



Graphical Data Interpretation in Competitive Exams

PROF.A.BALASUBRAMANIAN

**Former Dean, Fac. of Sci.& Technology,
University of Mysore**

Data Interpretation

- Data Interpretation is an important part of all the bank exams.
- This session will help you prepare for Data Interpretation section for various exams like RBI Grade B, SEB Grade A, NABARD Grade A, IBPS PO etc.
- Data interpretation is one of the most time consuming yet full marking questions if you have interpreted the question rightly.

Data Interpretation

- **Finding averages**
- Many times in Data Interpretation, questions are asked to find the average of many big numbers.
- As all these numbers are from the same graph, there is a high probability that these number will be close to each other.
- **Solve the fractions quickly**
- Learn the value of fractions in percentages.
- **Faster calculations**
- The only thing that you require to score well in data interpretation questions is the calculation speed.

How to solve **Data Interpretation** Questions:

- Visual Approximation for elimination:
- Get acquainted with all the types of DI Questions:
- Interpret the **data** before you begin with calculations:
- Reduce calculation time.
- Solve questions in the order in which they appear
- Do not use calculators while Practice
- Catch hold of the right data

- **Let's take an example :- How much 468 of 21428 ?**

Let me make this simple for you.

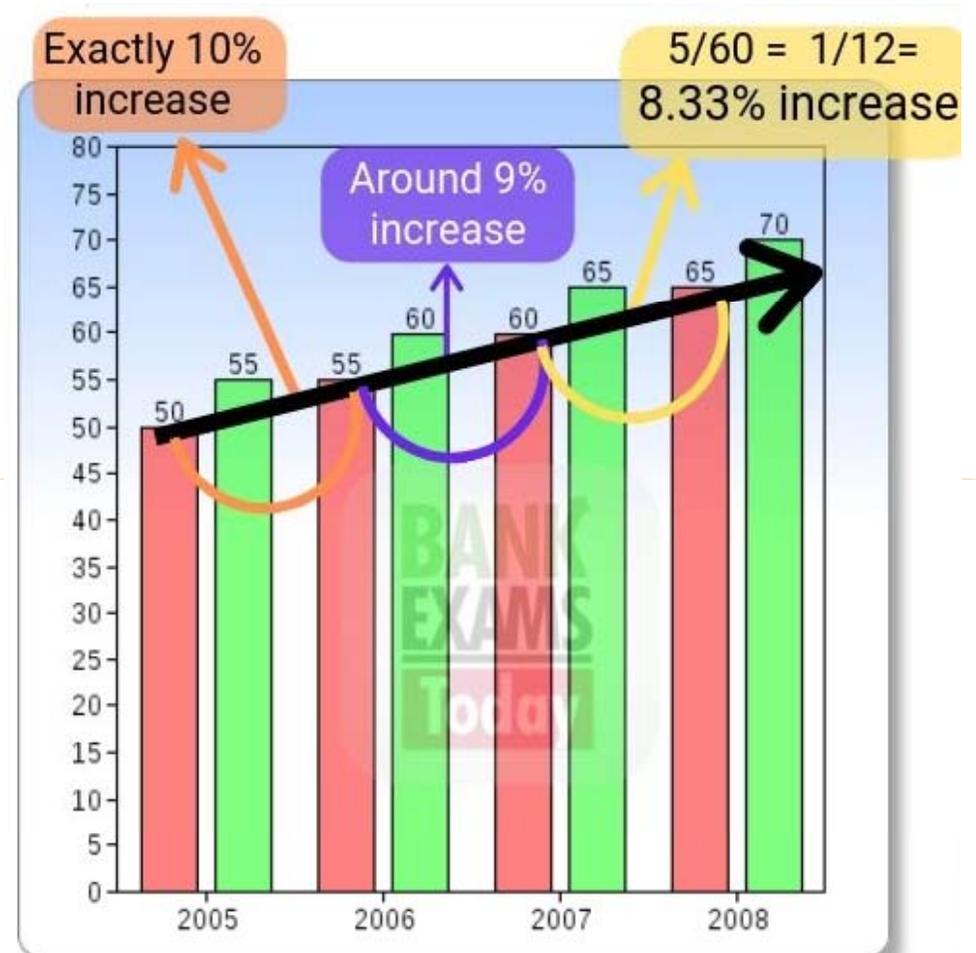
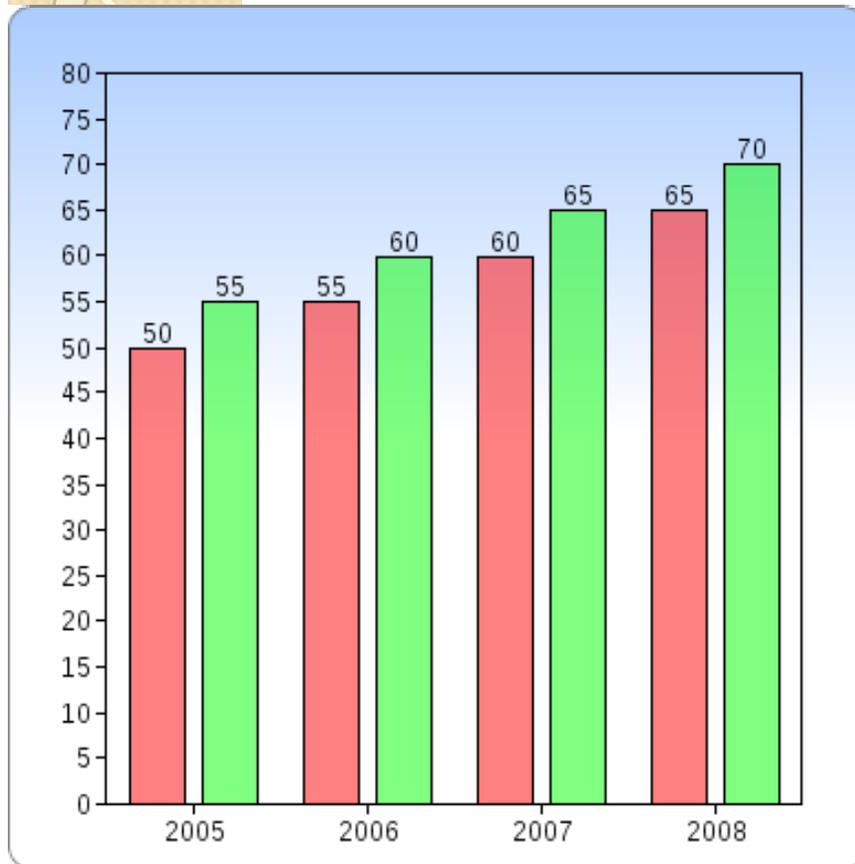
$$1\% \text{ of } 21428 = 214$$

$$2\% \text{ of } 21428 = 428$$

$$0.1\% \text{ of } 21428 = 21$$

For me, the answer should be around
2.2%

Visual Estimation- Give a look to this diagram



Example - Red bars states wheat production state and Green bars states rice production.

Question - In which year percentage increase Wheat production was highest?

As you can see there is an increase of 5 tonnes in production both wheat and rice production every year.

$$10\% \text{ of } 50 = 5$$

$$10\% \text{ of } 70 = 7$$

So the answer should 2006.

Percentages

- A percent is a number that represents the fractional part out of 100 (per cent literally means per one hundred). For future reference and to make your calculations faster, go through this table thoroughly.

1/1	100%
1/2	50%
1/3	33.33%
1/4	25%
1/5	20%
1/6	16.66%
1/7	14.28%
1/8	12.5%
1/9	11.11%
1/10	10%
1/11	9.09%

- **For example** – To determine 62% of 740, 10% of a number is easiest to find, dividing a number by 10.

Now, we fragment 62 as (60 + 2). To determine 60% just calculate 10% and multiply it by 6.

10% of 740 is $\frac{740}{10}$ i.e. 74. When multiplied by 6 gives 444 (60%).

Further to calculate 1% of a number, divide the number by 100.

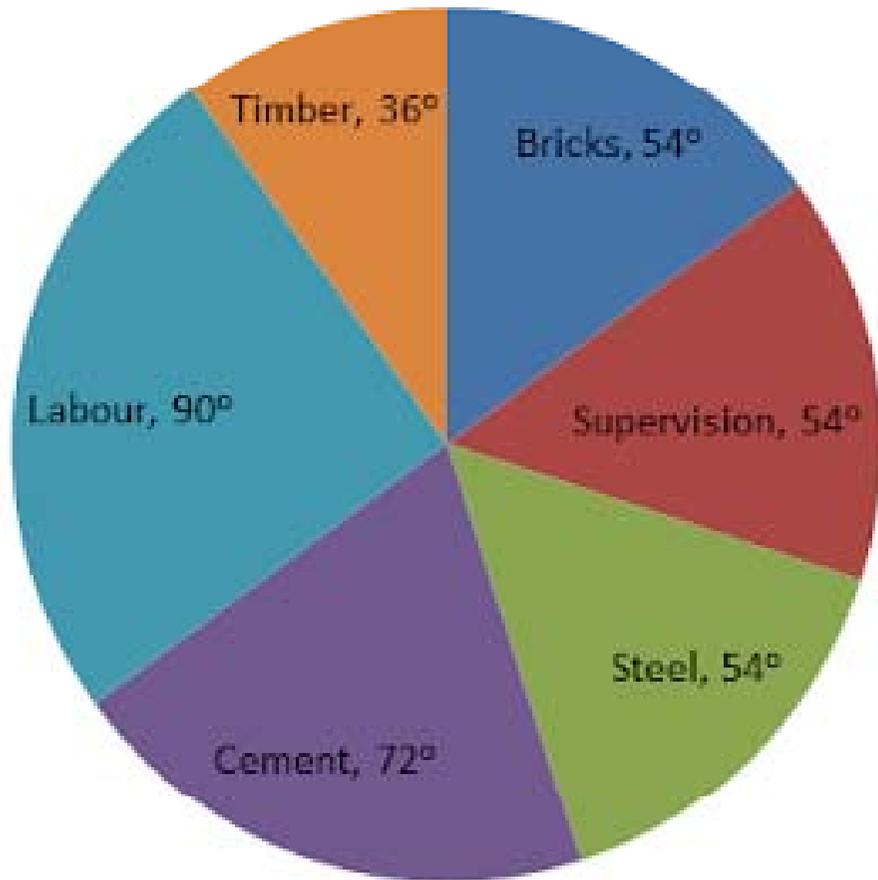
1% of 740 is $\frac{740}{100}$ i.e. 7.4. When multiplied by 2 gives 14.8 (2%).

The two, when added, gives 458.8 (62%). You can also fragment 62% as (50 + 10 + 2). Whichever you find easy. Similarly,

1. 28% of 450 = (20 + 8) % of 450
2. 83.33% of 72 = (50 + 33.33) % of 72.

Question: Refer to the following pie chart and answer the questions that follow.

Distribution of expenses (in '000) in the construction of a house
Cost of construction = Rs. 60000



- **Solution:** Before, proceeding to the questions, the degrees provided in the question can be converted to percentage as

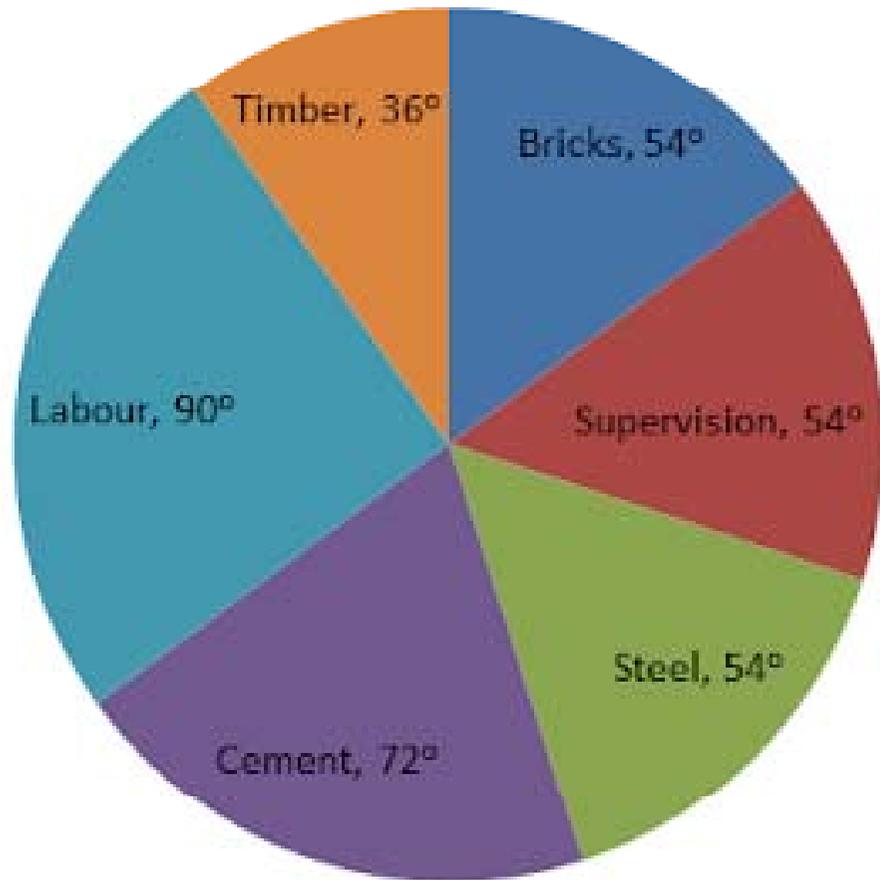
- $$\frac{36}{360} \times 100$$

Where 36 = central angle of division that specifies TIMBER
360 = total central angle
100 = Total percentage
Using this we can find the percentage of TIMBER (out of 100) if required.

