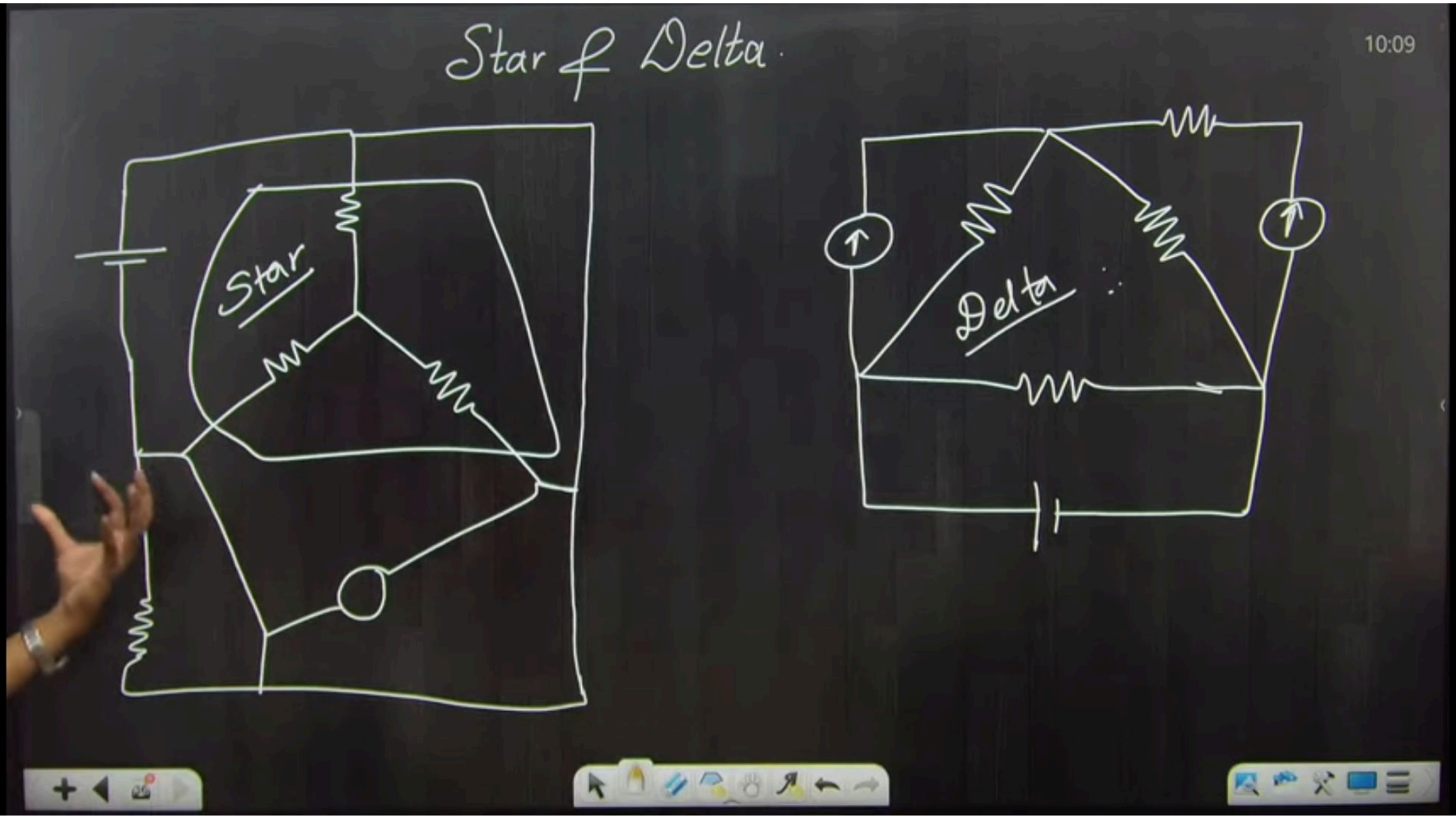
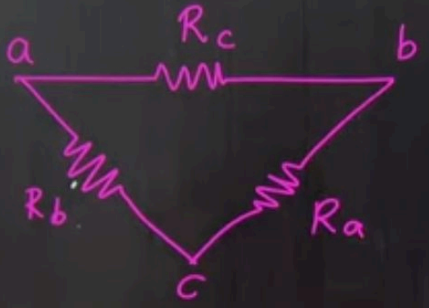
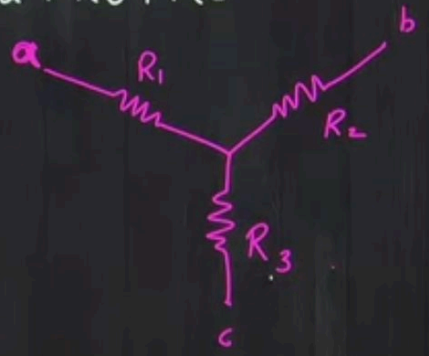

