

BANK EXAMS

QUANTITATIVE APTITUDE

LINE GRAPHS

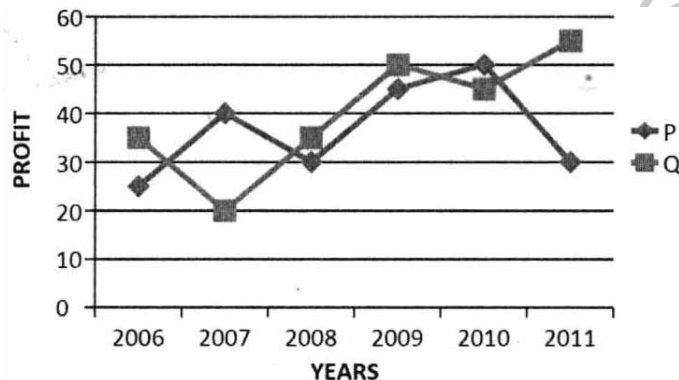
Line graph is a series of points representing the relationship between measurements. The lines in a line graph can descend and ascend based on the data. We can use a line graph to compare different events, situations and information.

A line graph has two axis. The x-axis of a line graph shows the occurrences and the categories being compared over time and the y-axis represents the scale, which is a set of numbers that represents the data and is organized into equal intervals. It is important to know that all line graphs must have a title. The title of a line graph provides a general overview of what is being displayed.

- ★ Both line graphs and bar graphs are used to convey same things and hence can be used interchangeably.
- ★ Trends can be even better established in line graphs.
- ★ Questions pertaining to percentage change and growth rates become easier to solve using line graphs.
- ★ In line graphs, read the data very carefully, as the smallest detail may change the meaning of the question completely.
- ★ It is imperative to be fast in approximations and calculations for excelling in questions on line graphs.
- ★ Questions on line graphs have occurred frequently in bank exams therefore the more you practice, the better you can solve.

Directions (Q.1 – 5): Study the following graph carefully and answer the questions accordingly.

Following graph shows the profit (in lakhs) of two companies P and Q over the years:

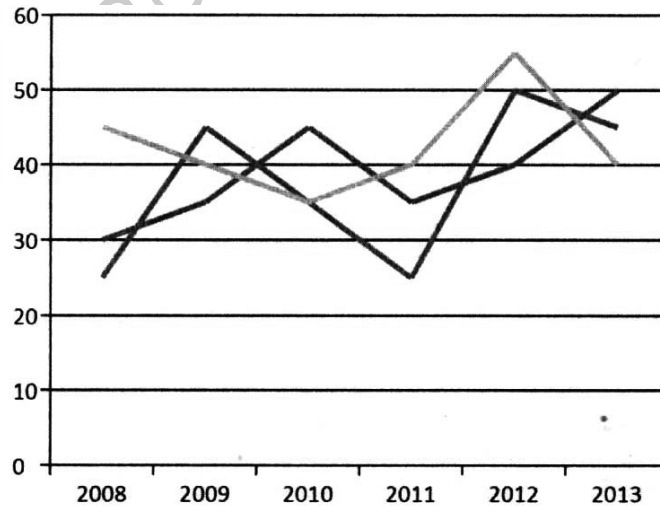


1. If the Expenditure of Company Q in the year 2009 was Rs.32 lakhs then what was its income in that year?
 - 1) Rs.18 lakhs
 - 2) Rs.14 lakhs
 - 3) Rs. 82 lakhs
 - 4) Can't be determined
 - 5) None of these
2. What is the percent profit of Company P in the year 2011, if the income of the company was Rs.105 lakhs?
 - 1) 55%
 - 2) 40%
 - 3) 53%
 - 4) 33.33%
 - 5) None

3. If the Income of Company P in the year 2007 was Rs.115 lakhs, what was the Income of Q in that year?
- 1) Rs.205 lakhs
 - 2) Rs.125 lakhs
 - 3) Rs.85 lakhs
 - 4) Can't be determined
 - 5) None of these
4. In which year was the percent increase in the profit of company P the highest from that of the previous year?
- 1) 2009
 - 2) 2006
 - 3) 2007
 - 4) 2008
 - 5) 2010
5. If the expenditures of Q in 2010 and 2011 were 65 and 90 lakhs respectively, what is the respective ratio of their incomes in those years?
- 1) 9 : 11
 - 2) 13 : 18
 - 3) 22 : 29
 - 4) 21 : 28
 - 5) None of these

Directions (6 – 10): Study the following graph carefully to answer the questions.

Amounts invested (in thousands) by three people in different schemes over the years.



