Rough Work Sheet Sample

Mention your name and candidate ID in all the rough sheets.

Please place your ID anywhere within the camera frame.

Note: your rough works should not be hidden.

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Quant

(14) Distance = speed × time

Given speed = 55 km/hr for 1st hour
(without stoppages)

average speed = 44 km/hr for 2nd hour
(with stoppages)

but actual speed = 55 km/hr

In 2nd hour, the bus moving with 55 km/h but due to some stoppages it is 44 km/h.

so Time = $\frac{\text{Distance}}{\text{speed}}$

$= \frac{44}{55}$ hours

$= 0.8$ hours

$= 0.8 \times \frac{60 \text{ m}}{\text{h}}$

$= 48$ minutes

Time = 48 minutes.

Now, Time spent on moving = 48 minutes.

Time spent for stop

$= 60 - 48$

$= 12$ minutes

Final answer = 12 minutes.

(1) Ramanujan has 7 kids
each has T-shirts = 1 to 64.

Given

1) avg of first 5 kids = 12
2) avg of last 5 kids = 16
3) avg of all 7 kids = 14.

Now,

let 7 T-shirt numbers be
$a_1, a_2, a_3, a_4, a_5, a_6, a_7$

from given (1)

$$\frac{a_1+a_2+a_3+a_4+a_5}{5} = 12.$$

$$a_1+a_2+a_3+a_4+a_5 = 60 \rightarrow (4)$$

from (2)

$$\frac{a_3+a_4+a_5+a_6+a_7}{5} = 16$$

$$a_3+a_4+a_5+a_6+a_7 = 80 \rightarrow (2)$$

from (3) $a_1+a_2+a_3+a_4+a_5+a_6+a_7 = 98$ $\rightarrow (3)$

$$\begin{array}{r} 17 \\ +\ 81 \\ \hline 98 \end{array}$$

from above equations.

subtract (3) & (1)

$$(a_1+a_2+a_3+a_4+a_5+a_6+a_7) - (a_1+a_2+a_3+a_4+a_5)$$

$$= 98 - 60$$

$$a_6+a_7 = 38$$

Now subbract ③ & ②

$(a_1+a_2+a_3+a_4+a_5+a_6+a_7)-(a_3+a_4+a_5+a_6+a_7)$

$= 98-80$

$a_1+a_2 = 18$

Then $a_1+a_2 = 18$

$a_6+a_7 = 38$

place above in ①

$a_1+a_2+a_3+a_4+a_5+a_6+a_7 = 60$

$18+a_3+a_4+a_5+38 = 60$

$a_3+a_4+a_5+56 = 60$

$a_3+a_4+a_5 = 42$

Now, try values of a_1 & a_2 sum to 18.

let smallest possible a_1

Try $a_1 = 4$ then $a_2 = 14$

$a_1 = 6$ then $a_2 = 12$

$a_1 = 7$ then $a_2 = 11$

So, $a_1 = 6$.

$a_2 = 12$

$a_3+a_4+a_5 = 42$

lets try $a_3 = 13$, $a_4 = 14$, $a_5 = 15$ (42)

$a_6 = 18$, $a_7 = 20$ (38)

Then

$6+12+13+14+15+18+20 = 98$

check conditions

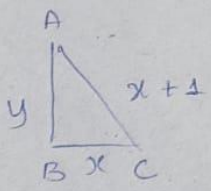
avg of first 5 $= \frac{6+12+13+14+15}{5} = \frac{60}{5} = 12$

last 5 $= \frac{13+14+15+18+20}{5} = \frac{80}{5} = 16$

$7 = \frac{98}{7} = 14$

Now final answer is 6 (for first kid T-shirt number)

(2)



let us assume hyptoneus $= x+1$

other side $= x$.

using pythagors theorem

$(x+1)^2 = x^2 + y^2$

$x^2 + 1 + 2x = x^2 + y^2$

$2x = y^2 - 1$

$x = \frac{y^2-1}{2}$

Now try by taking values.

$y = 15$

$x = \frac{15^2 - 1}{4} = \frac{224}{2} = 112$

$x + 1 = 112 + 1 = 113$

so sides 112, 113, 15 - no match.