Also remember, we need not calculate percentage every time, we can work with degrees and will calculate percentage only if that is the only option. Do not worry the answers won't differ in the two cases.

Question: Refer to the following pie chart and answer the questions that follow.

Distribution of expenses (in '000) in the construction of a house
Cost of construction = Rs. 60000

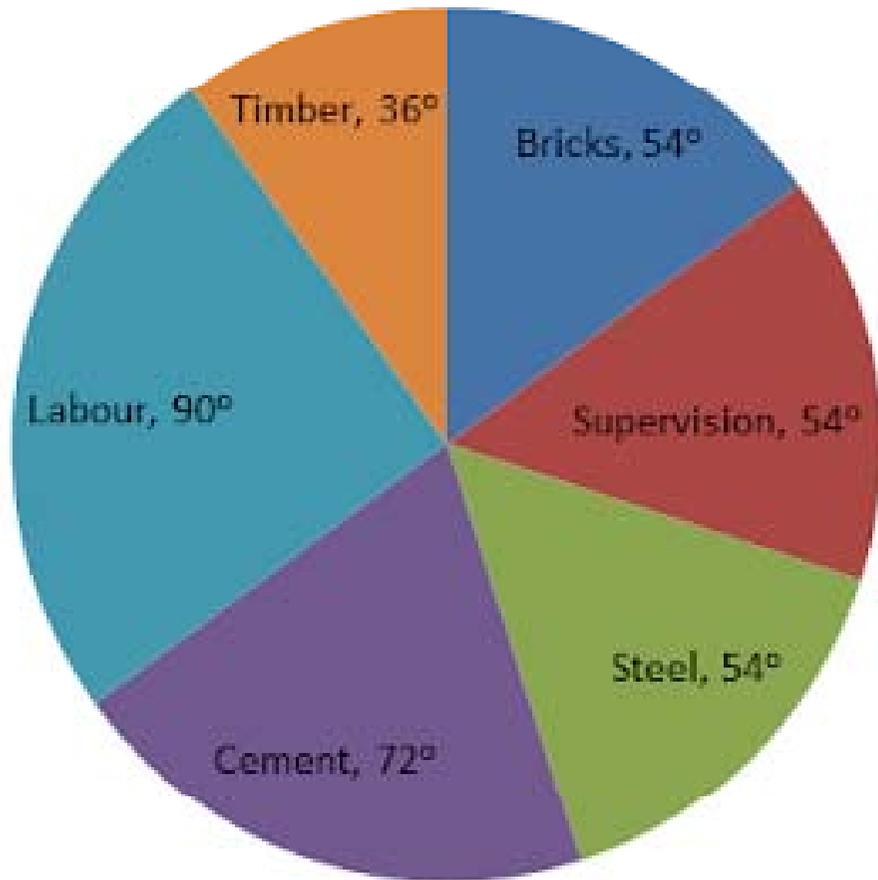


- **Q 1: The amount spent on CEMENT is?**
A. Rs. 20,000
B. Rs. 16,000
C. Rs. 12,000
D. Rs. 10,000
E. None of these
- Solution:** As the central angle for cement is 72 out of 360, and the total cost of construction is provided to us which is Rs. 60000

$$\frac{72}{360} \times 60000 = 12000 \text{ (Option C)}$$

Question: Refer to the following pie chart and answer the questions that follow.

Distribution of expenses (in '000) in the construction of a house
Cost of construction = Rs. 60000



- **Q 2:** The amount spent on **LABOUR** exceeds the amount spent on **STEEL** by?
A. 5% of total cost
B. 10% of total cost
C. 12% of total cost
D. 15% of total cost
E. None of these

The central angle for LABOUR = 90°

The central angle for STEEL = 54°

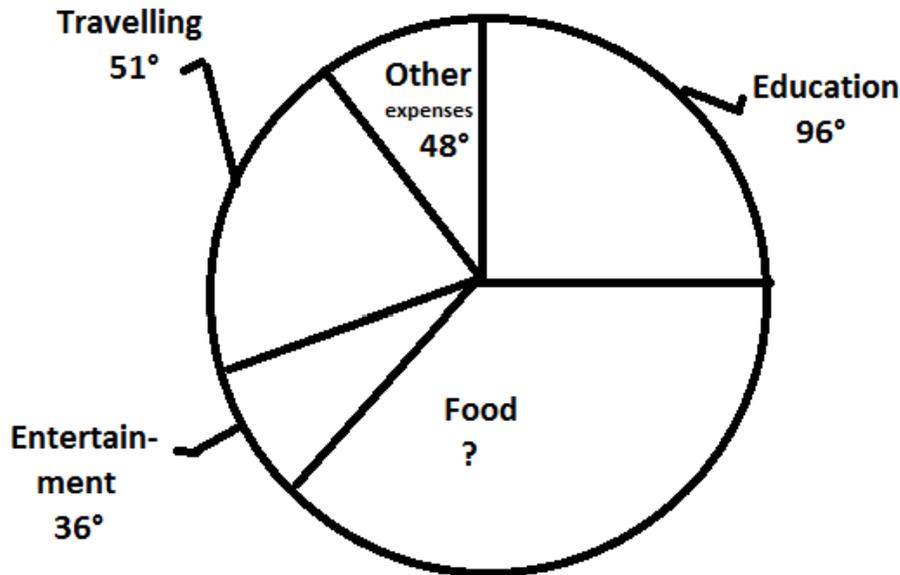
The word exceeding provides us the hint to find the difference.

Difference = 90 – 54 = 36

We need to find the percentage and we did study the formula in the very start of the problem, which goes like

$$\frac{36}{360} \times 100 = 10\% \text{ of the total cost (Option B)}$$

Directions (1-5): Study the following the pie-chart and table carefully to answer the questions given below: The following pie-chart shows the distribution of the monthly family budget of a person.



The following table shows the further distribution (in percent) of the above-mentioned items among the five family members i.e P (the person himself), W (his wife), Rahul (son), Rohit (son), and Preeti (his daughter). His monthly family budget is Rs. 1,20,000

	Education	Food	Entertainment	Travelling	Other expenses
P	10	30	10	40	20
W	15	25	30	10	25
Rahul	40	20	20	25	20
Rohit	25	15	25	10	10
Preeti	10	10	15	15	25

- **The average expenses of Rohit is approximately what percent of the average expenses of W (Wife)?**
- 1. 76.4% 2. 81.5% 3. 79.5% 4. 83.5%
- 5. Other than the given options

3. 4;

Average expenses of Rohit

$$= (25\% \text{ of } \frac{96}{360} + 15\% \text{ of } \frac{129}{360} + 25\% \text{ of } \frac{36}{360}) \times 1,20,000$$

$$\text{Of } \frac{51}{360} + 10\% \text{ of } \frac{48}{360}) \times 1,20,000$$

$$= \frac{2400+1935+900+510+480}{36000} \times \frac{1,20,000}{5}$$

$$= \text{Rs. 4150}$$

Average expenses of W (wife)

$$= (15\% \text{ of } \frac{96}{360} + 25\% \text{ of } \frac{129}{360} + 30\% \text{ of } \frac{36}{360} + 10\% \text{ of } \frac{48}{360}) \times 1,20,000$$

$$\text{Of } \frac{51}{360} + 25\% \text{ of } \frac{48}{360}) \times \frac{1,20,000}{5}$$

$$= \frac{1440+3225+1080+510+1200}{36000} \times \frac{1,20,000}{5}$$

$$= \text{Rs. 4970}$$

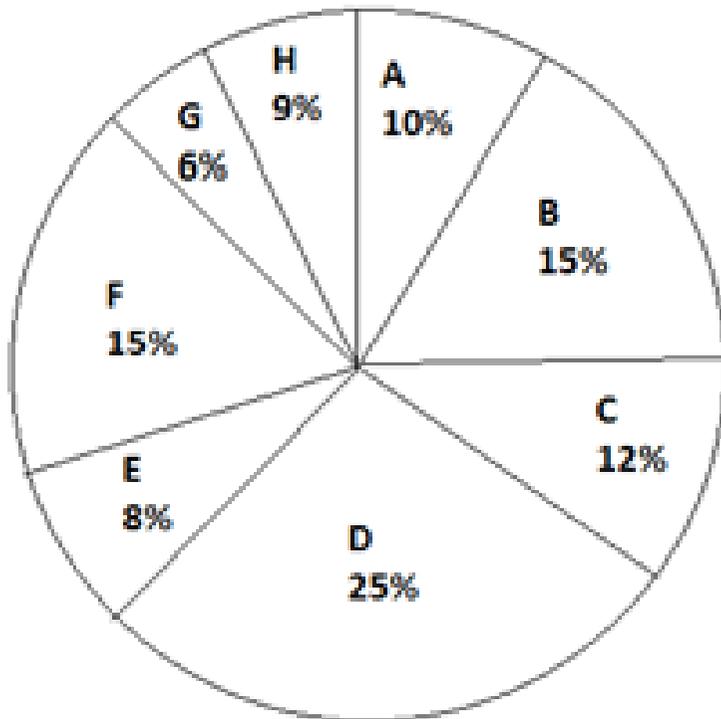
∴ Required percentage

$$= \frac{4150}{4970} \times 100 = 83.5\%$$

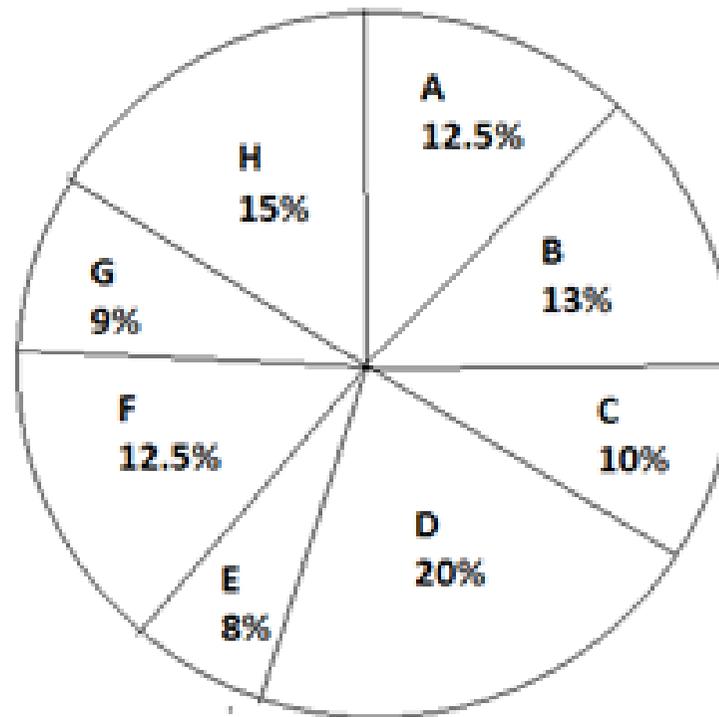
Double Diagram Pie Charts (2 Sets)

- The following graph shows the no. of workers of different categories A, B, C, D, E, F, G and H of a factory for the two different years.

TOTAL NO. OF WORKERS IN 1997= 1900



IN 1998=1800



Solution:

	1997	1998
A	10% of 1900 = 190	12.5 % of 1800 = 225
B	285	234
C	228	180
D	475	360
E	152	144
F	285	225
G	114	162
H	171	270

- What is the total no. of increased workers for the categories in which the no. of workers has been increased?
- **Solution:** The no. of workers has been increased in the category A (from 190 to 225 = 35), G (from 114 to 162 = 48) and H (from 171 to 270 = 99).
- \therefore Total no. of increased workers = $35 + 48 + 99 = 182$.

