IPMAT SAMPLE QUESTIONS
(PERCENTAGES, PROFIT & LOSS)

Q1. An old lady engaged a domestic help on the condition that she would pay him Rs. 90 and a gift after service of one year. He served only 9 months and received the gift and Rs. 65, Find the value of the gift.
a) Rs. 10
c) Rs. 15
b) Rs. 12
d) None of the above

Q2. The ratio of number of male and female journalists in a newspaper office is 5: 4. The newspaper has two sections, political and sports. If 30 percent of the mate journalists and 40 percent of the female journalists are covering political news, what percentage of the journalists (approx.) in the newspaper is currently involved in sports repotting?
a) 65 percent
c) 70 percent
b) 60 percent
d) None of the above

Q3. The annual production in cement industry is subject to business cycles. The production increases for two consecutive years consistently by 18% and decreases by 12% in the third year. Again in the next two years, it increases by 18% each year and decreases by 12% in the third year. Taking 2008 as the base year, what will be the approximate effect on cement production in 2012?
a) 24% increase
c) 45% increase
b) 37% decrease
d) 60% decrease

Q4. In 2011, Plasma - a pharmaceutical company - allocated Rs. 4.5×10^7 for Research and Development. In 2012, the company allocated Rs. 60,000,000 for Research and Development. If each year the funds are evenly divided among 2×10^2 departments, how much more will each department receive this year than it did last year?
a) Rs. 2.0×10^5
c) Rs. 7.5×10^4
b) Rs. 7.5×10^5
d) Rs. 2.5×10^7

Q5. At a reputed Engineering College in India, total expenses of a trimester are partly fixed and partly varying linearly with the number of students. The average expense per student is Rs. 400 when there are 20 students and Rs. 300 when there are 40 students. When there are 80 students, what is the average expense per student?
a) Rs.250
c) Rs.330
b) Rs.300
d) Rs.350

Q6. Rohit bought 20 soaps and 12 toothpastes. He marked-up the soaps by 15% on the cost price of each, and the toothpastes by Rs.20 on the cost price of each. He sold 75% of the soaps and 8 toothpastes and made a profit of Rs.385. If the cost of a toothpaste is 60% the cost of a soap and he got no return on unsold items, what was his overall profit or loss?
a) Loss of Rs.355
c) Loss of Rs.250
b) Loss of Rs.210
d) None of the above

Q7. A picture was bought at a certain sum, which was the price paid for its frame. Had the frame cost Rs 100 less and the picture Rs 75 more the price for the frame would have been only half of that of the picture. What is the price of the frame?

a) 75   c) 175
b) 100   d) 275

Q8. Any travelled 4/7th as many miles on foot as by water and 2/5th as many miles on horseback as by water. If she covered a total of 3036 miles, how many miles did she travel in each manner: foot and horseback?

a) 1540, 880, 616   c) 1540, 555, 616
b) 616, 880, 1540   d) 880, 1540, 616

Q9. Ram Singh goes to Pushkar Mela with Rs 10000 to buy exactly 100 animals. He finds that cows are sold at Rs 1000, horses at Rs 300 and chicken at Rs 50. How many chicken should be buy to meet his target of 100 animals?

a) 92   c) 90
b) 94   d) 88

Q10. A, B and C start a business each investing Rs 20000. After 5 months A withdrew Rs 5000, B Rs 4000 and C invested Rs 6000 more. At the end of the year a total profit of Rs 69900 was recorded. What is the share of B?

a) Rs 20500   c) Rs 28200
b) Rs 21200   d) Rs 27300

Q11. The current birth rate per thousand is 32, whereas corresponding death rate is 11 per thousand. The growth rate in terms of population increase in per cent is given by

a) 0.021 %   c) 2.1 %
b) 0.21 %   d) 21 %

Q12. A man purchased 40 fruits; Apples and oranges for Rs.17. Had he purchased as many oranges as apples and as many apples as oranges, he would have paid Rs.15/-. Find the cost of one pair of an apple and an orange.

a) 70 paise   c) 80 paise
b) 60 paise   d) 1 rupee

Q13. A 14.4 kg. Gas cylinder runs for 104 hours when the smaller burner on the gas stove is fully opened while it runs for 80 hours when the larger burner on the gas stove is fully opened. Which of these values are closest to the percentage difference in the usage of gas per hour, of the smaller burner over the larger burner?

