Circuit voltage worksheet

Question 1 Calculate the amount of tension between points and this cycle. You must draw polarity marks (+, $-$) in the drawing diagram to show the polarity of V_{AB}, as well as display all your mathematical work! Expose $V 1,000 volts, positive and negative. The voltage between points A and B is the supply voltage (26 volts) minus the voltage droplets over 1k and parallel subnet resistors. Alternatively, you can V_{AB} by adding 1k and 270 ohm counter voltage drops. The latest solution makes it easier to see the polarity of V_{AB}: specifying how the voltage drops over 1k and 270 ohms and opposites are a supplement, we consider point A to be the most positive and point B to be the most negative. Question 2 Calculate the resistance between points {\bf A} and {\bf B} (R_{AB}) for the following resistor networks: Exposure answer {\bf Figure 1:} $R_{{{ {AB} = 500 Ω {\bf Figure 2:} $R_{AB} = 750 Ω {\bf Figure 3:} $R {AB}$ = 1.511 kΩ {\bf Figure 4:} $R_{AB} = 940 Ω {\bf Figure 5:} $R_{{ AB} = 880 Ω {\bf Figure 6:} R_{AB} = 80.54 Ω Comments Note that the circle with letter 4 is a 'trick' :" Two of the R_{AB}! Be sure to discuss why it's with your students. Talk to your students about how they approached each of these problems, and let the entire class participate in the thought process. The purpose of this question, like most questions in the Socratic Electronics Project, is not just to get the answers right, but to inspire an understanding of {\it how} to solve such problems. Question 3 Use Kirschhof's power law to calculate the magnitude and polarity of tension over R_2 and R_4 on this counter-grid: Reveal answer notes: In your discussion, be sure to explore more than one 'loop' when using KVL. Not only does it demonstrate the arbitrary nature of loop selection, but it also serves as a good check for your work! You don't need to know anything about parallel or even parallel circles to solve the tension of R_2 or R_4 - all you need to know is how to use Kirschhoff's power law. Question 4 Imagine using a digital voltage meter to measure voltages between pairs of dots in a circle, following the sequence of steps shown in the following diagrams: How much voltage will be recorded by the voltage gauge in each of the steps? Be sure to include the symbol of measured DC voltage (note the coloring of the voltage gauge references, with the red transport always on the first point marked with the marquee: V_{BA} = red reference on 'B' and black transport on 'A'): {what $V and the $V $V $V algebraic amount of these voltages? $V 10.8$ Volt $V_{DB} = +25.2$ Volt $V_{FD} = -12 0$ Volt {\bullet} $V__{AF} = -24.0$ Volt Notes: Ask your students this question: "Will the algebraic amount of voltage measurements ever be other than zero in the loop?" ask them to explain why this is, the best they can. Question 5 Calculate the amount of tension that R_2: also note the direction of the current through it and the polarity of the voltage prolapse on its face. Exposure $V_{R2} = 12.11\hbox{ volts}$, positive up and negative at the bottom. If you track a conventional flow location, this means the current drops through the R_2. The real flow of electrons through R_2, however, is up. Notes: Talk to students about how they obtained their answers to this question. Logic and procedures are far more important than the answer itself. Students often find it difficult to formulate a solution method: determining the steps to take to get from the conditions under a definitive answer. While it is helpful at first for you (the guide) to show them, it is bad for you to show them too often, lest they stop thinking for themselves and just follow your lead. A teaching technique I found very helpful is for students to come to management (alone or in groups) before class to write down their problem-solving strategies for everyone else to see. They shouldn't really do the math, but list the steps they're going to take, just so they take them. By asking students question 6, complete the value table for this circle: View Response Notes: A noteworthy feature of the drawing of this circle is how the power supply connections are displayed. Unlike many of my sketch diagrams, I'm not displaying a battery icon here for a power source. Instead, I show icons to a 'train' power supply (flat line and ground symbol). Let your students know that this is a very common symbolism in modern drawings, and it only saves the need to draw lines to the power source icon (as well as the source icon itself). Discuss with your students what a good procedure can be for calculating the unknown values in this problem, and also how they might check their work. Students often find it difficult to formulate a solution method: determining the steps to take to get from the conditions under a definitive answer. While it is helpful at first for you (the guide) to show them, it is bad for you to show them too often, lest they stop thinking for themselves and just follow your lead. A teaching technique I found very helpful is for students to come to management (alone or in groups) before class to write down their problem-solving strategies for everyone else to see. They shouldn't do the math, but list the steps they'll take, in the order