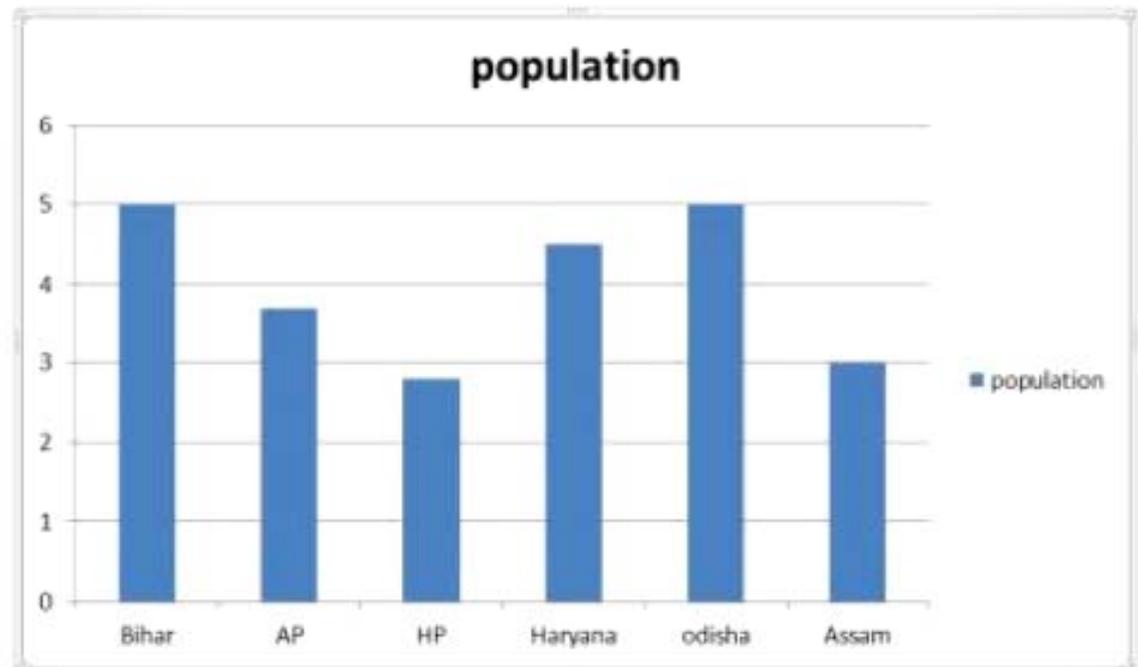
Solution:

	1997	1998
A	10% of 1900 = 190	12.5 % of 1800 = 225
B	285	234
C	228	180
D	475	360
E	152	144
F	285	225
G	114	162
H	171	270

- Find the percentage decrease in the no. of workers for the categories D and F taken together?
- **Solution:** Reqd. percentage decrease

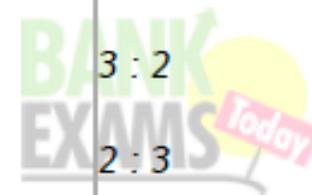
$$\frac{(475 - 360) + (285 - 225)}{475 + 285} \times 100\%$$
$$= \frac{175}{760} \times 100\% = 23\%$$

The bar graph shows data related to population of different states (in lakhs) in the year 1992



The table shows the ratio b/w male, female and literacy, illiterate and also graduates and under graduates.

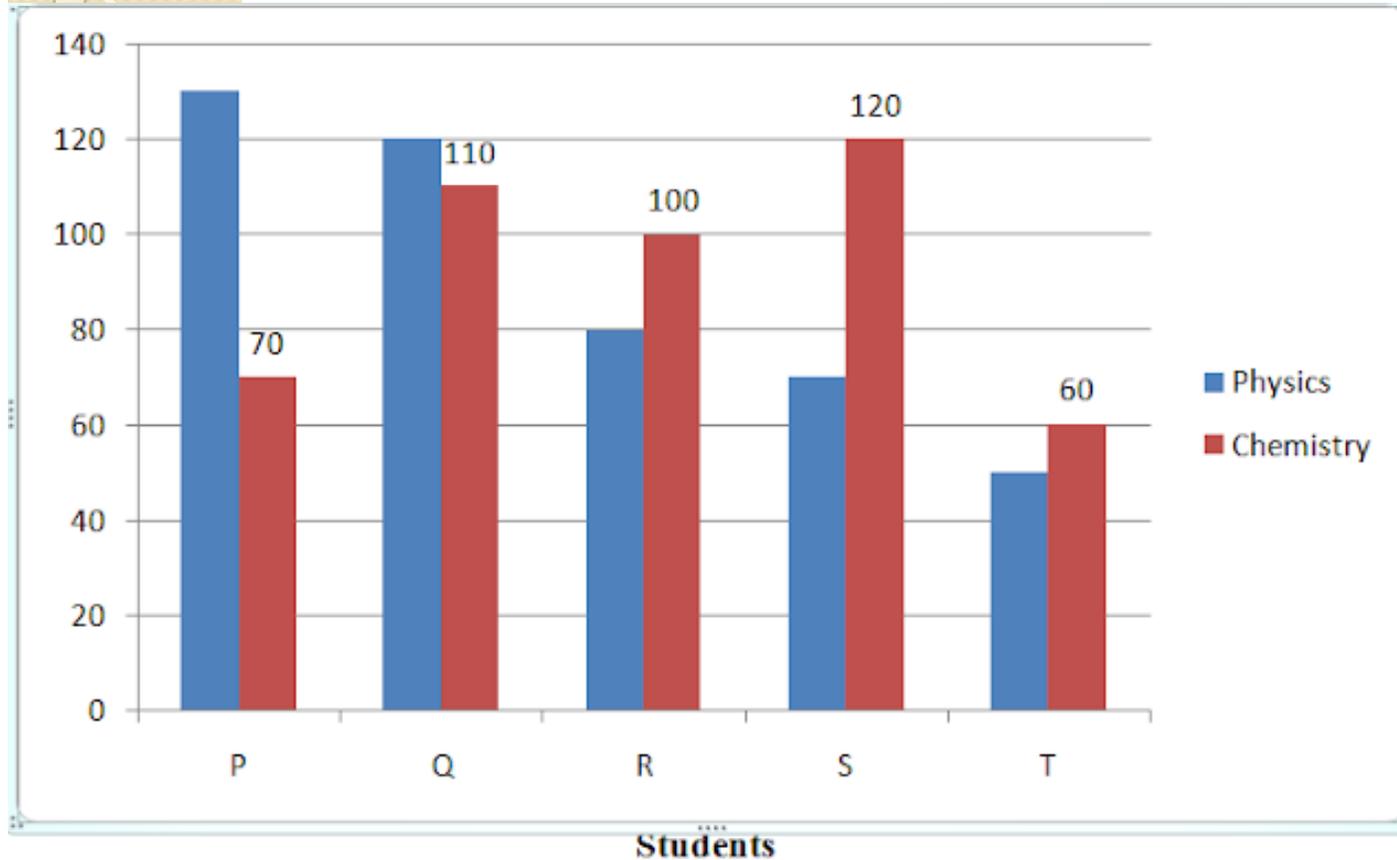
Different states	Male and female	Literacy and illiterate	Graduates and undergraduates
Bihar	3 : 2	1 : 4	4 : 7
AP	4 : 6	4 : 1	6 : 7
HP	3 : 4	2 : 1	3 : 2
Haryana	5 : 4	3 : 2	7 : 8
Odisha	2 : 3	2 : 3	4 : 5
Assam	2 : 1	7 : 2	6 : 7



- **What was the approximate percentage of women of Andhra Pradesh to the women of HP?**
- **a. 90% b. 110% c. 120% d. 126% e. 95%**

- *Total no of woman in*
- *AP is = $370000 * 6/10 = 222000$*
- *Total no of woman in HP is*
*= $280000 * 4/7 = 160000$*
- *Required percentage =*
 *$(222000/160000) * 100 = \sim 126$*

Five students namely Param, Qartar, Rasheed, Sultan and Tango are termed as P, Q, R, S and T. Marks obtained by them in Physics and Chemistry :-



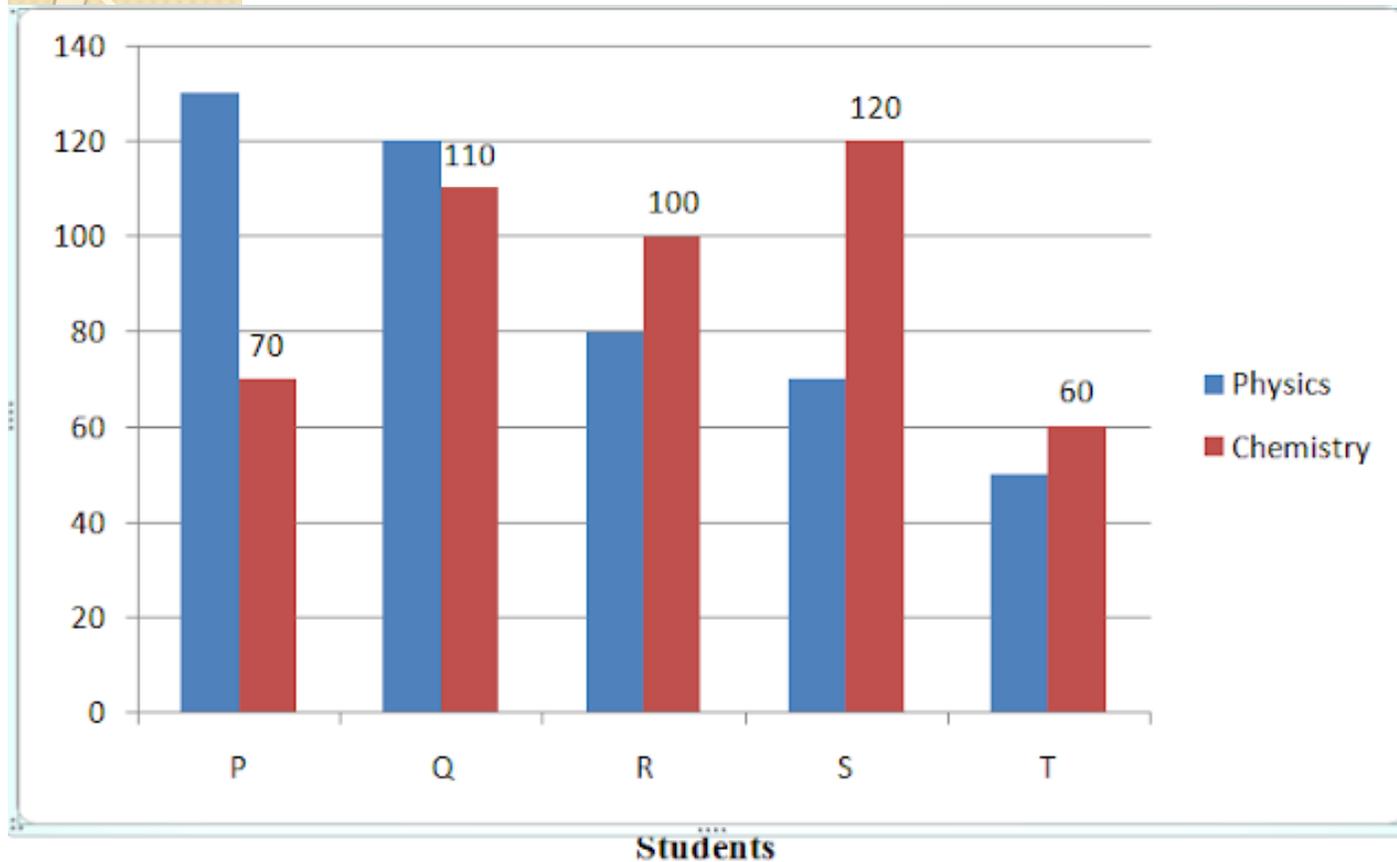
Marks obtained by Sultan in Chemistry is what percent of the total marks obtained by all the students in Chemistry?

- A) 26 b) 28.5 c) 35
d) 31.5 e) 22

Solution – I (Option A)

Required percentage mark =
$$\frac{120}{90 + 110 + 100 + 120 + 60} \times 100$$
$$= \frac{120}{460} \times 100 = 26\%$$

Five students namely Param, Qartar, Rasheed, Sultan and Tango are termed as P, Q, R, S and T. Marks obtained by them in Physics and Chemistry :-



If the marks obtained by Tango in Physics were increased by 14% of the original marks, what would be his new approximate percentage in Physics if the maximum marks in Physics were 140?

