

7. COMPARING QUANTITIES ^①

Class: VIII . MATHEMATICS

INTEGRATED SOLUTIONS

TEACHING TASK
JEE MAINS LEVEL

2025/26

01. Let the number be x

$$\text{Given } 25\% \text{ of } x = \frac{25}{100} \times x = \frac{x}{4}$$

$$18\% \text{ of } 650 = \frac{18}{100} \times 650 = 117$$

$$\text{Given } \frac{1}{4}x = 117 + 19$$

$$\Rightarrow x = 544$$

Ans: C

02. Let the income be Rs x

$$5\% \text{ of } x \text{ goes to charity} = \frac{5}{100}x = \frac{x}{20}$$

$$\text{Remaining} = x - \frac{x}{20} = \frac{19x}{20}$$

$$20\% \text{ of } \frac{19x}{20} \text{ goes to Bank} = \frac{20}{100} \times \frac{19x}{20} = \frac{19x}{100}$$

$$\text{Remaining } \frac{19x}{20} - \frac{19x}{100} = \frac{19x}{20} \times \frac{4}{5}$$
$$\Rightarrow \frac{19x}{25} = 1919$$

$$\Rightarrow x = \text{Rs } 2525$$

Ans: B

03. C.P. of 21 Copies = S.P. of 18 Copies (2)

Let C.P. of 1 Copy = Rs x

C.P. of 18 Copies = Rs $18x$

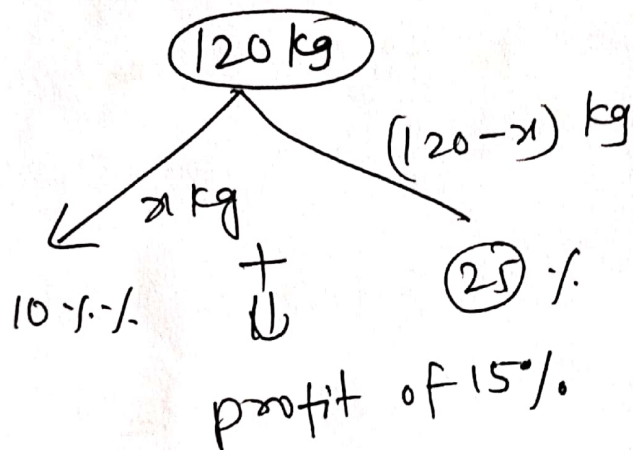
C.P. " 21 Copies = Rs $21x$

$$\text{Profit \%} = \frac{S.P. - C.P.}{C.P.} \times 100$$

$$= \frac{21x - 18x}{18x} \times 100$$

$$= \frac{50}{3} \% = 16\frac{2}{3} \% \quad \text{Ans. B}$$

04.



S.P. of x kg = $x + 10\%$ of x

$$= x + \frac{x \times 10}{100} = \frac{11}{10} x$$

S.P. of $(120-x)$ kg = $(120-x) + (120-x) 25\%$

$$= 120-x + \frac{25}{100} (120-x)$$

$$= (120-x) \left(\frac{125}{100} \right)$$

x kg + $(120-x)$ kg = $\sqrt{15\%}$ of 120 kg

$\times 120 +$

$$\frac{11x}{20} + (120-x) \frac{125}{100} = 120 \times \frac{115}{100} \quad (3)$$

$$\frac{11x}{20} - \frac{125}{100}x + \frac{120 \times 125}{100} = \frac{120 \times 115}{100}$$

$$= x = 80$$

$\therefore x = 80 \rightarrow$ from 10%.

$120 - x = 120 - 80 = 40 \rightarrow$ part of which 25% gain

Ans B

Q5

Given If selling at a 10% Loss results in Rs. 10.80. The C.P. can be calculated as follows

$$C.P. = 10\% \text{ of } C.P. = 10.80$$

$$C.P. - \frac{10}{100} \text{ of } C.P. = 10.80$$

$$\Rightarrow \frac{9}{10} C.P. = 10.80$$

$$\Rightarrow C.P. = 10.8 \times \frac{10}{9} = \text{Rs } 12$$

Calculating the S.P. for 20% profit

$$S.P. = C.P. + 20\% \text{ of } C.P.$$

$$= 12 + \frac{20}{100} \times 12$$

$$= 12 + 2.40 = \text{Rs } 14.40$$

Ans: C

Q6

$$\text{percentage} = \frac{0.05}{20} \times 100 = 0.25\%$$

Ans: C



07 let the number be x

(4)