a) 26.23%   c) 32.23%
b) 30%   d) 23.07%

Q14. A, B and C started a business by investing 1/2, 1/3rd and 1/6th of the capital respectively. After 1/3rd of the total time, A withdrew his capital completely and after 1/4th of the total time B withdrew his capital. C kept his capital for the full period. The ratio in which total profit is to be divided amongst the partners is

a) 1: 2: 1   c) 2: 1: 2
b) 4: 1: 4   d) 1: 2: 2

Q15. A merchant wants to make profit by selling food grains. Which of the following will maximize his profit? I. Sell product at 30% profit II. Increase the price by 15% over the cost price and reduce weight by 15% III. Use 700 gm of weight instead of 1 kg. IV. Mix 30% impurities in grains and sell it at cost price

a) III
b) II and I
c) II
d) All give the same profit

Q16. In September 2009, the sales of a product were (2/3) rd of that in July 2009. In November 2009, the sales of the product were higher by 5% as compared to September 2009. How much is the percentage of increase in sales in November 2009 with respect to the base figure in July 2009?

a) +40%
b) − 20%
c) − 30%
d) +25%

Q17. A trader makes a profit equal to the selling price of 75 articles when he sold 100 of the articles. What % profit did he make in the transaction?

a) 33.33%
b) 75%
c) 300%
d) 150%

Q18. Ramsukh bhai sells rasgulla (a favourite Indian sweets) at Rs. 15 per kg. A rasgulla is made up of flour and sugar in the ratio 5 : 3. The ratio of price of sugar and flour is 7 : 3 (per kg). Thus he earns 66 2/3 profit. What is the cost price of sugar?

a) Rs. 10/kg
b) Rs. 9/kg
c) Rs. 18/kg
d) Rs. 14/kg

Q19. A reduction of 20% in the price of sugar enables a person to purchase 6 kg more for Rs. 240. What is the original price per kg of sugar?

a) Rs. 10/kg
b) Rs. 8/kg
c) Rs. 6/kg
d) Rs. 5/kg

Q20. The salary of Raju and Ram is 20% and 30% less than the salary of Saroj respectively. By what percent is the salary of Raju more than the salary of Ram?

a) 33.33%
b) 50%
c) 15.18%
d) 14.28%

Q21. Mrs. X spends Rs. 535 in purchasing some shirts and ties for her husband. If shirts cost Rs. 43 each and the ties cost Rs.21 each, then what is the ratio of the shirts to the ties that are purchased?

a) 1 : 2
b) 2 : 1
c) 2 : 3
d) 3 : 4

Q22. In an examination, Raman scored 25 marks less than Rohit. Rohit scored 45 more marks than Sonia. Rohan scored 75 marks which is 10 more than Sonia. Ravi's score is 50 less than, maximum marks of the test. What approximate percentage of marks did Ravi score in the examination, if he gets 34 marks more than Raman?

a) 90
b) 70
c) 80
d) 60

Q23. Mr. Giridhar spends 50% of his monthly income on household items and out of the remaining he spends 50% on transport, 25% on entertainment, 10% on sports and the remaining amount of Rs. 900 is saved. What is Mr. Giridhar's monthly income?

a) Rs.6000

c) Rs.9000

b) Rs.12000

d) Cannot be determined

Q24. Last year there were 610 boys in a school. The number decreased by 20 percent this year. How many girls are there in the school if the number of girls is 175 percent of the total number of boys in the school this year?

a) 854

c) 798

b) 848

d) 782

Q25. Profit earned by an organization is distributed among officers and clerks where the individual amount received by them is in the ratio of 5 : 3. If the number of officers is 45 and the number of clerks is 80 and the amount received by each officer is Rs.25,000, what was the total amount of profit earned?

a) Rs.22 lakh

c) Rs.18 lakh

b) Rs.18.25 lakh

d) Rs.23.25lakh

Answer Key & Explanation:

1. Correct Answer: A
Solution:

ATQ : (Salary of 9 months) + Gift = $\frac{9}{12}$ (Salary of 12

Months + Gift) [Rs. 65/- + gift] = $\frac{9}{12}$ [Rs. 90/- + Gift]

