

Nesto Institute

Percentage & Profit and loss - Answer

1. **Answer:** Option B

Explanation:

$$\begin{aligned} \text{Number of runs made by running} &= 110 - (3 \times 4 + 8 \times 6) \\ &= 110 - (60) \\ &= 50. \end{aligned}$$

$$\therefore \text{Required percentage} = \left(\frac{50}{110} \times \frac{x}{100} \right) \% = 45\frac{5}{11}\%$$

2. **Answer:** Option C

Explanation:

Let their marks be $(x + 9)$ and x .

$$\begin{aligned} \text{Then, } x + 9 &= \frac{56}{100}(x + 9 + x) \\ \Rightarrow 25(x + 9) &= 14(2x + 9) \\ \Rightarrow 3x &= 99 \\ \Rightarrow x &= 33 \end{aligned}$$

So, their marks are 42 and 33.

3. **Answer:** Option D

Explanation:

Suppose originally he had x apples.

Then, $(100 - 40)\%$ of $x = 420$.

$$\begin{aligned} \Rightarrow \frac{60}{100} x &= 420 \\ \Rightarrow x &= \left(\frac{420 \times 100}{60} \right) = 700. \end{aligned}$$

4. **Answer:** Option C

Explanation:

Clearly, the numbers which have 1 or 9 in the unit's digit, have squares that end in the digit 1. Such numbers from 1 to 70 are 1, 9, 11, 19, 21, 29, 31, 39, 41, 49, 51, 59, 61, 69.

Number of such number = 14

$$\therefore \text{Required percentage} = \left(\frac{14}{70} \times \frac{x}{100} \right) \% = 20\%$$

5. **Answer:** Option E

Explanation:

$$\begin{aligned} x\% \text{ of } y &= \left(\frac{x}{100} \times y \right) = \left(\frac{y}{100} \times x \right) = y\% \text{ of } x \\ \therefore A &= B. \end{aligned}$$

6. **Answer:** Option A

Explanation:

$$\begin{aligned} 20\% \text{ of } a = b &\Rightarrow \frac{20}{100}a = b \\ \therefore b\% \text{ of } \left(\frac{b}{20} \right) &= \left(\frac{20}{100} \times \frac{1}{a} \times \frac{1}{20} \right) = \frac{4}{100} \frac{a}{a} = 4\% \text{ of } a \\ &= \end{aligned}$$

7. **Answer:** Option E

Explanation:

Let the number of students be x . Then, Number of students above 8 years of age = $(100 - 20)\%$ of $x = 80\%$ of x .

$$\therefore 80\% \text{ of } x = 48 + \frac{2}{3} \text{ of } 48$$

$$\begin{aligned} \Rightarrow \frac{80}{100}x &= 80 \\ \Rightarrow x &= 100. \end{aligned}$$

8. **Answer:** Option D

Explanation:

$$5\% \text{ of } A + 4\% \text{ of } B = \frac{2}{3} (6\% \text{ of } A + 8\% \text{ of } B)$$

$$\Rightarrow \frac{5}{100}A + \frac{4}{100}B = \frac{2}{3} \left(\frac{6}{100}A + \frac{8}{100}B \right)$$

$$\Rightarrow \frac{1}{20}A + \frac{1}{25}B = \frac{1}{25}A + \frac{4}{75}B$$

$$\Rightarrow \left(\frac{1}{20} - \frac{1}{25} \right)A = \left(\frac{4}{75} - \frac{1}{25} \right)B$$

$$\Rightarrow \frac{1}{100}A = \frac{1}{75}B$$

$$\frac{A}{B} = \frac{100}{75} = \frac{4}{3}$$

$$\therefore \text{Required ratio} = 4 : 3$$

9. **Answer:** Option D

Explanation:

Let the number be x .

$$\text{Then, error} = \frac{5}{3}x - \frac{3}{5}x = \frac{16}{15}x.$$

$$\text{Error\%} = \left(\frac{16x}{15} \times \frac{3}{5x} \times 100 \right) \% = 64\%.$$

10. Answer: Option A**Explanation:**

Number of valid votes = 80% of 7500 = 6000.

∴ Valid votes polled by other candidate = 45% of 6000

$$= \left(\frac{45}{100} \times 6000 \right) = 2700.$$

11. Answer: Option A**Explanation:**

Total number of votes polled = (1136 + 7636 + 11628) = 20400.

$$\therefore \text{Required percentage} = \left(\frac{11628}{20400} \times \frac{x}{100} \right) \% = 57\%.$$

12. Answer: Option B**Explanation:**

Let the sum paid to Y per week be Rs. z .