- a) 57 b) 32 c) 38
d) 48 e) 41

•Solution – 2 (Option E)

New marks of T in physics = $114 / 100 \times 50 = 57$

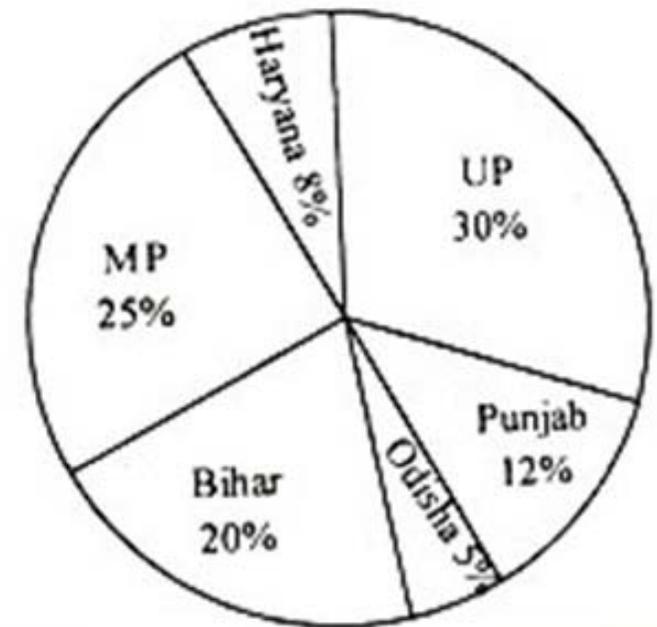
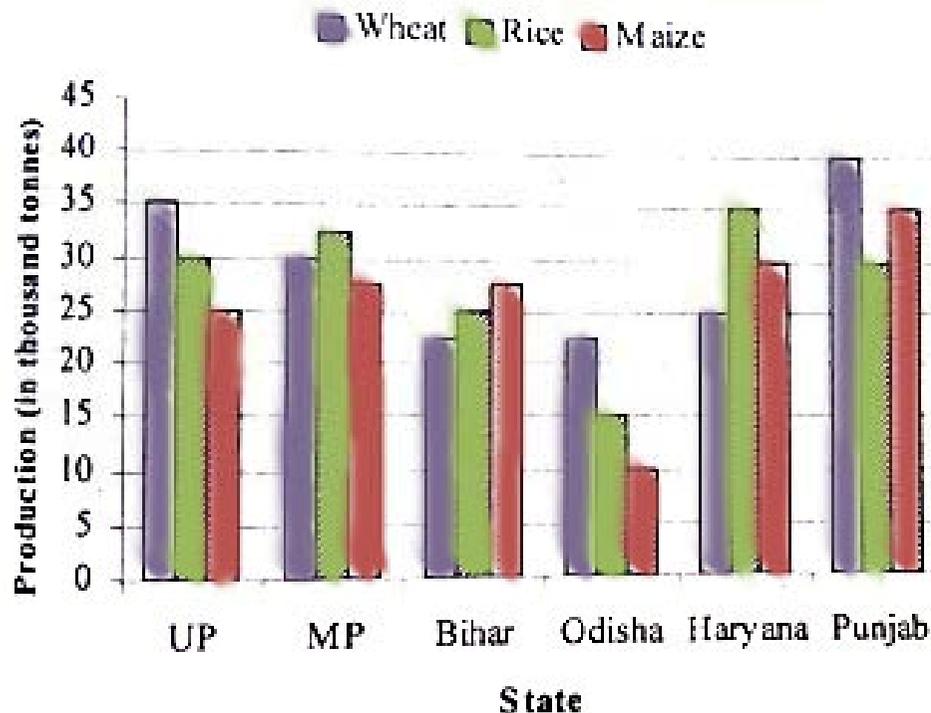
T's new percentage = $57 / 140 \times 100 = 41$

The graphical representation of data

- makes reading more interesting, less time-consuming and it is easily understandable.
- The business data, frequency data are mostly using graphical representation.
- Five types.
- Graphical representation 1: Bar graph.
- Graphical representation 2: Pie graph.
- Graphical representation 3: Line graph.
- Graphical representation 4: Scatter plot.
- Graphical representation 5: Histogram.

Study the given bar graph and pie chart to answer the following questions.

- The bar graph shows the production (in thousand tonnes) of Wheat, Rice and Maize in different states.



The pie-chart shows the percentage of agricultural land in the given six states.

1. The productivity of which state is the maximum ?

1. Bihar 2. Haryana 3. Punjab 4. UP 5. MP

2. The production of which state is the maximum ?

1. Bihar 2. MP 3. Haryana 4. UP 5. Punjab

3. The production of wheat in Punjab is what per cent more than the production of Maize in Odisha ?

1. 350% 2. 250% 3. 300% 4. 200% 5. 400%

4. What is the ratio of the production of Rice in Bihar to the production of Wheat in Haryana ?

1. 2:3 2. 3:2 3. 2:1 4. 1:1 5. 1:2

5. If MP exports 40% of Rice at the rate of Rs.30 per kg and UP exports 30% of Rice at the rate of Rs.32 per kg, then what is the ratio of the income from the exports ?

1. 65:48 2. 31:42 3. 43:54 4. 57:62 5. 1:2

I. Answer : 2

- **Explanation :** Productivity = Total production/area of Agr.land
- Productivity of UP = $[(35000+30000+25000) / (30/100)] = 300000$
- Productivity of MP = $[(30000+37500+27500) / (25/100)] = 380000$
- Productivity of Bihar = $[(22500+27500+25000) / (20/100)] = 375000$
- Productivity of Odisha = $[(22500+15000+10000) / (5/100)] = 950000$
- Productivity of Haryana = $[(30000+25000+35000) / (8/100)] = 1125000$
- Productivity of Punjab = $[(40000+35000+30000) / (12/100)] = 875000$
- The Productivity of Haryana is the maximum.

- **2. Answer : 5**

- **Explanation :** Production of Punjab is maximum = 105000 tonnes

-

- **3. Answer : 3**

- **Explanation :** Production of Wheat in Punjab = 40000 tones

- Production of Maize in Odisha = 10000 tones

- Required % = $(40000 - 10000)/100 = 300\%$

- **4. Answer : 4**

- **Explanation :** The ratio of production of Rice in Bihar to the production of Wheat in Haryana = 25000 tonnes : 25000 tonnes = 1 : 1

- **5. Answer : I**



Explanation : Income of MP from export of 40% of Rice at the rate of Rs.30 per kg = Rs.39crore



Income of UP from export of 30% of Rice at the rate of Rs.32 per kg = Rs.28.8 crore



Required ratio = $39 : 28.8 = 390 : 288 = 65 : 48$

A school has four sections A, B, C, D of Class IX students.

The results of half yearly and annual examinations are shown in the table given below.

Result	No. of Students			
	Section A	Section B	Section C	Section D
Students failed in both Exams	28	23	17	27
Students failed in half-yearly but passed in Annual Exams	14	12	8	13
Students passed in half-yearly but failed in Annual Exams	6	17	9	15
Students passed in both Exams	64	55	46	76

- 
- I. If the number of students passing an examination be considered a criteria for comparision of difficulty level of two examinations, which of the following statements is true in this context?
 - A. Half yearly examinations were more difficult.
 - B. Annual examinations were more difficult.
 - C. Both the examinations had almost the same difficulty level.
 - D. The two examinations cannot be compared for difficulty level.

- 2. How many students are there in Class IX in the school?
- A. 336 B. 189 C. 335 D. 430
-
- 3. Which section has the maximum pass percentage in at least one of the two examinations?
- A. A Section B. B Section C. C Section D. D Section
-
- 4. Which section has the maximum success rate in annual examination?
- A. A Section B. B Section C. C Section D. D Section
-
- 5. Which section has the minimum failure rate in half yearly examination?
- A. A section B. B section C. C section D. D section

I. ANSWER : C

- **Explanation** - Number of students who passed half-yearly exams in the school
- = (Number of students passed in half-yearly but failed in annual exams) + (Number of students passed in both exams)
= (6 + 17 + 9 + 15) + (64 + 55 + 46 + 76)

= 288.

Also, Number of students who passed annual exams in the school
= (Number of students failed in half-yearly but passed in annual exams) + (Number of students passed in both exams)

= (14 + 12 + 8 + 13) + (64 + 55 + 46 + 76)
= 288.

Since, the number of students passed in half-yearly = the number of students passed in annual exams. Therefore, it can be inferred that both the examinations had almost the same difficulty level.
Thus Statements (a), (b) and (d) are false and Statement (c) is true.

- **2. ANSWER : D**



Explanation - Since the classification of the students on the basis of their results and sections form independent groups, so the total number of students in the class:



$$\begin{aligned} &= (28 + 23 + 17 + 27 + 14 + 12 + 8 + 13 \\ &+ 6 + 17 + 9 + 15 + 64 + 55 + 46 + 76) \\ &= 430. \end{aligned}$$

- **3.ANSWER : D**

- **Explanation-** Pass percentages in at least one of the two examinations for different sections are:

- For Section A = $\frac{14+6+64}{28+14+6+64} \times 100 = 84.12\%$
 $= 75\%$

- For Section B = $\frac{12+17+55}{23+12+17+55} \times 100 \% = 78.5\%$

- For Section C = $\frac{8+9+46}{17+8+9+46} \times 100\% = 78.75\%$

- For Section D = $\frac{13+15+76}{27+13+15+76} \times 100\% = 79.39\%$

- Clearly ,the pass percentage is maximum for Section D

- **4. ANSWER : A**

- **Explanation** - Total number of students passed in annual exams in a section
- = [(No. of students failed in half-yearly but passed in annual exams) + (No. of students passed in both exams)] in that section
- Success rate in annual exams in Section A = $\frac{14+64}{112} \times 100\% = 69.64\%$

- Similarly, success rate in annual exams in:

- Section B = $\frac{12+55}{107} \times 100\% = 62.62\%$
- Section C = $\frac{8+46}{80} \times 100\% = 67.5\%$
- Section D = $\frac{89}{131} \times 100\% = 67.94\%$

- Clearly, the success rate in annual examination is maximum for Section A.

- **5.ANSWER : D**

- **Explanation** - Total number of failures in half-yearly exams in a section

- = [(Number of students failed in both exams) + (Number of students failed in half-yearly but passed in Annual exams)] in that section

- Failure rate in half-yearly exams in Section A %= 37.5 %

- Similarly, failure rate in half-yearly exams in:

- Section B = 32.71%

- Section C = 31.25%

- Section D = 30.53%

- Clearly, the failure rate is minimum for Section D.

- = (Number of students passed in half-yearly but failed in annual exams) + (Number of students passed in both exams)

- = (6 + 17 + 9 + 15) + (64 + 55 + 46 + 76) = 288.

- Also, Number of students who passed annual exams in the school

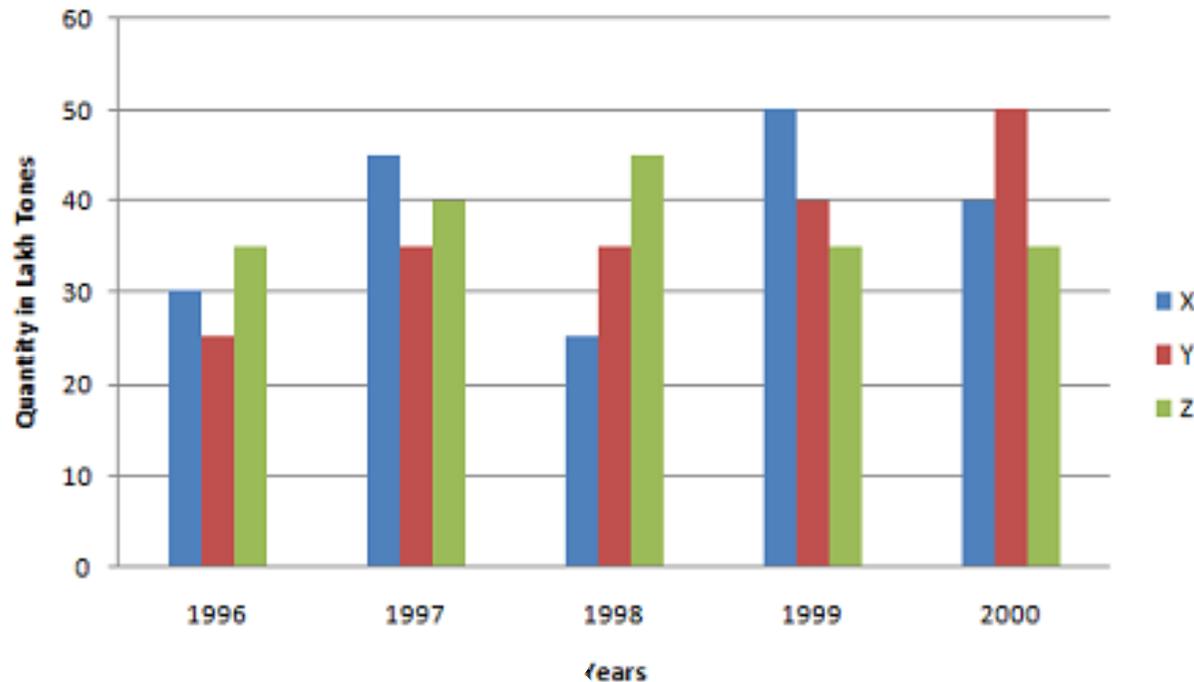
- = (Number of students failed in half-yearly but passed in annual exams) + (Number of students passed in both exams)

- = (14 + 12 + 8 + 13) + (64 + 55 + 46 + 76) = 288.