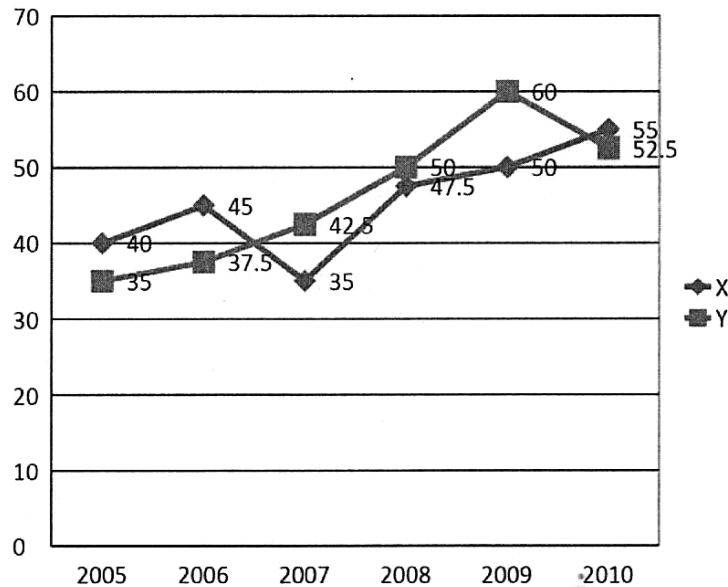
6. What is the average amount invested in the year 2012 by all the three people together?
- 1) Rs.28,350
 - 2) Rs.48,333.33
 - 3) Rs.32,333.45
 - 4) Rs.45,000
 - 5) None of these
7. What is the percent decrease in the amount invested by C in the year 2010 from the previous year?
- 1) 11.3%
 - 2) 13.5%
 - 3) 12.5%
 - 4) 14.3%
 - 5) None of these
8. What is the respective ratio of total amount invested by B in the years 2011 and 2013 together to the total amount invested by C in those two years together?
- 1) 7 : 8
 - 2) 14 : 15
 - 3) 6 : 7
 - 4) 12 : 13
 - 5) None of these
9. The amount invested by A in the year 2009 is approximately what per cent of the total amount invested by him over all the years together?
- 1) 15
 - 2) 19
 - 3) 21
 - 4) 8
 - 5) 11

10. What was the total amount invested by all the three people together in the year 2008?
- 1) Rs.1,0000
 - 2) Rs.1,00,000
 - 3) Rs.1,000
 - 4) Rs.100
 - 5) None of these

Direction (11 – 15): Study the following graph carefully to answer the questions:

Percent Profit Earned by Two Companies Over the years

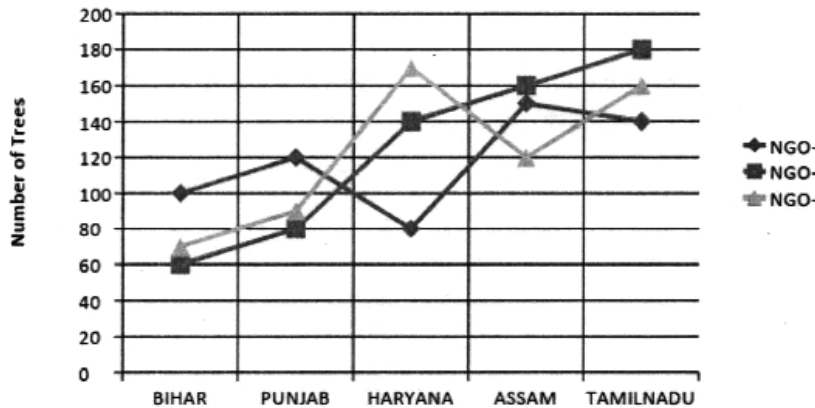
$$\text{Percent Profit} = \frac{(\text{Income} - \text{Expenditure})}{\text{Expenditure}} \times 100$$



11. In the income of company X in the year 2006 was Rs.6.425 lakhs, what was its expenditure in that year?
- 1) Rs.4.7 lakhs
 - 2) Rs.5.2 lakhs
 - 3) Rs.4.5 lakhs
 - 4) Rs.3.8 lakhs
 - 5) None of these
12. If the expenditure of company X in the year 2005 was Rs.3.6 lakhs, what was the amount of profit earned by it in that year?
- 1) Rs.2.52 lakhs
 - 2) Rs.2.46 lakhs
 - 3) Rs.1.44 lakhs
 - 4) Rs.1.31 lakhs
 - 5) None of these
13. What is the approximate average percent profit earned by company X over all the years together?
- 1) 57%
 - 2) 36%
 - 3) 41%
 - 4) 53%
 - 5) 45%
14. If in the year 2009 incomes of both the companies X and Y were the same, what was the respective ratio of their expenditures in that year?
- 1) 7 : 5
 - 2) 16 : 15
 - 3) 23 : 21
 - 4) Cannot be determined
 - 5) None of these
15. What is the percentage increase in percent profit of company Y in the year 2008 from the previous year? (Rounded off to two digits after decimal)
- 1) 17.65
 - 2) 19.25
 - 3) 16.55
 - 4) 15.75
 - 5) None of these

Directions (16 – 17): Study the following graph carefully to answer the questions that follow:

Number of trees planted by three different NGOs in five different States.



