

Name _____

Class _____

Date _____

By the end of this worksheet I can...

- ☐ calculate the output voltage of a voltage divider
- ☐ use $V_1 \div V_2 = R_1 \div R_2$ to find a missing resistor
- ☐ use $V_s = V_1 + V_2$
- ☐ check answers in Yenka

I DO**Key ideas and worked example** Read this first

$$V_2 = R_2 \div (R_1 + R_2) \times V_s$$

The output voltage of a divider (R_2 is the bottom resistor)

- $V_1 \div V_2 = R_1 \div R_2$
- $V_s = V_1 + V_2$
- The bigger resistor gets the bigger share of the supply

A 12 V supply with 25 Ω at the top and 10 Ω at the bottom.

Example Calculate V_2 .

Worked answer set out every step like this

$$V_2 = R_2 \div (R_1 + R_2) \times V_s$$

$$V_2 = 10 \div 35 \times 12$$

$$V_2 = 3.43 \text{ V}$$

WE DO**Guided practice** Follow the steps to help you

A 24 V supply: the top resistor is unknown and has 9 V across it; the bottom resistor is 26 Ω .

1 Calculate the missing resistance. (3 marks)**Steps**

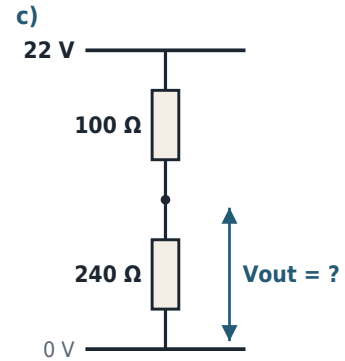
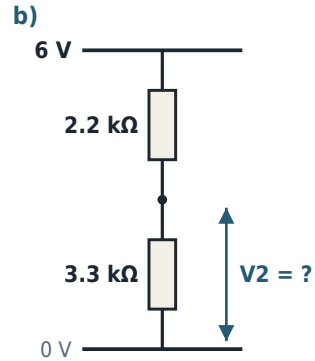
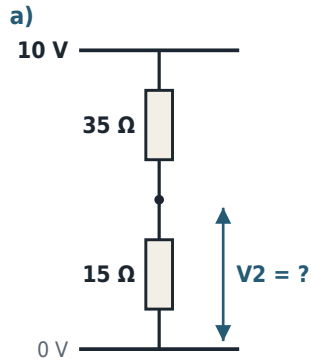
1. $V_2 = V_s - V_1 = 24 - 9 = \dots$
2. $R_1 \div R_2 = V_1 \div V_2$
3. $R_1 = V_1 \div V_2 \times 26$

YOU DO

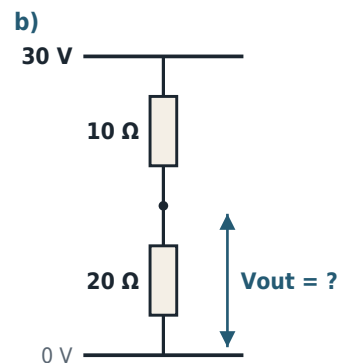
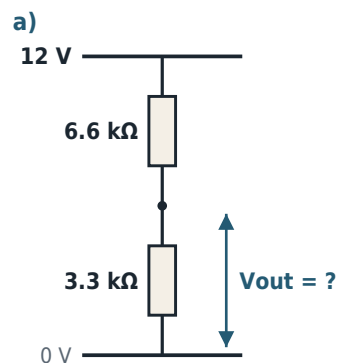
On your own

Calculate the missing value in each circuit. Check with Yenka.

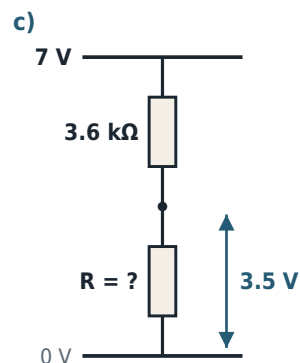
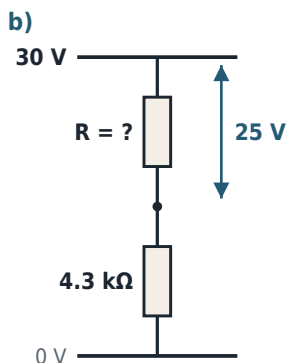
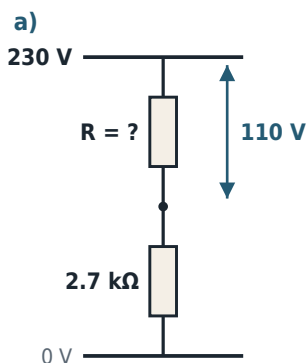
2 Calculate V_2 or V_{out} for each divider.



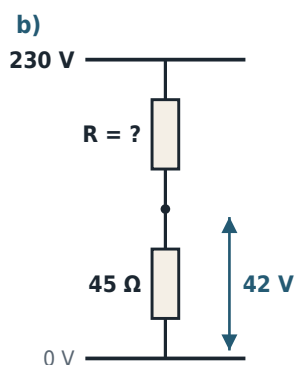
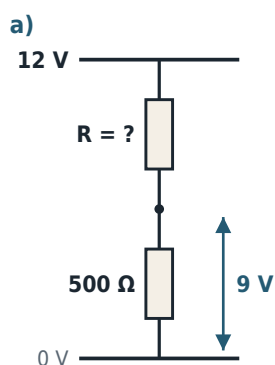
3 Calculate V_{out} for each divider.



4 Calculate the missing resistance in each divider.



5 Calculate the missing resistance in each divider.



Check and reflect

Mark your answers with the answer sheet. Which "I can" statement above still needs work? Look back at the notes for that topic on the site.