RATIO & PROPORTION -

Youtube Video Basics

~~Normal Values~~ -

1. Find third proportion to nos. 36 and 72.

Proportion: a : b :: b : c ⇒ b/a = c/b

b/a — ratio of b by a; c/b — ratio of c by b

36, 72, C

36 : 72 :: 72 : C

36/72 = 72/C C = 72×2 = 144

2. Find 4th proportion to nos. 7, 14, 5.

a : b :: c : d

b/a = d/c

7 : 14 :: 5 : d

14/7 = d/5 d = 10

3. What is mean value of 26 & 49.

26 : b :: b : 49

b/26 = 49/b

b² = 49×26 ⇒ b = 7√26

a : b :: b : c

b is 2nd proportion or mean value.

4. A : B B : C Find A : B : C

3 : 4 5 : 7

B : C ×5 : 7 ③

A : B 3 : 4 ①

④

15 : 20 : 28 ans.

3x 4x 5x 7x

3 4 5 7

a : b : c

3 : 4 : 4

5 : 5 : 7

15 : 20 : 28.

5. If A:B = 1:4, B:C = 3:2 and C:D = 5:6 then find A:B:C:D

B:C = 3:2
A:B = 1:4

A:B:C = 3:12:8

C:D = 5:6

A:B:C = 3:12:8

A	B	C	D
15	60	40	48

6. Sum of 2 nos = 700. Ratio b/w first & second be 2:3. find values of nos.

(M1) I = 2x   II = 3x

$5x = 700$ $x = 140$

I = 2×140 = 280
II = 3×140 = 420

(M2) Suppose 2 nos be 2 & 3 only

$\frac{2}{5} \times 700$, $\frac{3}{5} \times 700$

2+3

280, 420

7. An amt of 280 is distributed among A, B, C in the ratio 2:5:7. what is difference b/w share of B & A

Scanned By Scanner Go

(M1) 2, 5, 7 - suppose sum = 14 - diff = 3 → 20

$\frac{2}{14} \times 280^{40}$, $\frac{5}{14} \times 280^{20}$, $\frac{7}{14} \times 280^{20}$

$\frac{3}{14} \times 280 = 60$.

40, 100, 140

A B C

B - A = 100 - 40 = 60

(M2) $2x + 5x + 7x = 280$ $14x = 280$ $x = 20$

$5x - 2x = 3x = 3 \times 20 = 60$

8. A bag contains equal no. of 50 paisa, 25 paisa, 20 paisa, & 5 paisa coins resp. If total value = 40 how many coins of each type are there.

50p 25p 20p 5p = 100p = 1₹

(M1) Stupid!

$\frac{50}{100} \times 40^{20}$ $\frac{25}{100} \times 40^{10}$ $\frac{20}{100} \times 40^{8}$ $\frac{5}{100} \times 40^{2}$

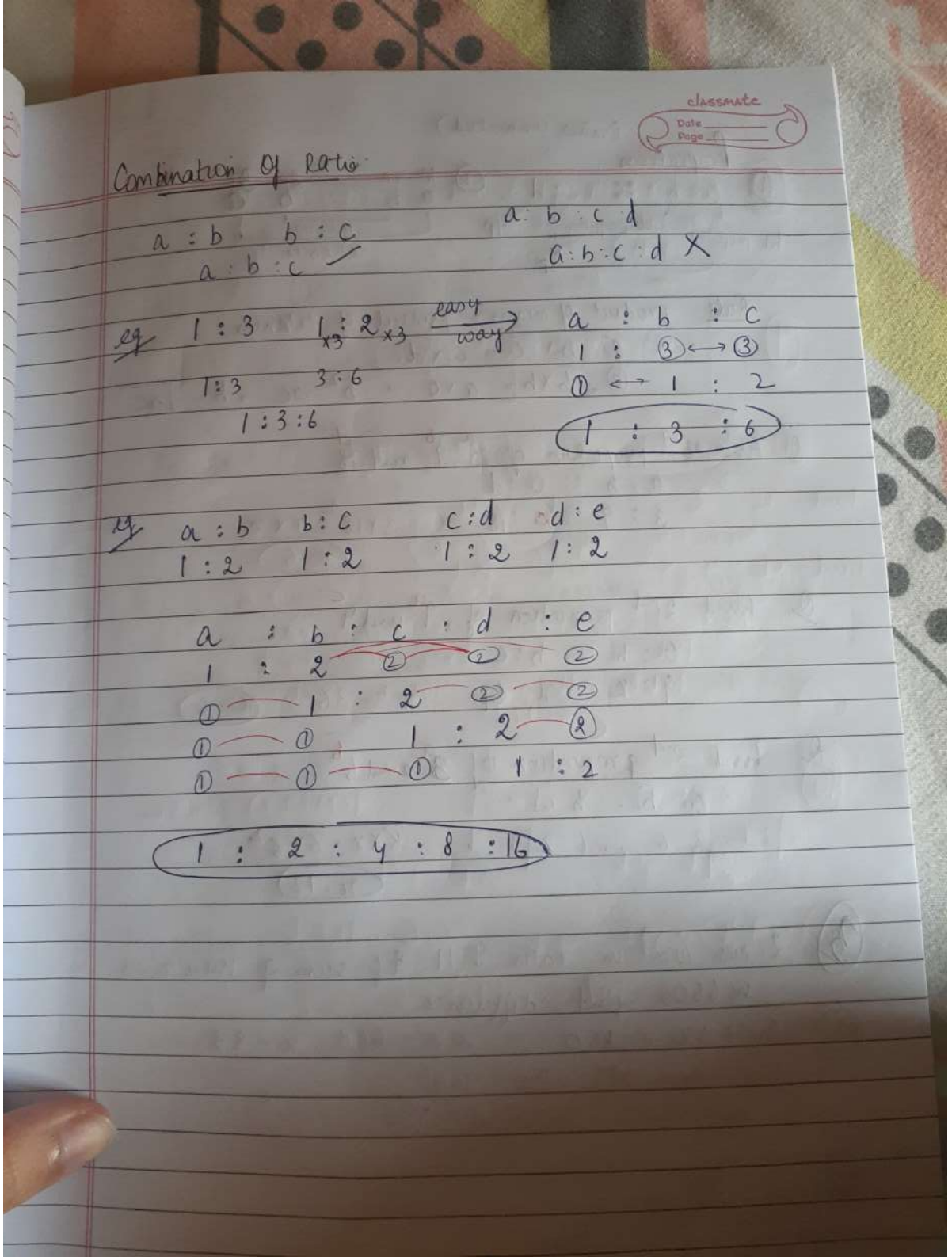
20 Rs. 10 Rs 8 Rs 2 Rs.

