How to Read a Schematic And Basic Electronics Test Answers

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1) B) Schematic

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5) A) Amperes (or Amps), E) Milliamps (or Ma or ma)

6) C) Capacitors

7) B) Diode

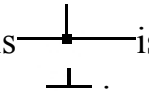
8) D) Integrated Circuits

9) B) Operational Amplifier

10) This  shows unconnected conductors.

11)This  is a resistor.

12) This  is a switch.

13) This  is connected conductors.

14) This  is a capacitor.

15)This  is a diode.

16)This  is the symbol for ground.

17) Ohm's Law: V = IR

18) I = 4, R = 10 so V = IR = 40 Volts

19) V = 12, R = 6 so I = V/R = 2 Amps

20) I = 75, V = 150K Volts so R = V/I = 150K/75 = 2K Ohms

21) P = VI = 150K * 75 = 11,250,000 Watts

22) 25K ohms

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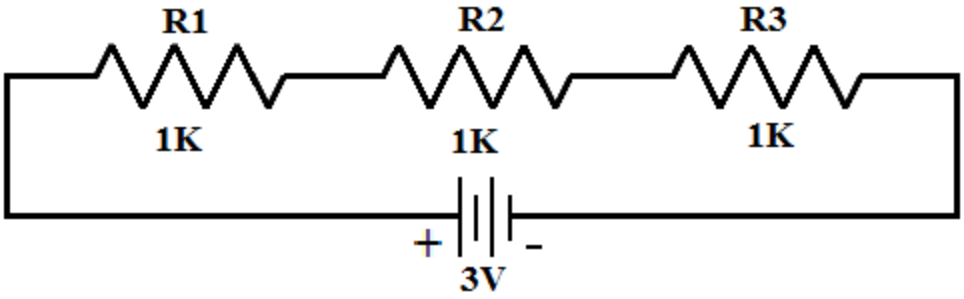

So, the total resistance in the above circuit = 3000 ohms

Now, remember that the current in a circuit = I = V/R.

The voltage is 3 volts

So, remembering to write the equation first, plug in the values to get the current:

I = V/R = 3/3000 = 1 ma

Since all three resistors are 1000 ohms in the above circuit, there is a total of 3000 ohms, and I = 3/3000 = 1ma. Remember, ma means milliamps or thousandths of an amp, so 1ma is the same as $1/1000^{th}$ of an amp. Now, to find the voltage across each 1K resistor, use V = IR.

So, the **calculated** voltage across each resistor =

V = IR = 1ma * 1000 = 1 volt

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Would including a 10K resistor work? No, because that would make the whole circuit more than 10K ohms.

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1,385,247 ^{0} = _1_ (**anything** raised to the power of 0 is 1)

1 X 10^{3} = _1000_ (any time you have 1 x 10 raised to a power, just write down 1, then the number of zeros indicated by the exponent – 3 in this case)

.1ma = _1/10000_ amps (remember that ma means milliamps, and that mili means 1/1000th. This is 1/10th of that, which is 1/10000)

10^{1} = _10_ (anything raised to the power of 1 is itself)

10^{-4} = _.0001 or 1/10000_ (remember to start with a 1 followed by a decimal, then move the decimal to the left the number of places shown by the negative exponent)

For the number 432.178,

the 4 is in the _100_ s place,

the 7 is in the _1/100_ s place, and

the 8 is in the _1/1000_ s place.

x raised to the power of y which is raised to the power of 0 = _x_

Break it down: y raised to the power of 0 is 1, then x raised to the power of 1 is x.

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But since you know the voltage, you can use the rules for a parallel circuit and Ohm's law for resistance and current. So calculate the following. Remember, the voltage is 3 volts across each resistor. Also remember to write Ohm's law for current first, which is _I = V/R_ :

Current through R1: _I = V/R_ = _3/30K_ = _.1_ _ma_ (.0001 amp)

Current through R2: _I = V/R_ = _3/300_ = _.01_ _amp_

Current through R3: _I = V/R_ = _3/3K_ = _1_ _ma_ (.001 amp)

Total current through all 3 = _11.1_ _ma_ (.0111 amp)

Since you know the source voltage is 3 volts and you know the total current, you can calculate the combined resistance using Ohm's law for resistance, which is _R=V/I_ :

R_{Total} = _R=V/I_ = 3/.0111 = 270 ohms