Try $y = 241$

$x = \frac{(241)^2 - 1}{2} = \frac{58081 - 1}{2} = \frac{58080}{2} = 2904$

Now $x^2 + y^2$

$(29040)^2 + (241)^2$

$843350640.25 + 58081$

$= 843350640.25$

$843324600 + 58081$

$843321\ 843330681$

compare with hypotenus square

$(29041)^2 = 843330681$

So final answer is 241

(9) A & B & C - a, b, c.

(8) A & B fill tank in 6 hours

(10) B & C - 7.5 hrs

C & A - 10 hours

find increasing order

(1) A + B in 6 hr

$$\frac{1}{a} + \frac{1}{b} = \frac{1}{6}$$

B + C

$$\frac{1}{b} + \frac{1}{c} = \frac{1}{7.5} = \frac{2}{15}$$

$$C + A = \frac{1}{c} + \frac{1}{a} = \frac{1}{10}$$

Add all

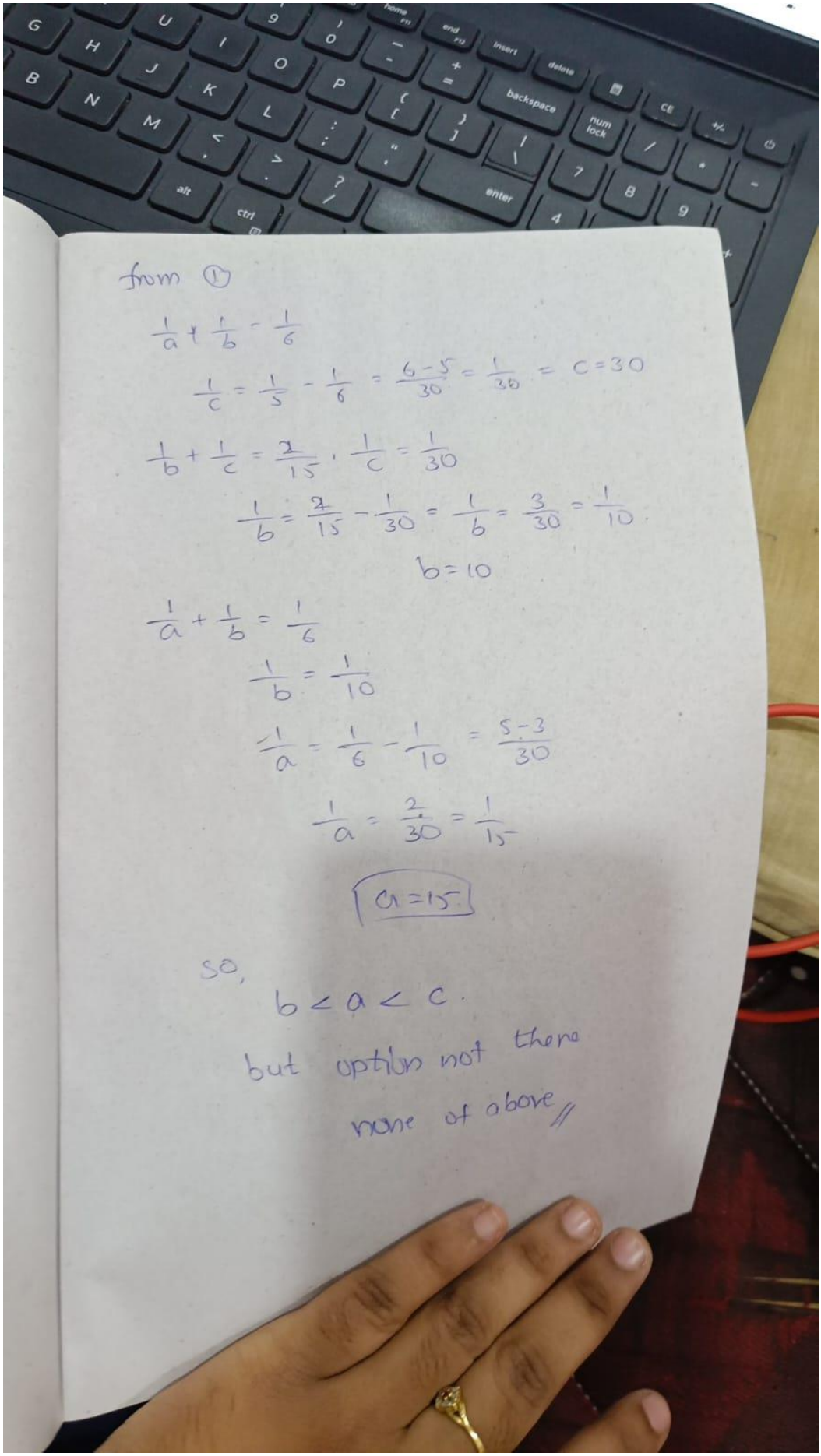
$$\left(\frac{1}{a} + \frac{1}{b}\right) + \left(\frac{1}{b} + \frac{1}{c}\right) + \left(\frac{1}{c} + \frac{1}{a}\right) = \frac{1}{6} + \frac{2}{15} + \frac{1}{10}$$

