

# COMPARING QUANTITIES ①

Class: VII; Mathematics

## SOLUTIONS

(F)

### TEACHING TASK

01. Let the no be  $x$

$$25\% \text{ of } x = 18\% \text{ of } 650 + 19$$

$$\Rightarrow \frac{25}{100} \times x = \frac{18}{100} \times 650 + 19$$

$$\Rightarrow x = 544$$

Ans: C

02. Let the incomes = Rs  $x$

$$\text{Charitable} = 5\% \text{ of } x = \frac{5}{100} \times x = \text{Rs } \frac{x}{20}$$

$$\text{Remain} = x - \frac{x}{20} = \text{Rs } \frac{19x}{20}$$

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

$$\text{Remain} = \frac{19x}{20} - \frac{19x}{100} = \text{Rs } \frac{19x}{25} = 1919$$

$$\therefore x = 2525$$

Ans: B

03. C.P of 21 copies = S.P of 18 copies.

$$\text{Let C.P of 1 copy} = \text{Rs } x$$

$$\text{C.P of 18 copies} = \text{Rs } 18x$$

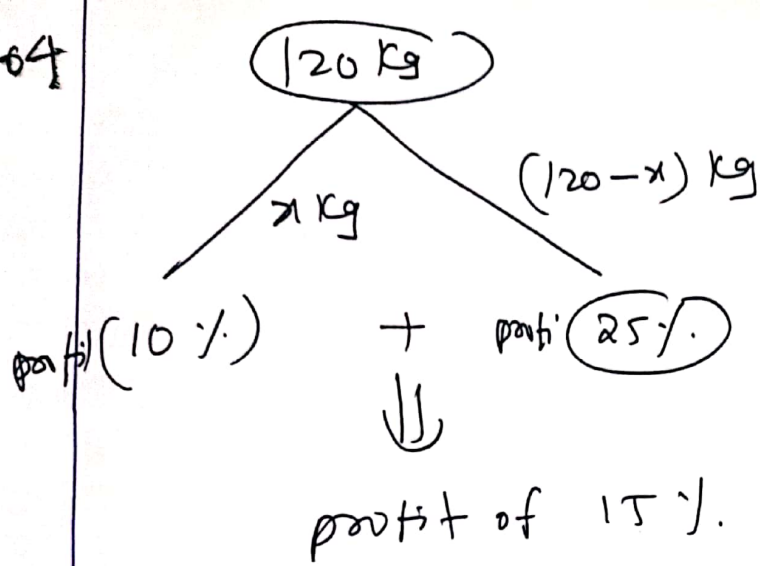
$$\text{S.P of 21 copies} = \text{Rs } 21x$$

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

$$= \frac{21x - 18x}{18x} \times 100 = \frac{3x}{18x} \times 100 = \frac{100}{6} = 16\frac{2}{3}\%$$



84



Let the Rate of  $(2)$   
 $1 \text{ kg of rice} = \text{Rs. } 1$

$$\text{S.P of } x = x + \frac{x \times 10}{100} = \frac{11x}{10} \rightarrow (1)$$

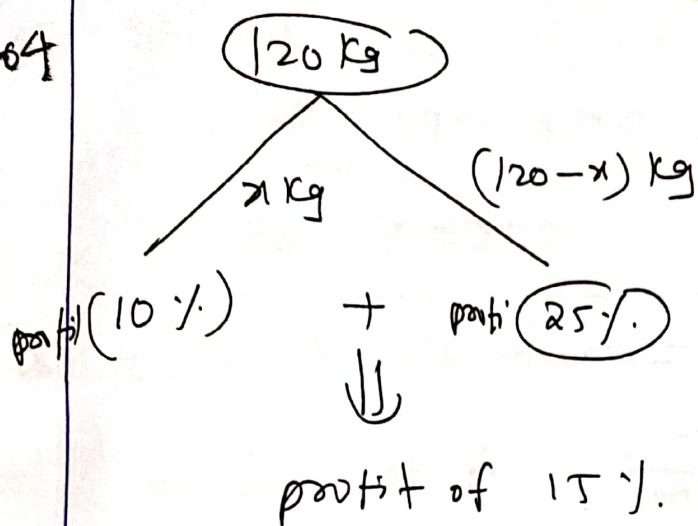
$$\begin{aligned} \text{S.P of } 120-x &= (120-x) + (120-x) \times \frac{25}{100} \\ &= (120-x) \left( \frac{125}{100} \right) \rightarrow (2) \end{aligned}$$

$$\text{S.P of } 120 = 120 + \frac{120 \times 15}{100} = 120 \times \frac{115}{100} \rightarrow (3)$$

$$\text{Now } \frac{11x}{10} + (120-x) \frac{125}{100} = 120 \times \frac{115}{100}$$

$$\Rightarrow x = 40 \text{ kg.}$$

04



Let the Rate of (2)  
1 kg of rice = Rs. 1

$$S.P \text{ of } x = x + \frac{x \times 10}{100} = \frac{11x}{10} \rightarrow (1)$$

$$S.P \text{ of } 120-x = (120-x) + \frac{(120-x) \times 25}{100} \\ = (120-x) \left( \frac{125}{100} \right) \rightarrow (2)$$

$$S.P \text{ of } 120 = 120 + \frac{120 \times 15}{100} = 120 \times \frac{115}{100} \rightarrow (3)$$

