SSC Exam Questions

Sunday, March 12, 2023 4:00 PM

(T2 2021)

Q.1 The cost price of an article is ₹ 2800. Profit as a percentage of selling price is 20 percent. What is the actual profit (in ₹)?

Let SP = 100 . Profit → 20% on SP = 20, then CP = SP − profit = 100 − 20 = 80

actual profit % → $\frac{20}{80} \times 100\% = 25\%$ (on CP)

Actual profit = 25% of 2800 = 700

(CGL T1 2021)

Q.1 A sold a mobile phone to B at a gain of 25% and B sold it to C at a loss of 10%. If C paid ₹5,625 for it, how much did A pay (in ₹) for the phone?

CP of A = 100 SP of A = 125 = CP of B SP of B = $\frac{9}{10} \times 125$ = CP of C

$(1 - \frac{1}{10}) \times 125$

$\frac{9}{10} \times 125 \longrightarrow 100$

$1 \longrightarrow \frac{100 \times 10}{9 \times 125}$

$5625 \longrightarrow \frac{100 \times 10}{9 \times 125} \times 5625 = 5000$

(CGL T2 2022)

Q.2 The sum of the curved surface area and total surface area of a solid cylinder is 2068 cm^2. If radius of its base is 7 cm, then what is the volume of this cylinder? (use $\pi = 22/7$)

$\pi r^2 h$

Curved surface area = $2\pi rh$

Total surface area = $2\pi rh + \pi r^2 \cdot 2 = 2\pi r(r+h)$

$2\pi rh + 2\pi r(r+h) = 2068$

$\Rightarrow 2\pi rh + 2\pi r^2 + 2\pi rh = 2068$

$\Rightarrow 2 \cdot \frac{22}{7} \times 7(7 + 2h) = 2068$

$7(7 + 2h) = \frac{2068}{44}$ | $7 + 2h = 47$ | $\Rightarrow h = 20$ cm

$2\pi r(r+2h)$

$\frac{22}{7}$ 11 2 7 r

Ans

1. 2060 cm^3
2. 2480 cm^3
3. 3080 cm^3 ✓
4. 2760 cm^3

2-0+6-0 ✗

2-4+8-0 ✗

3-0+8-0 ✓

2-7+6-0 ✗

40/9

Q.3 If $\sin\theta = (9/41),\ 0° < \theta < 90°$ then what is the value of $\cot\theta$?

S (S)ome C curly t through

p p(e)ople b black p proper

h (h)ave h hair b brushing

41, 9, ? 40 $\sqrt{41^2 - 9^2} = \sqrt{1681 - 81} = \sqrt{1600} = 40$

$(40+1)^2 = 1600 + 80 + 1 = 1681$

(CHSL 22)

Q.5 A can finish a piece of the work in 16 days and B can finish it in 12 days. They worked together for 4 days and then A left. B finished the remaining work. For how many total number of days did B work to finish the work completely?

Efficient

TW = LCM(16, 12, 4) = 48 units

eA = 48/16 = 3

eB = 48/12 = 4

e(A+B) = 4(3+4) = 28 units

remaining = (48 − 28)u = 20u

B will do remaining work in $\frac{20}{4} = 5$ days

Total days = (4 + 5)d = 9 days

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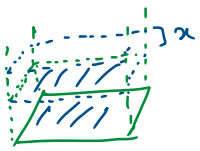
cuboidal

Q.6 A solid cube of side 8 cm is dropped into a rectangular container of length 16 cm, breadth 8 cm and height 15 cm which is partly filled with water. If the cube is completely submerged, then the rise of water level (in cm) is:



Height = x, l = 16, b = 8

Volume of water displaced = $x \times 16 \times 8$ cm^3 = 8^3 cm^3

$\Rightarrow x \times 2 \times 8 \times 8 = 8^3$

$\Rightarrow x = 4$ cm

Q.7 If $(x + 6y) = 8$, and $xy = 2$, where $x > 0$, what is the value of $(x^3 + 216y^3)$?