- Since, the number of students passed in half-yearly = the number of students passed in annual exams. Therefore, it can be inferred that both the examinations had almost the same difficulty level.

- Thus Statements (a), (b) and (d) are false and Statement (c) is true.

Production of paper (in lakh tonnes) by three companies X, Y and Z over the years. Study the graph and answer the questions that follow.



- What is the difference between the production of company Z in 1998 and company Y in 1996?
- A. 2,00,000 tons
- B. 20,00,000 tons
- C. 20,000 tons
- D. 2,00,00,000 tons
- E. None of these

Explanation:

Required difference

= $[(45 - 25) * 1,00,000]$

tones

= 20,00,000 tons.

- What is the ratio of the average production of company X in the period 1998-2000 to the average production of company Y in the same period?A. 1:1
- B. 15:17
- C. 23:25
- D. 27:29
- E. None of these

Answer: Option C

Explanation:

Average production of company X in the period 1998-2000 = $[\frac{1}{3} * (25 + 50 + 40)] = (\frac{115}{3})$ lakh tons. Average production of company Y in the period 1998-2000 = $[\frac{1}{3} * (35 + 40 + 50)] = (\frac{125}{3})$ lakh tons. Required ratio = $(\frac{115}{3}) / (\frac{125}{3}) = 115/125 = 23/25$

- What is the percentage increase in the production of company Y from 1996 to 1999? A. 30%
- B. 45%
- C. 50%
- D. 60%
- E. 75%

Answer: Option D

Explanation:

Percentage increase in the production of company Y from 1996 to 1999

$$= [(40 - 25)/25 * 100]\% = (15/25 * 100)\% = 60\%$$

- The average production for five years was maximum for which company?
- A. X
- B. Y
- C. Z
- D. X and Y both
- E. X and z both

Answer: Option E

Explanation:

For company

$$\mathbf{X = [1/5 * (30 + 45 + 25 + 50 + 40)] = 190/5 = 38}$$

For company

$$\mathbf{Y = [1/5 * (25 + 35 + 35 + 50 + 40)] = 185/5 = 37}$$

For company

$$\mathbf{Z = [1/5 * (35 + 40 + 45 + 35 + 35)] = 190/5 = 38}$$

Average production of five years in maximum for both the companies X and Z.

- In which year was the percentage of production of company Z to the production of company Y the maximum?
A. 1996
- B. 1997
- C. 1998
- D. 1999
- E. 2000

Answer: Option A

Explanation:

The percentage of production of company Z to the production of company Y for various years are:

For 1996 = $(35/25 * 100)\% = 140\%$

For 1997 = $(40/35 * 100)\% = 114.29\%$

For 1998 = $(45/35 * 100)\% = 128.57\%$

For 1999 = $(35/40 * 100)\% = 87.5\%$

For 2000 = $(35/50 * 100)\% = 70\%$

Clearly, this percentage is highest for 1996.

Study the following table to answer the 5 questions that are given below it.

Item of Expenditure/ Year	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.38	36.4	88
2002	420	142	3.96	49.4	98

- The ratio between the total expenditure on taxes for all the years and the total expenditure on Fuel and Transport for all the years respectively is approximately:
 - **A.** 4:7
 - **B.** 10:13
 - **C.** 15:18
 - **D.** 5:8
 - **E.** 2:3

Answer: Option B

Explanation:

$$\begin{aligned} \text{Required Ratio} &= (83 + 108 + 74 + 88 \\ &+ 98)/(98 + 112 + 101 + 133 + 142) \\ &= 451/586 \approx 1/1.3 = 10/13 \end{aligned}$$

Q no 2

- The total expenditure of the Company over these items during the year 2000 is
- **A.** Rs. 544.44 Lakhs
- **B.** Rs. 501.11 Lakhs
- **C.** Rs. 446.46 Lakhs
- **D.** Rs. 478.87 Lakhs
- **E.** Rs. 612.13 Lakhs

Answer: Option A

Explanation:

Total expenditure of the Company during 2000

= Rs. (324 + 101 + 3.84 + 41.6 + 74) lakhs

= Rs. 544.44 lakhs

Q no.3

- Total expenditure on all these items in 1998 was approximately what percent of the total expenditure in 2002? **A. 62%**
- **B. 66%**
- **C. 69%**
- **D. 71%**
- **E. 73%**

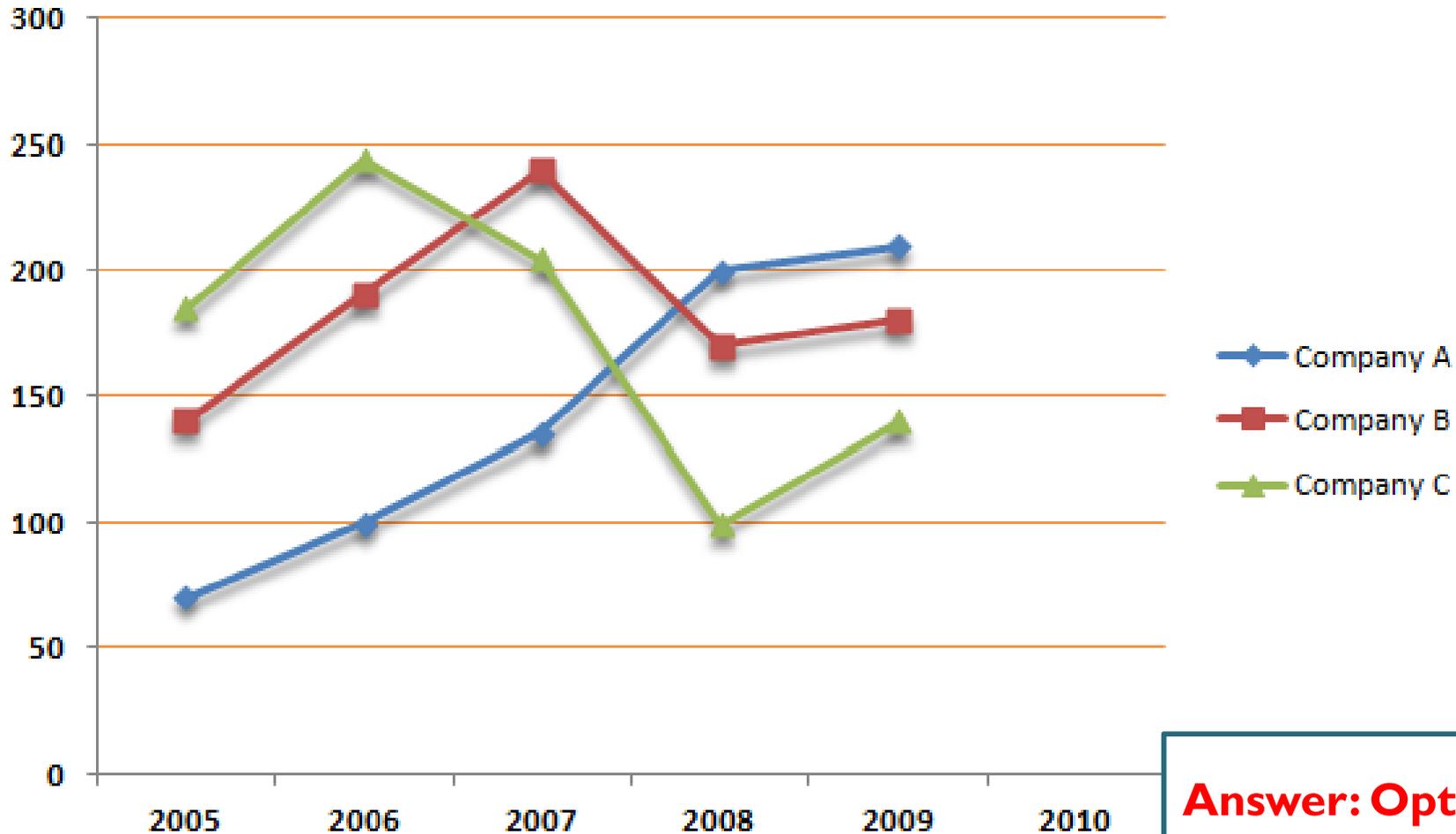
Answer: Option C

Explanation:

Required percentage

$$= [(288 + 98 + 3.00 + 23.4 + 83) / (420 + 142 + 3.96 + 49.4 + 98) * 100] \% = (495.4 / 713.36 * 100) \% \approx 69.45\%$$

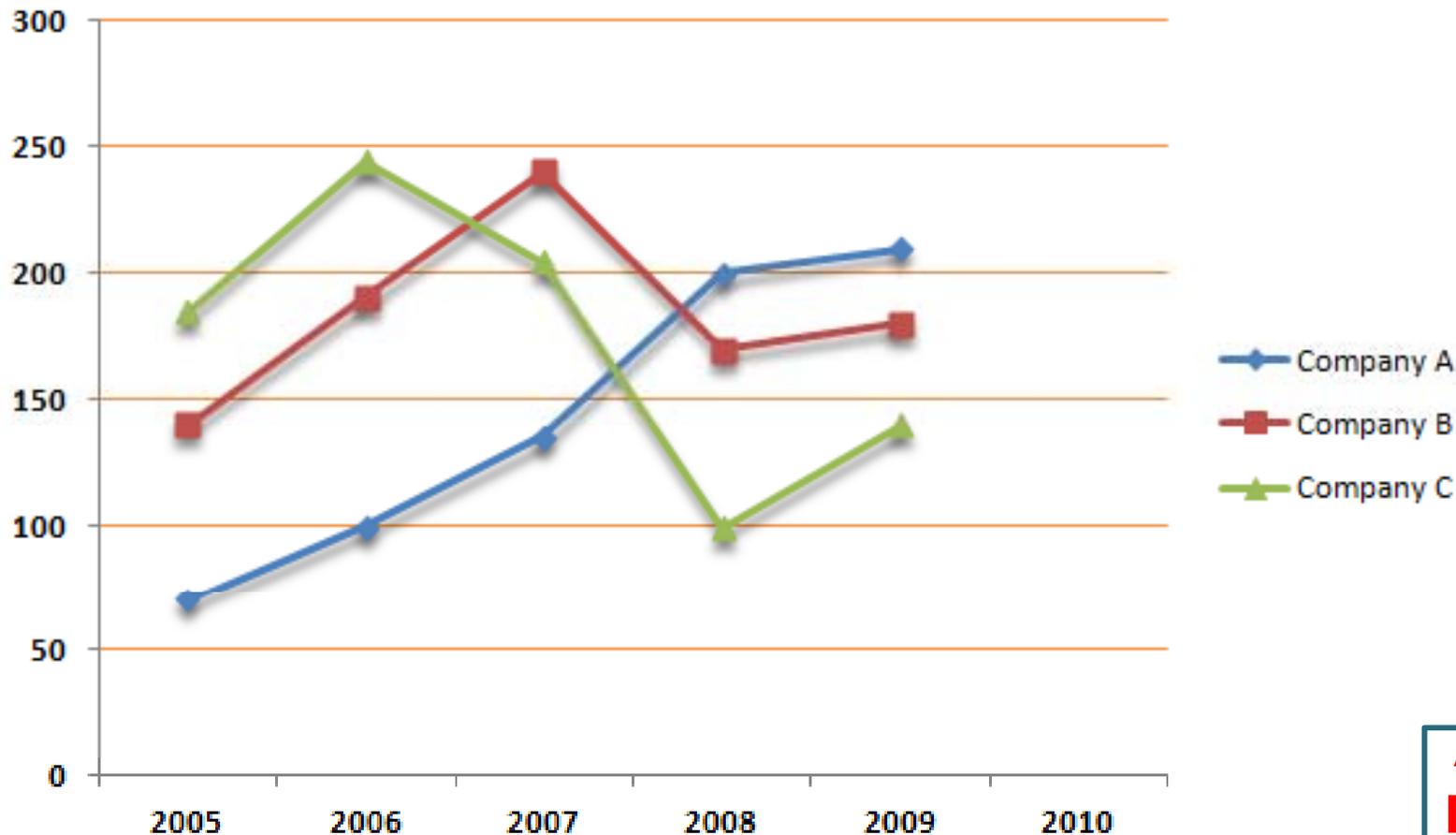
Expenditure(in lakhs) of three different Company in five Different year



- **I. What was the overall average expenditure of Company C in all the years together?**
- A.Rs. 190 lakhs B.Rs. 120 lakhs
- C.Rs. 180 lakhs D.Rs. 150 lakhs

Answer: Option C
Solution:
Required average expenditure, = $\frac{200+250+210+100+140}{5}$ = Rs. 180 lakhs