Now

$$\frac{11x}{10} + (120-x) \frac{125}{100} = 120 \times \frac{115}{100}$$

$$\Rightarrow x = 40 \text{ kg.}$$

05  $S.P = Rs. 10.80$ , Loss = 10%.

$$C.P = \frac{100}{100-L} \times S.P \\ = \frac{100}{90} \times 10.80 = 12$$

New  $S.P = 120\% \text{ of } 12 \\ = \frac{120}{100} \times 12 = Rs. 14.4. \quad \text{opt: C}$

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

Ans: C

67 Let the number be  $x$

(3)

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

$$\Rightarrow x = 300$$

Ans: D

68 35% of A's income = 25% of B's income

$$\Rightarrow \frac{35}{100} \text{ of } A = \frac{25}{100} \text{ of } B$$

$$\Rightarrow 7A = 5B$$

$$\Rightarrow \frac{A}{B} = \frac{5}{7} = 5:7$$

Ans: B

69 M.P = C.P + 20% of C.P

$$= CP + \frac{20}{100} CP$$

$$= \frac{6}{5} CP$$

Now, S.P = M.P - M.P  $\times$  5%

$$= M.P - MP \times \frac{5}{100}$$

$$= \frac{19}{20} MP.$$

$$= \frac{19}{20} \times \frac{6}{5} CP$$

$$= \frac{57}{100} CP$$

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

$$= \frac{\frac{57}{100} CP - C.P}{C.P} \times 100$$

$$= 14\%$$

Ans: B

$$10 \text{ Loss \%} = \frac{C.P - S.P}{C.P} \times 100$$

(4)

$$25 = \frac{\text{Loss}}{4,55,000 + \text{Loss}} \times 100$$

$$\Rightarrow \text{Loss} = 1,51,666.67 \text{ (approx)} \quad \text{Ans D}$$

$$11. \quad 90\% \text{ of } A = 30\% \text{ of } B$$

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

$$\Rightarrow 3A = B \rightarrow \textcircled{1}$$

$$\text{Given } B = x\% \text{ of } A$$

$$B = \frac{x}{100} \times A$$

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

$$\Rightarrow x = 300$$

Ans. D

$$12 \quad \text{one third of } 1206 = \frac{1}{3} \times 1206 = 402$$

$$134 \times x\% = 402$$

$$\Rightarrow 134 \times \frac{x}{100} = 402$$

$$\Rightarrow x = 300\%$$

$$13 \quad \text{Statement I} \\ \text{C.P of 1 banana} = \text{Rs } \frac{1}{15}$$

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

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

$$= \frac{\frac{1}{9} - \frac{1}{15}}{\frac{1}{15}} \times 100 = \frac{6}{9} \times 100$$
$$= 66\frac{2}{3}\%$$





Statement III: Conceptual (True) Ans: B

14. Statement I:  $\frac{30}{100} \times 150 = 45$  (True) (5)

Statement II: Conceptual (True) Ans: A

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

$n = 18 \text{ months} = 3 \text{ half years}, n = 3$

$R = 12.5\% \text{ P.A}$

$= \frac{12.5}{2} = \frac{25}{4}$

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

$= 4096 \left(1 + \frac{25}{400}\right)^3 = \text{Rs } 4913$

Ans: A

16.  $R = 2.5\%$ ,  $T = 2$ ,  $P = 5,06,000$ .

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

$= 5,06,000 \left(1 + \frac{2.5}{100}\right)^2$

$= 5,31,616.25$

Ans: A

\*17. Profit = C.P - S.P  
 $= 715 - 620$   
 $= \text{Rs } 15$

Ans: —

18. C.P = S.P + Profit  
 $= 840 + 62$   
 $= \text{Rs } 902$

Ans: C

19. ~~Not Not~~

19. Not good = 75% of 20

(6)

$$= \frac{75}{100} \times 20 = 15$$

$$\text{good} = 20 - 15 = 5$$

Ans: 5

20 \* Initially

2% of salt out of 30 kg solution

$$= \frac{2}{100} \times 30 = 0.6 \text{ kg}$$

Now

$$(0.6 + n \frac{1}{3}) \text{ kg} = 10\% \text{ of } 30 \text{ kg}$$

$$\Rightarrow 0.6 + \frac{4n}{3} = \frac{10}{100} \times 30$$

$$\Rightarrow n = 1.8$$

21 (i)  $P = 12600$

$$n = 2$$

$$R = 10\% \text{ P.A}$$

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

$$= 12600 \left(1 + \frac{10}{100}\right)^2 = 15,246$$

$$\text{Interest} = 15,246 - 12600 = \text{R } 2646$$

(ii)  $P = 18000$ ;  $n = 2$ ,  $R = 10\%$ .

