitive enterprise environment. Now that organizations have the opportunity
to capture massive amounts of diverse internal and external data, they need a discipline to maximize their value, manage risks and reduce cost.

Data governance is a collection of processes, roles, policies, standards, and metrics that ensure the effective and efficient use of information in enabling an organization to achieve its goals. Data governance defines who can take what action, upon what data, in what situations, using what methods. Data governance ensures that roles related to data are clearly defined, and that responsibility and accountability are agreed upon across the enterprise. A well-planned data governance framework covers strategic, tactical, and operational roles and responsibilities.

While crafting data and governance strategy, we need to be careful.

Data Governance is not data management: Data management refers to the management of the full data lifecycle needs of an organization. Data governance is the core component of data management such as data warehousing.

1. **Data Governance is not master data management:** Master data management focuses on identifying an organization's key entities and then improving the quality of this data.
2. **Data Governance is not data stewardship:** Data stewards take care of data assets, making certain that the actual data is consistent with the data governance plan, linked with other data assets and in control in terms of data quality, compliance, or security.

Benefits of Data Governance

An effective data governance strategy provides many benefits to an organization, where it includes the following

- **There is a common understanding of data.**
- **There is improved quality of data, such as data** accuracy, completeness and consistency.
- **Data map is available.**
- **Holistic view:** A 360-degree view of each customer and other business entities basically a single version of the truth'.

- **Consistent compliance:** Data governance provides a platform for meeting the demands of government regulations.
- **Improved data management:** It brings the human dimension into a highly automated and data-driven world.

We can use technology as the enabler for the same.

Open source and cloud are the basic strategies for data governance tools. iPaas is also closely linked with them. These tools also help us achieve the following.

1. Capture and understand our data,

2. Improve the quality of our data.

3. Managing data: With metadata-driven ETL and ELT, and data integration applications.

4. Controlling data.

5. Document our data.

6. Empower the people that know the data best: To contribute to the data stewardship.

7. Protecting sensitive data.

We need to understand that data governance is not optional.

The implementation known as a 'data lake' necessarily requires processes that allow you to keep the data you need in a way that eliminates technical barriers and gives new capabilities to process that data.

Data Interpretation

Data Interpretation refers to the process of reviewing the data provided and using these data to calculate the required value.

Data can be provided in various forms such as tables, line diagrams, bar diagrams, pie charts, radar graphs, compound graphs and caselets. Also, check the data adequacy concepts once through the data interpretation concepts.

Data Interpretation Methodology is a way of analyzing and helping people make sense of numerical data that has been collected, analyzed and presented. When the data is collected, it usually remains in the form of a row which can be difficult for the lay person to understand and that is why analysts always divide the collected information so that others can understand it. For example, when founders present their pitches to or to their potential investors, they may seek a better understanding of the market.

The following concepts are useful for solving data interpretation –

- Average
- Ratio and Proportion
- Percent

Average

The average or arithmetic mean or mean of two or more quantities is equal to their sum divided by the number of those quantities.

$$\text{Average} = \frac{\text{Sum of all quantities}}{\text{Number of quantities}}$$

It is defined as the central value of the values of all quantities. It is the result of the sum of the values of all the quantities divided by the number of quantities. The average is always between the highest and lowest values of all quantities. It is necessary that the quantities taken into account have the same features and must be expressed either in the same unit or in comparable units. In order to calculate the average, students must learn the various properties related to the average.

Ratio and Proportion

The comparative relation between two quantities of the same type by division is called ratio. In other words, ratio means how much of one quantity belongs to another.

The ratio is always between the same units like kg : kg, hour : hour, litre : litre etc.

Let us consider two quantities x and y in the ratio x : y or x/y or x y.

The two quantities being compared here are called terms. The first quantity 'x' is called antecedent. The second quantity 'y' is called the resultant.

Percent

Percent means every hundred. It is a ratio with a base of 100. Percentage calculation is the most important aspect in representation as well as in the interpretation of data.

Percentage increase = (Final value - Initial value) / (Initial value) × 100

Percentage reduction = Initial value - Final value) / (Initial value) × 100

Tips and Tricks for data interpretation

Read the question asked carefully

Firstly, before going through the given data, go through all the questions asked. Now, you get some information about the given topic.

Try to analyze the given data

Start reading the given data and analyze it carefully keeping in mind the questions.