$x=1, y=2$; $x=2, y=1$

$2 + 6 \times 1 = 8$ $\quad x=2, y=1$ $\quad 8 + 216 = 224$

Q.10 If $4\sin^2\theta = 3(1 + \cos\theta)$, $0° < \theta < 90°$, then what is the value of $(2\tan\theta + 4\sin\theta - \sec\theta)$?

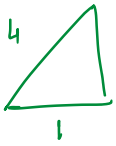
$4s^2 = 3(1+c)$

$4(1-c^2) = 3(1+c)$ $\quad (1+c) \neq 0$ why?

$4(1-c) = 3$

$1 - c = \frac{3}{4}$

$c = \frac{1}{4}$



$\frac{2\sqrt{15}}{1} + \frac{4}{4} \cdot \frac{\sqrt{15}}{4} - 4$

$\Rightarrow 2\sqrt{15} + \sqrt{15} - 4$

$3\sqrt{15} - 4$

Q.11 The lengths of the three sides of a right-angled triangle are $(x - 1)$ cm, $(x + 1)$ cm and $(x + 3)$ cm, respectively. The hypotenuse of the right-angled triangle (in cm) is:

3, 4, 5 $\quad$ 5, 12, 13 $\quad$ 6 8 10 $\rightarrow x = 7$ $\quad$ 10 cm

Q.16 Find the greatest number 23a68b, which is divisible by 3 but NOT divisible by 9.

$2+3+6+8+a+b \rightarrow 19+a+b$. Put $a=9 \rightarrow 28+b$ $\quad$ 3n & not 9n

$b = \cancel{2}, 5, \cancel{8} \rightarrow 36$

239685

CP ⟶ SP

profit

SP > CP → $\frac{P}{CP} \times 100\%$

Loss SP < CP → $\frac{L}{CP} \times 100\%$

MP —discount→ SP

↑ → mark-up

CP

$d = SP - MP$

$d\% = \frac{d}{MP} \times 100\%$

Tax

SP = — + tax

retail price = sp + tax

Q.2 When A commodity is sold for Rs. 34.80, there is a loss of 25%. What is the cost price of the commodity?

(A) Rs. 46.40

(B) Rs. 26.10

(C) Rs. 43

(D) Rs. 43.20

SP = 34.8 $\quad$ loss 25% = $\frac{1}{4}$

CP = 100, SP = 75

SP = (100 − 25% of CP

$\approx \left(1 - \frac{L}{100}\right) CP$

$= \left(1 - \frac{1}{4}\right) CP = \frac{3}{4} CP$

11.6

$34.8 = \frac{3}{4} CP$

$\Rightarrow CP = 46.4$

Q.3 If the S.P. of an article for is 4/3 times its C.P. the profit percent is.....

(A) 33 1/3%

(B) 25 1/4 %

(C) 20 ½ %

(D) 20 ¾ %

$SP = \frac{4}{3} CP$

$P = \frac{4}{3} CP - CP = \frac{1}{3} CP$

$\frac{P}{CP} = \frac{1}{3} \Rightarrow 33\frac{1}{3}\%$

Profit, Loss and Discount

Thursday, April 13, 2023 8:00 AM

Q.4 By selling an article for Rs. 19.50, a dealer makes a profit of 30%. By how much should he increase his S.P. so as to make a profit of 40%?

(A) Rs. 1.50

(B) Rs. 1.75

(C) Rs. 2

(D) Rs. 3

$1.3CP = 19.5$

$CP = 15$

$\text{Increase} = (15 \times 1.4 - 19.5)$

$= (21 - 19.5) = 1.5$

Q.5 The C.P. of 20 articles is the same as S.P. of 15 articles. The profit percent is....

(A) 25%

(B) 30%

(C) 33 1/3 %

(C) 50%

$20CP = 15SP$

$\Rightarrow \frac{CP}{SP} = \frac{15}{20}$

$CP = 15$

$SP = 20$

$P\% = \frac{5}{15} \times 100\%$

Q.6 A fruit seller purchases oranges at the rate of 3 for Rs. 5 and sells them at 2 for Rs. 4. His profit is.....