Expenditure(in lakhs) of three different Company in five Different year

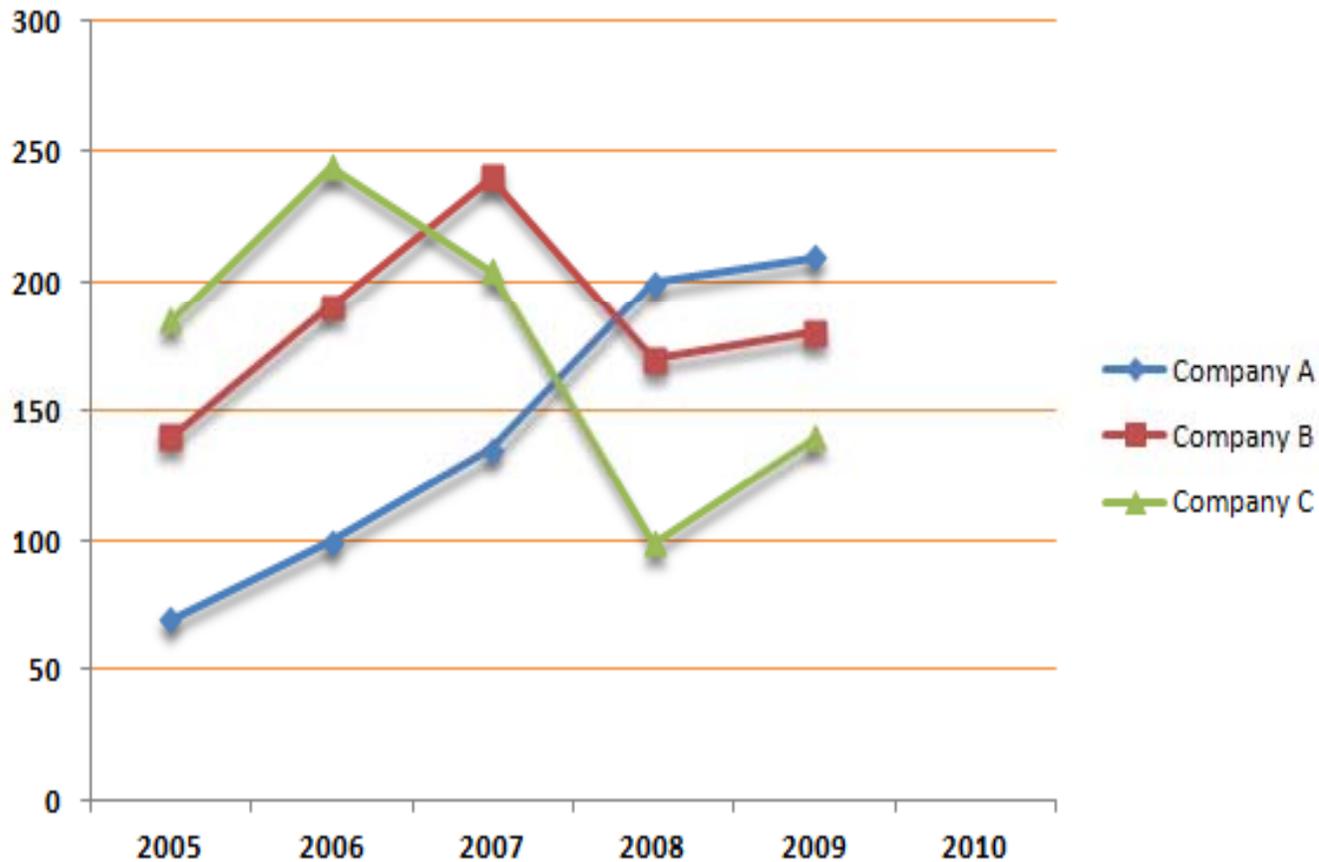


What was the respective ratio between the expenditure of company A in the year 2009 and expenditure of company B in the year 2005?

- A. 5 : 3
- B. 3 : 4
- C. 3 : 5
- D. 3 : 2

Answer: Option D
Solution:
Required Ratio
= 210 : 140
= 3 : 2

Expenditure(in lakhs) of three different Company in five Different year



In which year was the total expenditure by all three Companies together second highest?

- A.2005
- B.2006
- C.2007
- D.2008
- E.2009

Answer: Option B
Solution:

Total expenditure of 3 companies in 2005,
 $= (80 + 140 + 200)$
 $= \text{Rs. } 420 \text{ lakh}$

Total expenditure of 3 companies in 2006,
 $= (100 + 190 + 250)$
 $= \text{Rs. } 540 \text{ lakh}$

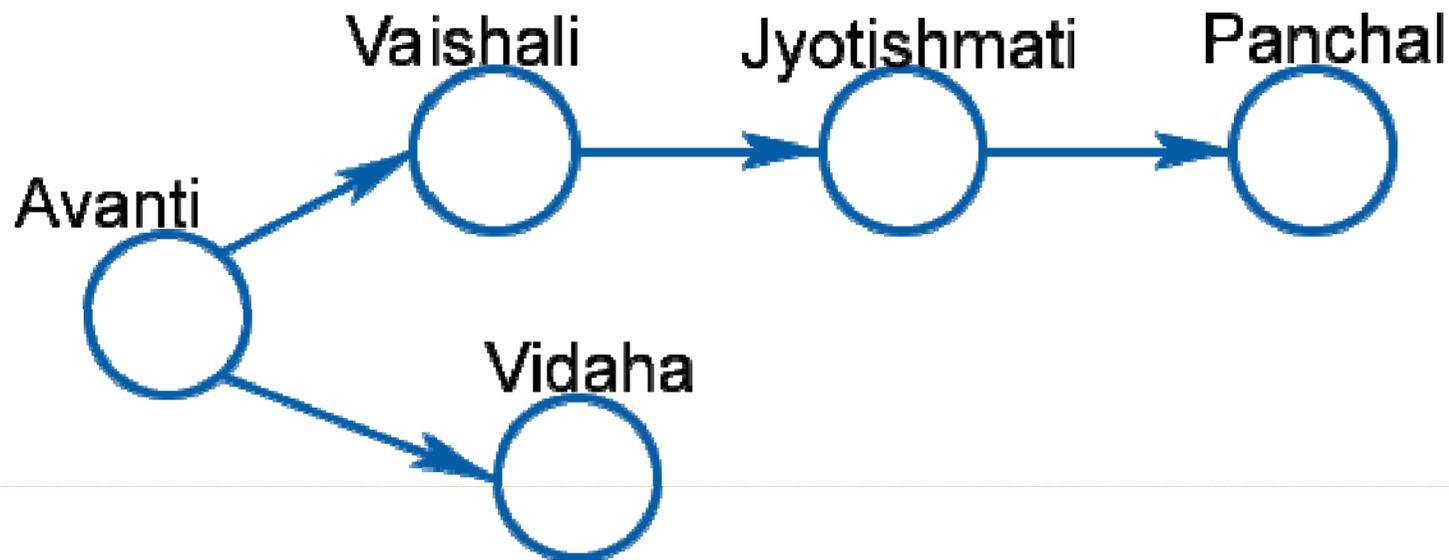
Total expenditure of 3 companies in 2007,
 $= \text{Rs. } 580 \text{ lakh}$

Total expenditure of 3 companies in 2008,
 $= \text{Rs. } 470 \text{ lakh}$

Total expenditure of 3 companies in 2009,
 $= \text{Rs. } 530 \text{ lakh}$

\therefore The required answer is 2006.

- **Directions (1 - 3):**The following sketch shows the pipeline carrying material from one location to another. Each location has a demand for material. The demand Vaishali is 400, at Jyotishmati is 400, at Panchal is 700 and Vidisha is 200. Each arrow indicates the direction of material flow through the pipeline. The flow from Vaishali to Jyotishmati is 300. The quantity of material flow is such that the demands at all these locations are exactly met. The capacity of each pipeline is 1.



I. Quantity moved Avanti to Vidisha is :

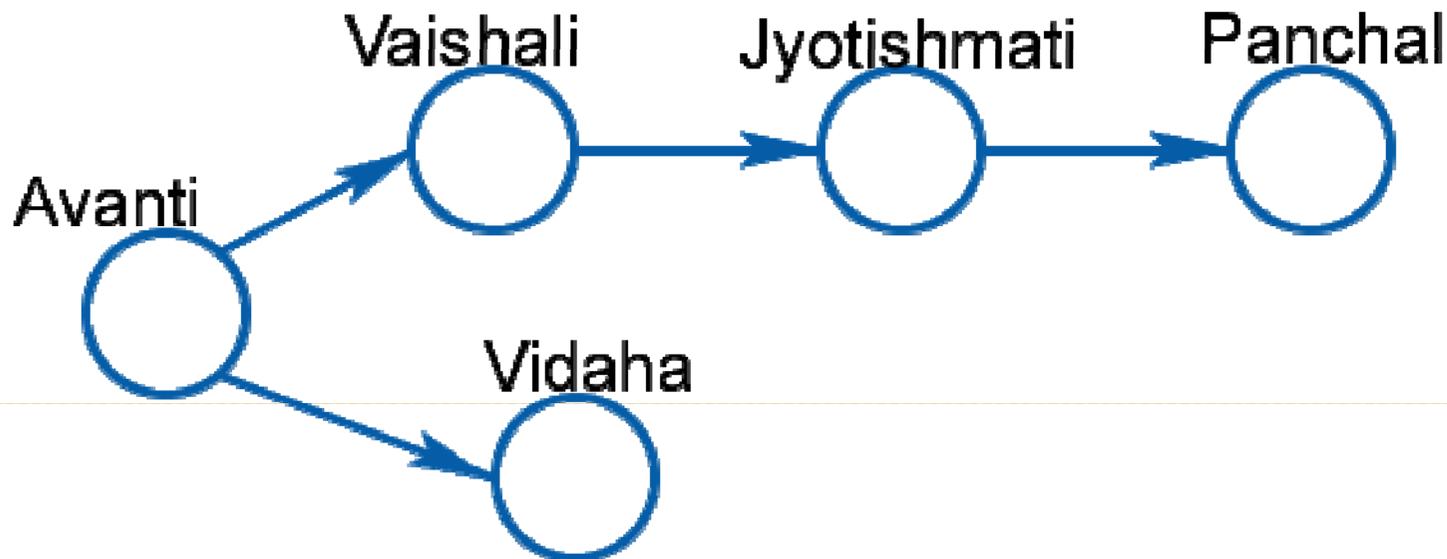
- A. 200
- B. 800
- C. 700
- D. 1000

Answer: Option D

Solution:

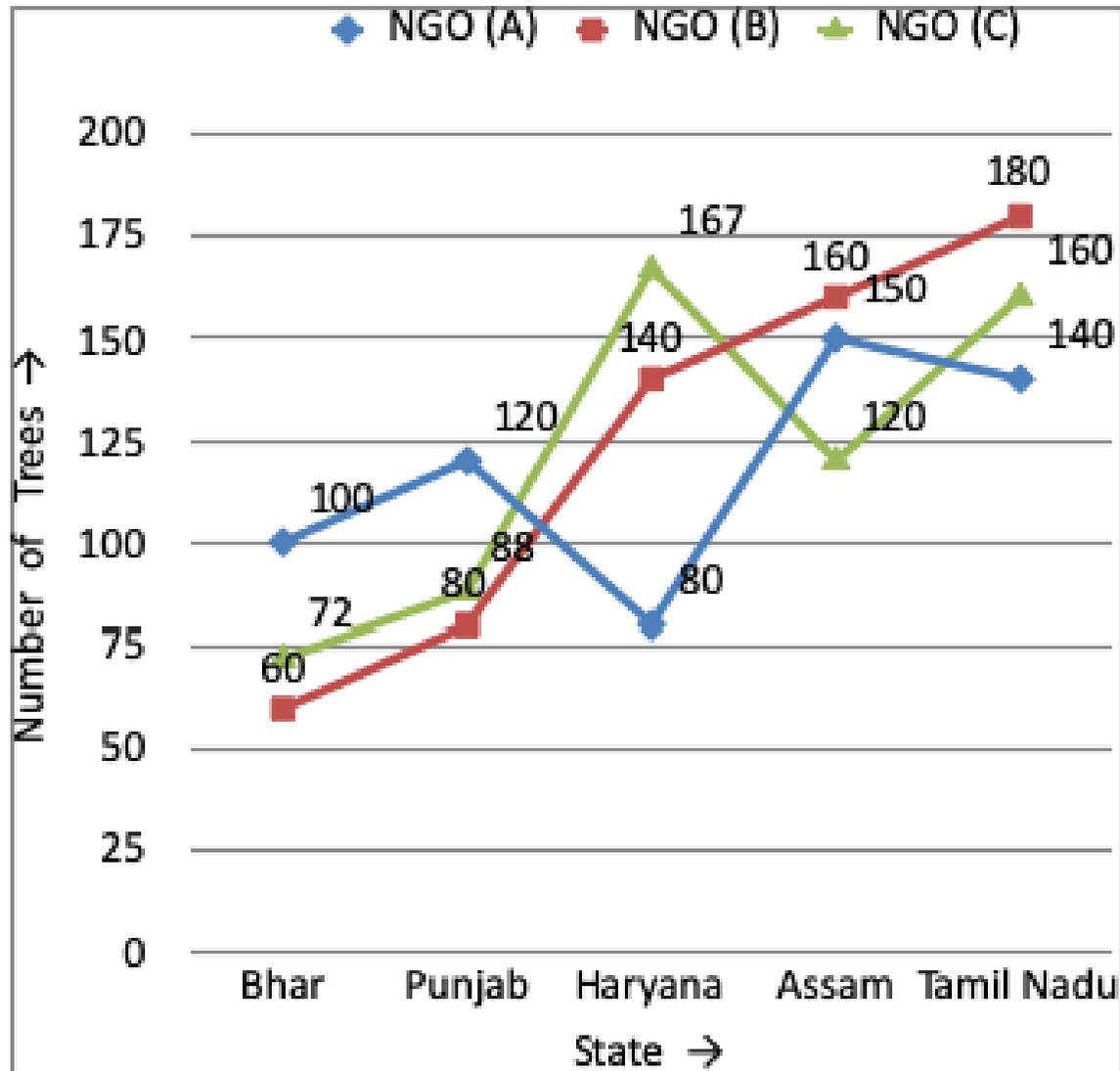
Jyotishmati gets supply from two direction one from Vaishali max 300 and rest from Vidisha. all supply given to Panchal is received and supplies 100 for Jyotishmati because it receives only 300 (max flow) from Vaishali.