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

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

$$= 18000 \times \frac{11}{10} \times \frac{11}{10} = \text{Rs } 21780$$

$$\text{Interest} = 21780 - 18000$$

$$= \text{Rs } 3780$$

$$(iii) P = \text{Rs. } 16000, n = 3, R = 12\frac{1}{2}\% = \frac{25}{2}\%$$

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

(7)

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

$$= 16000 \left(1 + \frac{1}{8}\right)^3$$

$$= 16000 \times \left(\frac{9}{8}\right)^3 = \underline{11664000}$$

$$= \text{Rs } 22,781.25$$

$$(iv) P = 1500, n = 2\frac{1}{2} = \frac{5}{2}, R = 10$$

$$\text{For 1st year Interest} = \frac{PTR}{100} = \frac{1500 \times 1 \times 10}{100} = \text{Rs } 150.$$

$$\text{for second year } P = 1500 + 150 = \text{Rs } 1650$$

$$\text{for 2nd year Inter} = \frac{1650 \times 1 \times 10}{100} = \text{Rs } 165$$

$$\therefore \text{for } \frac{1}{2} \text{ year } P = 1650 + 165 = \text{Rs } 1815$$

$$\therefore \text{for } 2\frac{1}{2} \text{ year} = \frac{1815 \times \frac{1}{2} \times 10}{100} = \text{Rs } 90.75$$

$$\text{Total} = 1815 + 90.75 = \text{Rs } 1905.75$$

$$22(i) \quad \frac{15}{30} = 1:2$$

$$(ii) \text{ Sm } \varnothing, \text{ } 10\text{km} = 10 \times 1000 \text{ m} = 10000$$

$$\text{Ratio} = \frac{5}{10000} = 1:2000$$



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

$$(iv) \text{ good} = \frac{72}{100} \times 25 = 18$$

$$\text{not good} = 25 - 18 = 7$$

(8)

### LEARNERS TASK

01	<u>CWS</u> Conceptual	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: <del>D</del>
10.	$\frac{75}{100} \times 500 = \text{Rs } 375$	Ans: D

### JEE MAINS LEVEL

01.	$x \times 15 = \frac{37.5}{100} \times 220$ $\Rightarrow x = 5.5$	Ans: D
02	Let the no be $x$ $20\% \text{ of } x = \frac{20}{100} \times x = \frac{x}{5}$ According to problems $x - \frac{x}{5} = 40$ $\Rightarrow x = 50$	Ans: A



03 Let he had  $x$  apples (9)

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

$$\text{Now } \frac{2x}{5} + 420 = x$$

$$\Rightarrow x = 700$$

Ans: D

$$04 \sqrt{3.6\% \text{ of } 40} = \sqrt{\frac{3.6}{100} \times 40} = \sqrt{\frac{36}{100} \times 4} = \frac{6 \times 2}{10} = 1.2$$

$$05 \text{ Required percentage} = \left( \frac{30}{100+30} \times 100 \right) \% = 23\frac{1}{3} \%$$

Ans: C

$$06 \text{ S.P} = 1980, P = 10\%$$

$$\begin{aligned} \text{C.P} &= \text{S.P} \times \frac{100}{100+P\%} \\ &= 1980 \times \frac{100}{100+10} \\ &= 1800 \end{aligned}$$

Ans: B

$$07 \begin{aligned} P\% &= \frac{\text{S.P} - \text{C.P}}{\text{C.P}} \times 100 \\ 12.5\% &= \frac{247.50 - \text{C.P}}{\text{C.P}} \times 100 \end{aligned}$$

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

Ans: B

08 Let the total marks =  $x$ .

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

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

$$\Rightarrow x = \frac{98 \times 100}{56} = 175$$

Ans: D



10 Let the total Employees =  $x$

$$40\% \text{ of } x = 80$$

$$\Rightarrow \frac{40}{100} \times x = 80 \Rightarrow x = 200$$

Ans: D

### JEE ADVANCED

01.

$$x = 90\% \text{ of } y$$

$$x = \frac{90}{100} \times y$$

$$\Rightarrow y = \frac{10x}{9}$$

$$\begin{aligned} \text{Required } y &= \frac{\left(\frac{10x}{9}\right) \times 100}{x} \\ &= 111.1\% \end{aligned}$$

