

MANIDHANAHEYAM FREE IAS ACADEMY – TNPSC GROUP – IV & VAO EXAM
UNIT – X – APTITUDE & MENTAL ABILITY
PERCENTAGE & PROFIT AND LOSS

Terms:

Cost Price: The price at which an article is purchased. [cp]

Selling Price: The price at which an article is sold. [sp]

Profit or Gain: $sp > cp$, if sp is greater than cp then it is profit.

Loss: $cp > sp$, if cp is greater than sp then it is loss.

Formula:

1. Gain = SP – CP
2. Loss = CP – SP
3. Loss or gain is calculated on the cost price.
4. Gain % = (Gain / CP) x 100
5. Loss % = (Loss / CP) x 100
6. Selling price [SP] – when it is gain
 $SP = ((100+gain) / 100) \times CP$
7. Selling price [CP] – when it is loss
 $SP = ((100-loss)/100) \times CP$
8. Cost price [CP] – when it is gain
 $CP = (100 / (100+gain)) \times SP$
9. Cost price [CP] – when it is loss
 $CP = (100 / (100-loss)) \times SP$
10. If an article is sold at a profit of 35%, then the sold price is 135% of cost price. [100 + gain %]
11. If an article is sold at a loss of 35%, then the sold price is 65% of cost price. [100 – loss %]
12. When a person sells 2 similar items at same percent (say X %) of profit and loss, hence he will have a Loss of

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(Common profit and loss % / 10)²

Problems:

1. What is 40% in 560?

- A. 224 B. 124 C. 214 D. 114

Explanation:

$$\begin{aligned} 40\% &= 40/100 \\ 40\% \text{ of } 560 &= \frac{40}{100} \times 560 \\ &= 56 \times 4 = 224 \end{aligned}$$

Ans: A

2. A shopkeeper sold 42% of the total stock of pen that he had. if the number of remaining pens is 580, what is the total number of pens that he had initially?

- A. 100 B. 1000 C. 500 D. 420

Explanation:

$$\begin{aligned} \text{Total number of pens be } &100 \\ \text{pens sold} &= 42\% \\ \text{remaining} &= 58\% = 580 \\ 58\% &= 580 \\ 1\% &= 10 \\ 100\% &= 10 \times 100 \\ &= 1000 \\ \text{total pen} &= 1000 \end{aligned}$$

Ans: B

3. Convert into fraction $12 \frac{1}{2}$

- A. 1/5 B. 1/6 C. 1/7 D. 1/8

Explanation:

$$\begin{aligned} 12 \frac{1}{2} &= \frac{12 \frac{1}{2}}{1} \\ &= \frac{25}{2} \\ &= \frac{25}{200} \\ &= \frac{1}{8} \end{aligned}$$

Ans : D

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4. What is the percentage of $12\frac{1}{2}$ in $16\frac{2}{3}$?

- A. 50% B. 25% C. 75% D. 60%

Explanation :

$$\begin{aligned}\frac{12\frac{1}{2}}{16\frac{2}{3}} \times 100 &= \frac{25}{2} \times \frac{3}{50} \times 100 \\ &= 25 \times 3 \\ &= 75\%\end{aligned}$$

Ans : C

5. In a class of 75 students, only 42 students could clear a test. What is the percentage of students who are unable to clear the test ?

- A. 24% B. 34% C. 44% D. 50%

Explanation:

total = 75 (let it be 100%)

Number of students not cleared = $75 - 42 = 33$

$$\begin{aligned}\% &= \frac{33}{75} \times 100 \\ &= 11 \times 4 = 44\%\end{aligned}$$

Ans : C

6. Price of commodity has increased by $12\frac{1}{2}\%$, and the amount increased was 25. Find the original price of the commodity?

- A. 100 B. 200 C. 300 D. 400

Explanation:

$$12\frac{1}{2}\% = 25$$

let original price be x

$$\frac{12\frac{1}{2}}{100} \times x = 25$$

$$x = \frac{25 \times 100}{25/2}$$

$$= \frac{25 \times 100 \times 2}{25}$$

$$x = 200$$

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Ans : B

7. Amutha bought a new pen at a price which is 75 less than the original price at certain percentage of discount. What is the percentage of discount if she spent rs 425 for that pen?

A. 15% B. 25% C. 35% D. 45%

Explanation:

Total price of the pen = amount paid + discount

$$= 427 + 75 = 500$$

$$110\% = 500$$

$$1\% = 5$$

$$15\% = 75$$

Ans : A

8. If 80% of 120 is how much greater than 120% of 80.

A. 40 B. 20 C. 0 D.100

Explanation:

$$\begin{aligned} 80\% \text{ of } 120 &= 80/100 \times 120 \\ &= 96 \end{aligned}$$

$$\begin{aligned} 120\% \text{ of } 80 &= 120/100 \times 80 \\ &= 96 \end{aligned}$$

$$\text{difference} = 96 - 96 = 0$$

Ans : C

9. 56% of the total students appeared for an examination was successful. And 132 of them have failed. What is the total number of students appeared for the examination?