Don't make assumptions

Do not try to make any assumptions while answering the questions. Answer it when you are absolutely sure that it is correct. There is a risk of negative marking if you answer with guesses. (Questions with negative marking cases)

The approximation of values can be considered:

When making calculations, consider approximate values to make simplification easier.

Learn to calculate fast and maintain accuracy

Instead of using a calculator or lengthy methods when simplifying, try to calculate in your mind. Initially, it may take some time but with regular practice you can master it. Everyone can solve a problem but those who have time management and efficiency, they succeed in the exam are eligible for.

Identify the questions that are time consuming and skip them

Try to identify the questions that are time consuming, even if you think you can get the answers, skip them because of the lengthy calculations. It can waste your time and you may miss solving simple questions left with you. If you have time after covering all the questions then come back to such questions and give an attempt.

Master these techniques by regularly practicing on various model questions

Once you have all the concepts of Data Interpretation in your mind, get clarity on those topics by solving various example problems. Now, start applying your knowledge on Data Interpretation to solve various model questions and then try to solve previous year question papers.

Data Interpretation is broadly classified as follows -

1. Table
2. Line diagram
3. Bar graph
4. Pie chart
5. Radar graph
6. Mixed graph
7. Caselet

Table

In tabular method, data is arranged in vertical and horizontal rows. It is the easiest way to represent statistics but not the easiest way to interpret statistics. Generally, questions based on tabular method include data related to production/profit/sales of different companies in a year, list of students in a class, list of defective goods, income of different persons etc. In the tabular method, either row is used to represent discrete non-connected data.

How to Solve Tabular Method

Generally, there are two types of tables in the Table Data Interpretation (DI) : (i) Complete Data Tables (ii) Missing data tables.

Missing Data Tables

While solving the missing data table, try to complete the data in the table if it can be completed initially, as it will help you solve the questions.

To solve the question, first of all, note down all the variables against which you have to extract the data from the table.

Example :

Directions: Read the following information carefully and answer questions accordingly.

The table shows the population (in thousands) of six different cities and the percentage of males, females and children in them. It is also given that there is no other person who is outside the category of men, women and children. Furthermore, children are exclusive of man and woman.

City	Population	Male	Women	Children
A	36	45%	33%	22%
B	54	36%	,	,
C	72	24%	52%	,
D	28	,	25%	,
E	86	,	,	42%
F	94	44%	25%	,

Q. What is the average number of children in cities A, C, E and F ?

Sol: Number of children in city A = 22% of 36000 = 7920

Number of children in city E = 42% of 86000 = 36120

Percentage of children in city C = (100 – 24 – 52) = 24%

Number of children in city C = 24% of 72000 = 17280

Percentage of children in city F = (100 – 44 – 25) = 31%

Number of children in city F = 31% of 94000 = 29140

Average number of children = (total number of children in city A, C, E, F) × 100 / 4

$$\Rightarrow \frac{7920+36120+17280+29140}{4} = \frac{90460}{4} = 22615 \text{ Children}$$

Practice Questions with Their Solution

Instructions (Q.1-3): Study the given table carefully to answer the following questions.
Number of students studying in five different sections of five institutes -

Discipline Institutes	Arts	Commerce	Science	Management	Computer Science
A	350	260	450	140	300
B	240	320	400	180	320
C	460	300	360	160	380
D	440	480	420	120	340
E	280	360	340	200	330

Q.1 What is the average number of students studying in commerce institute from all the institutes together?

(a) 356 (b) 360 (c) 348 (d) 344

Sol: (d)

$$\text{Average of students} = \frac{\text{Sum of all institutes of students}}{\text{Total number of institutes}}$$

$$= \frac{260+320+300+480+360}{(A+B+C+D+E)}$$

$$= \frac{1720}{5}$$

Average of students = 344

Q.2 The total number of students studying Arts section from institutes A and B together is what percent of the total number of students studying Computer Science section from these two institutes together?

(a) 84 (b) 85 (c) 88 (d) 95

Sol: (d)

Number of students of arts from institute A & B = (350 + 240) = 590

Number of computer science students from institute A & B = (300 + 320) = 620

$$\text{Required percentage} = \frac{590}{620} \times 100$$

$$= 96.61 \cong 95\%$$

Q.3 What is the respective ratio of the total number of students studying in science section from institutes C and D together to the total number of students studying in Computer Science section from these two institutes together?