(A) 10%

(B) 11%

(C) 20%

(D) 25%

6 orange . $CP = 10$, $SP = 12$

profit = 20%

$CP = 5/3$

$SP = 2$

$\therefore \frac{2 - 5/3}{5/3}$

$1/5 = 20\%$

Q.8 A man buys eggs at 2 for Rs. 1 and an equal number at 3 for Rs. 2 and sells the whole at 5 for Rs. 3. His gain or loss percent is.....

(A) 2 2/7 %

(B) 3 6/7 %

(C) 3 2/7 %

(D) 2 6/7 %

$30 \rightarrow 15$, $CP = 35$

$30 \rightarrow 20$

$60 \rightarrow 36$, $SP = 36$

$\%p = \frac{100}{35} \times 20 = 2\frac{6}{7}\%$

Q.9 A sells a bicycle to B at a profit of 20% and B sells it to C at a profit of 25%. If C pays Rs. 1500, what did A pay for it?

(A) Rs. 825

(B) Rs. 1000

(C) Rs.1100

(D) Rs. 1125

CP A = 100

SP A = CP B = 120

SP B = CP C = $1.25 \times 120 = 150$

150 : 1500

100 : ?

1000

Q.10 Two mixers and a TV costs Rs. 7000, while 2 TVs and a mixer cost Rs. 9800. The values of one TV is.....

(A) Rs. 2800

(B) Rs. 2100

(C) Rs. 4200

(D) Rs. 8400

$4x + 2y = 14000$

$-\ x + 2y = 9800$

$3x = 4200$

$1400 + 2y = 9800$

$\Rightarrow y = 4200$

Profit, Loss and Discount

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A tradesman marks his goods at 35% above its cost price and allows a discount of 17.5% for purchase in cash. What profit per cent does he make ?

(A) 11.25

(B) 12.125

(C) 11.125

(D) 11.375 ✓

CP = 100

MP = 135

SP = (100 − 17.5)% of MP

= $\frac{82.5 \times 135}{100}$

= 111.375

825
135
4125
2475
825
111.375

A trader sells his goods at 20% profit. Had he bought it at 10% more and sold it for Rs. 70 more, he would have earned a profit of 25%. Find the cost price of the goods.

(A) Rs. 200

(B) Rs. 800

(C) Rs. 400 ✓

(D) Rs. 600

CP = x

SP = 1.2x

CP = 1.1x ✓

SP = 1.2x + 70

0.1x + 70 = $\frac{1.1x}{4}$

⇒ 70 = 0.175x

⇒ 10 = 0.025x

(break even)

A trader sold two bullocks for Rs. 8,400 each, neither losing nor gaining in total. If he sold one of the bullocks at a gain of 20%, then the other is sold at a loss of

SP = 8400

CP = 9800

1400 / 9800 → 1/7

(A) 20%

(B) $18\frac{2}{9}\%$

(C) $14\frac{2}{7}\%$ ✓

(D) 21%

8400 → 16800 ✓

1.2 × (B_1) = 8400

⇒ 12 : 10 :: B_1 : 8400

⇒ B_1 = 7000

CP = 16800 − 7000

= 9800

SP MP

After getting two successive discounts Shalini got a shirt at Rs. 136 whose marked price is Rs. 200. If the second discount is 15% find the first discount.

(A) 12.5%

(B) 15%

(C) 25%

(D) 20% ✓

(100 − x)% of 200

= $\frac{100 - x}{100} \times 200$

= 2(100 − x)

$\frac{85}{100} \times 2(100 - x) = 136$

100 − x = 80

x = 20

Profit, Loss and Discount

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3. By selling 32 oranges for ₹ 30 a man losses 25%. How many oranges should be sold for ₹ 24, so as to gain 20% in the transaction?