$$LHS = 2\left[\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right] = \frac{5+4+3}{30}$$

$$2\left[\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right] = \frac{12}{30} = \frac{2}{5}$$

$$\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = \frac{2}{5} \times \frac{1}{2}$$

$$\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = 1$$



from ①

$\frac{1}{a} + \frac{1}{b} = \frac{1}{6}$

$\frac{1}{c} = \frac{1}{5} - \frac{1}{6} = \frac{6-5}{30} = \frac{1}{30} \Rightarrow c = 30$

$\frac{1}{b} + \frac{1}{c} = \frac{2}{15}, \frac{1}{c} = \frac{1}{30}$

$\frac{1}{b} = \frac{2}{15} - \frac{1}{30} = \frac{1}{b} = \frac{3}{30} = \frac{1}{10}$

$b = 10$

$\frac{1}{a} + \frac{1}{b} = \frac{1}{6}$

$\frac{1}{b} = \frac{1}{10}$

$\frac{1}{a} = \frac{1}{6} - \frac{1}{10} = \frac{5-3}{30}$

$\frac{1}{a} = \frac{2}{30} = \frac{1}{15}$

$a = 15$

so,

$b < a < c$.

but option not there

none of above //

(8)

Given,

x, y, z are consecutive terms

$$x + y + z = 1376$$

find $z - x$

common ratio r

lets terms.

$$x = a$$
$$y = ar$$
$$z = ar^2$$

Then,

$$a + ar + ar^2$$
$$a(1 + r + r^2) = 1376$$

Try $r = 1$

$$a(1 + 1 + 1) = 3$$

$$a = \frac{1376}{3} = 458.67 \quad \text{(Not integer)}$$

$r = 2$

$$1 + 2 + 4 = 7$$

$$a = \frac{1376}{7} = 196.571$$

$r = 3$

$$1 + 3 + 9 = 13$$

$$a = \frac{1376}{13} = 105.846$$

$r = 4$

$$1 + 4 + 16 = 21$$

$$a = \frac{1376}{21} = 65.52$$

$r = 5$

$1 + 5 + 25 = 31$

$a = \frac{1376}{31} = 44.387$

$r = 6$

$1 + 6 + 36 = 43$

$a = \frac{1376}{43} = 32$ (Integer)