Star & Delta.
10:09
Star
Delta

10:14

Delta to star transformation.

$$R_1 = \frac{R_c \cdot R_b}{R_a + R_b + R_c}$$

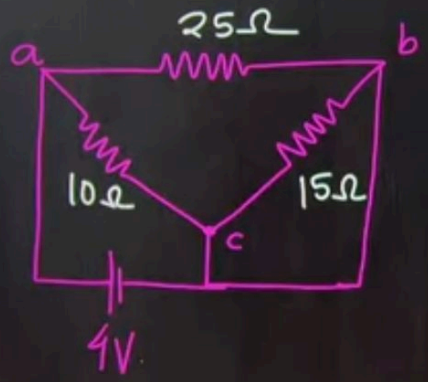




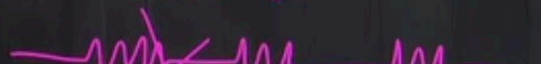
$$R_2 = \frac{R_c \cdot R_a}{R_a + R_b + R_c}$$

$$R_3 = \frac{R_b R_a}{R_a + R_b + R_c}$$

Convert the following circuit in order to find total current.



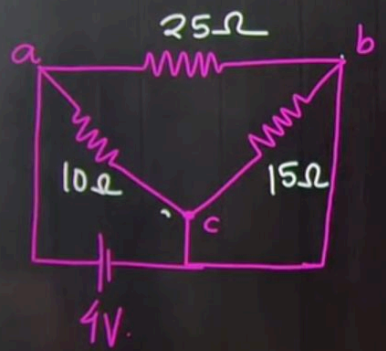
Series

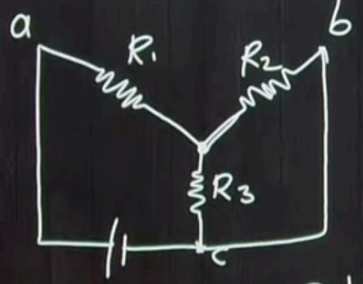


Parallel

10:21

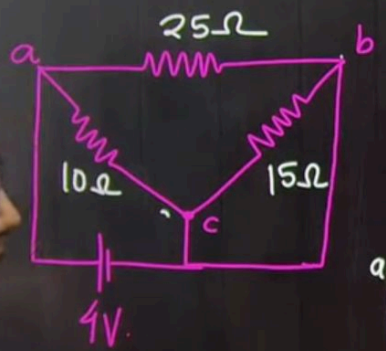
Convert the following circuit in order to find total current.

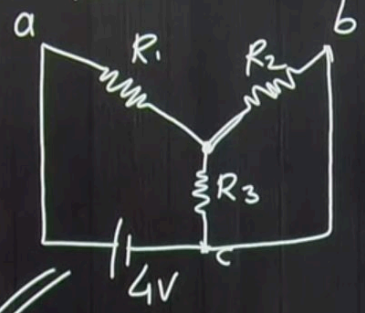




$R_2 || R_3$

Convert the following circuit in order to find total current.