they'll take them. By requiring students to have question 7, let's say you're planning a circle that required two trulins for overpower. The power supply voltage is 15 volts, and each LED is rated at 1.6V and 20 mA. Calculate the drop resistors sizes and power ratings: After doing this, a coworker looks at your circuit and suggests change. Why not use a single anti-release for both lights, so it's economical in the number of components you need? Recalculate the descending resistor ratings (resistance and) intensity for the new design. Reveal an answer with two counters: $R_1 = R_2 = 670 \> \Omega$, rated for at least 0.268 watts (1/2 watts would be a practical rating). With one counter: $R_1 = 335 \> \Omega$, rated for at least 0.536 watts (1 watt will be a practical rating). Notes: If students are not yet familiar with the +V symbol used to indicate the positive power supply connection in this chart, let them know that this is a very common practice in electronic design, and the ground symbol is commonly used as a power supply connection icon. The follow-up question is very practical because you rarely have the exact components at hand to accommodate the requirements of a circuit you build. It's important to understand which direction is safer for the err (too large or too small) when doing a 'as built' design work. Question 8 Complete the value table for this circle: Guess answer question 9 Complete the value table for this circle: Reveal answer notes: Discuss with your students what is a good procedure for calculating the unknown values in this issue, even how they might check their work. Question 10 Complete the value table for this circle: Reveal answer notes: Discuss with your students what a good procedure for calculating the unknown values in this issue, even how they might test their work. Students often find it difficult to formulate a solution method: determining the steps to take to get from the conditions under a definitive answer. While it is helpful at first for you (the guide) to show them, it is bad for you to show them too often, lest they stop thinking for themselves and just follow your lead. A teaching technique I found very helpful is for students to come to management (alone or in groups) before class to write down their problem-solving strategies for everyone else to see. They shouldn't really do the math, but list the steps they're going to take, just so they take them. By making students question 11 the same as who these components are directly connected to the series with each other, and are connected directly to each other: suppose the ends of the open wire are power connection points. In circles where ground symbols appear, consider the ground as the second of the power source. Answer {\bf Figure 1:} R1 in a series with SW1. Figure 2:} R1 in a series with R2; R3 parallel R4. Figure 3:00 R1 parallel with R2. Figure 4:} R1 corresponds with R2. Figure 5:} L-1 in series with C-1. Figure 6:00 R3 parallel to R4. Notes: Work with your students to clearly identify rules by which parallel series and parallel connections can be identified. It is very important for students to understand whether they want to be successful in analyzing series parallel networks of any kind. The most common problems I encounter as an electronics instructor with reference to parallel series are always related to students' inability to consistently distinguish between subnets for series and parallel subnets in parallel interconnunctional circuits. Question 12 Complete the value table for this circle: Reveal answer notes: Ask your students to identify elements in this parallel circle that are promised to share the same voltage, and elements that are promised to share the same stream, regardless of any calculations. This is a good exercise in identifying parallel connections and series, respectively. Students often find it difficult to formulate a solution method: determining the steps to take to get from the conditions under a definitive answer. While it is helpful at first for you (the guide) to show them, it is bad for you to show them too often, lest they stop thinking for themselves and just follow your lead. A teaching technique I found very helpful is for students to come to management (alone or in groups) before class to write down their problem-solving strategies for everyone else to see. They shouldn't really do the math, but list the steps they're going to take, just so they take them. By making the students have question 13 when 5 kΩ potentiometer in this circuit is set to 0 {\bullet} at 0 {\bullet} at 25 at 50 {\bullet} at 75 {\bullet} at 100 calculate what output voltages will be if 1 k$\1 against load of omega is connected between the terminal $V and the ground: at 05:50 at 75. At 50 in 75 in 100 comments this question is no more than five loaded stress buffer issues packed into one! This is a very practical question, as potentiometers are very often used in variable voltage partitions, and students must understand the effects a load resistance will have on the characteristics of such buffers. Point to them the extreme linearity created by the inclusion of load resistance. Question 14 Set the voltages (relative to the ground) at points {\bf A} and {\bf B} in this circle