A. 300 B. 400 C. 600 D. 900

Explanation:

let the total students be 100%

56% = passed students

100-56 = 44% = failed students

44% = 132

1% = 3

100% = 300

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Ans : A

10. A candidate needs to secure 40% marks to clear a test of 150 marks does he fail if he scores 40 marks in the test.

A. 20 B. 15 C. 10 D. 5

Explanation:

Minimum marks required to pass in examination = 40%

40% of 150 = $40/100 \times 150$

= 60

pass mark = 60

marks he scored = 40

so he fails by 20 marks

Ans :A

11. The length of a rectangle increases by 85% and breadth is decreased by 20%.
What is the percentage change in the area of the rectangle?

A. 40% B. 20% C. 48% D. 28%

Explanation:

old area = $100 \times 100 = 10000$

new area = $100 + 85\%$ and $100 - 20\%$

new area = 185×80

= 14800

difference = $14800 - 10000 / 10000 \times 100\%$

= 48%

Ans : C

12. The annual increase in the cost of land in Chennai is 14% points more than inflation which is also 6%. If the cost of the land in Chennai is 10000 now, what would be the cost in 3 years from now?

A. 13310 B. 17280 C. 15600 D. 16500

Explanation :

percentage increase = price $\left(1 + \frac{\text{increase}}{100}\right)^n$

increase = $6 + 14 = 20\%$

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$$\begin{aligned} \text{price after inflation} &= 1000 \left(1 + \frac{20}{100} \right)^3 \\ &= 10000 \times (1 + 0.2)^3 \\ &= 10000 \times 1.728 \\ &= 17280 \end{aligned}$$

Ans : B

13. The numerator of a fraction increased by 15% and its denominator is decreased by 12%, the value of the fraction becomes $\frac{5}{4}$. What is the original fraction?

- A. $\frac{12}{15}$ B. $\frac{13}{15}$ C. $\frac{22}{23}$ D. $\frac{21}{25}$

Explanation:

$$\begin{aligned} \text{let the fraction be } x/y &= 100\%/100\% \\ 100 + 15/100 - 20 &= 115x/88y \\ x/y &= 22/23 \end{aligned}$$

Ans : C

14. If one number is 60% of the second number and 5 times the sum of their two numbers is 360. Find the smaller number?

- A. 25 B. 27 C. 37 D. 29

Explanation:

$$\begin{aligned} \text{let the number be } x \text{ and } y \\ x &= 60\% \text{ of } y \text{ (} x \text{ is the smallest)} \\ x &= 60y/100 \\ 100x &= 60y \\ 5x &= 3y \\ 5x - 3y &= 0 \text{ -----1} \\ 5x + 3y &= 360 \\ x + y &= 360/5 \\ x + y &= 72 \text{ -----2} \\ \text{solving 1 and 2} \\ x &= 27 \end{aligned}$$

Ans : B

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15. If the price of rice decreases by 20%, a man can buy 2 kilo more for rs. 320.

What is the original price of rice per kg?

- A. 40 B. 50 C. 60 D. 80

Explanation:

$$\text{amount} = 320$$

$$\text{extra kilograms} = 2$$

$$\text{price decrease} = 20\% = 100 - 20 = 80\%$$

$$\text{current price} = 80\% = 80/100 = 4/5$$

$$\text{new quantity} = 5/4 = 1.25$$

let x be the number of kilograms he buys with 320 before
decrease in price

$$1.25x - x = 2$$

$$0.25x = 2$$

$$x = 8$$

$$\text{kilo per kg} = 320/8 = 40$$

Ans : A

16. a% of b% of 800 is equal to 40% of 1600. What is the value of ab?

- A. 64 B. 640 C. 6400 D. 64000

Explanation:

$$\frac{a}{100} \times \frac{b}{100} \times 800 = \frac{40}{100} \times 1600$$

$$\frac{ab}{100} = 40 \times 16$$

$$\begin{aligned} ab &= 40 \times 16 \times 100 \\ &= 64000 \end{aligned}$$

Ans : D

17. If 50 is added to 50% of a numbers, the numbers becomes 200. Find the 30% of that number?

- A. 90 B. 180 C. 100 D. 125

Explanation:

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let the number be x.

$$50 + (50\% \text{ of } x) = 200$$

$$50 + (50x/100) = 200$$

$$50 + (x/2) = 200$$

$$100 + x = 400$$

$$x = 300$$

$$30\% (300) = 90$$

Ans : A

18. Ramu spent 60% of his salary for house rent, 25% of house rent on food, and 20% of food on clothing. If he spent 1500 on clothing, What is his total salary?