(a) 13 : 12 (b) 12 : 13 (c) 13 : 15 (d) 15 : 13

Sol: (a)

Total number of students form the section C and D of science = (360 + 420) = 780

Total number of students form the section C and D of computer = (380 + 340) = 720

Required ratio = 780 : 720

= 13 : 12

Direction (Question 4-6): The following table shows the total number of students appeared in an entrance examination from six schools in different years and the ratio of passed students to failed students. Answer the given questions on the basis of this table.

Note - Total Attended = Total Passed + Total Failed in a given year

School	2010		2011		2012	
	Total Attendance	Passed : Fail	Total Attendance	Passed : Fail	Total Attendance	Passed : Fail
A	646	11 : 8	754	7 : 6	672	3 : 5
B	847	4 : 7	845	8 : 5	952	9 : 8
C	810	8 : 7	792	7 : 4	637	4 : 3
D	876	7 : 5	828	11 : 7	988	7 : 12
E	870	3 : 2	726	7 : 4	725	8 : 5
F	986	17 : 12	867	12 : 5	924	8 : 13

Q.4 What is the difference between the total number of failed students from school Q in the year 2010 and 3/4th of the failed students from school B in the year 2012?

(a) 165 (b) 176 (c) 175 (d) 180

Sol: (c)

The total attendance of the school in the year 2010 was 876, out of which passed

$= 876 \times \frac{7}{12} = 511$

The total attendance of the school in the year 2012 was 952, out of which failed

$= 952 \times \frac{8}{17} = 448$

Q.5 What is the total number of failed students in schools A and D together in all the three years together?

(a) 1036 (b) 1311 (c) 2351 (d) 2446

Sol: (c)

Failed from school $A = 646 \times \frac{8}{19} + 754 \times \frac{6}{13} + 672 \times \frac{5}{8} = 1040$

Failed from school $D = 876 \times \frac{5}{12} + 828 \times \frac{7}{18} + 988 \times \frac{12}{19} = 1311$

Total failed = 1040 + 1311 = 2351

Q.6 What is the difference between the number of passed students in the year 2011 from A, B and D together and the number of failed students in the year 2012 from A, C and F together?

(a) 167 (b) 177 (c) 217 (d) 157

Sol: (a)

Passed in year 2011 from $A = 754 \times \frac{7}{13} = 406$

Passed in year 2011 from $B = 754 \times \frac{7}{13} = 406 = 845 \times \frac{8}{13} = 520$

Passed in year 2011 from $D = 828 \times \frac{11}{18} = 506$

Total passed = 1432

Failed in 2012

$A = 672 \times \frac{5}{8} = 420$

$C = 637 \times \frac{3}{7} = 273$

$F = 924 \times \frac{13}{21} = 572$

Total failed = 1265

Required difference = 1432 – 1265 = 167

Directions (Q.7-9): Study the given table carefully to answer the following questions

Friend	Salary (In rupees)	Incentives (In rupees)	Expenditure (In rupees)				Savings (In rupees)
			Journey	Party	Home	Marketing	
Babu	46000	6900	13035	5480	5290	7935	21160
Gaurav	48000	7200	7640	8500	6200	10730	22080
Anand	42000	6300	5796	3864	13524	5796	19320
Mohit	44000	6600	9846	7560	4554	8400	20240
Kamal	40000	6000	2300	15480	4200	5620	18400
Mohan	30000	5700	4200	3496	11664	6860	17480

Q.7 Find the total amount (in Rs.) spent by all the friends on the journey together?

(a) 42817 Rs. (b) 42871 Rs. (c) 41817 Rs. (d) 41781 Rs.

Sol: (a)

Total spent in journey = 1350 + 7640 + 5796 + 9846 + 2300 + 4200

= 42817 Rs.

Q.8 Find the difference between the amount spent by Gaurav on party and marketing together and the amount spent by Anand on housing.

(a) 5656 (b) 5776 (c) 5756 (d) 5576

Sol: (c)

Total spent by Gaurav in party and marketing = 8500 + 10780 = 19280

Spent by Anand in housing = 13524

Required difference = 19280 – 13524 = 5756 Rs.

Q.9 The amount spent by Babu on the journey is what percent of Mohan's salary (approximately)?

(a) 30% (b) 38% (c) 32% (d) 34%

Sol: (d)

Spent by Babu in journey = 13035 Rs.

Mohan's salary = 38000 Rs.

Required percentage = $\frac{\text{Spent by Babu}}{\text{Mohan's salary}} \times 100 = \frac{13035}{38000} \times 100 = 34\%$

Line Graph

It is a type of graph in which the variables do not change according to any rule but change suddenly. It indicates the variation of one parameter with respect to another (X-axis, Y-axis). It determines trends and rates of change over time. We can easily see the speed of data in case of line graph.