$\frac{20 \times 100^{2}}{50} = 40$ coins $\frac{10 \times 100^{4}}{25} = 40$ coins $\frac{8 \times 100^{5}}{20}$ $\frac{2 \times 100^{20}}{5}$

40 coins 40 coins

(M2) $.50x + .25x + .20x + .05x = 40$

$1x = 40$ $x = 40$



Combination of Ratio

a : b b : c
a : b : c ✓

a : b : c d
a : b : c : d ✗

eg 1 : 3 1 : 2 (×3) easy way

1 : 3 3 : 6
1 : 3 : 6

a : b : c
1 : ③ ↔ ③
① ↔ 1 : 2
1 : 3 : 6

eg a : b b : c c : d d : e
1 : 2 1 : 2 1 : 2 1 : 2

a : b : c : d : e
1 : 2 ② ② ②
① 1 : 2 ② ②
① ① 1 : 2 ②
① ① ① 1 : 2

1 : 2 : 4 : 8 : 16

Proportion (ratio connected)

① $a : b :: c : d$ (1st proportion, 2nd proportion, 3rd proportion, 4th proportion)

② $a : b :: b : c$ (1st proportion, 2nd proportion, 3rd proportion; means, extremes)

Rule: product of means = product of extremes

① $b \times c = a \times d$.

② $b \times b = a \times c \rightarrow b^2 = ac \rightarrow b = \sqrt{ac}$

Q Find 3rd proportion of 3^a 9^b and 18^d

$a : b :: c : d$

$3 : 9 :: x : 18 \rightarrow 3 \times 18 = 9 \times x$

$x = 6$

Q Find 2nd proportion of 9^a and 4^c

$a : b :: b : c$

$9 : x :: x : 4 \quad x^2 = 36 \quad x = 6$

Q Find 3rd proportion of 3^a and 6^b

$a : b :: b : c$

$3 : 6 :: 6 : 2 \rightarrow 3 \times x = 6 \times 6^2$

$x = 12$

③ 2 nos. are in ratio 9:11 If sum of those 2 nos. is 660, find difference

M1 $9x + 11x = 660 \quad 20x = 660 \quad x = 33.$

Nos. $9x = 297 \quad 11x = 363$

Difference = $363 - 297 = 66$

M2

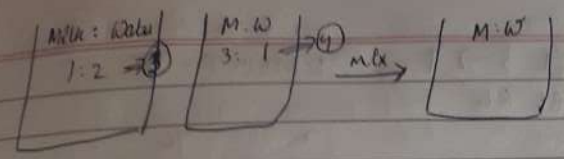
660

$a : b$

$9 : 11 \Rightarrow 20$ units

1 unit = 33

difference = 2 units = $2 \times 33 = 66$

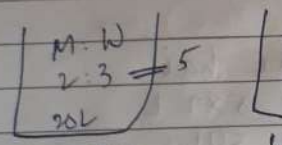
Q 

LCM(3,4) = 12 L - capacity of each tank

1 : 2 → 12 L (3)
4L 8L
1 unit = 4

3 : 1 → 12 L (4)
9L 3L
1 unit = 3

M : W = 13 : 11

Q 

5 units = 20L
1 unit = 4L
2 : 3
8L 12L

4 units = 20L
1 unit = 5L
1 : 3
5L 15L

M : W = 13 : 27

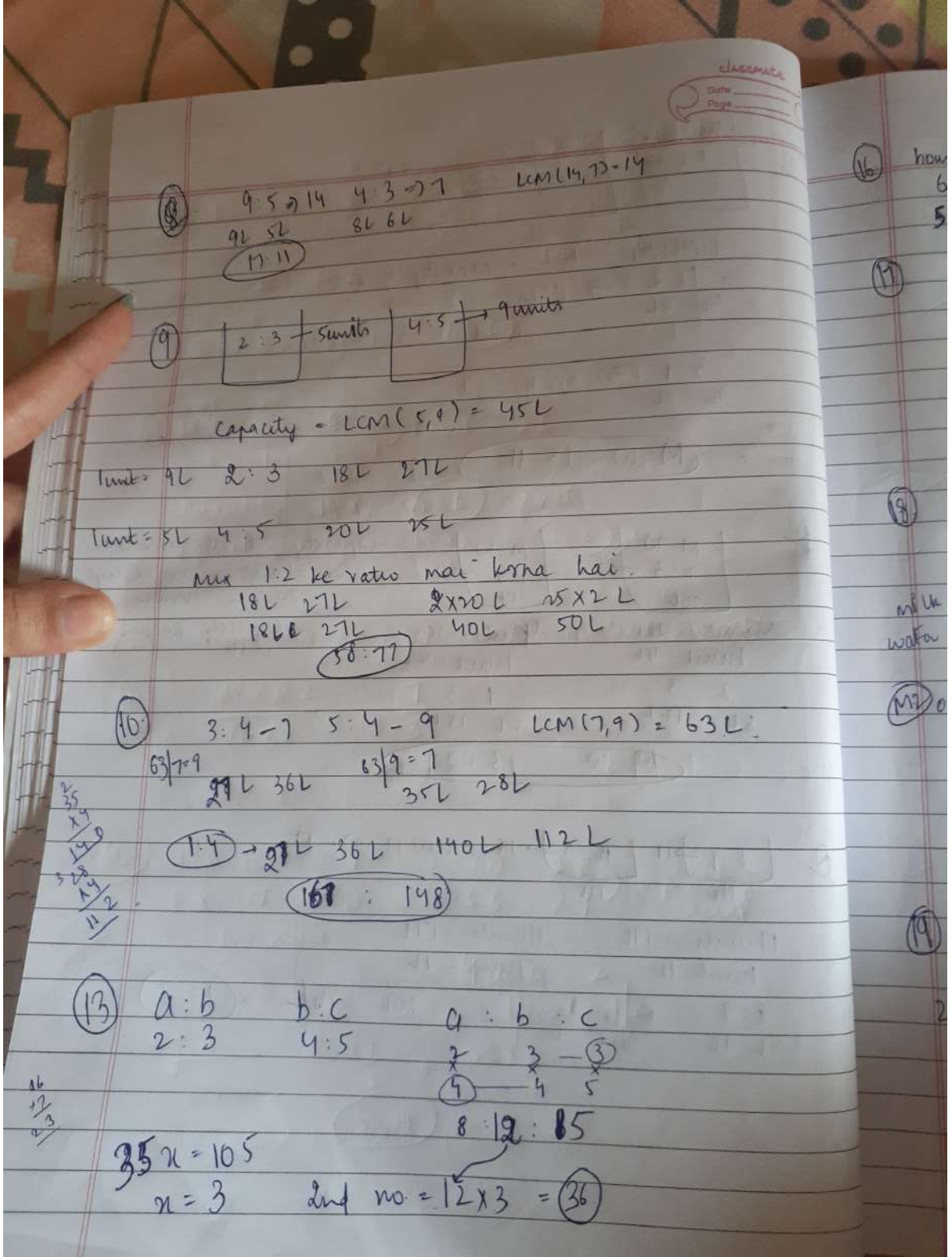
capacity - LCM(5,4) = 20.
↳ calculation easy ho liye 20 liya. Vrna capacity kuch bhi ho.