$$75\% \text{ of } x + 75 = x$$

$$\Rightarrow \frac{75}{100} \times x + 75 = x$$

$$\Rightarrow x = 300$$

Ans: D

08

$$35\% \text{ of A's income} = 25\% \text{ of B's income}$$

$$= \frac{35}{100} \text{ of A's income} = \frac{25}{100} \text{ of B's income}$$

$$\Rightarrow \frac{\text{A's income}}{\text{B's income}} = \frac{25}{35} = \frac{5}{7}$$

Ans: B

09

$$\text{let cost price} = C.P$$

$$\text{marked price} = C.P + 20\% \text{ of } C.P$$

$$= C.P + \frac{20}{100} C.P$$

$$= \frac{6}{5} C.P$$

$$\text{Selling price} = m.p - (m.p) \times \frac{5}{100} \quad (\because \text{Discount } 5\%)$$

$$= \frac{19}{20} m.p$$

$$= \frac{19}{20} \times \frac{6}{5} C.P = \frac{57}{50} C.P$$

$$\begin{aligned} \text{Profit}\% &= \frac{S.P - C.P}{C.P} \times 100 = \frac{\left(\frac{57}{50} C.P\right) - C.P}{C.P} \times 100 \\ &= 14\% \end{aligned}$$

Ans B

10. S.P. = Rs 4,55,000

(5)

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

$$\text{S.P.} = \text{C.P.} - 25\% \text{ of C.P.} = 75\% \text{ of C.P.}$$

$$4,55,000 = \frac{75}{100} \times \text{C.P.}$$

$$\Rightarrow \text{C.P.} = 60,666.67$$

$$\therefore \text{Loss} = 60,666.67 - 4,55,000$$

$$= \text{Rs. } 1,51,666.67$$

Ans: D

JEE ADVANCED LEVEL

11. 90% of A = 30% of B

$$\Rightarrow \frac{90}{100} \times A = \frac{30}{100} \times B$$

$$\Rightarrow 3A = B$$

$$\Rightarrow 3A = x\% \text{ of } A$$

$$\Rightarrow 3A = \frac{x}{100} \times A$$

$$\Rightarrow x = 300$$

Ans: D

12. $\frac{1}{3} \times 1206 = 402$

$$\text{percentage} = \frac{402}{134} \times 100 = 300\%$$

Ans: C

13

Statement I: $\frac{C.P.}{15} \text{ bananas} = \text{Rs. } 1$

(6)

$$C.P. \text{ of } 1 \text{ banana} = \text{Rs. } \left(\frac{1}{15}\right)$$

$$\underline{S.P.} : 9 \text{ bananas} = \text{Rs. } 1.$$

$$S.P. \text{ of } 1 \text{ banana} = \text{Rs. } \frac{1}{9}$$

$$\text{Gain \%} = \left(\frac{S.P. - C.P.}{C.P.} \right) \times 100$$

$$= \frac{\left(\frac{1}{9} - \frac{1}{15} \right)}{\left(\frac{1}{15} \right)} \times 100 = 66 \frac{2}{3} \% \text{ (True)}$$

Statement II: Conceptual (True)

Ans. A

14. Statement I: 30% of 150

$$= \frac{30}{100} \times 150 = 45 \text{ (True)}$$

Statement II: Conceptual (True)

Ans. A

15 Given $P = \text{Rs. } 4096$

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

$$T = 18 \text{ months}$$

Interest compounded half yearly

1 year $\rightarrow$ 2 half year $\rightarrow$ 18 months $\rightarrow$ 3 half year

$$= \text{Rs. } 4913$$

$$\therefore A = P \left(1 + \frac{R}{100} \right)^n$$

$$= 4096 \left(1 + \frac{25}{2 \times 100} \right)^3$$

Ans. A

16

$$R = 2.5\%$$

$$P = 506000$$

$$A = P \left(1 + \frac{R}{100}\right)^n$$

$$= 506000 \left(1 + \frac{2.5}{100}\right)^2$$

$$= 531616.25$$

Ans: A

(7)

17

$$\begin{aligned} \text{Profit} &= S.P - C.P \\ &= 715 - 620 \\ &= \text{Rs. } 95 \end{aligned}$$