(1) 16 (2) 24 (3) 32
(4) 40 (5) None of these

SP of 1 orange $= \frac{30}{32}$

$CP - SP = \frac{1}{4}CP$

$\Rightarrow \frac{3}{4}CP = SP = \frac{30}{32}$

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

$SP = \frac{5}{4} \times \frac{6}{5} = \frac{3}{2}$

$3/2 \rightarrow 1$

$1 \rightarrow 2/3$

$24 \rightarrow \frac{2}{3} \times 24 = 16$

4. The cost price of 24 apples is same as the selling price of 18 apples. The percentage of gain is

(1) $12\frac{1}{2}\%$ (2) $14\frac{2}{3}\%$ (3) $16\frac{2}{3}\%$
(4) $33\frac{1}{3}\%$ (5) None of these

$24\,CP = 18\,SP$

$\Rightarrow \frac{SP}{CP} = \frac{4}{3}$

5. A merchant bought some goods worth ₹ 6000 and sold half of them at 12% profit. At what profit per cent should be sell the remaining goods to make and overall profit of 18%?

(1) 24 (2) 28 (3) 16
(4) 20 (5) 26

Profit = 18% of 6000
= 1080

₹3000 @ 12% profit

Profit = 360

remaining = 720, on remaining CP = 3000

profit

$\therefore$ % profit = 24

$\left[a + b - \frac{ab}{100}\right]\%$

6. The equivalent discount to consecutive discounts of 10% and 20% will be

(1) 32% (2) 28% (3) 36%
(4) 30% (5) None of these

9. A shopkeeper sells his goods at 15% discount. The marked price of an article whose selling price is ₹ 629 is

(1) ₹ 740 (2) ₹ 704 (3) ₹ 700
(4) ₹ 614 (5) None of these

$5 \frac{85 \cdot MP}{100} = 629$ 37

$\Rightarrow MP = 740$

10. A dishonest dealer professes to sell his goods at cost price but he uses a weight of 800 g for a kg weight. Find his gain per cent.

(1) 35% (2) 56% (3) 23%
(4) 25% (5) None of these

On selling 800g, he gains 200 g

$\therefore$ % profit $= \frac{200}{800} \times 100\%$

Formula $\text{Gain \%} = \frac{\text{True weight} - \text{False weight}}{\text{False weight}} \times 100\%$

11. A dishonest dealer sells articles at 10% loss on cost price but uses the weight of 16 g instead of 18 g. What is his profit to loss per cent?

(1) $1\frac{1}{4}\%$ gain (2) $1\frac{1}{4}\%$ loss
(3) $3\frac{1}{4}\%$ loss (4) $5\frac{1}{4}\%$ gain
(5) None of these

8 units 144 g — inventory, CP 100 per unit

CP = 800

SP = 9 units × 90 per unit

= 810

$\therefore$ profit = 810 − 800 = 10

Profit, Loss and Discount

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12. A dishonest dealer sells his goods at 10% loss on cost price and uses 30% less weight. What is his profit or loss per cent?

(1) $28\frac{4}{7}$% loss

(2) $28\frac{3}{7}$% gain

(3) $23\frac{3}{7}$% loss

(4) $28\frac{4}{7}$% gain

(5) None of the above

Total inventory = 70

Bought = 7 units @ 100/unit

Sale = 10 units @ 90/unit

7 — 10

CP = 7 × 100 = 700

SP = 10 × 90 = 900

Profit % = $\frac{200}{7}$ % = $28\frac{4}{7}$ % gain

1. Suhas sold an item for ₹ 7500 and incurred a loss of 25%. At what price, should he have sold the item to have gained a profit of 25%?