- A. 45000 B. 50000 C. 55000 D. 55500

Explanation:

let his salary be x

$$x \times \frac{60}{100} \times \frac{25}{100} \times \frac{20}{100} = 1500$$

$$x = \frac{1500 \times 100 \times 100}{25 \times 2 \times 6}$$

$$x = 50000$$

Ans : B

19. A company has 250 employees. One fifth are females and rest are male. 5% of male and 40% of female are excelled in digital skills. Then, what percentage of the whole lack in digital skills?

- A. 58% B. 68% C. 78% D. 88%

Explanation:

$$\text{male} = 4/5(250) = 200$$

$$\text{female} = 50$$

$$\text{men excelled in skill} = (5/100) \times 200 = 10$$

$$\text{women excelled in skills} = (40/100) \times 50 = 20$$

$$\text{percentage who lack skills} = (220/250) \times 100 = 88\%$$

Ans : D

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20. The time duration of 2 hours 20 minutes is what percent of a day?

- A. 8.33 B. 6.25% C. 9.72 D. 10.5%

Explanation:

let 24 hours of a day be 100%
24 X 60
2 hours + 20 minutes = 120 + 20 = 140
percentage of 140 minutes in a day
= $140/1440 \times 100$
= 9.72%

Ans : C

21. If 8% of x = 4% of y, then 20% of x?

- A. 10% of y
B. 16% of y
C. 40% of y
D. 80% of y

Explanation:

$8\% (x) = 4\% (y)$
 $8x = 4y$
 $x = y/2$
 $20\%(x) = (20/100) (y/2)$
= $10y/100$
= 10%(y)

Ans : A

22. A box has 200 blue balls, 100 red balls, 100 green balls. 25% of blue balls and 50% of red balls are taken away. Then, What is the percentage of green balls in the box at present?

- A. 20% B. 33 1/3 % C. 40% D. 50%

Explanation:

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$$25\% \text{ of blue balls} = (25/100) \times 200 = 50$$

$$50\% \text{ of red balls} = (50/100) \times 100 = 50$$

$$\text{number of green balls} = 100$$

$$\text{remaining balls in the box} = 400 - 100 = 300$$

$$\begin{aligned} \text{percentage of green balls} &= (100/300) \times 100 \\ &= 33 \frac{1}{3} \% \end{aligned}$$

Ans : B

23. A television costs 20000 in 2020. The price increased to 10%, 20% and 30% consecutively in 2021, 2022, and 2023 respectively. What is the current price of the television?

- A. 31720 B. 35276 C. 42330 D. 31726

Explanation:

$$\begin{aligned} \text{current price} &= P \left(1 + \frac{x}{100} \right) \left(1 + \frac{y}{100} \right) \left(1 + \frac{z}{100} \right) \\ &= 20000 \left(1 + \frac{10}{100} \right) \left(1 + \frac{20}{100} \right) \left(1 + \frac{30}{100} \right) \\ &= 20000 \times 1.1 \times 1.2 \times 1.3 \\ &= 31720 \end{aligned}$$

Ans : A

24. Difference between a number and its one third is 426. What is the 33 1/3% of that number?

- A. 213 B. 312 C. 619 D. 264

Explanation:

let the number be x

$$x - x/3 = 426$$

$$(2/3)x = 426$$

$$x = 213 \times 2$$

$$x/3 = 213$$

Ans : A

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25. If the selling price of notebooks decreases by 40%. What percent should the sales be increased so that the total revenue remain the same?

- A. 50% B. 66.66% C. 40% D. 55.55%

Explanation:

let selling price be 100
reduced price = $100 - 40 = 60$
old price of 3 notebooks = $3 \times 100 = 300$
new price of 3 notebooks = $3 \times 60 = 180$
price change = 120
% increase in quantity = $100 \times \frac{2}{3} = 66.67\%$

Ans : B

26. 64 is what percent of 160?

- A. 40 % B. 50% C. 60% D. 70%

Explanation:

$160 \times \left(\frac{64}{100} \right)$
= 40%

Ans : A

27. In a basket of 150 mangoes, only 90 are in good condition and rest are rotten.

What is the percentage of mangoes that are rotten in that basket?

- A. 20 B. 30 C. 40 D. 50

Explanation:

Total mangoes = 150
rotten mangoes = $150 - 90 = 60$
percentage of rotten mangoes = $\frac{60}{150} \times 100$
= 40%

Ans : C

28. If a% of a is 36, then what is a?

- A. 40 B. 6 C. 60 D. 50

Explanation:

$\frac{a}{100} (a) = 36$

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$$a \times a = 36 \times 100$$

$$a = 6 \times 10$$

$$a = 60$$

Ans : B

29. A has twice as much money as that of B, and B has 50% more money than of Z. if the average money of the three is 110. How much money that A has with him?