Then, $z + 120\%$ of $z = 550$.

$$\Rightarrow z + \frac{120}{100}z = 550$$

$$\Rightarrow \frac{11}{5}z = 550$$

$$\Rightarrow z = \left(\frac{550 \times 5}{11} \right) = 250.$$

13. Answer: Option C**Explanation:**

Let the amount taxable purchases be Rs. x .

$$\text{Then, } 6\% \text{ of } x = \frac{30}{100}$$

$$\Rightarrow x = \left(\frac{30}{100} \times \frac{100}{6} \right) = 5.$$

∴ Cost of tax free items = Rs. $[25 - (5 + 0.30)] = \text{Rs. } 19.70$

14. Answer: Option A**Explanation:**

$$\text{Rebate} = 6\% \text{ of Rs. } \left(\frac{6}{100} \times \frac{x}{6650} \right) = \text{Rs. } 399.$$

$$\text{Sales tax} = 10\% \text{ of Rs. } \left(\frac{10}{100} \times \frac{x}{6251} \right) = \text{Rs. } 625.10$$

∴ Final amount = Rs. $(6251 + 625.10) = \text{Rs. } 6876.10$

15. Answer: Option B**Explanation:**

Increase in 10 years = $(262500 - 175000) = 87500$.

$$\text{Increase\%} = \left(\frac{87500}{175000} \times 100 \right) \% = 50\%.$$

∴ Required average = $\left(\frac{50}{10} \right) \% = 5\%$.

16. Answer: Option B**Explanation:**

Cost Price (C.P.) = Rs. $(4700 + 800) = \text{Rs. } 5500$.

Selling Price (S.P.) = Rs. 5800.

Gain = $(\text{S.P.}) - (\text{C.P.}) = \text{Rs. } (5800 - 5500) = \text{Rs. } 300$.

$$\text{Gain \%} = \left(\frac{300}{5500} \times 100 \right) \% = 5\frac{5}{11}\%$$

17. Answer: Option B**Explanation:**

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

S.P. of x articles = Rs. 20.

Profit = Rs. $(20 - x)$.

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

$$\Rightarrow 2000 - 100x = 25x$$

$$125x = 2000$$

$$\Rightarrow x = 16.$$

18. Answer: Option B**Explanation:**

Let C.P. be Rs. x and S.P. be Rs. y .

Then, $3(y - x) = (2y - x) \Rightarrow y = 2x$.

$$\text{Profit} = \text{Rs. } (y - x) = \text{Rs. } (2x - x) = \text{Rs. } x.$$

$$\therefore \text{Profit \%} = \left(\frac{x}{x} \times 100 \right) \% = 100\%$$

19. **Answer:** Option B

Explanation:

Let C.P. = Rs. 100. Then, Profit = Rs. 320, S.P. = Rs. 420.

New C.P. = 125% of Rs. 100 = Rs. 125

New S.P. = Rs. 420.

Profit = Rs. (420 - 125) = Rs. 295.

$$\therefore \text{Required percentage} = \left(\frac{29}{42} \times \frac{x}{10} \right) \% = \frac{147}{21} \% = 70\% \text{ (approximately).}$$

20. **Answer:** Option C

Explanation:

C.P. of 6 toffees = Re. 1

S.P. of 6 toffees = 120% of Re. 1 = Rs. $\frac{6}{5}$

For Rs. $\frac{6}{5}$, toffees sold = 6.

For Re. 1, toffees sold = $\left(6 \times \frac{5}{6} \right) = 5$.

21. **Answer:** Option A

Explanation:

Let C.P. be Rs. x.

$$\text{Then, } \frac{1920 - x}{x} \times 100 = \frac{x - 1280}{x} \times 100$$

$$\Rightarrow 1920 - x = x - 1280$$

$$\Rightarrow 2x = 3200$$

$$\Rightarrow x = 1600$$

$$\therefore \text{Required S.P.} = \left(\frac{125}{100} \times x \right) = \text{Rs. } 2000.$$

22. **Answer:** Option C

Explanation:

$$\text{C.P.} = \left(\frac{100}{122.5} \times x \right) = \text{Rs. } 320$$

$$\therefore \text{Profit} = \text{Rs. } (392 - 320) = \text{Rs. } 72.$$

23. **Answer:** Option C

Explanation:

$$\text{S.P.} = 85\% \text{ of Rs. } 1400 = \text{Rs. } \left(\frac{85}{100} \times 1400 \right) = \text{Rs. } 1190$$

24. **Answer:** Option C

Explanation:

$$\text{Cost Price of 1 toy} = \text{Rs. } \left(\frac{375}{12} \right) = \text{Rs. } 31.25$$

Selling Price of 1 toy = Rs. 33

So, Gain = Rs. (33 - 31.25) = Rs. 1.75

$$\therefore \text{Profit \%} = \left(\frac{1.75}{31.25} \times 100 \right) \% = \frac{28}{5} \% = 5.6\%$$

25. **Answer:** Option D

Explanation:

Suppose, number of articles bought = L.C.M. of 6 and 5 = 30.

$$\text{C.P. of 30 articles} = \text{Rs. } \left(\frac{5}{6} \times 30 \right) = \text{Rs. } 25.$$

$$\text{S.P. of 30 articles} = \text{Rs. } \left(\frac{6}{5} \times 30 \right) = \text{Rs. } 36.$$

$$\therefore \text{Gain \%} = \left(\frac{11}{25} \times 100 \right) \% = 44\%.$$

26. **Answer:** Option D

Explanation:

(C.P. of 17 balls) - (S.P. of 17 balls) = (C.P. of 5 balls)

$$\Rightarrow \text{C.P. of 12 balls} = \text{S.P. of 17 balls} = \text{Rs. } 720.$$

$$\Rightarrow \text{C.P. of 1 ball} = \text{Rs. } \left(\frac{720}{12} \right) = \text{Rs. } 60.$$

27. **Answer:** Option C

Explanation:

$$85 : 18700 = 115 : x$$

$$\Rightarrow x = \left(\frac{18700 \times 115}{85} \right) = 25300.$$

Hence, S.P. = Rs. 25,300.