4[65/- + Gift] = 3 [90/- + Gift]
260/- + 4 (Gift) = 270 + 3 (Gift)]
Gift = Rs. 10/-

2. Correct Answer: A
Solution:
Let Total no. = 900
No. of Males = 500;
Females = 400
Political = 30% of 500 + 40% of 400 = 150 + 160 = 310
Sports = 900 – 310 = 590
Required %age = (590/900)100= 65%

3. Correct Answer: C
Solution:
Let production in 2008 be x.
Production in 2012 = x×1.18×1.18×0.88×1.18 = 1.446x

Therefore, approximately cement production is increased by 45%.

4. Correct Answer: C
Solution:
Extra amount received by each department = $(6 \times 10^7 - 4.5 \times 10^7)/200$
= 15000000/200 = 7.5×10^4

5. Correct Answer: A
Solution:
ATQ, Total charges = Variable charges + Fixed charges
$\Rightarrow$ 400 × 20 = 20 × V + F
$\Rightarrow$ 8000 = 20V + F
Also, 300 × 40 = 40 × V + F
$\Rightarrow$ 12000 = 40V + F
Subtracting the 2 equations, we get
20V = 4000 $\Rightarrow$ V = 200
Putting the value back in one of the equation,
F = 4000.
Thus, total expenses for 80 students = 80×200 + 4000 = 20000

Hence, average expense per students = 20000/80 = Rs.250

6. Correct Answer: D
Solution:
Since Rohit got no return on unsold items, thus we can assume that for these items there is no profit no loss. Hence, his overall profit will be the profit earned on the already sold items i.e. Rs. 385.

7. Correct Answer: D
Solution:
P + 75 = (F – 100)2
=> P + 75 = 2P – 200
=> P = Rs. 275.

8. Correct Answer: A
Solution:
(a) Let any travelled x miles on water.
According to question

$$x + \frac{4}{7}x + \frac{2}{5}x = 3036$$

$$\Rightarrow x = 1540 \text{ miles}$$

$$\therefore \frac{4}{7}x = 880 \text{ miles}$$

$$\text{and } \frac{2}{5}x = 616 \text{ miles}$$

9. Correct Answer: B
Solution:
Solve through options. We find that if he buys 94 chickens, 1 horse and 5 cows, he spends 4700 + 300 + 5000 = 10,000 and he also has 100 animals.

10. Correct Answer: B
Solution:
A's Capital = 20000 × 5 + 15000 × 7 = 205000
B's Capital = 20000 × 5 + 16000 × 7 = 212000
C's Capital = 20000 × 5 + 26000 × 7 = 282000
B's Share = (69900 x 212)/699= Rs 21200

11. Correct Answer: C

Solution:
Growth = Birth rate – Death rate = 3.2 – 1.1
= 2.1%

12. Correct Answer: C
Solution:
Let the man buys x apples at p price and y oranges at q price, then x + y = 40
px + qy = 17 ..... (1)
Also qx + py = 15 ..... (2)
Adding (1) & (2)
(p + q)(x + y) = 17 + 15
p + q = 32/40 = Rs 0.80

13. Correct Answer: D
Solution:

Smaller burner uses gas at the rate of $\frac{14.4}{104}$ kg/hour

Larger one uses gas at the rate of $\frac{14.4}{80}$ kg/hour

$\therefore$ Ratio of gas usage of both these burners

$$= \frac{\text{Gas usage for smaller burner}}{\text{Gas usage for larger burner}} = \frac{\frac{14.4}{104}}{\frac{14.4}{80}} = \frac{80}{104} = \frac{10}{13}$$

Thus, difference in usage of gas between the two burners is

$$1 - \frac{10}{13}$$

$$= \frac{3}{13} = 23.07\%$$

Hence the rate of smaller burner is 23.07% less than the larger burner.
Hence, **option 4**.

14. Correct Answer: C
Solution:
The table below shows the investment together with the time frame for which the amount is invested. For convenience, the total amount of time is assumed to be 12 months and the total capital is assumed to be 6x.

	A	B	C
Amount	3x	2x	1x
Time	4	3	12
Share in Profit	12x	6x	12x

The required ratio is 2 : 1 : 2
Hence, **option 3**.