A. 55 B. 60 C. 90 D. 180

Explanation:

let the money with C be x

$$B = 150\% \text{ of } x$$

$$B = 3x/2$$

$$\text{money with A} = 200\% \text{ of } 3x/2 = 3x$$

$$\text{average} = 110$$

$$x + 3x/2 + 3x = 110$$

$$11x = 220$$

$$x = 20$$

$$3x = 60$$

Ans : B

30. If A's income is 50% less than that of B's, the B's income is what percent more than that of A?

A. 125% B. 100% C. 75% D. 50%

Explanation:

$$\text{Required formula} = \left(\frac{x}{100 - x} \right) \times 100$$

$$= \left(\frac{50}{100 - 50} \right) \times 100$$

$$= 100\%$$

Ans : B

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31.A vendor's gains 20% while buying the goods and 30% while selling them.
Find his total gains

- A) 50% B) 36% C) 56% D) 40%

Solutions:

$$= \left(x + y + \frac{xy}{100} \right) \%$$

$$= \left(20 + 30 + \frac{20 \times 30}{100} \right) = 56\%$$

Ans: C

32.1 of 3 lemon are sold for the cost of 5 lemons then what is the profit percentage?

- A) 50 B) 60 C) $66\frac{2}{3}$ D) 65

Solution:

$$\text{profit \%} = \frac{5-3}{2} \times 100$$

$$= \frac{200}{3}$$

$$= 66\frac{2}{3}\%$$

Ans : c

33.If a sum of Rs 1170 was distributed among A,B,C in the ratio 2:3:4 by mistake in place of $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$ who was benefited most and by how much?

- A) B. Rs 220 B) C. Rs 250 C) B Rs 270 D) A. Rs 280

Solution:

$$\text{Actual ratio} = \frac{1}{2} : \frac{1}{3} : \frac{1}{4}$$

$$\text{sum of ratio} = 12$$

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$$= \left(\frac{1}{2} \times 12\right) : \left(\frac{1}{3} \times 12\right) : \left(\frac{1}{4} \times 12\right)$$

$$= 6:4:3$$

$$\text{Total} = 13$$

$$\text{wrong ratio} = 2:3:4$$

$$\text{total sum} = 9$$

$$\text{clearly gained C} \left(\frac{4}{9} \times 1170 - \frac{3}{12} \times 1170 \right)$$

$$= 520 - 270 = 250$$

Ans : C

34. Profit after selling a commodity for 524 is the same as loss after selling it for 452 cost price of commodity is

A) 480

B) 500

C) 488

D) 485

Solution:

Let the commodity = x

$$524 - x = x - 452$$

$$2x = 524 + 452$$

$$2x = 976$$

$$x = \frac{976}{2} = 488$$

Ans: C

35. 72% of 250 students are good in science. How many students are not good in science?

A) 180

B) 70

C) 120

D) 130

Solution:

The no. of Students good in science

$$= 72\% \text{ of } 250 = \frac{72 \times 250}{100} = 180$$

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$$=180$$

No of students not good in science

$$= 250-180$$

$$=70$$

Ans: C

36.If 8% GST is included in the prices then what is the Original price of Fan bought for Rs 180?

A) 166.66

B) 163.66

C) 162.66

D) 164.66

Solution:

$$x + 8 \% \text{ of } x = 180$$

$$x + \frac{8x}{100} = 180$$

$$100x + 8x = 180$$

$$x = \frac{180 \times 100}{108}$$

$$x = 166.66$$

Ans: A

37.The cost price of 20 articles is same as the selling price of x articles. If the profit 25 % then the value of x is?

A) 15

B) 16

C) 18

D) 25

Solution:

Let C.P of each article be Rs 1 C.P of x article = Rs x

S.P of x article = Rs 20

$$\left(\frac{20 - x}{x} \right) \times 100 = 25$$

$$2000 - 100x = 25x$$

$$2000 = 125x$$

$$x = 16$$

Ans: B

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38.If selling price is doubled the profit triples Find the profit %?

- A) $66 \frac{2}{3}$ B) 100 C) $105 \frac{1}{3}$ D) 120

Solution:

$$\text{let SP} = y$$

$$\text{CP} = x$$

$$\text{profit} = y - x$$

According to question new SP = 2y and new profit = 2y - x

profit triples = SP doubles

$$3(y - x) = 2y - x$$

$$3y - 3x = 2y - x$$

$$y = 2x \text{ so } y = 2; x = 1$$

$$x : y = 1 : 2$$

$$\text{profit} = 2 - 1 = 1$$

$$\text{profit \%} = \frac{1}{1} \times 100 = 100\%$$

Ans : B

39.Senguntran purchased $2 \frac{1}{2}$ dozen eggs at the rate of Rs 20 per Dozen one found that 6 eggs at the rate of Rs 22 per dozen the her profit or loss percentage is?

- A) 127% loss B) 12% loss C) 10% loss D) 10%

profit

Solution:

$$1 \text{ dozen} = 12$$

$$\text{C.P of } 2 \frac{1}{2} \text{ dozen or 30 eggs} = \frac{20}{12} \times 30 = \text{Rs} 50$$

$$6 \text{ eggs were rotten} = 30 - 6 = 24 \text{ eggs}$$

$$\text{per dozen} = 22$$

$$\text{S.P of 24 eggs} = 22 \times 2 = 44$$

$$\text{loss} = \text{Rs} (50 - 44) = \text{Rs} 6$$

$$\text{loss \%} = \frac{6}{50} \times 100 = 12\%$$

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40. By selling 14 watches of equal cost price at the rate of Rs 450 each there is a profit equal to the cost price of 4 watches the cost price of a watch is?