So, $a = 32, \; r = 6$

$x = a = 32$

$y = ar = 192$

$z = ar^2 = 1152$

Check $32 + 192 + 1152 = 1376$

Now, $z - x = 1152 - 32$

$= 1120$ //

Problem solving

(22) Sandeep Rajdesai in centre

all 8 members facing sandeep

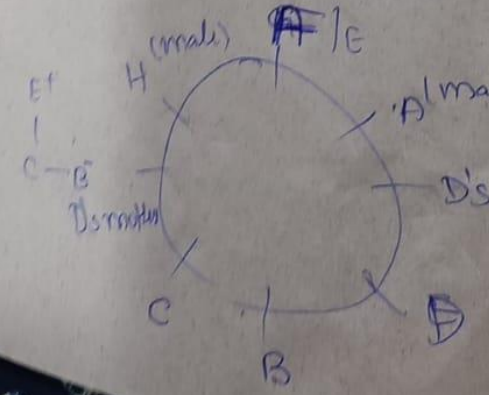
from due 6: 5 females & 3 males

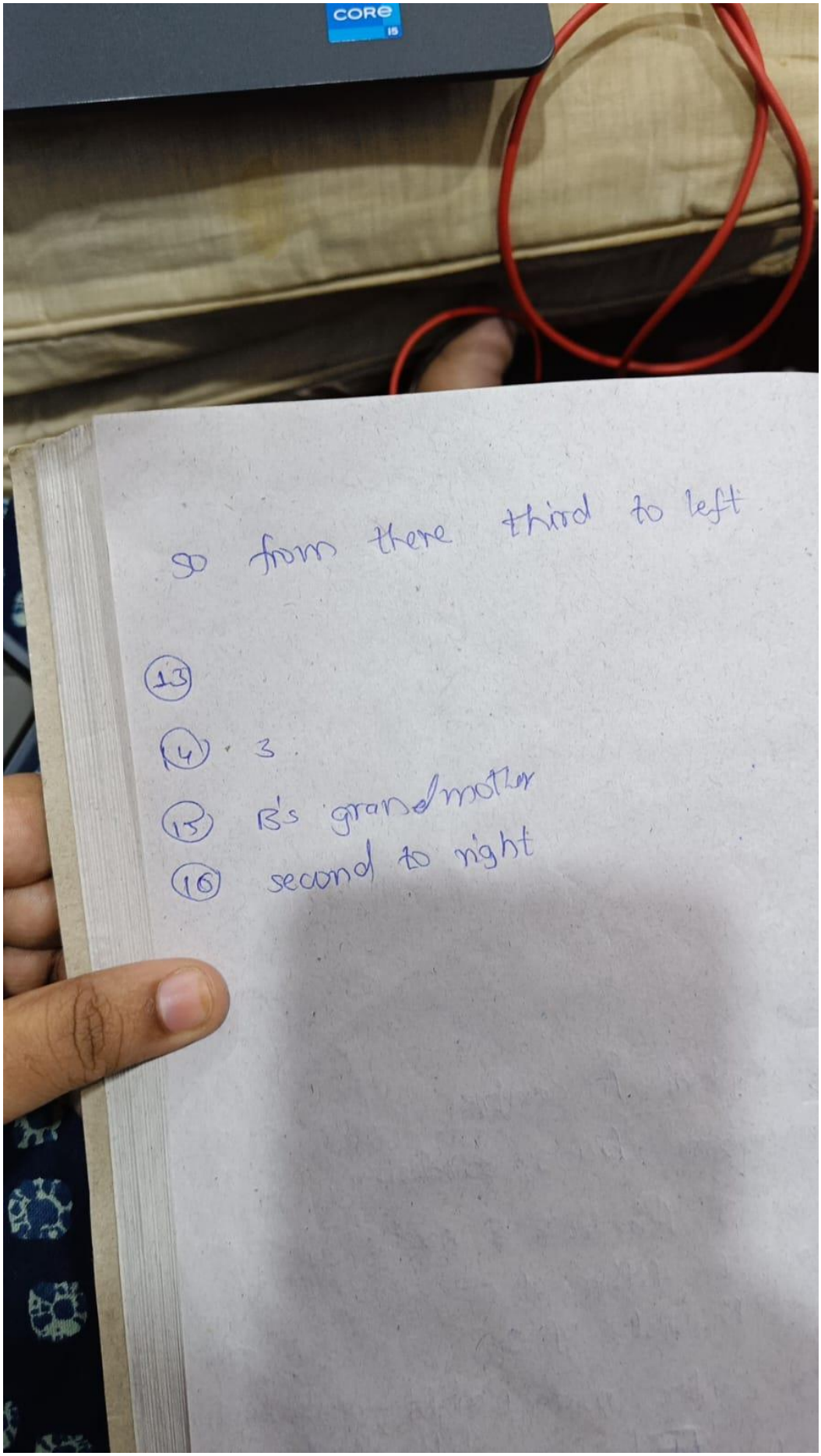
from due 7: E father of C

from due 3: B sister of C

facing center means right - anticlock

left - clockwise




CORE
i5
so from there third to left
(13)
(14) 3
(15) B's grandmother
(16) second to right