under four different conditions: both load, load 1 on (only), load 2 on (only), and Loaded in: $$\begin{array} {|l|l|} \hline Voltage & Both load & load 1 on (only) & load 2 on (only) & both load on \\ \hline V_A & & \\ \hline V_B & \\ \hline \end{array}$$ reveal answer $$\begin{array} {|l|l|} \hline Two mounts & load 1 on (only) load 2 on (only) and both load on \\hline V_A & 26.4 volts & 26.3 volts and 22.4 volts and 22.3 volts \\ \\ hline V_B & 5V 4.46V and 4.23V and 3.78V \\ \hline \end{array}$$ Notes: Students will need to reconsider (and allow to redraw) the circuit for any loading conditions, which is one of the main points of this question. The fact that a circuit can 'change', just by throwing a switch is an important concept for electronics students to grasp. Another concept employed in this question is that of tensions specified at individual points with implicit reference to the ground. Note how each voltage was simply directed by one letter, or BF A} or {BF B}. Of course there's no such thing as tension at one point in each circuit, so we need another point of reference, and that point is ground. It's very common in electronic circuits of all kinds, and it's a good thing to be exposed to it early on in electronics education. A much less obvious point of this question is to subtly present the idea of discreet modes (charging conditions) available with a given number of Boolean elements (switches). Given two load switches, there are four possible circuit load modes, previewing binary modes in digital circuits. Question 15 One of the adments in this voltage partition circuit failed to open. Based on the voltage calls displayed in each load, determine which one: Show answer against R1 failed to open. This is evident because only the \#1 receives any power; The other two loads are totally dead. NOTES: Discuss with your students how they were able to predict R1 was against the flawed. Is there a specific clue in the diagram that indicates R1 as the obvious problem? Question 16 One of the opponents in this voltage separator circuit failed to open. Based on the voltage readings displayed in each load, determine which one: Show answer against R2 failed to open. We can say this because #3 \people don't get electricity at all during load \#2 is being over-powered. NOTES: Discuss with your students how they were able to predict R2 was against the flawed. Is there a specific clue in the diagram that indicates R2 as the obvious problem? Question 17 One of the opponents in this cycle of voltage partition failed (open or short). Based on the voltage readings displayed in each load, determine what type of failure it is: Reveal the answer against R1 failed (partially) for short. We can say this because both #2 \#3 and/#3 are over-activated. Comments: Discuss with How they were able to predict R1 was against damaged. Is there a specific clue in the diagram that indicates R1 as the obvious problem? Some students may suspect an open failure against R3 can cause the same effects, but there is a clear way to say that the problem can {\it only} come up short in R1 (hint: analyze against R2). It is explained that not all 'short' failures are 'difficult', in the sense of direct metal wire connections to metal. Often, components will fail short in a 'soft' sense, meaning they still have some non-trivial amount of electrical resistance. Question 18 old vacuum tube-based electronic circuits often required several different voltage levels for proper operation. An easy way to achieve these different power supply voltages was to take one high-voltage power supply circuit and 'divide' the overall voltage into smaller divisions. These voltage buffer circuits also turned the supply into a small amount of 'wasted' current through the buffer called a bleeding current, designed to discharge the power supply's high power output quickly when it was turned off. Design a high-voltage partition to provide the following loads with the voltages they need, plus a 'bleeding' current of 5 mA (the amount of current that passes through against R4): Reveal Answer The key to calculating all resisting values is to determine how much voltage each of them needs to drop and how much current each must carry. The current question can be answered by applying Kirschoff's current law (KCL) to each of the circuit's wires, while the power question may be answered by calculating the voltage difference between each pair of supply lines and the pipeline circuit. $R $3.25 $R.200 million, Omega, $R 3. $ 3.67 kΩ {\bullet} $R_4 =$ 9 kΩ Notes: Be sure to ask your students {\it how} they have achieved the solution to this problem. If no one has been able to reach a solution, introduce the following technique: simplify the problem (fewer counters, perhaps) until the solution is clear, and then apply the same strategy that you used to resolve the obvious problem to the more complex versions of the problem, until you solve the original problem in all its complexity. Question 19 Calculate the required value of $$R to create a 4-volt power drop between test points {\bf A} and {\bf B}: Expose question 20 in a parallel circle, you can specify certain general principles regarding amounts of voltage, current, resistance, and power. Complete these