- A) Rs 350 B) Rs 360 C) Rs 375 D) Rs 400

Solution:

Let the C.P of each watch be x

C.P of 14 watches = 14x

S.P of 14 watches = 6300

According to question

$$6300 - 14x = 4x$$

$$18x = 6300$$

$$x = \frac{6300}{18} = \text{Rs} 350$$

Ans : A

41. A man buys some apples at Rs. P per dozen and sells them at Rs P/8 per piece. His profit percentage

- A) 30% B) 40% C) 50% D) 60%

Solution:

1 dozen = 12 Articles

C.P of each apples = $\frac{P}{12}$

S.P = $\frac{P}{8}$

$$\text{Gains} = \frac{p}{8} - \frac{p}{12} = \frac{3p - 2p}{24} = \frac{p}{24}$$

$$\text{gain \%} = \frac{p/24}{p/12} \times 100 = \frac{p}{24} \times \frac{12}{p} \times 100 = 50\%$$

$$\text{gain \%} = 50 \%$$

Ans : C

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42. The ratio of cost price and selling price is 5:4 the loss percentage is

- A) 20% B) 25% C) 40% D) 50%

Solution:

$$\frac{CP}{SP} = \frac{5}{4}$$

$$SP = \frac{4}{5} \times CP$$

$$\begin{aligned} \text{Loss} &= CP - SP \\ &= CP - \frac{4}{5} CP \\ &= \frac{1}{5} CP \end{aligned}$$

$$\begin{aligned} \text{Loss \%} &= \frac{\frac{1}{5} CP \times 100}{CP} \\ &= \frac{100}{5} \end{aligned}$$

$$\text{LOSS} = 20\%$$

Ans : A

43. If an article is sold at 200% profit then the ratio of its cost selling price will be ?

- A) 1:2 B) 2:1 C) 1:3 D) 3:1

Solution:

$$\text{if } CP = \text{Rs. } 100$$

$$SP = 300 \text{ [GAIN BEING 200\%]}$$

$$= 100 : 300$$

$$\text{Ratio} = 1:3$$

Ans : C

44. An lemon is sold 5% profit the ratio of S.P and C.P price will be

- A) 1:5 B) 20:21 C) 21:20 D) 5:1

Solution

$$\text{let } CP \text{ be } 100 \text{ then}$$

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$$SP = 105 \text{ [Gain Being 5 \%]}$$

$$\text{Required ratio} = 105 : 100 = 21 : 20$$

Ans ;C

45.If the ratio of cost price and the selling price is 5:6 the gain percentage is

- A) 20% B) 33 1/3% C) 25% D) 30%

Solution:

$$CP = 5x$$

$$SP = 6x$$

$$\text{Gain \%} = \frac{6x - 5x}{5x} \times 100$$

$$\text{gain} = 20\%$$

Ans: A

46. The ratio of C.P and S.P of an orange is 20: 21 these gain percentage?

- A) 7% B) 5% C) 6% D) 4%

Solution:

$$CP = 20x$$

$$SP = 21x$$

$$\text{Profit \%} = \frac{21x - 20x}{20x} \times 100$$

$$\text{Profit} = 5\%$$

Ans:B

47.If mangoes are purchase at the rate of 4 for a rupee, how many must be sold for a rupee so as to gain 33 1/3 %?

- A) 2.5 B) 2 C) 3 D) 4

Solution

$$SP \text{ of 4 mangoes} = 100 + \left(\frac{100}{3}\right)\% \text{ of Rs 1}$$

$$400/3 = Rs 4/3$$

$$\text{no of mangoes sold for Rs. 1} = \frac{4}{4} \times 3 = 3$$

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Ans : C

48. The cost price of 400 lemons is equal to the selling price of 320 orange then the profit percentage?

- A) 15% B) 20% C) 25% D) 40%

Solution:

$$\begin{aligned}\text{Gain \%} &= \left(\frac{x-y}{y} \right) \times 100 \\ &= \left(\frac{400-320}{320} \right) \times 100 \\ &= \left(\frac{80}{320} \right) \times 100\end{aligned}$$

$$\text{profit} = 25 \%$$

Ans : C

49. The selling price of 5 articles is the same as the cost price of 3 articles the gain or loss percentage

- A) 20% gain B) 25% gain C) 33.33% loss D) 40% loss

Solution:

$$\begin{aligned}|\text{Loss \%}| &= \left(\frac{x-y}{y} \right) \times 100 \\ &= \left(\frac{3-5}{5} \right) \times 100 \\ &= \left(\frac{2}{5} \right) \times 100\end{aligned}$$

$$\text{loss} = 40 \%$$

Ans : D

50. An article is sold at a profit of 25%. If the selling price is doubled the profit will be?

- A) 200% B) 50% C) 100% D) 150%

Solution:

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let CP of article = Rs. 100

25 % of profit = 125 %

SP doubled = 250

$$\text{Profit \%} = \left(\frac{250 - 100}{100} \right) \times 100 = 150\%$$

Ans : D

51. Cheran bought a mobile for Rs 3300 including a tax of 10% what is the price of mobile before GST was added.

- A) Rs 2500 B) 3000 C) 2800 D) 4000

Solution:

Let the price of mobile before GST be x

$$x + 10x/100 = 3300$$

$$11x = 3300 \times 10$$

$$x = 3000$$

Ans : B

52. By selling an watch at a profit of Rs 60 a shopkeeper made a profit of 20%. What is the cost price of watch?

- A) 300 B) 320 C) 400
D) 420

Solution:

Let the CP be x

$$20\% \text{ of } x = 60$$

$$20x/100 = 60$$

$$20x/100 = 60$$

$$x = \frac{60 \times 100}{20}$$

$$x = 300$$

Ans : A

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53.A Vendor bought soaps at 6 for a rupee How many for a rupee must be sell to gain 20%

- A) 3 B) 4 C) 5 D) 6

Solution:

$$\text{CP of 6 soaps} = \text{Rs. } 1$$

$$\text{SP of 6 soaps} = 120 \% \text{ of Rs. } 1 = \text{Rs } 6/5$$

$$\text{for Rs. } 6/5, \text{ soaps sold} = 6$$

$$\text{For Rs. } 1 \text{ soaps sold} = \frac{5}{6} \times 6 = 5$$

Ans : D

54.A man purchased a bed sheet for Rs 450 and sold at a gain of 10% calculated on the selling price the selling price of bed sheet was

- A) 460 B) 475 C) 480 D) 500

Solution:

$$\text{Let the SP of the bedsheet be Rs. } x$$

$$450 + \frac{10x}{100} = x$$

$$450 = x - x/10$$

$$450 = 9x/10$$

$$x = 500$$

Ans : D

55.The profit on the sale of a product is 25% How much will be the loss%. If the values of the cost price and selling price are interchanged?

- A) Loss of 12% B) Loss of 16% C) Loss of 20% D) Loss of 25%

Solution:

$$\text{Let the CP} = 100$$

$$\text{SP} = 100 + 25 = 125$$

According to question interchanging the value of CP and SP

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$$CP = 125$$

$$SP = 100$$

$$\begin{aligned} \text{Loss \%} &= \frac{125 - 100}{125} \times 100 \\ &= \frac{25}{125} \times 100 \end{aligned}$$

$$\text{Loss} = 20 \%$$

Ans :C

56. Two items whose C.P is Rs 2500 each one is sold at a profit of 5%. If the total profit is 20% then find profit on 2nd item?

- A) 20% B) 25% C) 30% D) 35%

Solution:

Let the second item is sold at x%
according to question

$$\begin{aligned} &= 2500 \times \frac{100 + 5}{100} + \left(2500 \times \frac{100 + x}{100} \right) \\ &= 5000 \times \left(\frac{100 + 20}{100} \right) \\ &= 25 \times 105 + 25 (100 + x) = 50 \times 120 \\ 2625 + 2500 + 25x &= 6000 \\ 25x &= 6000 - 5125 \\ 25x &= 875 \\ x &= 35 \% \end{aligned}$$

Ans : D

57. On selling an item the difference between 33% loss and 7% profit is Rs 220.

What is the cost price of the item?

- A) 600 B) 525 C) 575 D) 550

Solution:

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Let CP = x

According to question

$$x \times \frac{107}{100} - \frac{x \times 67}{100} = 220$$

$$40x/100 = 220$$

$$x = 550$$

Ans : D

58.If an item is sold at 13% loss and 14% profit then the difference between both prices is Rs 162 what is cost price of the items?

A) 625

B) 620

C) 600

D) 640

Solution:

Let CP = x

According to question

$$x \times \frac{114}{100} - \frac{x \times 87}{100} = 16x$$

$$\frac{x}{100}(114 - 87) = 16x$$

$$\frac{162 \times 100}{127} = x$$

$$x = 600$$

Ans: C

59.Tamil bought an item for Rs 2500 and sold it at 25% much amount and paid Rs 125 on it . Find profit of it?