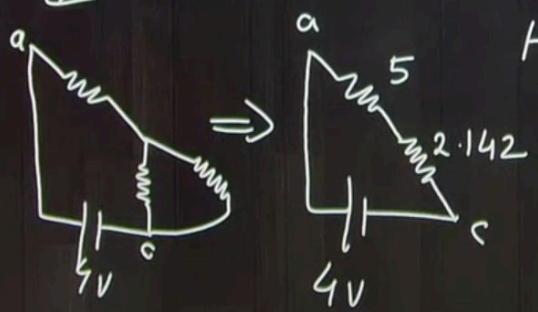




$$R_1 = \frac{25 \times 10}{25+10+15} = 5\,\Omega$$

$$R_2 = \frac{25 \times 15}{25+10+15} = 7.5\,\Omega$$

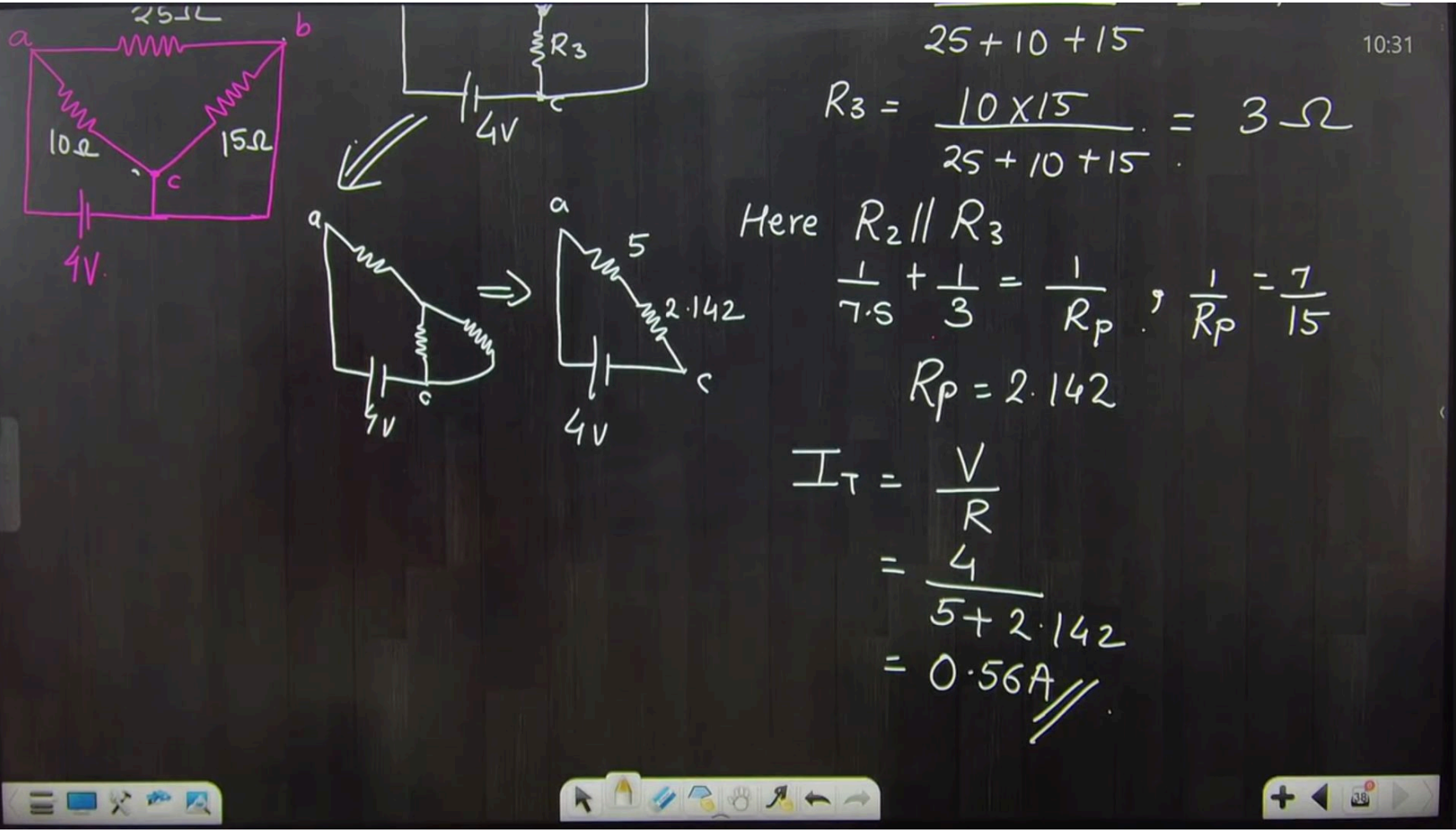
$$R_3 = \frac{10 \times 15}{25+10+15} = 3\,\Omega$$