Ans: -

18

$$\begin{aligned} C.P &= S.P - \text{Profit} \\ &= 840 - 62 \\ &= \text{Rs } 778 \end{aligned}$$

Ans: D

19

Not good at English = 75% of 20

good at English = 25% of 20

$$= \frac{25}{100} \times 20 = 5$$

Ans: 5

20

Amount of salt in 30 kg. solution

$$= \left(\frac{2}{100} \times 30\right) \text{ Kg} = 0.6 \text{ Kg}$$

let x kg of pure salt be added

$$\frac{0.6 + x}{30 + x} = \frac{10}{100} \Rightarrow x = 2\frac{2}{3} \text{ Kg} = n\frac{1}{3} \text{ Kg.}$$

$$\therefore n = 2$$

Ans: 2

21 a) $P = 12600, n = 2, R = 10\%$

(2)

$$A = P \left(1 + \frac{R}{100}\right)^n$$

$$= 12600 \left(1 + \frac{10}{100}\right)^2$$

$$= 12600 \times \frac{121}{100}$$

$$= \text{Rs } 15246$$

$$\text{Interest} = 12600 - 15246$$

$$= \text{Rs } 2646$$

b) $A = P \left(1 + \frac{R}{100}\right)^n$

$$= 18000 \left(1 + \frac{10}{100}\right)^2$$

$$= \text{Rs } 21,780$$

Interest

$$= 21780 - 18000$$

$$= \text{Rs } 3,780 (\text{Rs})$$

c) $A = 16000 \left(1 + \frac{25}{2 \times 100}\right)^3$

$$= 22,781.25 (P)$$

d) $A = 1500 \left(1 + \frac{0}{100}\right)^T$

$$= 1500$$

Ans: —, Rs, P, —

22 a) $\frac{15}{30} = \frac{1}{2} \Rightarrow 1:2 (t)$

b) $\frac{5m}{10km} = \frac{5}{10000} = \frac{1}{2000} (P)$

c) $\frac{3}{4} \times 100 = 75\% (q)$

d) 28% of 25

$$= \frac{28}{100} \times 25$$

$$= 7 (\text{Rs})$$

Ans: t, P, 2, Rs

LEARNERS TASK (CQ'S)

(9)

01. P. of $q = \frac{P}{100} \times q$

Ans: D

02 Conceptual

Ans: A

03 Conceptual

Ans: D

04 Conceptual

Ans: B

05 Conceptual

Ans: C

06 Conceptual

Ans: D

07 Conceptual

Ans: B

08 Conceptual

Ans: D

09 Conceptual

Ans: ~~C~~

10 $\frac{75}{100} \times 500 = 375$

Ans: D

MAINS LEVEL

01. $x.15 = 37.5\% \text{ of } 220$

$$= \frac{37.5}{100} \times 220$$

$$= \frac{375}{1000} \times 220$$

$$\therefore x = \frac{55}{10} = 5.5$$

Ans: D

02. Let the number be x

(10)

Given $x = 20\% \text{ of } x + 40$

$$\Rightarrow x = \frac{20}{100}x + 40$$

$$\Rightarrow x - \frac{20x}{100} = 40$$

$$\Rightarrow x = 50$$

Ans: A

03. Let the original apples be x

$$40\% \text{ of } x = \frac{40}{100} \times x = \frac{2x}{5}$$

$$\text{Remaining} = x - \frac{2x}{5} = \frac{3x}{5} = 420$$

$$\Rightarrow x = 700$$

Ans: D

$$04. 3.6\% \text{ of } 40 = \frac{36}{100} \times 40$$

$$= \frac{36}{1000} \times 40 = \frac{36}{25}$$

$$\therefore \sqrt{3.6\% \text{ of } 40} = \sqrt{\frac{36}{25}} = \frac{6}{5} = 1.2$$

Ans: B

05. Let B's salary = Rs 100

$\therefore$ A's salary = Rs 130

$$\% \text{ of less} = \frac{\text{Difference}}{\text{A's salary}} \times 100$$

$$= \frac{30}{130} \times 100 = 23.1\% = 23\frac{1}{3}$$

B's salary is 23.1% less than that of A
 $23\frac{1}{3}$

Ans: —

06

$$S.P. = \text{Rs } 1980$$

$$\text{gain \%} = 10 \%$$

$$S.P. = C.P \times \left(1 + \frac{10\%}{100}\right)$$

$$1980 = C.P \times \left(1 + \frac{10}{100}\right)$$

$$C.P. = \text{Rs } 1800$$

Ans: B

(11)