15. Correct Answer: A
Solution:

Let the cost price of 100 gms be Rs. 100.
∴ Each gm costs Re. 1.
Consider options.
I. The profit is 30%.
II. 85 gms is sold for Rs. 115.
∴ Profit percentage is $\frac{115-85}{85} \times 100 \approx 35\%$
III. 700 gm is sold for the cost of 1000 gm.
∴ Profit percentage is $\frac{1000-700}{700} \times 100 \approx 43\%$
IV. As 30% impurities are added, the cost of 130 gms becomes Rs.100.
∴ The cost of 100 gm is $\frac{100 \times 100}{130}$
The selling price of 100 gm = Rs. 100
∴ Profit percentage = $\frac{100 - \frac{100 \times 100}{130}}{\frac{100 \times 100}{130}} \times 100 = 30\%$
We see that profit is maximised for option III.
Hence, **option 1**.

16. Correct Answer: C
Solution:
Let the sales in July be 300
∴ Sales in September = 200
Sales in November = 200 × 1.05 = 210
∴ Required percentage increase $= \frac{210 - 300}{300} \times 100$
= –30%
Hence, **option 3**.

17. Correct Answer: C
Solution:
Let selling price of each article be 1.
Hence, selling price of 100 article = 100
Hence, profit = 75 Hence, cost price = 100 – 75 = 25
Hence, percentage profit = 75/25 × 100 = 300%
Hence, option c.

18. Correct Answer: D
Solution:
After selling at Rs. 15/kg, Ramsukh earns a profit of 66.66%.
Hence, cost price of Rasgulla is Rs. 9/kg.
Now, ratio of flour and sugar is 5 : 3.
Hence, 1 kg of rasgulla is made up of 5/8 kg of flour and 3/8 kg of sugar.
Let price of 1 kg of flour = 3k

Hence, price of 1 kg of sugar = 7k
Hence price of 1 kg of Rasgulla is;
(3/8)x7k + (5/8) x 3k = 9
Hence, k = 2
Hence, cost price of sugar = 7k = 7 × 2 = Rs. 14/kg
Hence, option d.

19. Correct Answer: A
Solution:
Let cost price of sugar be x.
Hence, reduced cost price = 0.8x
Hence, 240/x + 6 = 240/0.8x
Hence, 300/x = 240/x + 6
Hence, 60/x = 6
Hence, x = 10
Hence, option a.

20. Correct Answer: d
Solution:
Let the salary of Saroj be Rs. 100.
Salary of Raju and Ram is 20% and 30% less than Saroj's salary.
Hence, Raju's salary is Rs. 80 and Ram's salary is Rs. 70.
Thus Raju's salary is greater than Ram's salary by
[(80-70)/70]x 100= 14.28%
Hence, Option d

21. Correct Answer: B

22. Correct Answer: B
Solution:
Marks obtained by Rohan =75
Marks obtained by Sonia = 65
Marks obtained by Rohit = 65+45=110
Marks obtained by Raman = 110-25 = 85
Marks obtained by Ravi = 85+34 = 119
Maximum Marks = 119+50 = 169
Required percentage = (119x 100)/169 =70%
B is the correct answer.

23. Correct Answer: B
Solution:

Let the total monthly income of Mr Giridhar be 100g

The proportion of income he spends on household items = 50% i.e 50g

Of the remaining 50%, the proportion of income he spends on transport, entertainment and sports are 50%, 25%, 10%

15% of 50g = Amount saved

7.5g = 900(given) 100g = 12000

The monthly income of Mr Giridhar = Rs.12000

24. Correct Answer: A
Solution:
Number of boys in the school last year = 610

Number of boys in the school in the present year = 610*0.8 (It is given that the boys decreased by 20% this year) = 488

Number of girls in the class = 1.75* Number of boys
=1.75*488 =854
A is the correct answer.

25. Correct Answer: D
Solution:
Profit received by each officer= Rs.25000

Therefore, Profit received by each clerk= 3/5×25000 = Rs.15000

Therefore, Total earned profit = Rs. (45×25000+80×15000)

= Rs.(1125000+1200000)

= Rs.23.25 lakh

D is the correct answer.

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