Here $R_2 \parallel R_3$

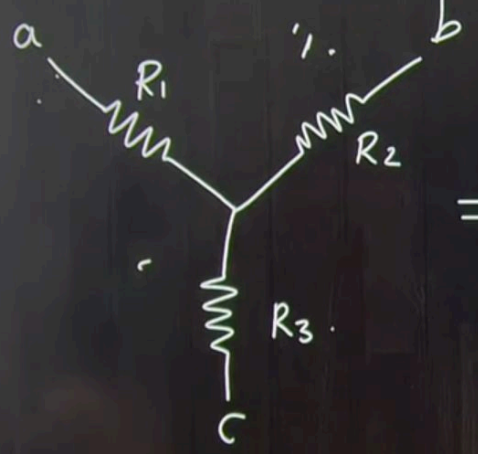
$$\frac{1}{7.5} + \frac{1}{3} = \frac{1}{R_p} \;;\; \frac{1}{R_p} = \frac{7}{15}$$

$$R_p = 2.142$$


25Ω
a
b
10Ω
15Ω
c
4V
R_3
4V
a
5
2·142
c
4V
10:31
$25+10+15$
$R_3 = \frac{10 \times 15}{25+10+15} = 3\Omega$
Here $R_2 \parallel R_3$
$\frac{1}{7.5} + \frac{1}{3} = \frac{1}{R_p}$; $\frac{1}{R_p} = \frac{7}{15}$
$R_p = 2.142$
$I_T = \frac{V}{R}$
$= \frac{4}{5+2.142}$
$= 0.56A$

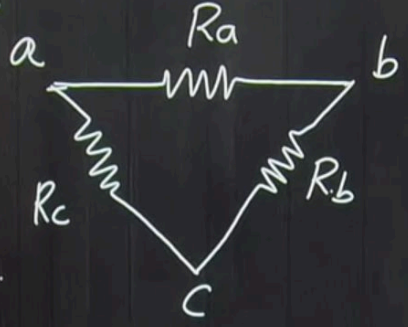
Star to Delta transformation.

Y



$\Rightarrow$

Δ

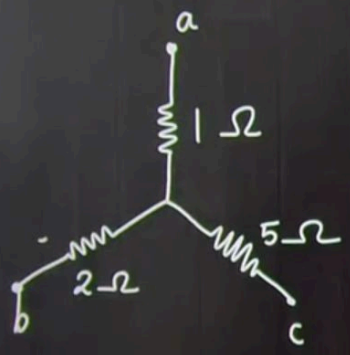


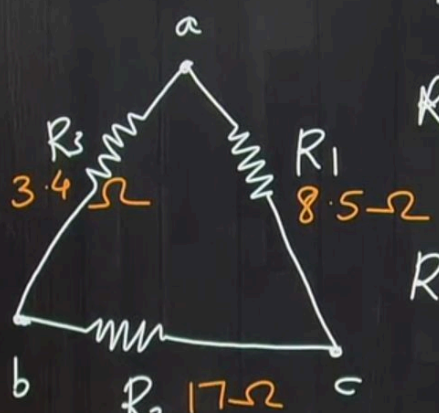
$$Ra = R_1 + R_2 + \frac{R_1 \times R_2}{R_3}$$

$$R_b = R_2 + R_3 + \frac{R_2 \times R_3}{R_1}$$

$$R_c = R_1 + R_3 + \frac{R_1 \times R_3}{R_2}$$

Convert the star fig. into delta.



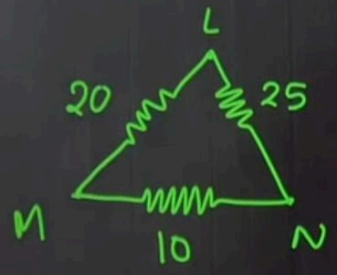


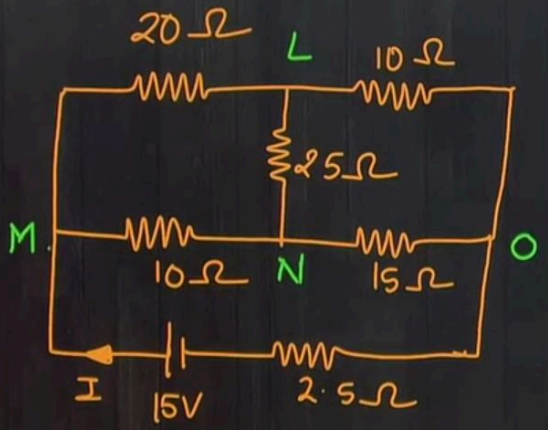
$$R_1 = 1 + 5 + \frac{1 \times 5}{2} = 8.5\,\Omega$$