A) 500

B) 550

C) 475

D) 625

Solution:

$$SP = \frac{CP(100 \pm P/L)}{100}$$

$$SP = \frac{2500 \times 125}{100} = 3125$$

$$\text{Profit} = SP - (CP + \text{tax})$$

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$$= 3125 - (2500 + 125)$$

$$= 3125 - 2605$$

$$\text{Profit} = 500$$

Ans : A

60. Find the profit percentage on the sale of 33 meter of cloth if the profit in the sale is equal to the S.P of 11 meter of cloth

A) 25%

B) 45%

C) 60%

D)

50%

Solution:

Let the price of 1 meter cloth is Rs. 1

$$SP = 33$$

$$\text{Profit} = \text{Rs. } 11$$

$$CP = 33 - 11 = 22$$

$$\text{Profit \%} = \frac{11}{22} \times 100$$

$$\text{Profit \%} = 50 \%$$

Ans : D

TNPSC PREVIOUS YEAR QUESTION PAPER

1) The cost price of 16 notebooks is equal to the selling price of 12 notebooks. Find the gain percent.

- (A) 24% (B) $33\frac{1}{3}\%$
(C) 16% (D) 12%

2) The cost price of 21 pens is equal to the selling price of 20 pens. The loss or gain percent is

- (A) 20% (B) 5%
(C) 10% (D) 15%

3) If the cost of 12 Articles is equal to the selling price of 10 Articles, the profit percent in the transaction is

- (A) 18% (B) $16\frac{2}{3}\%$
(C) 20% (D) 25%

4) Cost of 3 pencils and 5 erasers is ₹ 34 and cost of 2 pencils and 7 erasers is ₹ 30 then the cost of a pencil is

- (A) ₹ 8 (B) ₹ 5
(C) ₹ 4 (D) ₹ 2

5) 5 pencils and 4 erasers cost ₹ 13 whereas 9 pencils and 5 erasers cost ₹ 19 then the price of 6 pencils and 3 erasers is

- (A) ₹ 9 (B) ₹ 12

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(C) ₹ 15 (D) ₹ 18

6) Three shirts and four pants cost Rs. 3,680. Two pants and one shirt cost Rs. 1,680. Find the costs of a shirt and a pant ?

(A) Rs. 320 and Rs. 680 (B) Rs. 300 and Rs. 600
 (C) Rs. 400 and Rs. 450 (D) Rs. 310 and Rs. 690

7) A fruit seller bought 12 boxes of grapes at a price of Rs. 160 each. Two boxes was damaged. If he sold the remaining boxes at Rs. 200 each. Find the profit percent.

(A) 4.258 (B) 4.33
 (C) 4.167 (D) 4.52

8) A fruit seller bought 8 boxes of grapes at a price of Rs. 150 each. One box was damaged. If he sold the remaining boxes at Rs. 190 each. Find the profit/loss percent.

(A) Profit 130% (B) Profit 10.83%
 (C) Loss 130% (D) Loss 10.83%

9) A fruit seller bought 10 boxes of grapes at Rs. 210 each. One box was damaged. He sold the remaining boxes at Rs. 250 each. Find the profit/loss percent.

(A) 7.14% loss (B) 10.14% loss
 (C) 7.14% profit (D) 10.14% profit

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10) A man buys 10 articles for Rs. 8 and sells them at the rate of Rs. 1.25 per article. His gain is

- (A) 20% (B) 50%
(C) 19 ½% (D) 56 ¼%

11) An almirah is sold at Rs. 5,225 after allowing a discount of 5%. Find its marked price.

- (A) Rs. 5,000 (B) Rs. 5,500
(C) Rs. 6,500 (D) Rs. 5,575

12) A man bought an old bicycle for Rs. 1,500. He spends Rs. 500 on its repair and sells it for Rs. 1,800. Find the percentage of his loss.

- (A) 10% (B) 15%
(C) 20% (D) 5%

13) A refrigerator is purchased for Rs. 14,355, including sales tax. If the actual cost price of the refrigerator is Rs. 13,050, find the rate of sales tax.

- (A) 11% (B) 8%
(C) 9% (D) 10%

14) Ram sold a watch at ₹ 405 and earned a profit of 20%. What was his cost price?

- (A) ₹ 337.50 (B) ₹ 87.50
(C) ₹ 237.50 (D) ₹ 237

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15) Sasi purchased a house for ₹ 27,75,000 and spent ₹ 2,25,000 on its interior decoration. He sold the house to make a profit of 40%. What is the selling price of the house?

- (A) ₹ 31,20,000 (B) ₹ 36,00,000
 (C) ₹ 42,00,000 (D) ₹ 48,00,000

16) A man had Rs. 75 lakhs with him. He spent 48 lakhs and 85 thousands to buy a building. How much money is left with him?

- (A) 40 lakhs (B) 26 lakhs 15 thousand
 (C) 20 lakhs 25 thousand (D) 33 lakhs

17) If P% of P is 36. Then find P.