Hence, quantity moved from Avanti to Vidisha,
 $= 200 + 100 + 700$
 $= 1000$



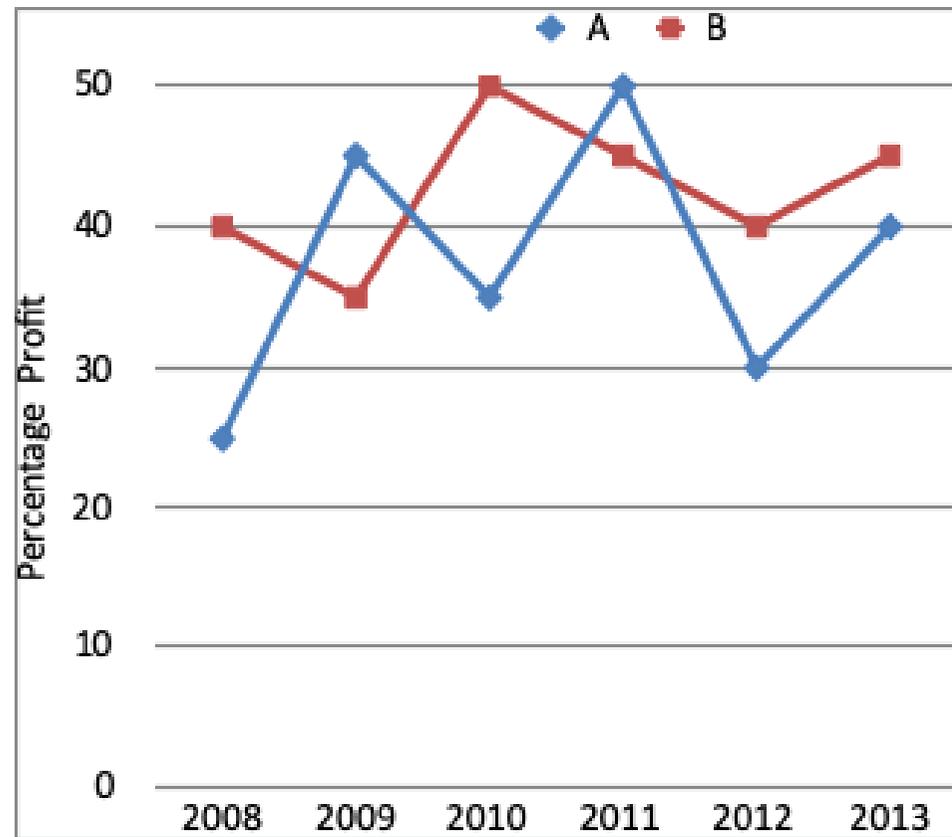
Directions (I - 5): Study the following graph carefully and answer the questions that follow:

Number of Trees Planted by Three Different NGOs A, B, and C in Five Different States.



- **I. What was the difference between the trees planted by NGO – A in Haryana and those Planted by NGO – C in Tamil Nadu?**
- A. 90 B. 60
- C. 120 D. 160
- E. None of these
- **Answer: Option E**
- **Solution:** (Trees planted by C in Tamil Nadu) - (Trees planted by A in Haryana)
 $= 160 - 80$
 $= 80$

Directions (1 - 5): Study the following graph carefully and answer the questions given below it. Percentage profit earned by two companies A and B over the six years.



I. Expenditure of company B in 2009 and 2010 are Rs. 12 lakhs and Rs. 14.5 lakhs respectively. What was the total income of company B in 2009 and 2010 together (in lakh rupees)?

- A. Rs. 39.75 lakhs
- B. Rs. 37.95 lakhs
- C. Rs. 38.758 lakhs
- D. Rs. 38.55 lakhs
- E. None of these

A	25	45	35	50	30	40
B	40	35	50	45	40	45

- **Answer: Option B ;Solution:**

- Profit percent earned by company B in 2009 = 35%

Profit percent earned by company B in 2010 = 50%

Expenditure of company B in 2009 = 12 lakhs

Expenditure of company B in 2010 = 14.5 lakhs

Income of company B in 2009

$35\% = \frac{I - EE}{E} \times 100 \Rightarrow 35 = \frac{I - 12 \text{ lakh}}{12 \text{ lakh}} \times 100 \Rightarrow (35 \times 12) \text{ lakh} = 100I - 1200 \text{ lakh}$

$\Rightarrow 420 \text{ lakh} = 100I - 1200 \text{ lakh} \Rightarrow I = 16.20 \text{ lakh}$ Income of company B in

2009 $50\% = \frac{I - EE}{E} \times 100 \Rightarrow 50 = \frac{I - 14.5 \text{ lakh}}{14.5 \text{ lakh}} \times 100 \Rightarrow (50 \times 14.5) \text{ lakh} = 100I - 14.50 \text{ lakh}$

$\Rightarrow 2175 \text{ lakh} = 100I - 14.50 \text{ lakh} \Rightarrow I = 21.75 \text{ lakh}$

$35\% = \frac{I - EE}{E} \times 100 \Rightarrow 35 = \frac{I - 12 \text{ lakh}}{12 \text{ lakh}} \times 100 \Rightarrow (35 \times 12) \text{ lakh} = 100I - 1200 \text{ lakh} \Rightarrow 420 \text{ lakh} = 100I - 1200 \text{ lakh}$

$\Rightarrow I = 16.20 \text{ lakh}$ Income of company B in

2009 $50\% = \frac{I - EE}{E} \times 100 \Rightarrow 50 = \frac{I - 14.5 \text{ lakh}}{14.5 \text{ lakh}} \times 100 \Rightarrow (50 \times 14.5) \text{ lakh} = 100I - 14.50 \text{ lakh}$

$\Rightarrow 2175 \text{ lakh} = 100I - 14.50 \text{ lakh} \Rightarrow I = 21.75 \text{ lakh}$

- So,

Total income of company B in 2009 and 2010

= 16.2 + 21.75

= Rs. 37.95 lakhs

Study the following table and answer the questions based on it. Expenditures of a Company (in Lakhs) per Annum Over the given Years

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

- **What is the average amount of interest per year which the company had to pay during this period?**
- **A. 32.43 B. 33.72**
C. 34.18 D. 36.66

Answer:
Option D

$$\begin{aligned} &= \left[\frac{23.4 + 32.5 + 41.6 + 36.4 + 49.4}{5} \right] \\ &= \left[\frac{183.3}{5} \right] \\ &= 36.66 \end{aligned}$$

Study the following table and answer the questions based on it. Expenditures of a Company (in Lakhs) per Annum Over the given Years

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

- **Total expenditure on all these items in 1998 was approximately what percent of the total expenditure in 2002?**
- **A. 62% B. 66%**
C. 69% D. 71%

Answer:
Option C

$$\left[\frac{(288 + 98 + 3.00 + 23.4 + 83)}{(420 + 142 + 3.96 + 49.4 + 98)} * 100 \right] \%$$

$$\left[\frac{495.4}{713.36} * 100 \right] \%$$

$$\approx 69.45\%$$

Study the following table and answer the questions based on it. Expenditures of a Company (in Lakhs) per Annum Over the given Years

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

- **The total expenditure of the company over these items during the year 2000 is?**
- **A. 544.44 B. 501.11**
C. 446.46 D. 478.87

Answer: Option A

Explanation: Total expenditure of the Company during 2000 = (324 + 101 + 3.84 + 41.6 + 74) lakhs = 544.44 lakhs

Study the following table and answer the questions. Number of Candidates Appeared and Qualified in a Competitive Examination from Different States Over the Years.

State	Year									
	1997		1998		1999		2000		2001	
	App.	Qual.								
M	5200	720	8500	980	7400	850	6800	775	9500	1125
N	7500	840	9200	1050	8450	920	9200	980	8800	1020
P	6400	780	8800	1020	7800	890	8750	1010	9750	1250
Q	8100	950	9500	1240	8700	980	9700	1200	8950	995
R	7800	870	7600	940	9800	1350	7600	945	7990	885

Total number of candidates qualified from all the states together in 1997 is approximately what percentage of the total number of candidates qualified from all the states together in 1998?

- A. 72% B. 77%
 C. 80% D. 83% Ans=C

$$\left[\frac{(720 + 840 + 780 + 950 + 870)}{(980 + 1050 + 1020 + 1240 + 940)} * 100 \right] \%$$

$$\left[\frac{4160}{5230} * 100 \right] \%$$

$$\approx 79.54\% \approx 80\%$$

Study the following table and answer the questions. Number of Candidates Appeared and Qualified in a Competitive Examination from Different States Over the Years.

State	Year									
	1997		1998		1999		2000		2001	
	App.	Qual.								
M	5200	720	8500	980	7400	850	6800	775	9500	1125
N	7500	840	9200	1050	8450	920	9200	980	8800	1020
P	6400	780	8800	1020	7800	890	8750	1010	9750	1250
Q	8100	950	9500	1240	8700	980	9700	1200	8950	995
R	7800	870	7600	940	9800	1350	7600	945	7990	885

- What is the average candidates who appeared from State Q during the given years?
- A. 8700 B. 8760
- C. 8990 D. 8920

$$\frac{8100 + 9500 + 8700 + 9700 + 8950}{5}$$

$$\frac{44950}{5}$$

$$8990$$

• **ANS=C**

Study the following table and answer the questions. Number of Candidates Appeared and Qualified in a Competitive Examination from Different States Over the Years.

State	Year									
	1997		1998		1999		2000		2001	
	App.	Qual.								
M	5200	720	8500	980	7400	850	6800	775	9500	1125
N	7500	840	9200	1050	8450	920	9200	980	8800	1020
P	6400	780	8800	1020	7800	890	8750	1010	9750	1250
Q	8100	950	9500	1240	8700	980	9700	1200	8950	995
R	7800	870	7600	940	9800	1350	7600	945	7990	885

In which of the given years the number of candidates appeared from State P has maximum percentage of qualified candidates?

- A. 1997 B. 1998**
C. 1999 D. 2001

ANS= D

$$\text{For 1997 } \left(\frac{780}{6400} \times 100 \right) \% = 12.19\%.$$

$$\text{For 1998 } \left(\frac{1020}{8800} \times 100 \right) \% = 11.59\%.$$

$$\text{For 1999 } \left(\frac{890}{7800} \times 100 \right) \% = 11.41\%.$$

$$\text{For 2000 } \left(\frac{1010}{8750} \times 100 \right) \% = 11.54\%.$$

$$\text{For 2001 } \left(\frac{1250}{9750} \times 100 \right) \% = 12.82\%.$$

∴ Maximum percentage is for the year 2001.

Study the following table and answer the questions. Number of Candidates Appeared and Qualified in a Competitive Examination from Different States Over the Years.

State	Year									
	1997		1998		1999		2000		2001	
	App.	Qual.								
M	5200	720	8500	980	7400	850	6800	775	9500	1125
N	7500	840	9200	1050	8450	920	9200	980	8800	1020
P	6400	780	8800	1020	7800	890	8750	1010	9750	1250
Q	8100	950	9500	1240	8700	980	9700	1200	8950	995
R	7800	870	7600	940	9800	1350	7600	945	7990	885

The percentage of total number of qualified candidates to the total number of appeared candidates among all the five states in 1999 is?