Q 8 : 9 ≠ 17 | 12 : 5 ≠ 17 LCM(17,17) = 17
17L 17L

17 units = 17L
1 unit = 1L
8 : 9
8L 9L

17 units = 17L
1 unit = 1L
12 : 5
12L 5L

= 20L : 14L = 10 : 7



8. 9:5 → 14 4:3 → 7 LCM(14, 7) = 14
9L 5L 8L 6L
17:11

9. 2:3 → 5 units 4:5 → 9 units
Capacity = LCM(5, 9) = 45L
Unit = 9L 2:3 18L 27L
Unit = 5L 4:5 20L 25L
Mix 1:2 ke ratio mai krna hai.
18L 27L 2×20L 25×2L
18L 27L 40L 50L
58:77

10. 3:4 → 7 5:4 → 9 LCM(7, 9) = 63L
63/7 = 9 63/9 = 7
21L 36L 35L 28L
1:4 → 21L 36L 140L 112L
157 : 148

13. a:b 2:3 b:c 4:5
a : b : c
2 3 (3)
(4) 4 5
8 : 12 : 15
35x = 105
x = 3 2nd no. = 12×3 = 36

(16) hound hare — speed/dist — time

6 : 7 — 36 : 35 — 35 : 36

5 × 6

(17) hound hare

2 3

(18) 5 : 2 ⇒ 7 units 28 l capacity 1 unit = 4 l

20 l 8 l

milk $\frac{20}{(8+x)} = \frac{2}{5}$ ⇒ $100 = 16 + 2x$

$84 = 2x$ ∴ (42 l)

(19) only water is added, so milk will remain constant.

M : W — M : W — 14 units = 28 l, 1 unit = 2 l

2 × 5 : 2 — 10 : 4 — 21 units added.

5 × 2 : 5 — 10 : 25

21 units = 21 × 2 = (42 l)

(19) M : W — milk remains constant

2 : 1 — M : W

2 × 1 : 2 — 2 : 1 ⇒ 3 units = 60 l, 1 unit = 20 l

2 : 4 — (3 units added)

3 × 20 = (60 l)

water is added, milk is constant

(20) M : W
9 : 4 — 2 units.

$13x = 16$, $x = \frac{16}{13}$

2 units = 4L
1 unit = 2L

3 × 3 : 2 = 9 : 6

Total Quantity = 13×2 = (26 L)

(21)
M : W
2× 4 : 3
8 : 7

8 : 6
8 : 7
) 1 unit = 2L

Quantity = 14 × 2 = (28 L) original
final quantity = 15 × 2 = (30 L) ans

(22) change hone ke baad- kuch constant nhi rehta

(M1) $\frac{15x - 2}{7x - 2} = \frac{7}{3}$

(M2)
diff = 8
4 × 15 : 7
8 × 7 : 3
diff = 4

(60 : 28
(56 : 24) gap becomes equal.

4 units = 2
1 unit = 1/2.

Org. nos. $60 \times \frac{1}{2}$, $28 \times \frac{1}{2}$

(30, 14)

(23)
A
4 × 9
5 × 7

Incor

(24)

To

differently

(30)

A
B

(23) A : B

4x 9 : 4 incomes) gap = 2000.

5x 7 : 3 expenditures

4

36 : 16

35 : 15) 1unit = 2000.

Incomes = 36 × 2000 , 16 × 2000

72000, 32000

(24) M : W

9 : 4

3x 3 : 2 9 : 6) 2units = 8L

1unit = 4L.

Total qty = 13 × 4 = 52L

different type

(20)

A	B
5	3

−16L

A : B = 5 : 3 = 8units

5x + 3x

1unit = 2L.

A - 10L bahan nikle

B - 6L " "

$$\frac{5x-10}{3x-6+16} = \frac{3}{5} \Rightarrow \frac{5x-10}{3x+10} \times \frac{3}{5}$$

$$25x - 50 = 9x + 30$$

$$16x = 80$$

$$x = 5$$

A - 5x	= 25L
B - 3x	= 15L

	A	B
(M2) 1st P 3×95		3
2nd P 5×3		5

1st process mai A & B dono changes – but ratio 5:3 hee rhegi
2nd process mai only B changes

	A	B
1P →	15	9
2P →	(15)	25

} 16 units added = 16L
1 unit = 1L

2P → A 15L, B 25L → 40L capacity.