16. In which state was the total number of trees planted by NGO-A and NGO-B together second lowest?
 1) Bihar 2) Punjab 3) Haryana 4) Assam
 5) Tamil Nadu
17. What was the difference between the trees planted by NGO-A in Haryana and the number of trees planted by NGO-C in Tamil Nadu?
 1) 90 2) 60 3) 120 4) 100
 5) None of these

ANSWERS

1-3; 2-2; 3-4; 4-3; 5-3; 6-2; 7-3; 8-1; 9-1; 10-5; 11-5; 12-3; 13-5; 14-2; 15-1; 16-2; 17-5.

EXPLANATIONS

1. Profit of Q in 2009 = Rs.50 Lakhs, Expenditure = Rs.32 Lakhs

Profit = income – Expenditure

Income = 50 + 32 = Rs.82 lakhs

2. Income = Rs.105 lakhs, Profit in 2011 = Rs.30 lakhs

Expenditure = 105 – 30 = 75

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

$$\Rightarrow \frac{30}{75} \times 100 = 40\%$$

4. Increment % in profit in 2007 = $\frac{40 - 25}{25} \times 100 = 60\%$

$$2009 = \frac{45 - 30}{30} \times 100 = 50\%$$

$$2010 = \frac{50 - 45}{45} \times 100 = 11 \frac{1}{9} \%$$

5. Profit of Q in 2010 = 45

Expenditure in 2010 = 65

Income of Q in 2010 = 65 + 45 = Rs.110 Lakhs

Profit of Q in 2011 = 55

Expenditure = 90

Income of Q in 2011 = 90 + 55

= Rs.145 Lakhs

Required ratio = 110 : 145 = 22 : 29

$$6. \quad \text{Required average amount invested in 2009} = \left(\frac{55 + 50 + 40}{3} \right) \times 1000$$

$$= \left(\frac{145000}{3} \right) = \text{Rs. } 48,333.33$$

$$7. \quad \text{Per cent decrease} = \frac{40 - 35}{40} \times 100 = 12.5\%$$

$$8. \quad \text{Required ratio} = (25 + 45) : (40 + 40) = 70 : 80$$

$$= 7 : 8$$

10. Total amount invested by all the three people in 2005 = (30 + 25 + 45) thousand = Rs.100000

$$11. \quad 45 = \left[\frac{6.425 - E}{E} \right] \times 100$$

$$\Rightarrow 145E = 642.5 \Rightarrow E = \frac{642.5}{145} = \text{Rs. } 4.43 \text{ Lakhs}$$

Shortcut:

Expenditure is always 100%

Income of X in 2006 145% (45% profit)

$$\therefore \text{Expenditure (100\%)} = \frac{100}{145} \times 6.425 = 4.43$$

$$12. \quad \text{Income} = \frac{140}{100} \times 3.6 = 5.04$$

\therefore Profit = 5.04 - 3.6 = Rs.1.44 Lakhs.

13. Average percent profit earned by company A

$$\therefore \frac{40 + 45 + 35 + 47.5 + 50 + 55}{6} = \frac{272.5}{6} = 45\%$$

14. Let the incomes of x & y be 'I' and Expenditure of x be E_1 & y be E_2

$$50 = \left[\frac{I - E_1}{E_1} \right] \times 100 \Rightarrow I = \frac{150E_1}{100}$$

$$60 = \left[\frac{I - E_2}{E_2} \right] \times 100 \Rightarrow I = \frac{160E_2}{100}$$

$$\text{Since incomes are same, } \frac{150E_1}{100} = \frac{160E_2}{100}$$

$$\Rightarrow \frac{E_1}{E_2} = \frac{160}{150} = E_1 : E_2 = 16 : 15$$

15. Required percentage = $\frac{50 - 425}{42.5} \times 100 = 17.65\%$

16. Number of trees planted by NGO-A and NGO-B together

Bihar $\Rightarrow 100 + 60 = 160$

Punjab $\Rightarrow 120 + 80 = 200$

Haryana $\Rightarrow 140 + 80 = 220$

Assam $\Rightarrow 160 + 150 = 310$

Tamil Nadu $\Rightarrow 180 + 140 = 320$

17. Required difference = $160 - 80 = 80$.

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