- A. 11.49%** **B. 11.84%**
C. 12.21% **D. 12.57%**

$$\left[\frac{(850 + 920 + 890 + 980 + 1350)}{(7400 + 8450 + 7800 + 8700 + 9800)} * 100 \right] \%$$

$$\left[\frac{4990}{42150} * 100 \right] \%$$

11.84%

ANS= B

Study the following table and answer the questions. Number of Candidates Appeared and Qualified in a Competitive Examination from Different States Over the Years.

State	Year									
	1997		1998		1999		2000		2001	
	App.	Qual.								
M	5200	720	8500	980	7400	850	6800	775	9500	1125
N	7500	840	9200	1050	8450	920	9200	980	8800	1020
P	6400	780	8800	1020	7800	890	8750	1010	9750	1250
Q	8100	950	9500	1240	8700	980	9700	1200	8950	995
R	7800	870	7600	940	9800	1350	7600	945	7990	885

- Combining the states P and Q together in 1998, what is the percentage of the candidates qualified to that of the candidate appeared?
- A. 10.87% B. 11.49%
- C. 12.35% D. 12.54%

ANS= C

$$\left[\frac{(1020 + 1240)}{(8800 + 9500)} * 100 \right] \%$$

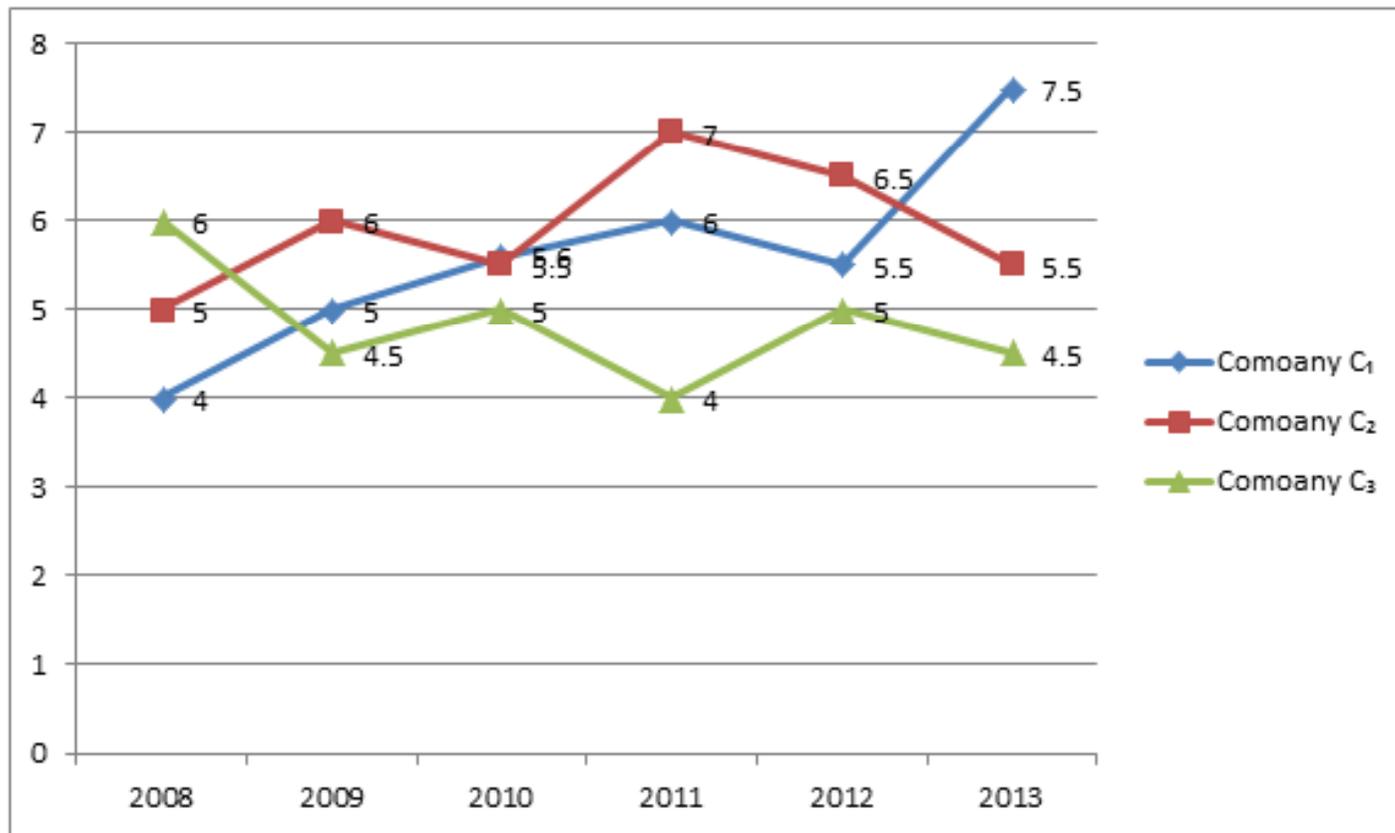
$$\left[\frac{2260}{18300} * 100 \right] \%$$

12.35%

Directions (1-5): Study the following line graph carefully and answer the questions given below:

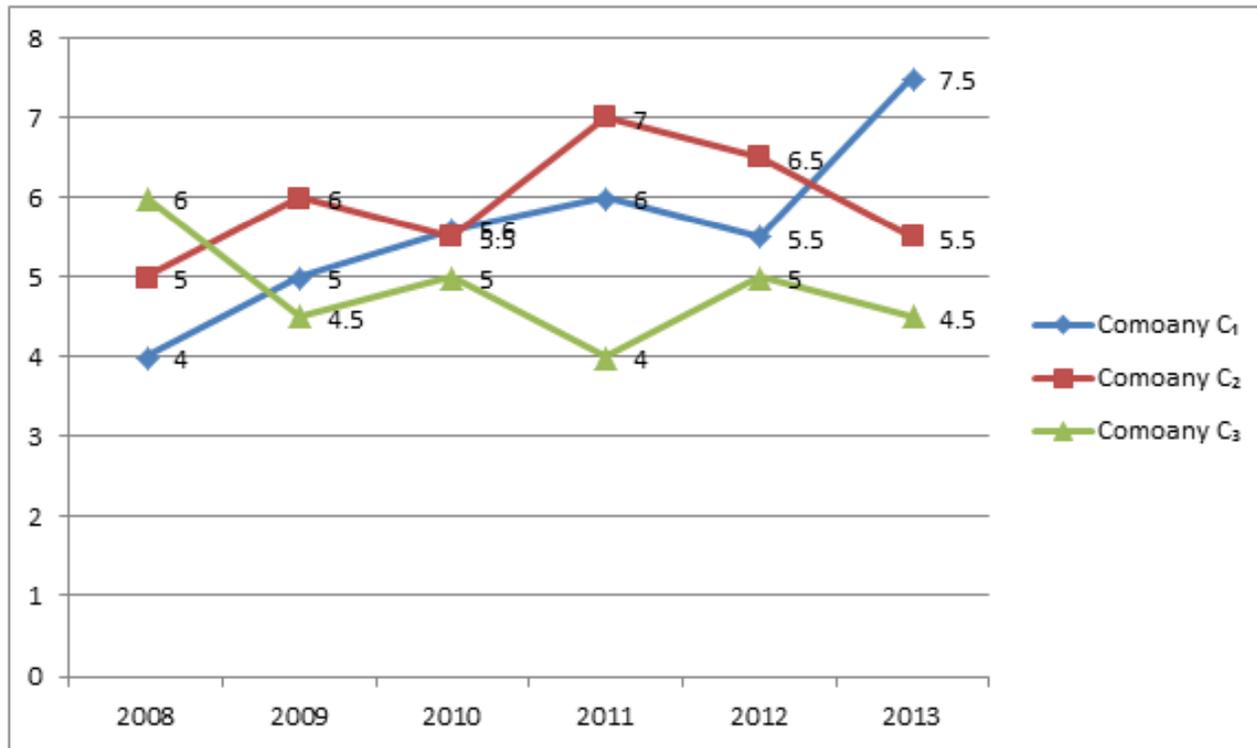
$$\text{Profit \%} = \frac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100$$

Income (in Rs. lakh)



Year

Income (in Rs. lakh)



Ques 1. The percentage increase or decrease in the income of company C₂ is highest in which of the following years?

1. 2013
 2. 2012
 3. 2011
 4. 2009
 5. 2010
- ans = 3

1. 3;

The percentage increase/decrease in the income of company C₂ in:

$$2009 = \frac{6-5}{5} \times 100 = 20\% \text{ (increase)}$$

$$2010 = \frac{5.5-6}{6} \times 100 = 8.3\% \text{ (decrease)}$$

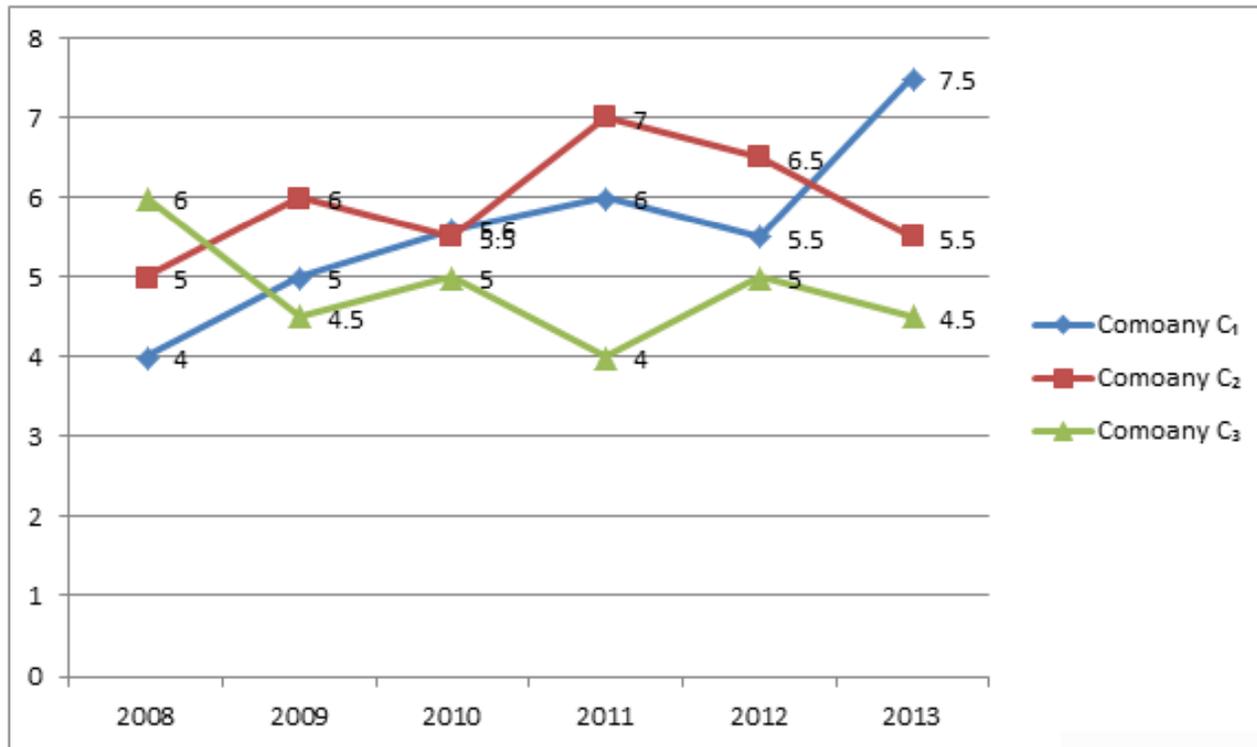
$$2011 = \frac{7-5.5}{5.5} \times 100 = 27.27\% \text{ (increase)}$$

$$2012 = \frac{6.5-7}{7} \times 100 = 7.14\% \text{ (decrease)}$$

$$2013 = \frac{5.5-6.5}{6.5} \times 100 = 15.3\% \text{ (decrease)}$$

Hence, highest is in the year 2011.

Income (in Rs. lakh)



Ques . If the profit percentage of company C₂ in the year 2011 is 20%, what was its expenditure in that year? (in Rs, lakh)

1. 5.83 2. 4.58 3. 4.12

4. 6.83 5. 3.45

ANS=1

Company C₂ in 2011:

$$20 = \frac{7 - \text{Expenditure}}{\text{Expenditure}} \times 100$$

$$\Rightarrow 20 \text{ Expenditure} = 700 - 100E$$

$$\Rightarrow E = \frac{700}{120} = \text{Rs. 5.83 lakh}$$



Programme Continues...