40L: A : B = 5 : 3 = 8 — initially

1 unit = 5L (40/8)

initially – A B
5×5, 3×5
25L, 15L

(31)

	A	B	
1P	6 : 5	6 : 5	
2P 2×	3 : 4	= 6 : 8	

} 3 units = 33L
1 unit = 11L

2P → A = 6 × 11 = 66L
B = 8 × 11 = 88L

Capacity = 154L

66
88
154

154: A : B = 6 : 5 = 11

11 units = 154
1 unit = 154/11 = (14L)

Initial

initial qty A = 6×14 = (84L)
B = 5×14 = (90L)

14
×6
84

(32)

3 ×

(3)

9L

(34)

(36)

$3x + 5x = 24$

$x = 3$

(32) A : B

3 : 1

3×1 : 3

3 : 1 → 8 units = 8L

1 unit = 1L

3 → 3L, 1 → 9L

Capacity = 12L

12 L → 1 unit = 3L.

3 : 1 = 4 units

3 → 9L, 1 → 3L

(34) A : B

9 : 4

2 : 5

18 : 20

~~how employees decrease ratio~~

Increase 9 : 10.

(36) A : B

1 : 1

3 : 1

A: 7 hours, 1 hr - $\frac{1}{7}$ part

B: 6 hours, 1 hr - $\frac{1}{6}$ part.

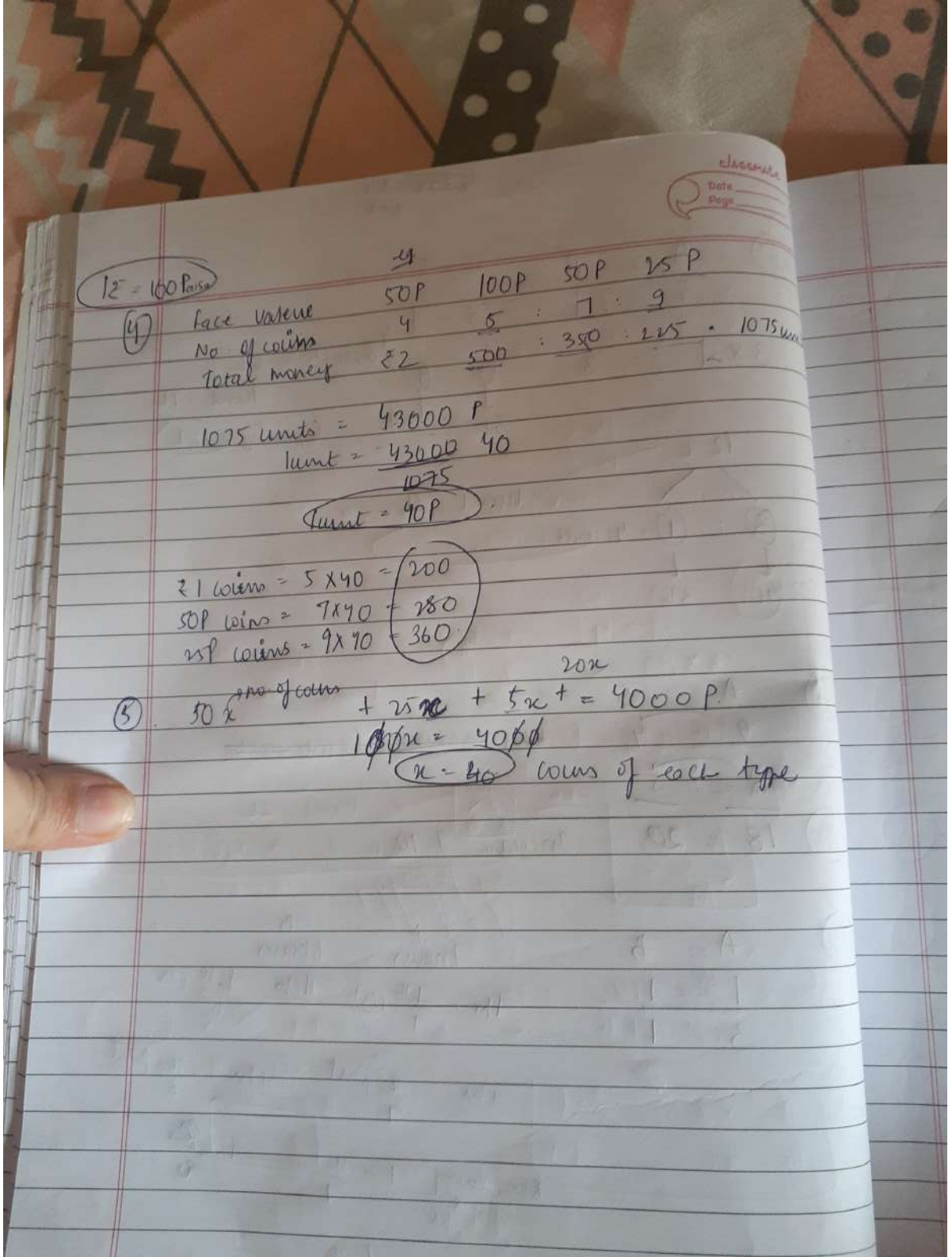
x hr - $\frac{x}{7}$ part

x hr - $\frac{x}{6}$ part.

Remaining after x hr - $1 - \frac{x}{7}$

$1 - \frac{x}{6}$

$\frac{1 - \frac{x}{7}}{1 - \frac{x}{6}} \times \frac{3}{1}$



₹2 = 100 Paise

(4)

	50P	100P	50P	25P
Face value				
No of coins	4	5	7	9
Total money	₹2	500	350	225

: 1075 units

1075 units = 43000 P

1 unit = $\frac{43000}{1075}$ 40

1 unit = 40P

₹1 coins = 5 × 40 = 200

50P coins = 7 × 40 = 280

25P coins = 9 × 40 = 360

(5) 50x + 25x + 5x = 4000P

20x

~~no of coins~~

$\cancel{100}x = \cancel{4000}$

x = 40 coins of each type

Ratio Proportion Worksheet

1. $6 : 8 :: 9 : x$ $\frac{8}{6} = \frac{x}{9}$ $\frac{8 \times 9}{6} = x$ $x = 12$ (1)

2. $3 : 6 :: 6 : x$ $\frac{6}{3} = \frac{x}{6}$ $x = 12$ (4)

3. $9 : 11$ sum = 20

   $\frac{9}{20} \times 660$ $\frac{11}{20} \times 660$

   difference = $\frac{2}{20} \times 660$ = 66 (1)

4. | | 100p | 50p | 25p |
   |---|---|---|---|
   | No. of coins | $5x$ | $7x$ | $9x$ |
   | money in (p) | $500x$ | $350x$ | $225x$ |

   $1075x = 43000$

   $x = 40$ coins.