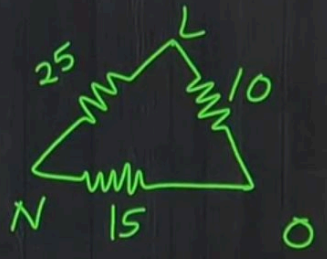
$$R_2 = 2 + 5 + \frac{2 \times 5}{1} = 17\,\Omega$$

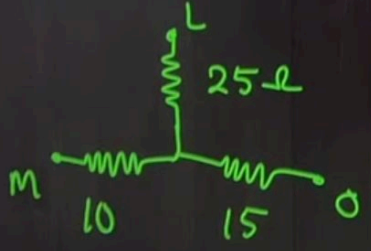
$$R_3 = 1 + 2 + \frac{1 \times 2}{5} = 3.4\,\Omega$$

Q. Determine total current I in given circuit.

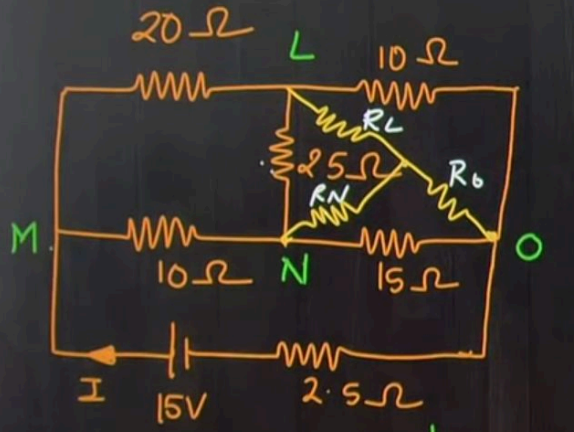


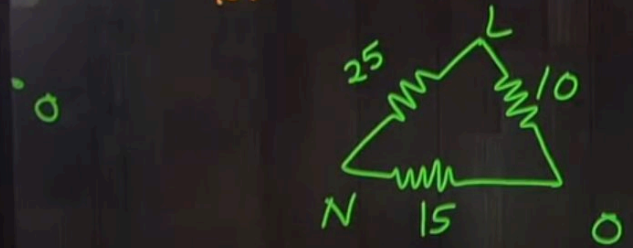






Q. Determine total current I in given circuit.





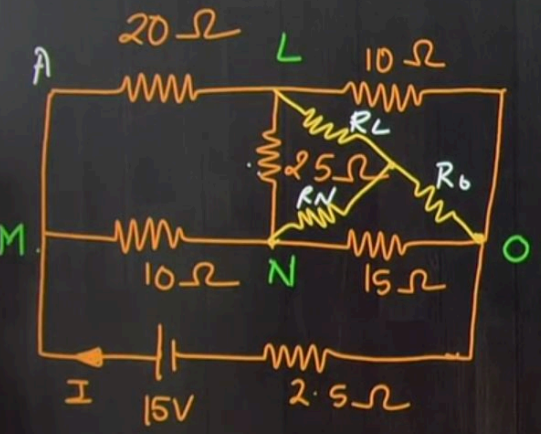
$$R_L = \frac{25 \times 10}{25+10+15} = 5\,\Omega$$

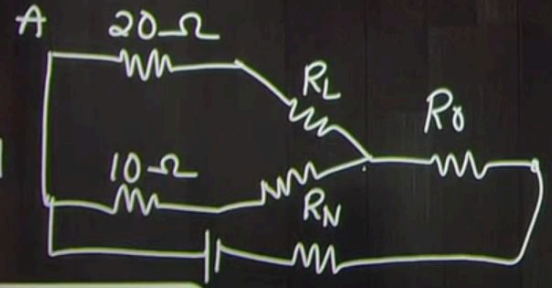
$$R_N = \frac{25 \times 15}{25+10+15} = 7{\cdot}5\,\Omega$$