07.

$$S.P. = \text{Rs } 247.50$$

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

$$S.P. = C.P \times \left(1 + \frac{25\%}{100}\right)$$

$$\Rightarrow 247.50 = C.P \left(1 + \frac{25}{2 \times 100}\right)$$

$$\Rightarrow C.P. = \text{Rs } 220$$

Ans: B

08

let the maximum marks be x

$$56\% \text{ of } x = 98$$

$$\Rightarrow \frac{56}{100} \times x = 98 \Rightarrow x = 225$$

Ans: D

(12)

09. 1st ratio $\rightarrow \frac{2a}{3b}$

2nd ratio $\rightarrow \frac{6ab}{5c^2}$

3rd ratio $\rightarrow \frac{c}{a}$

$$\therefore \text{Compound ratio} = \frac{2a}{3b} \times \frac{6ab}{5c^2} \times \frac{c}{a}$$

$$= \frac{4a}{5c}$$

Ans: D

10

let the total employees = x

40% of $x = 80$

$$\Rightarrow \frac{40}{100} \times x = 80$$

$$\Rightarrow x = 200$$

Ans: D

JEE ADVANCED LEVEL

11. Conceptual

Ans: A, B, C

$$12 \quad \left. \begin{array}{l} S.P = C.P \left(1 + \frac{9\%}{100}\right) \\ 810 = C.P \left(1 + \frac{8}{100}\right) \end{array} \right\} C.P = ₹ 750$$

Ans: B

13 Statement I: Given $x = 90\% \text{ of } y \Rightarrow x = \frac{90}{100} \times y$

We have to find $\frac{y}{x} \times 100$

$$= \frac{y}{\left(\frac{90}{100}\right)y} \times 100 = 111\frac{1}{9}\% \text{ (True)}$$

Statement II: Conceptual (True)

Ans: A



14. ^(Repeated) Statement I: S.P = Rs 1980
 gain% = 10%

$$S.P. = C.P. \times \left(1 + \frac{10}{100}\right)$$

$$\Rightarrow 1980 = C.P. \times \left(1 + \frac{10}{100}\right)$$

$$\Rightarrow C.P. = Rs 1800 \text{ (True)}$$

(13) Statement Conceptual (True)

Ans. A

15 C.P. = Rs 2200 ; S.P. = Rs 1980
 Loss = 2200 - 1980
 = Rs 220.

Ans. A

16 ^(Repeated) S.P = 1980 ; gain% = 10%

$$C.P. = \frac{100 \times S.P.}{100 + \text{profit}\%}$$

$$= \frac{100 \times 1980}{100 + 10} = Rs 1800$$

Ans. B

17 ^{* Repeated *}

$$\frac{2a}{3b} \times \frac{6ab}{5c^2} \times \frac{c}{a} = \frac{4a}{5c}$$

Ans. D

18 $L_A = 3x$; $L_B = 4x$
 $P_A = \left(\frac{5}{4} \times 3x\right) = \frac{15x}{4}$
 $P_B = \left(\frac{3}{2} \times 4x\right) = 6x$
 $P_A + P_B = Rs 4160$
 $\frac{15x}{4} + 6x = Rs 4160$

$x = \frac{4160 \times 4}{39}$
 Present Salary of A =
 $\frac{15x}{4} = \frac{15}{4} \times \frac{4160 \times 4}{39}$
 = Rs 1600