28. **Answer:** Option A

Explanation:

$$\text{C.P. of 1 orange} = \text{Rs. } \left(\frac{350}{100} \right) = \text{Rs. } 3.50$$

$$\text{S.P. of 1 orange} = \text{Rs. } \left(\frac{48}{12} \right) = \text{Rs. } 4$$

$$\therefore \text{Gain\%} = \left(\frac{0.50}{3.50} \times 100 \right)\% = \frac{100}{7}\% = 14\frac{2}{7}\%$$

29. **Answer:** Option B

Explanation:

$$\text{C.P. of 1st transistor} = \left(\frac{100}{120} \times \frac{x}{840} \right) = \text{Rs. } \frac{x}{700}$$

$$\text{C.P. of 2nd transistor} = \left(\frac{100}{96} \times \frac{x}{960} \right) = \text{Rs. } \frac{x}{1000}$$

So, total C.P. = Rs. (700 + 1000) = Rs. 1700.

Total S.P. = Rs. (840 + 960) = Rs. 1800.

$$\therefore \text{Gain \%} = \left(\frac{100}{1700} \times 100 \right)\% = 5\frac{15}{17}\%$$

30. **Answer:** Option B

Explanation:

C.P. of 56 kg rice = Rs. (26 × 20 + 30 × 36) = Rs. (520 + 1080) = Rs. 1600.

S.P. of 56 kg rice = Rs. (56 × 30) = Rs. 1680.

$$\therefore \text{Gain} = \left(\frac{80}{1600} \times 100 \right)\% = 5\%$$

31. **Answer:** Option D

Explanation:

Gain = 25% of C.P.

In order to find gain, we must know the sale price of each article and the number of articles sold.

∴ Correct answer is (D).

32. **Answer:** Option B

Explanation:

S.P. = Rs. 250 each.

To find gain percent, we must know the C.P. of each.

∴ Correct answer is (B).

33. **Answer:** Option D

Explanation:

The ratio, in which X and Y are mixed, is not given.

So, both I and II together cannot give the answer.

∴ Correct answer is (D).

34. **Answer:** Option A

Explanation:

Gain = 20%

I. Profit = (S.P.) - (C.P.) = Rs. 40.

Thus, I give the answer. But, II does not give the answer.

∴ Correct answer is (A).

35. **Answer:** Option A

Explanation:

I. Let the list price be Rs. x.

$$\text{Then, S.P.} = 95\% \text{ of Rs. } x = \text{Rs. } \left(x \times \frac{95}{100} \right) = \text{Rs. } \frac{19x}{20}$$

II. When S.P. = Rs. x and gain = 20%.

$$\text{Then, C.P.} = \text{Rs. } \left(\frac{100}{120} \times x \right) = \text{Rs. } \frac{5x}{6}$$

$$\therefore \text{Gain} = \left(\frac{19x}{20} - \frac{5x}{6} \right) = \left(\frac{57x - 50x}{60} \right) = \frac{7x}{60}$$

$$\therefore \text{Gain \%} = \left(\frac{7x}{60} \times \frac{6}{5x} \times 100 \right)\% = 14\%$$

Thus, I and II only give the answer.

∴ Correct answer is (A).

36. **Answer:** Option E

Explanation:

I. S.P. = Rs. 12350, Gain = 23.5%

$$\therefore \text{C.P.} = \text{Rs. } \left(\frac{100}{123.5} \times 12350 \right) = \text{Rs. } 10,000.$$

II. M.P. = 130% of C.P. = 130% of Rs. 10,000 = Rs. 13,000.

From I and II, discount = Rs. (13000 - 12350) = Rs. 650.

$$\text{Discount \%} = \left(\frac{650}{13000} \times 100 \right)\% = 5\%$$

Thus, I and II give the answer.

II and III cannot give the answer. Because we require profit percentage with discount and profit percentage without discount. So II and III are not sufficient.

Since III gives C.P. = Rs. 10,000, I and III give the answer.

Therefore, I and II [or] I and III give the answer.

∴ Correct answer is (E).

37. **Answer:** Option C

Explanation:

I. Let C.P. be Rs. x .

Then, M.P. = 130% of x = Rs. $\left(\frac{13x}{10}\right)$.

III. S.P. = 90% of M.P.

Thus, I and III give,
$$\text{S.P.} = \text{Rs.} \left(\frac{90}{100} \times \frac{13x}{10}\right) = \text{Rs.} \left(\frac{117x}{100}\right)$$

Gain = Rs. $\left(\frac{117x}{100} - x\right) = \text{Rs.} \frac{17x}{100}$

Thus, from I and III, gain % can be obtained.

Clearly, II is redundant.