Subject: #24 and #25
Posted by sburkett on Tue, 23 Aug 2016 14:45:36 GMT

I am creating a new topic for problems 24 and 25

Subject: Re: #24 and #25
Posted by sburkett on Tue, 23 Aug 2016 14:47:50 GMT

In problems 24 and 25, find your reduced circuit (one source, one equivalent resistance). That will help you find the current flowing through the 10 ohms (point of problem #24). That current divides to flow through the 2-4 ohm branches. They have the same voltage across them, the point of problem #25.

Subject: Re: #24 and #25

Are the answers to #24: 5V and #25: 2V?

Subject: Re: #24 and #25
Posted by sburkett on Thu, 25 Aug 2016 00:16:04 GMT

5V is the answer to #24 but #25 is not 2 V. If you write KVL in the inner loop, the two voltages (V1 and V2) have to add up to 6 so V2 can't be 2 V. Remember V2 is the voltage across each of the resistors and the current you are using (I think) to find V2 is flowing through the 10 ohm and the parallel combination of 2-4 ohm resistors (4*4/(4+4)). In the full circuit, the source current, 1/2 A, splits to flow down each of the 4 ohm resistors. So what is the answer to #25?

Subject: Re: #24 and #25
Posted by rebutler2 on Fri, 26 Aug 2016 19:45:59 GMT

On #25, I understand that V1 is 5V but I do not understand how V2 is one of the possible answers unless V3 for the parallel resistor does not exist. If V2 is for both of the parallel resistors, is #25 1 V?

Subject: Re: #24 and #25
Yes, V2 is 1 V. There is no V3. The 4 ohm resistors are in parallel so the voltage is the same across each of them (1 V). The current coming out of the voltage source is 1/2 A (making V1 = 5V). That current divides to flow through the two parallel branches. KCL at the top right node would give you 1/2 A = V2/4 + V2/4 or 2 = 2V2 or V2 = 1V.