$P_A \rightarrow$ present salary
 $L_A \rightarrow$ last salary

Ans. B

19. 50% of $x-y = 30\%$ of $x+y$

$$\frac{50}{100} \times (x-y) = \frac{30}{100} (x+y)$$

$$\Rightarrow 5(x-y) = 3(x+y)$$

$$\Rightarrow 5x - 5y = 3x + 3y$$

$$\Rightarrow 2x = 8y$$

$$\Rightarrow x = 4y \Rightarrow k = 4$$

Ans: 4

20

$$S.P = Rs 550$$

$$Gain = \frac{1}{10} \times C.P$$

$$\text{let } C.P = x$$

$$Gain = \frac{x}{10}$$

$$S.P = C.P + \text{gain}$$

~~$$x + \frac{x}{10} =$$~~

$$550 = x + \frac{x}{10}$$

$$\Rightarrow x = 500.$$

$$Gain = 550 - 500 = 50$$

$$Gain \% = \frac{50}{500} \times 100 = 10\% = 10 \times 1\% = 10 \times n$$

$$n = 1\%$$

Ans: 1%

21 a) $\frac{2}{5} \times 100 = 40\% (s)$

b) $\frac{2}{7} \times 100 = 28.57\% (p)$

c) $\frac{13}{20} \times 100 = 65\% (x)$

d) $\frac{13}{75} \times 100 = 17.33\% (q)$

Ans: s, p, x, q

22 a) $36:64 = 9:16$ (Q)

b) 40 paise : Rs 3
 $\frac{40}{300} = \frac{2}{15}$ (S)

c) $\frac{24}{1 \text{ hr}} = \frac{24}{60} = 2:5$ (P)

d) $\frac{125}{2000} = \frac{1}{16} = 1:16$ (R)

Ans: Q, S, P, R

ADDITIONAL QUESTIONS

01. x is 90% of $y \Rightarrow x = \frac{90}{100} \times y = 0.9y$

We want to find $\frac{y}{x} \times 100$

$= \frac{y}{0.9y} \times 100 = \frac{100}{0.9} \approx 111.11\%$

Ans: D

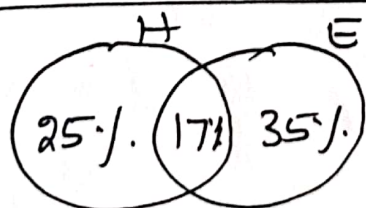
02 12.5% of $192 = 50\%$ of x

$\Rightarrow \frac{12.5}{100} \times 192 = \frac{50}{100} \times x$

$\Rightarrow x = 48$

Ans: A

03



Failed in at least one subject
 $= 25\% + 17\% + 35\%$
 $= 77\%$

Passed in 23%

Ans: A

04. $SP = ₹1140$

Loss = 5%

$S.P = (100 - \text{Loss \%}) \% \text{ of } C.P$

$1140 = (100 - 5\%) \% \text{ of } C.P$

$\therefore C.P = \frac{1140 \times 100}{95} = ₹1200$

To gain 5%. find new S.P.

$\text{New } S.P = C.P \times \left(1 + \frac{5}{100}\right)$

$= 1200 \times \left(1 + \frac{1}{20}\right) = ₹1260$

Ans: D

05. $C.P \text{ of 1 article} = \frac{8}{10} = ₹0.80$

he sells 1 article at the rate of ₹1.25

$\text{Gain \%} = \frac{\text{profit}}{C.P} \times 100 = \frac{0.45}{0.80} \times 100$

$= 56\frac{1}{4} \% \quad \text{Ans D}$

06. $S.P. = ₹150$

Loss = 25%

$S.P = (100 - \text{Loss}) \% \text{ of } C.P$

$C.P = \frac{150 \times 100}{75} = ₹200$

Ans: C

07. ~~$\text{Gain \%} = \frac{\text{gain}}{C.P} \times 100 =$~~



07. $S.P. = ₹100$

profit = ₹10.

$C.P. = S.P. - \text{Gain} = 100 - 10 = 90.$

$\text{Gain}\% = \frac{\text{Gain}}{C.P.} \times 100$

$= \frac{10}{90} \times 100 = 11\frac{1}{9}\%.$

Ans. C

08 ~~S.P.~~ Let the $C.P. = ₹x$

$S.P. \text{ at } 10\% \text{ profit} = x + 10$

$S.P. \text{ at } 15\% \text{ profit} = x + 15$

Given Difference = ₹10

$1.15x - 1.10x = ₹10$

$\Rightarrow x = ₹200$

Ans. D

09 $R = 10\%$ $n = 12 \text{ years}$, $A = 2P$

We know $A = P \left(1 + \frac{R}{100}\right)^n$

$\Rightarrow 2P = P \left(1 + \frac{10}{100}\right)^{12}$

$\Rightarrow 2 = 3.138$ which is false

Ans. B

$\Rightarrow \text{THE END} \Leftarrow$