Ans: D

02

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

$$\Rightarrow x = 48$$

Ans: A

03 Let the total no. student = 100.

No. of students who failed in atleast

$$\text{one subject} = 42 + 52 - 17 = 77.$$

$$\begin{aligned} \text{Passed} &= 100 - 77 \\ &= 23 \end{aligned}$$

$$\% = \frac{23}{100} \times 100 = 23\%$$

$$\begin{aligned} n(A \cup B) &= n(A) + n(B) \\ &\quad - n(A \cap B) \end{aligned}$$

Ans: A

$$04 \quad SP = 1140 = MP - \frac{5}{100} MP = MP \left( \frac{19}{20} \right) \quad (11)$$

$$\therefore 1140 = MP \times \frac{19}{20}$$

$$\Rightarrow MP = 1200$$

$$\text{New S.P.} = 1200 + 1200 \times \frac{5}{100} \\ = \text{Rs } 1260 \quad \text{Ans: D}$$

05 C.P of 10 articles - Rs. 8

$$S.P = 1.25 \times 100$$

$$= \text{Rs } 12.5$$

$$P\% = \frac{SP - CP}{CP} \times 100$$

$$= \frac{4.5}{8} \times 100 = 56\frac{1}{4}\%$$

Ans: D

06  $SP = 150$       Loss = 25%

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

$$25 = \frac{CP - 150}{C.P} \times 100$$

$$\Rightarrow CP = 200$$

Ans: C

07  $CP = \text{Rs } 100$ , profit = Rs 10

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

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

Ans: C



08 let the cost price = Rs  $x$

(12)

$$x \left[ \frac{115}{100} - \frac{110}{100} \right] = 10$$

$$\Rightarrow x = 200$$

Ans: D

09 12% of  $x = 18$

$$\Rightarrow \frac{12}{100} x = 18$$

$$\Rightarrow x = 150$$

Ans: D

10 let the amount be  $P = x$ ,  $R = 10\%$ ,  $T = ?$

$$S.I = \frac{PRT}{100}$$

$$T = \frac{S.I \times 100}{P \times R}$$

$$x = \frac{x \times 10 \times T}{100} \Rightarrow T = \frac{P \times 100}{P \times 10}$$

$$= 10 \text{ years}$$

Ans: B

→

11 conceptual

Ans: A, B, C

12. S.P = Rs 810, 9% = 8%

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

$$= \frac{100}{100 + 8} \times 810$$

$$= 750$$

Ans B

13 Statement I: 90% of  $y = x$

$$\frac{90}{100} \times y = x$$

$$y = \frac{10x}{9}$$

$$R.\% = \left( \frac{10x}{9} \right) \times 100$$

$$= 111.1\%$$

Statement II Conceptual (True)

(True)

14 Statement I:  $S.P = 1980$ ,  $P\% = 10$ .

$$\therefore C.P = \frac{100 \times S.P}{100 + P\%} = \frac{100 \times 1980}{110} = 1800 \text{ (True)}$$

Statement II: Conceptual (True)

15  $C.P = 2200$ ,  $S.P = 1980$   
 $Loss = 2200 - 1980 = 220$

16  $S.P = 1980$ ,  $P\% = 10$

$$C.P = \frac{S.P \times 100}{100 + P\%} = \frac{1980 \times 100}{110} = 1800$$

17

18  $L_A = 3x$ ,  $L_B = 4x$

$$P_A = \left(\frac{5}{4} \times 3x\right) = \frac{15x}{4}$$

$$P_B = \left(\frac{3}{2} \times 4x\right) = \frac{24x}{4}$$

$$P_A + P_B = \text{Rs } 4160$$

$$\frac{15x}{4} + \frac{24x}{4} = 4160$$

$$\Rightarrow x = \text{Rs } 426.667$$

$$\therefore P_A = \frac{15x}{4} = \frac{15 \times 426.667}{4} = \text{Rs } 1600$$

$L_A =$  loss year sales of A

$P_A =$  present year of A



19. 50% of  $(x-y) = 30\%$  of  $(x+y)$  (14)

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

$$\Rightarrow x = 4y$$

$$\therefore x = 4$$

Ans: 4

20. S.P = Rs. 550, P%. =  $\frac{1}{10} \times C.P$

$$S.P = C.P + \frac{C.P}{10}$$

$$550 = C.P + \frac{C.P}{10} \Rightarrow C.P = 500.$$

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

$$= \frac{550 - 500}{500} \times 100$$

$$= 10\% = 10\%$$

$$\Rightarrow n = 1$$

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

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

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

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

22) (i)  $36 : 64 = 9 : 16$

(ii)  $40 : 300 = 2 : 15$

(iii)  $24 : 60 = 2 : 5$

(iv)  $125 : 2000 = 1 : 16$