   ₹1 = $5 \times 40 \times 1$ = 200 coins (1)

   50p = 7×40 = 290 coins

   25p = 9×40 = 360 coins

5. $50x + 25x + 20x + 5x = 4000p$

   $100x = 4000p$

   $x = 40$ coins (1)

6. W : M   6 : 11   W : M   9 : 8

   ratio of strengths of milk in 2 mixtures

   11 : 8 (3)

12x + 5x capacity = 17x

capacity = LCM(12, 5) = (60) L

M : W

7. [1:9] 17 [12:5] 17

8L 9L 12L 5L

LCM(17, 17) = 17.

M : W in new mixture
20 : 14 (10 : 7) (4)

8. [9:5] 14 units [4:3] 7 units

(84) L capacity

14 units = 84
1 unit = 84/14 = 6

1 unit = 84/12 = 7

9×6 + 5×6
54 + 30 = (84) L

4×7 + 3×7
28 + 21

LCM(14, 12) = 2 | 14, 12 | 7, 6

LCM(14, 7) = (14 L) capacity. 84

9L 5L , 4×2L + 3×2L
8L + 6L

(17 : 11) (1)

9. [2:3] 5 [4:5] 9

LCM(5, 9) = 45 L capacity

5x = 45
x = 9

9x = 45
x = 5

18L, 27L 20L, 25L

18L + 2×20L , 27L + 2×25L
58L 77L

(58 : 77) (2)

10. [3:4] 7 [5:4] 9

LCM(7, 9) = 63.

7x = 63
x = 9

9x = 63
x = 7.

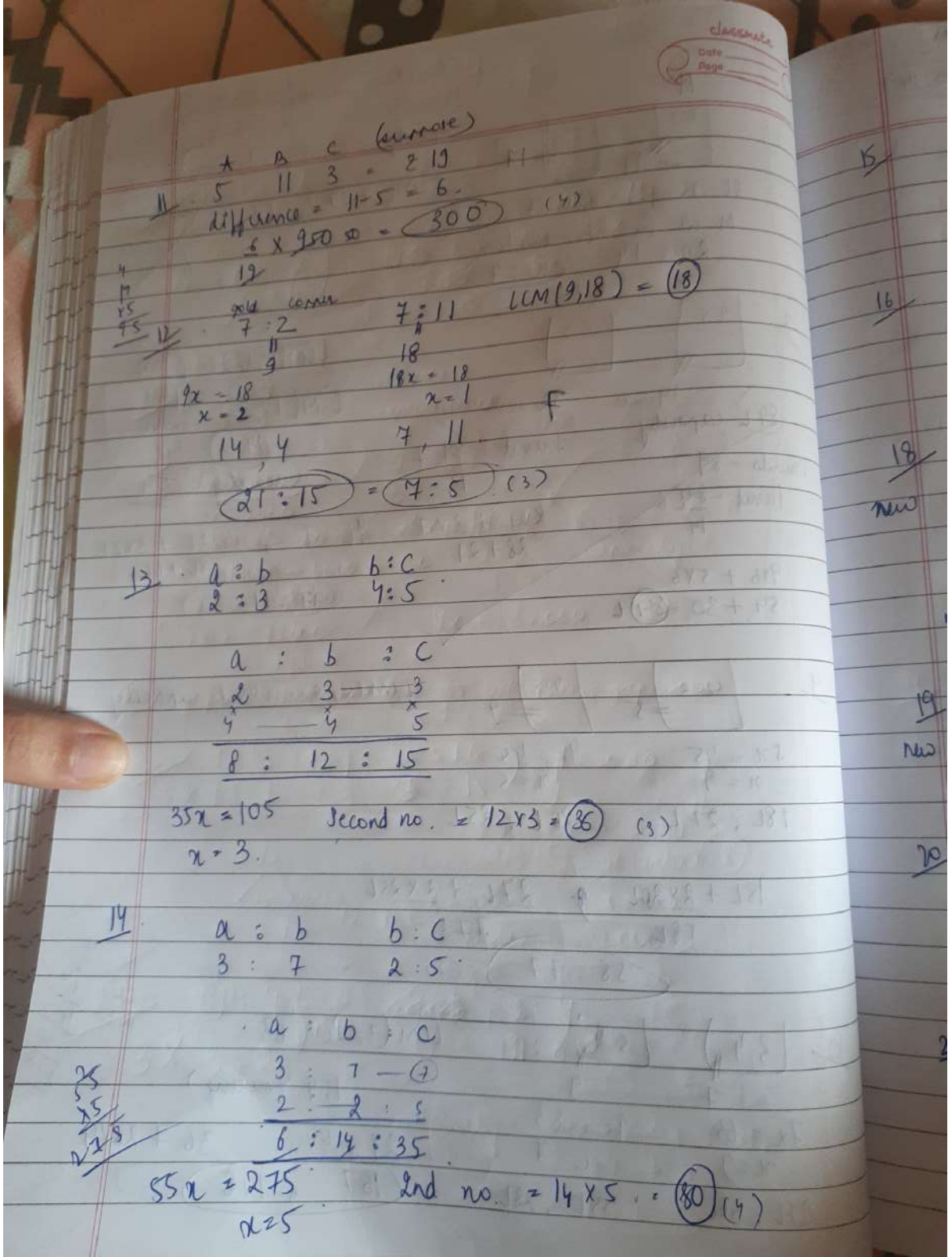
27L, 36L 35L, 28L

1:4 (mixing)

27 + 4×35 , 36 + 28×4
(167 : 148) (3)

35 ×4 = 140 28 ×4 = 112

Scanned By Scanner Go



A B C (surname)
11. 5 11 3 . 2 19
Difference = 11-5 = 6.
6 × 50 = 300 (4)

12. old comer
7 : 2 = 9
9x = 18
x = 2
14, 4

7 : 11 = 18
18x = 18
x = 1
7, 11

21 : 15 = 7 : 5 (3)

LCM(9,18) = 18

13. a : b b : C
2 : 3 4 : 5

a : b : C
2 — 3 — 3
4 — 4 — 5
8 : 12 : 15

35x = 105
x = 3.
Second no. = 12 × 3 = 36 (3)