This graph can be classified into the following categories -

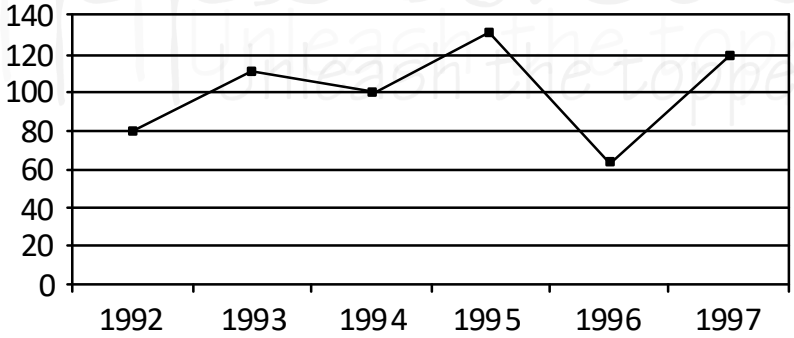
(i) Straight line graph

(ii) Multiple Line Graphs

(i) Straight Line Graph – It is also known as single dependent variable graph. A straight line graph is a type of graph that can be drawn with only one line.

Example –

Directions to the questions: Line graph with the questions given below which show the annual food grain production from 1992 to 1997. Read the line graph and solve the given question.



Q. What is the approximate percentage reduction in production from 1993 to 1994?

(a) 87.5% (b) 37.5% (c) 9.09% (d) none of these

Sol: (c)

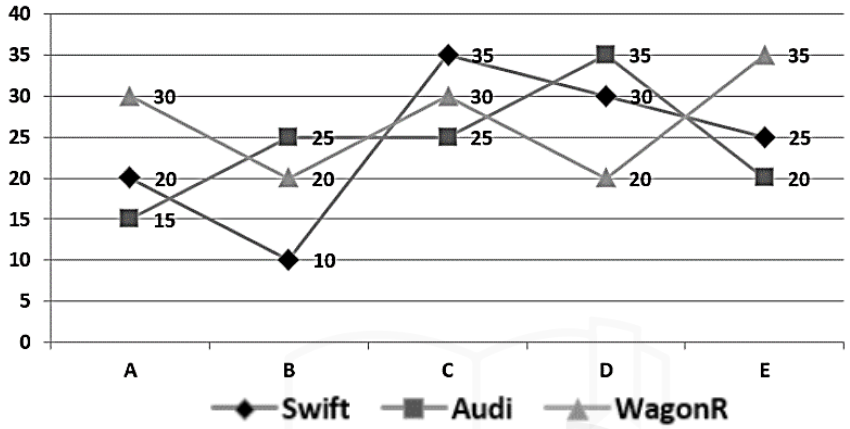
Here we look at the production values for the first 2 years. Find 1993 on the X-axis, which represents the years. Move vertically upwards in the direction of Y-axis in 1993 and the value of output in 1993 is obtained as 110. Similarly, we get the value of production in 1994 as 100.

In calculating % increase and decrease: in this case 1993, it is very important to remember that the original year is the one that is used as the reference year. First, we calculate the absolute reduction which is 110 - 100 = 10. Now we have to express 10 as a percentage of production in 1993, which is 110. So, the required answer is 100 × 10/110 = 9.09%.

(ii) **Multiple Line Graphs –** A multiple line graph is a line graph that is drawn with two or more lines. It is used to depict two or more variables that change over the same period.

Example:

Directions: The line graph given below shows five dealers A, B, C, D and E who are selling three different types of cars (in thousands). Swift, Audi and Wagonr. Read the following line graph and solve the given question.