(1) ₹13800

(2) ₹ 12500

(3) ₹ 11200

(4) Can't be determined

(5) None of these

CP = 10000

7. A merchant has 1000 kg of sugar, part of which he sells at 8% profit and the rest at 18% profit. He gains 14% on the whole. The quantity sold at 18% profit is

(1) 500 kg

(2) 600 kg

(3) 400 kg

(4) 640 kg

(5) None of these

SP

$1.08x + 1.18(1000 - x) = 1140$

$\Rightarrow 1180 - 0.1x = 1140$

$\Rightarrow x = 400$ kg

profit

$0.08x + 0.18(1000 - x) = 140$

$\Rightarrow 180 - 140 = 0.1x$

14. If the difference between the selling prices of an article at profit of 6% and 4% is ₹ 3 ,then the cost price of the article should be

(1) ₹ 100

(2) ₹ 150

(3) ₹ 175

(4) ₹ 200

(5) None of these

SP = X

CP = 100,

SP = 106, 104

2 → 3

1 → 3/2

100 → 150

16. A shopkeeper purchased a chair marked at ₹ 800, at two successive discounts of 10% and 15%, respectively. He spent ₹ 28 on transportation and sold the chair for ₹ 800. His gain per cent is

(1) 40 (2) 30 (3) 25 (4) 14

(5) None of these

MP = 800 × 0.9 × 0.85

= 720 × 0.85

= 612

Adding overheads = 640

profit = $\frac{800 - 640}{640} \times 100\%$

18. A sells an article to *B* at 20% gain, *B* sells it to *C* at 10% profit and *C* to *D* at 25% gain for ₹ 330. The price at which *A* bought the article is

(1) ₹ 175

(2) ₹ 190

(3) ₹ 200

(4) ₹ 225

(5) None of these

let CP of A = 100, SP = 120 → B

SP for B = 132 → C

SP for C = 132 + 33 → 165

165 — 100

330 — 200

Percentage

Thursday, May 4, 2023 8:00 AM

28. Tho sale price of 40 articles is equal to the total printed price of 32 articles. The rate of discount is
(1) 5% (2) 10% (3) 12% (4) 20%
(5) None of these

$40SP = 32MP$
$\Rightarrow 5SP = 4MP$
$\Rightarrow \frac{SP}{MP} = \frac{4}{5}$ | $SP = 4$, $MP = 5$, $dis = 1$

discount % $= \frac{1}{5} = 20\%$

32. Pure milk costs ~~₹ 169~~ ₹ 16 per litre. After adding water the milkman sells the mixture ₹ 15 per litre and thereby makes a profit of 25%. In what respective ratio does he mix milk with water?
(1) 3 : 1 (2) 4 : 3 (3) 3 : 2 (4) 5 : 3
(5) 4 : 1

Alligation

SP = 15 per liter
CP = 12 per liter

M: 16 + W: 0 = 16
12
12: 4 = 16

$12 : 4 = 3 : 1$

37. A man sells an article at a profit of 40%. If he had bought it at 40% less and sold for ₹ 5 less, he would have gained 50%. Find the cost price of the article.
(1) ₹ 10 (2) ₹ 15 (2) ₹ 20 (4) ₹ 30
(5) None of these

CP	SP
x	$1.4x$
$0.6x$	$1.4x - 5$

$(1.4x - 5) - (0.6x) = 0.3x$

$x =$ ____

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1. If 30% of $(B - A)$ = 18% of $(B + A)$, then the ratio $A : B$ is equal to
(1) 4 : 1 (2) 1 : 4
(3) 5 : 4 (4) 5 : 9
(5) None of these

$B = 4$
$A = 1$

$\frac{B+A}{B-A} = \frac{30}{18} = \frac{5}{3}$

$\frac{B+A}{B-A} = \frac{x}{y}$ $\quad \frac{B}{A} = \frac{4}{1}$

$5/3 \rightarrow \frac{5+3}{5-3} = 8/2 = 4/1$

$\Rightarrow \frac{B}{A} = \frac{x+y}{x-y}$ (by componendo & dividendo)

2. If 30% of A is added on 40% of B, the answer is 80% of B. What percentage of A is B?
(1) 30 (2) 40
(3) 70 (4) 75
(5) None of these

$\frac{3}{10}A + \frac{4}{10}B = \frac{8}{10}B$
$\Rightarrow 3A + 4B = 8B \Rightarrow 3A = 4B$
$\Rightarrow \frac{A}{B} = \frac{4}{3}$

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