14. a : b b : C
3 : 7 2 : 5

a : b : C
3 : 7 — (1)
2 — 2 : 5
6 : 14 : 35

55x = 275
x = 5
2nd no. = 14 × 5 = 80 (4)

21 × 4 = 84

15. $a : b : c : d$

3 : 4 — 4 — 4

5 5 7 7

$45 : 60 : 84 : 140$ (2)

16. $6 : 7$

$5 : 6$

$36 : 35$ (1)

17. $3 : 4$

$2 : 3$

$9 : 8$ (1)

18. M : W

2× 5 : 2 — 28L — $7x = 28$, $x = 4L$

New 5× 2 : 5

old 10 : 4

new 10 : 25 — 21x added

$14x = 28$, $x = 2L$

$21 \times 2 = 42L$ (1)

19. M : W

1× 2 : 1 — 60L

New 2× 1 : 2

2 : 1 → 2 : 4 (+3x)

$3x = 60$, $x = 20$. 60L should be added (3)

20. M : W

9 : 4

3× 3 : 2 — +4L of water

9 : 4 → 9 : 6 (+4L)

$4L = 2x$, $x = 2L$

org. mixture capacity : 18 + 8 = 26L (1)

21. 2× 4 : 3 → 8 : 7 (+2L)

8 : 6 → 8 : 7

$x = 2L$

final mixture capacity : 16 + 14 = 30L (4)

(M2) 4X 15 : 7   60 : 28   Nos. 60 X 1/2
8X 7 : 3   56 : 24) 4x = 2 (x = 1/2)   (30, 14)

22. old 15 : 7
New 7 : 3

$\frac{15x - 2}{7x - 2} = \frac{7}{3}$

$45x - 6 = 49x - 14$

$14 - 6 = 49x - 45x$

$8 = 4x$

($x = 2$)

Nos. - 15x = (30)
7x = (14)

23. 9 : 4 - incomes
7 : 3 expenditures

$\frac{9x - 2000}{4x - 2000} = \frac{7}{3}$

$27x - 6000 = 28x - 14000$

$14000 - 6000 = x$

$8000 = x$

$9x = 72000$, $4x = 32000$ (4)

(M2) gaps equal krnalo. as we know gap = 2000.

4X 9 : 4   36 : 16
5X 7 : 3   35 : 15) gap = 2000

$16x - 15x = 2000$

$x = 2000$

Incomes = 36 X 2000 , 16 X 2000

(72000 , 32000)

24. 9 : 4
3 X 3 : 2) 18L   9 : 4
9 : 6

25. 2×4 : 3
8 : 7) +6L

8 : 6 = x : 6L
8 : 7

final mixture = 8×6 + 7×6
48 + 42 = 90L (5)

26. 13 : 28
1 : 2

(M1) $\frac{13+x}{28+x} = \frac{1}{2}$

$26 + 2x = 28 + x$

$x = 2$ (3)

(M2) terms means 13 & 28
apne no. likha hota toh 13x & 28x hota nahi.

a) 17 : 32 ≠ 1 : 2 b) 16 : 31 ≠ 1 : 2 c) 15 : 30
1 : 2

27. $\frac{9+x}{17+x} = \frac{3}{5}$ = $45 + 5x = 51 + 3x$

$2x = 6$

$x = 3$ (2)

(M2) a) 13 : 21 ≠ 3 : 5 b) 12 : 20
3 : 5

28. $\frac{15-x}{17-x} = \frac{6}{7}$ = $105 - 7x = 102 - 6x$

3 / 15 ×7 / 105 — x / 17 ×6 / 102

$3 = x$ (2)

29. $\frac{11-x}{25-x} = \frac{4}{11}$ = $121 - 11x = 100 - 4x$

$21 = 7x$

$x = 3$ (2)

30. 3x 5 : 3
5 x 3 : 5

15 : 9) 16x = 16L
15 : 25 x = 1L

Capacity = 15L, 25L = 40L

40
5 : 3
25L, 15L

8x = 40
x = 5

31. 6 : 5) +33. only B
2 x 3 : 4

6 : 5
6 : 8

3x = 33
x = 11L

15 4
6 5

66L + 88L = 154L
capacity

11x = 154
x = 14L

8x = 14 x 6 = 84L (1)

32. 3 : 1
3 x 1 : 3

3 : 1) 8x = 8L
3 : 9 x = 1L

12
3 : 1 4x = 12L

Capacity = 3 + 9 = 12L (1)

33. 6 x 7 : 6
7 x 6 : 7

42 : 36) 13x = 26
42 : 49 x = 2

Capacity = 42 x 2 + 49 x 2
84 + 98
182L (4)

34) Employees - 9 : 4 | Pehle agar 9 toh ab 4
wages - 2 : 5 | Pehle 2 ₹ deta tha ab ₹ 5 dena hai.
bill - 18 : 20
9 : 10 - Pehle agar ₹ 9 tha bill toh ab ₹ 10 dena hai.

Increase 9 : 10 (3)

35) Height = 1m.
In 7 hrs, candle consumed = 1m
In 1 hr, ——— = $\frac{1}{7}$ m.

In 6 hrs, candle consumed = 1m
In 1 hr, ——— = $\frac{1}{6}$ m.

x hrs - $\frac{x}{7}$ m, $\frac{x}{6}$ m

$\frac{x}{7} : \frac{x}{6} = \frac{3}{1}$ — $\frac{x}{7} \times \frac{x}{7}$

Remaining after x hrs $1 - \frac{x}{7}$, $1 - \frac{x}{6}$

$\frac{7-x}{7}$, $\frac{6-x}{6}$

Acc. to Ques, $\frac{7-x}{7} \div \frac{6-x}{6} = \frac{3}{1}$

$\frac{7-x}{7} \times \frac{6}{6-x} = \frac{3}{1}$

$(7-x) \times 2 = 3(7 \times (6-x))$

$42 - 6x = 3(42 - 7x)$

$42 - 6x = 1 \quad 14 - 2x = 42 - 7x$

$5x = 28$

3 | 42
14
28
42
35
7

$x = \frac{28}{5}$ hrs

$5\overline{)28}$ → 5, remainder 3

$5\text{hrs} + \frac{3}{5}\text{ hrs}$

$\frac{3}{5} \times 60^{12} = 36$ mins.