Q. The number of cars sold by A and B is what percent more than the cars sold by C?

Sol: Cars sold by A and B = (65 + 55) thousand = 1,20,000

Cars sold by C = 90,000

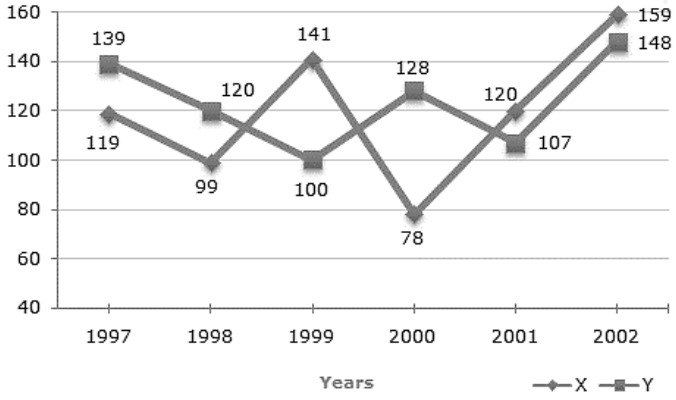
Required percentage = (Cars sold by A and B – Cars sold by C) × 100/ (Cars sold by C)

$$= \frac{1,20,000 - 90,000}{90,000} \times 100 = \frac{30,000}{90,000} \times 100$$

= 33.33%

Practice Questions with Solutions

Direction (Q.1-3): Study the following line graph and answer the questions based on it. Number of vehicles manufactured by the two companies over the years (in thousands),



Q.1 What is the average number of vehicles manufactured by company X in the given period? (rounded off to the nearest integer)

(a) 119333 (b) 113666 (c) 112778 (d) 111223

Sol: (a)

Average number of vehicles manufactured by company X

$$= \frac{1}{6} \times (119000 + 99000 + 141000 + 78000 + 120000 + 159000)$$

= 119333

Q.2 **In which of the following year the difference between the production of company X and Y in the given years was maximum ?**

(a) 1997 (b) 1998 (c) 1999 (d) 2000

Sol: **(d)**

The difference between the production of company X and Y in different years is:

For 1997 (139000 – 119000) = 20000

For 1998 (120000 – 99000) = 21000

For 1999 (141000 – 100000) = 41000

For 2000 (128000 – 78000) = 50000

For 2001 (120000 – 107000) = 13000

For 2002 (159000 – 148000) = 11000

So, the maximum difference was in the year 2000.

Q. 3 **The production of company Y in the year 2000 was approximately what percent of the production of company X in the same year?**

(a) 173 (b) 164 (c) 132 (d) 97

Sol: **(b)**

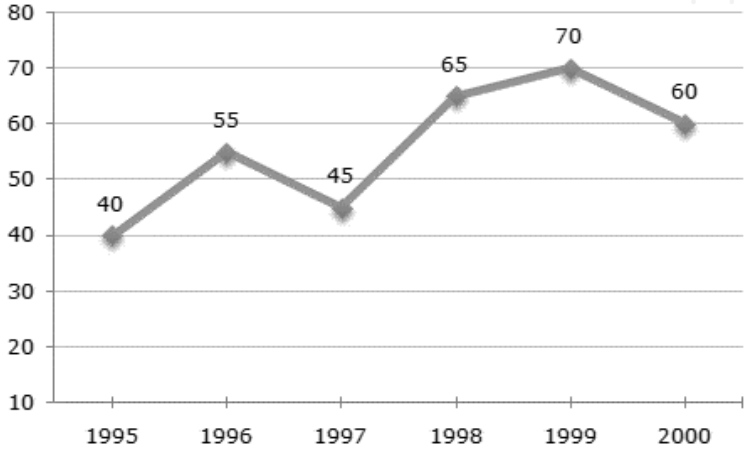
Production of company Y in the year 2000 = 128000

Production of company X in the year 2000 = 78000

Required percentage $= \frac{128000}{78000} \times 100$

= 164%

Instructions (Q.4-6): The following line graph shows the annual percentage profit earned by the company during the period 1995 - 2000.



Q.4 **If the expenditure in 1996 and 1999 are same then what is the approximate ratio of income in 1996 and 1999 respectively?**

(a) 1:1 (b) 2:3 (c) 13:14 (d) 9:10

Sol: **(d)**

Let the expenditure in 1996 = x

Also, suppose the incomes in 1996 and 1999 are respectively I_1 and I_2.

Then, for the year 1996,

$$55=\frac{I_1-x}{x}\times 100\Rightarrow\frac{55}{100}=\frac{I_1}{x}-1\Rightarrow I_1=\frac{155x}{100} \quad \text{....(i)}$$

$$70=\frac{I_2-x}{x}\times 100\Rightarrow\frac{70}{100}=\frac{I_2}{x}-1\Rightarrow I_2=\frac{170x}{100} \quad \text{....(ii)}$$

from (i) and (ii),

$$\frac{I_1}{I_2}=\frac{\left(\frac{155x}{100}\right)}{\left(\frac{170x}{100}\right)}=\frac{155}{170}\approx\frac{0.91}{1}\approx 9:10$$

Q.5 If the income in the year 1998 are 264 crore Rupees. How much did it cost in 1998?