$$R_O = \frac{15 \times 10}{25+10+15} = 3\,\Omega$$

11:01

Q. Determine total current I in given circuit.



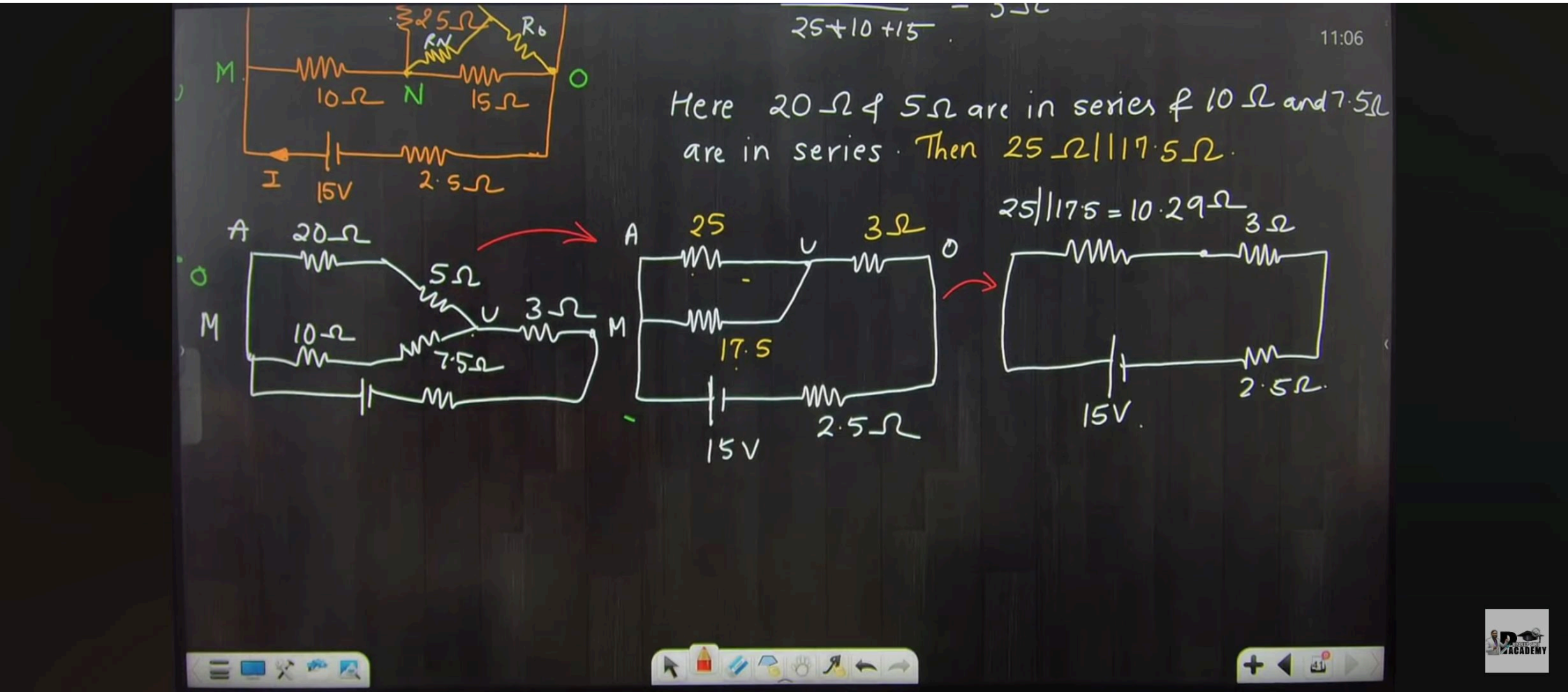


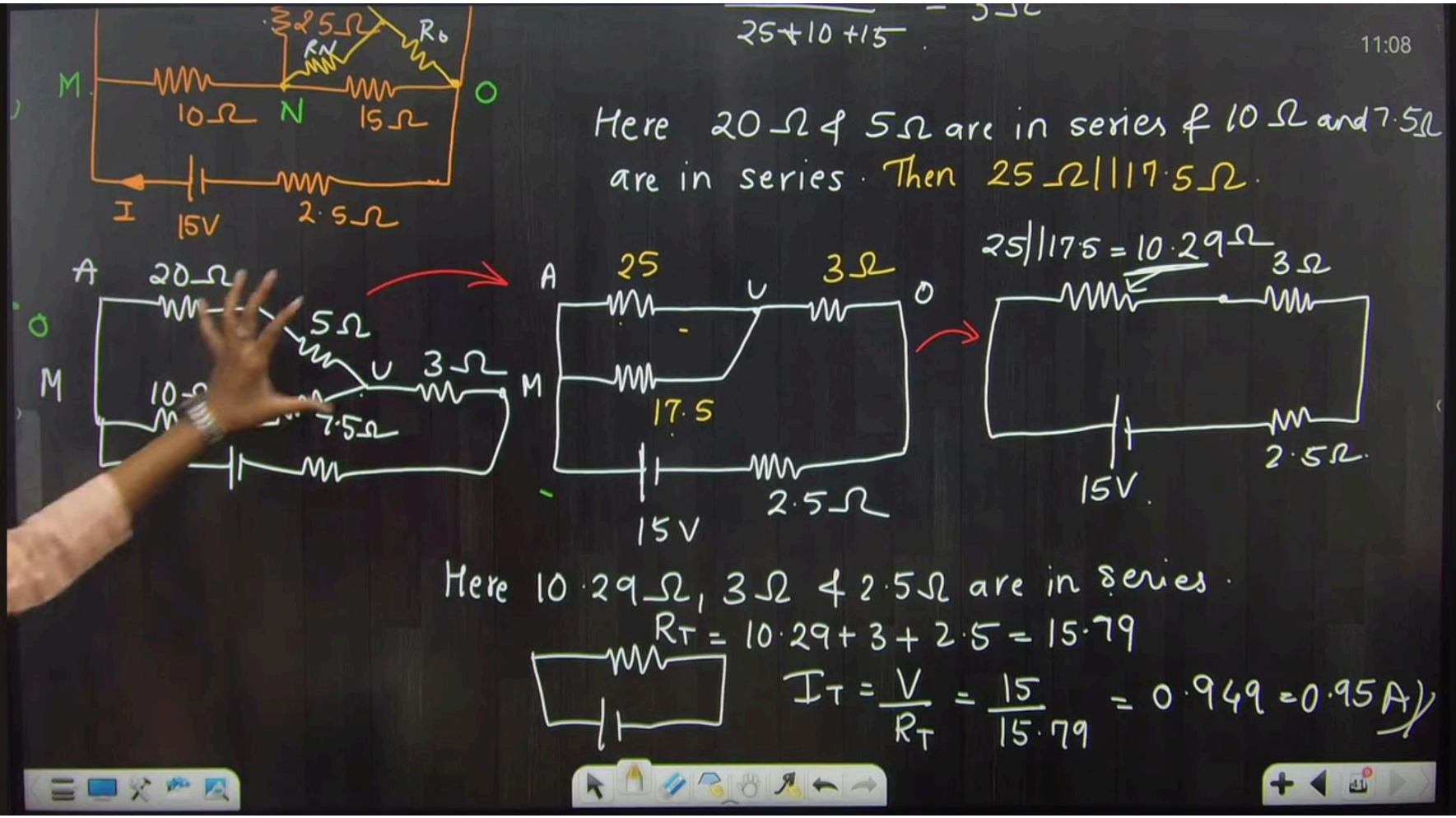
$$R_L = \frac{25 \times 10}{25+10+15} = 5\,\Omega$$

$$R_N = \frac{25 \times 15}{25+10+15} = 7.5\,\Omega$$

$$R_O = \frac{15 \times 10}{25+10+15} = 3\,\Omega$$

11:02


25Ω
R_N
R_0
M
10Ω
N
15Ω
O
I
15V
2·5Ω
25+10+15
11:06
Here 20Ω & 5Ω are in series & 10Ω and 7·5Ω are in series. Then 25Ω||17·5Ω.
A
20Ω
5Ω
U
3Ω
M
10Ω
7·5Ω
15V
25
17·5
2·5Ω
25||17·5 = 10·29Ω
2·5Ω.


25Ω
R_0
M
10Ω
N
15Ω
O
I
15V
2·5Ω
25+10+15
11:08
Here 20Ω & 5Ω are in series & 10Ω and 7·5Ω are in series. Then 25Ω||17·5Ω.
A
20Ω
5Ω
M
10Ω
3Ω
7·5Ω
A
25
3Ω
O
M
17·5
15V
2·5Ω
25||17·5 = 10·29Ω
3Ω
2·5Ω
15V
Here 10·29Ω, 3Ω & 2·5Ω are in series.
$R_T = 10·29 + 3 + 2·5 = 15·79$
$I_T = \frac{V}{R_T} = \frac{15}{15·79} = 0·949 = 0·95A$