5hrs 36 mins (1)

37 $1m - 3hrs$ $\quad 1m - 1hr$

$1hr = \frac{1}{3}m$ $\quad 1hr = 1m$

$x\,hr - \frac{x}{3}m$ $\quad x\,hr - xm$

Remaining after x hrs $= \left(1 - \frac{x}{3}\right)m$ $\quad (1-x)m$

$$\frac{1-\frac{x}{3}}{(1-x)} = \frac{2}{1}$$

$$1 - \frac{x}{3} = 2 - 2x \quad , \quad \frac{3-x}{3} = 2 - 2x$$

$$3 - x = 6 - 6x$$

$$5x = 3 \quad x = \frac{3}{5}\text{ hrs} \quad 36 \text{ minutes}$$

(3)

38 a b c

a : b $\quad 4a = 5b \quad a/b = 5/4$

a : c $\quad 4a = 7c \quad a/c = 7/4$

a	:	b	:	c
5		4		4
7		7		4
35		28		16

a : b = 5 : 4

a : c = 7 : 4

A common hai toh b:a x:a:c nikalo
4:5 7:4

b	:	a	:	c
4		5		5
		7		4
28	:	35	:	20

$83x = 1162$

$x = \frac{1162}{83}$ (14)

smallest value = $\frac{1162}{83} \times 20$

280 (4)

39. A B C

$\frac{2}{3}x : \frac{x}{6} : \frac{1}{4}x$: x

$\frac{x}{6} + \frac{x}{4} + x = 680$

$\frac{2x + 3x + 12x}{12} = 680$

$17x = 680 \times 12$

$x = 480$ (3)

40
17 | 680
68
00

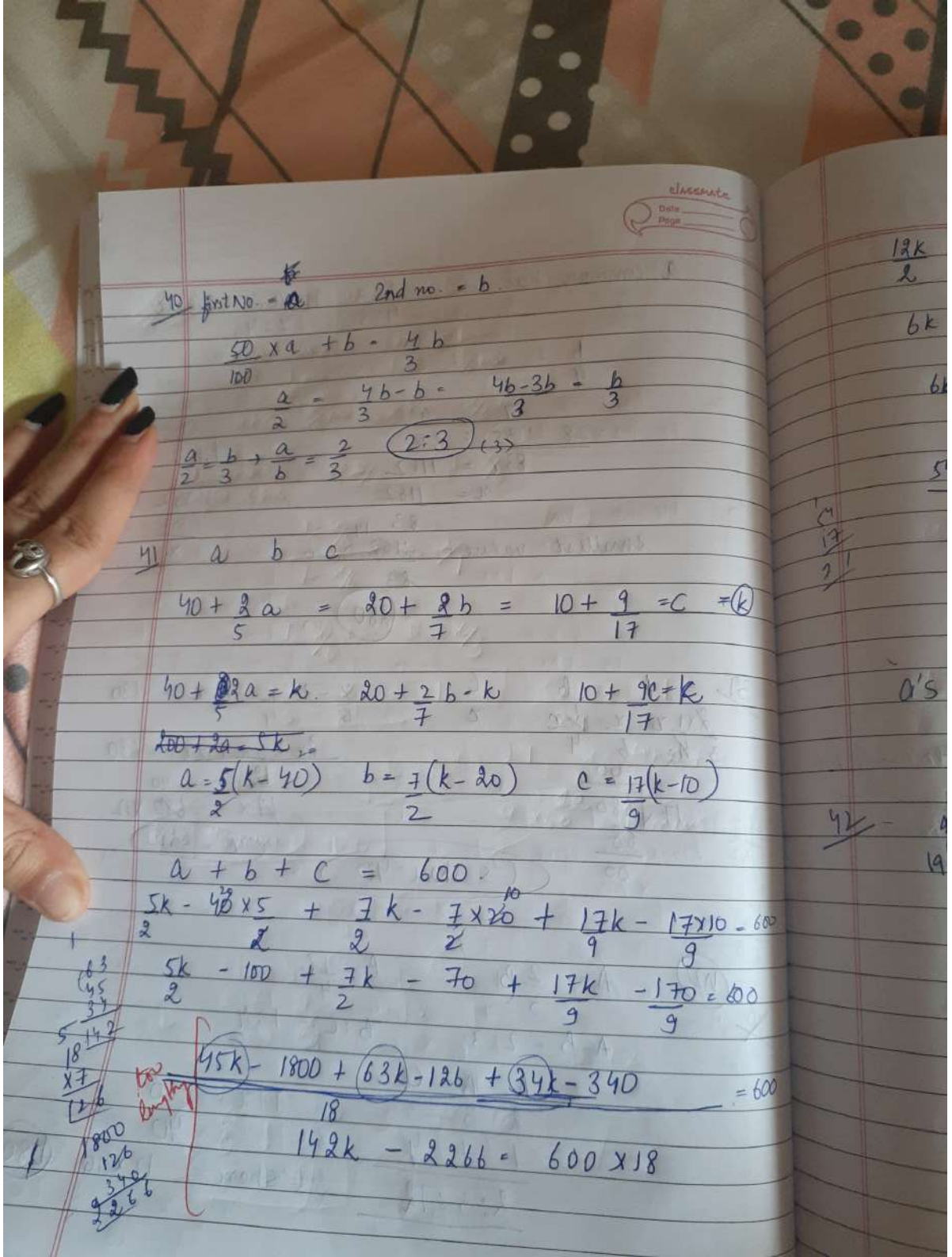
C's share = 480

(ii) $A = \frac{2}{3}B$ $B = \frac{1}{4}C$

$A : B = 2 : 3$ $B : C = 1 : 4$

A : B : C
2 : 3 — 3
1 — 1 : 4
2 : 3 : 12

$17x = 680$
$x = 40$
C's share = 12×40 = 480



40. first no. = a 2nd no. = b

$\frac{50}{100} \times a + b = \frac{4}{3} b$

$\frac{a}{2} = \frac{4b}{3} - b = \frac{4b-3b}{3} = \frac{b}{3}$

$\frac{a}{2} = \frac{b}{3} \rightarrow \frac{a}{b} = \frac{2}{3}$ (2:3)