- (A) 15 (B) 60
 (C) 600 (D) 3600

18) If n% of n is 64. Then n is equal to

- (A) 6400 (B) 640
 (C) 80 (D) 160

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UNIT – X – APTITUDE & MENTAL ABILITY

- 19) A man invested $\frac{1}{3}$ of his capital at 7%, $\frac{1}{4}$ at 8% and the remaining at 10%. If his annual income is Rs. 561, the capital is
- (A) Rs. 5,400 (B) Rs. 6,000
(C) Rs. 6,600 (D) Rs. 7,200
- 20) Shyam's monthly income is Rs. 12,000. He saves Rs. 1200. Find the percent of his savings and his expenditure.
- (A) 10%, 80% (B) 10%, 90%
(C) 80%, 10% (D) 90%, 10%
- 21) After spending 40% on machinery, 25% on building, 15% on raw material and 5% on furniture, a small scale industry owner had a balance of Rs. 1,30,500. Total money with him(in rupees) was
- (A) 7,39,500 (B) 8,70,000
(C) 7,56,900 (D) 7,22,500
- 22) If 30% of (B-A) is equal to 18% of (A+B) then the ratio A : B is equal to
- (A) 1 : 4 (B) 4 : 1
(C) 1 : 2 (D) 2 : 1
- 23) 30% of x is equal to 60% of y then x : y is
- (A) 1 : 2 (B) 2 : 1
(C) 30 : 60 (D) 3 : 6

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- (A) 4.37% (B) 5%
(C) 6% (D) 8.75%

29) In 1998, the production of tea is 1584 million kgs. Which is 20% more than that in 1991. Find the production of tea in 1991.

- (A) 1270 m.kgs. (B) 1320 m.kgs.
(C) 1410 m.kgs. (D) 1520 m.kgs.

30) The value of 25% of 1200 is

- (A) 300 (B) 900
(C) 1000 (D) 600

31) 15% of the total number of biscuits in a bottle is 30. The total number of biscuits is

- (A) 100 (B) 150
(C) 200 (D) 300

32) $33\frac{1}{3}\%$ of 50% of 300 is

- (A) 50 (B) 100
(C) 150 (D) 300

33) If 20% of pure acid is in 8 litres of a solution, how many litres of pure acid is in that solution?

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- (A) 1.4 (B) 1.5
(C) 1.6 (D) 2.4

34) Find the total amount, if 12% of it is ₹ 1080

- (A) 28,000 Rs. (B) 9,000 Rs.
(C) 18,000 Rs (D) 10,800 Rs.

35) If 12% of an amount is ₹ 1080, then the amount is

- (A) ₹ 9000 (B) ₹ 8000
(C) ₹ 7000 (D) ₹ 6000

36) What is 95% of 4598?

- (A) 4800 (B) 4840
(C) 4850 (D) 4880

37) If y% of x is 50 and z% of y is 25, then the relation between x and z

- (A) $x=2z$ (B) $z=2x$
(C) $x=4z$ (D) $z=4x$

38) 5 out of 2250 parts of earth is sulphur. What is the percentage of sulphur in earth?

- (A) 11/50 (B) 2/9

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- (C) $1/45$ (D) $2/45$

39) If 60% of $\frac{3}{5}$ th of a number is 36, then find the number

- (A) 80 (B) 100
(C) 75 (D) 90

40) What percent of $\frac{2}{7}$ is $\frac{1}{35}$?

- (A) 25% (B) 2.5%
(C) 10% (D) 1000%

41) What percent of 60 is 72?

- (A) 80% (B) 120%
(C) 84% (D) 65%

42) The number which exceeds 16% of it by 42 is

- (A) 50 (B) 52
(C) 58 (D) 60

43) The population of a town is 1,76,400. It increases annually at the rate of 5% per annum. What will be its population after 2 years ?

- (A) 1,94,781 (B) 1,94,681
(C) 1,94,581 (D) 1,94,481

**MANIDHANAHEYAM FREE IAS ACADEMY – TNPSC GROUP – IV & VAO EXAM
UNIT – X – APTITUDE & MENTAL ABILITY**

44) In 2013, the population of a city is 1,25,000. After one year population increased by 7%. Then find out the population in 2014?

- (A) 8,750 (B) 1,33,750
(C) 1,16,250 (D) 1,25,000

45) 280 candidates appeared for an examination of which 252 passed. The failed percentage is.

- (A) 8% (B) 6%
(C) 10% (D) 12%

46) 30% apples out of 450 are rotten. How many apples are in good condition?

- (A) 310 (B) 315
(C) 320 (D) 325

47) The value of a machine depreciates by 10% each year. A man pays Rs. 50,000 for the machine. Find its value after three years

- (A) Rs. 35,650 (B) Rs. 36,450
(C) Rs. 35,450 (D) Rs. 37,450

48) The population of a city was 2,25,000 at 2018. If it will be increases at the rate of 12% next year. What will be the population of 2019 ?

- (A) 2,52,000 (B) 2,50,000

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(C) 2,47,000

(D) 2,52,500

49) In 2010, the population of a town is 1,50,000. If it increased by 10% in the next year. Find the population in 2011.

(A) 2,00,000

(B) 1,80,000

(C) 1,65,000

(D) 1,75,000

50) If $x\%$ of y is 100 and $y\%$ of z is 200, then the relation between x and z is

(A) $z=x/2$

(B) $z=2x$

(C) $z=x/4$

(D) $z=4x$