(a) 104 crores Rs. (b) 145 crore Rs. (c) 160 crores Rs. (d) 185 crore Rs.

Sol: (c)

Suppose the expenditure of 1998 is Rs. x

Then, $65=\frac{264-x}{x}\times 100$

$$\frac{65}{100}=\frac{264}{x}-1$$

$$x=\frac{264\times 100}{165}=160$$

Hence expenditure in 1998 = 160 crore Rs.

Q.6 If the profit in 1999 is 4 crore Rs. If so, what was the profit in the year 2000?

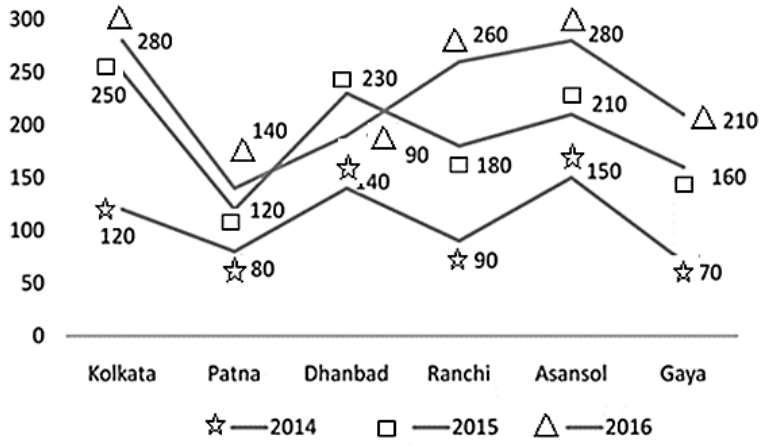
(a) 4.2 crores Rs. (b) 6.6 crore Rs. (c) 6.8 crore Rs. (d) cannot be determined

Sol: (d)

The line graph gives us the information of percentage profit only. To find profit in the year 2000, we should have the data of income or expenditure in the year 2000.

Hence profit for 2000 cannot be determined.

Instructions (Q.7-9): The given line graph data interpretation chart shows the sales (in thousands) of shoes during three consecutive years 2014, 2015 and 2016 from six stores in six different cities Kolkata, Patna, Dhanbad, Ranchi, Asansol and Gaya.



Q.7 What is the ratio of total sales of Patna store for three years to that of Asansol store for three years?

(a) 33: 17 (b) 17: 33 (c) 32: 17 (d) 17 : 32

Sol: (d)

Number of campus shoes sold at Patna store in 2014 = 80

Number of campus shoes sold at Patna store in 2015 = 120

Number of campus shoes sold at Patna store in 2015 = 140

Total number of campus shoes sold at Patna store in these three years = 80 + 120 + 140 = 340

Number of campus shoe sales at Asansol stores in 2014 = 150

Number of campus shoe sales at Asansol stores in 2015 = 210

Number of sales of campus shoes at Asansol store in 2015 = 280

Total number of campus shoes sold at Asansol store in these three years = 150 + 210 + 280 = 640

So, required ratio

$= \frac{340}{640} = 17:32$

Q.8 What percent of average sales of campus shoes at Kolkata store, Patna store and Dhanbad store in 2014 is what is the average sale of campus shoes at Ranchi store, Asansol store and Gaya store in 2015?

(a) 61.81% (b) 62.23% (c) 62.81% (d) 63.43%

Sol: (a)

Number of campus shoes sold at Kolkata store in 2014 = 120

At Patna store in 2014campus Number of shoes sold = 80

Number of sales of campus shoes at Dhanbad store in 2014 = 140

At Kolkata Store, Patna Store and Dhanbad Store in 2014campus Total number of shoe sales

= (120 + 80 + 140) = 340

At Kolkata Store, Patna Store and Dhanbad Store in 2014campus Average sales of shoes of $= \frac{340}{3} = 113:33$

Number of sales of campus shoes at Ranchi store in 2015 = 180

Number of campus shoes sold at Asansol store in 2015 = 210

Number of campus shoes sold at Gaya store in 2015 = 160

Total number of shoes sold at Ranchi Stores, Asansol Stores and Gaya Stores campus in 2015

= (180 + 210 + 160) = 550

Average sales of campus shoes at Ranchi Stores, Asansol Stores and Gaya Stores in the year 2015