41. a b c

$40 + \frac{2}{5}a = 20 + \frac{2}{7}b = 10 + \frac{9}{17}c = k$

$40 + \frac{2}{5}a = k \quad 20 + \frac{2}{7}b = k \quad 10 + \frac{9}{17}c = k$

$a = \frac{5}{2}(k-40) \quad b = \frac{7}{2}(k-20) \quad c = \frac{17}{9}(k-10)$

$a + b + c = 600$

$\frac{5k}{2} - \frac{40 \times 5}{2} + \frac{7}{2}k - \frac{7 \times 20}{2} + \frac{17}{9}k - \frac{17 \times 10}{9} = 600$

$\frac{5k}{2} - 100 + \frac{7k}{2} - 70 + \frac{17k}{9} - \frac{170}{9} = 600$

$\frac{45k - 1800 + 63k - 126 + 34k - 340}{18} = 600$

$142k - 2266 = 600 \times 18$

$-170\left(1+\frac{17}{9}\right)$ classmate Date Page

$\frac{12k}{2} + \frac{17k}{9} - 100 - 70 - \frac{170}{9} = 600$

$6k + \frac{17k}{9} - 170 - \frac{170}{9} = 600$

$6k + \frac{17k}{9} - 170\left(\frac{10}{9}\right) = 600$

$-170 - \frac{170}{9}$

$-170\left(1+\frac{1}{9}\right)$

$-170\left(\frac{10}{9}\right)$

$\frac{54k + 17k - 170(10)}{9} = 600$

$71k - 1700 = 5400$

$71k = 7100$

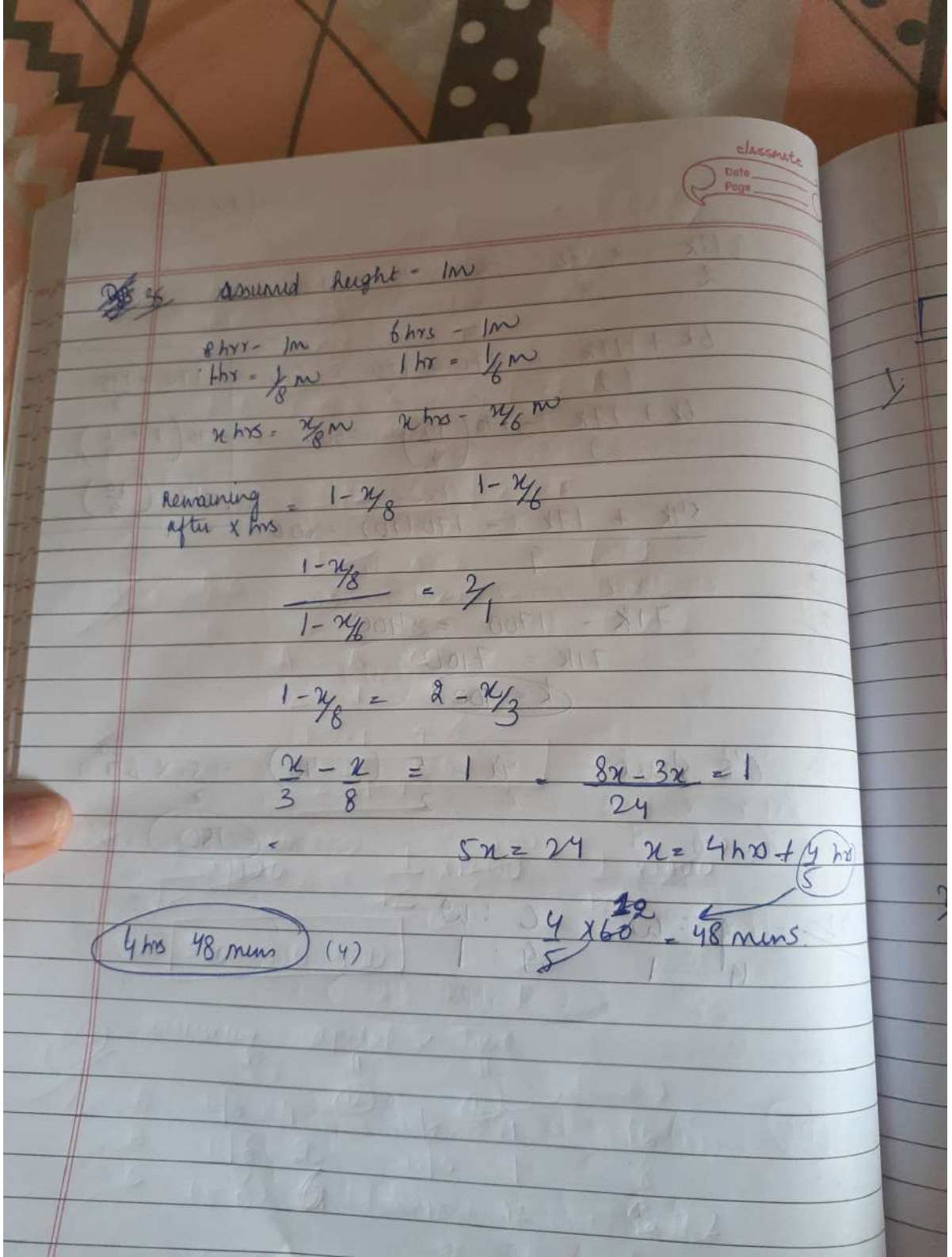
$k = 100$

A's share $= a = \frac{5}{2}(k-40) = \frac{5}{2} \times 60^{30}$

$= 150$ (3)

42. $\frac{g}{19} : w$ $\quad C : w$

$1 \quad\quad 9 : 1$



Assumed height - 1m

8 hrs - 1m
1 hr = 1/8 m
x hrs = x/8 m

6 hrs - 1m
1 hr = 1/6 m
x hrs = x/6 m

Remaining after x hrs = $1 - \frac{x}{8}$, $1 - \frac{x}{6}$

$$\frac{1 - x/8}{1 - x/6} = \frac{2}{1}$$

$$1 - \frac{x}{8} = 2 - \frac{x}{3}$$

$$\frac{x}{3} - \frac{x}{8} = 1 \quad \frac{8x - 3x}{24} = 1$$

$$5x = 24 \quad x = 4 \text{ hrs} + \frac{4}{5} \text{ hr}$$

$$\frac{4}{5} \times 60 = 48 \text{ mins}$$

4 hrs 48 mins (4)