sentences, each describing a basic principle of parallel circles: 'In a parallel circle, tension. For each of these rules, an explanation Why} is true. Exposure of a reply 'In a parallel circle, voltage equals all elements}'. This is true because a parallel circle in the definition is a circle in which the constituent elements share the same two egalitarian points. In a parallel circle, the current adds to the total. This is an expression of Kirschhof's current law (KCL), whereby the algberic sum of all entry and exit streams from a node must equal zero. In a parallel circle, resistance is reduced to totality. Any resistance in a parallel circuit provides a different path to electrical current. When the resistance is connected in parallel, their combined total paths provide less resistance than any single path, because the current is able to split and proportionately track those alternate paths. In a parallel circle, dispersing this power add equals the total amount. It is an expression of energy conservation that states that energy cannot be created or destroyed. Wherever power disperses in any load of circuit, that power must be responsible back at the source, no matter how these loads might be connected to each other. Notes: Series rules and parallel circles are very important for students to understand. However, a trend I have observed among many students is the habit of memorizing rather than understanding these rules. Students will work hard to memorize the rules without really understanding why the rules are right, so often fail to recall or apply the rules properly. Question 21 Explanation, step by step, how to calculate the current amount $I ($$I) that will go over each counter in this series circuit, And the current ($$I) provided by DC Power Source: Reveal a primary answer We need to identify all relevant principles for series circuits: {\bullet} The algbarian amount of all voltages in the circuit will equal zero (Kirschoff's power law) {\bullet} currently common along a series circuit because there is only one path to current in each circle that resistance adds in series we know the voltage of the source and the The resistance of the three loads, however, we cannot simply apply the Ohm Act at this time because the source voltage is not entirely impressed with any of the loads – but rather the source voltage will be divided proportionally between the three loads depending on KVL. It is important to always apply the Ohm Rule in context: $V = IR$ is true only if $$V, $$I, and $$R apply to the same element or group of elements. Here, 36 volts of origin applies to all three opponents, not all against one. However, we may apply the adds resistance principle in the 10000s to reach an overall resistance value for the circuit, which we may then apply to total voltage to find an overall current. Plus three. Values, we get total resistance of $R_{total} = 1500 + 10000 + 4700 = 16200$ ohms. The total circuit stream is then calculated as follows: $$I = {V \over R} = {36\hbox{ V} \over 16200 \> \Omega} = 2.222 \hbox{ mA}$$ It is helpful to remember all the values calculated in the circle chart for easy reference. This is because it forgives the context for the calculated value. Here we draw arrows (in the direction of conventional flow) to record the circuit current of 2.222 mA, based on the connection between voltage and current for {\it sources} (i.e. current ports from the positive diameter of a source because the source drives this current): because a series circuit is changed, we know that this value of the current (2.222 millimeters) will be common in all components. Now that we know the flow through each counter and the resistance of each counter, we may apply the Ohm Act to each individual counter as such: $$V_{R1} = I R_1 = (2.222 \hbox{ mA}) (1500 \> \Omega) = 3.333 \hbox{ V}$$ $$V_{R2} = I R_2 = (2.222 \hbox{ mA}) (1000 0 \> \Omega) = 22.222 \hbox{ V}$$ $$V_{R3} = I R_3 = (2.222 \hbox{ mA }) (4700 \> \Omega) = 10.444 \hbox{ V}$$ \filbreak again Recommended to calculate the circuit schematics with these calculated values for saving All calculations in context., the polarity (+, $-$) of each voltage is important to note as well, and we know this by the link between voltage and current for {\it loads} (i.e. the positive pole of load is one where conventional flow enters, Because the voltage decreased by load is a contrasting current): As a final test of our work, we can summarize these three-sided voltage drops to ensure they do add up to the source voltage equivalent according to KVL $$ 3.333 \hbox{ V} + 22.222 \hbox{ V} + 10.444 \hbox{ V} = 36 \hbox{ V}$ question 22 Determine the amount of voltage dropped by each counter in this circuit, if each counter has a color code of Brn, Blk, Red, Gld (assume fully accurate resistance values - 0 also, set the following information about this circuit: Stream through all against {\bullet} Power dispersed by each resistor {\bullet} Ratio of any power reduction of all counter-to-battery pressure ($E_R\over E_{bat}$) {\bullet} ratio of all resistance to total circuit resistance ($R \over R_{total}$) Across each resistor = current 1.5 V through each resistor = 1.5 mA power dispersed by any resistance or = voltage ratio of 2.25 mW = $1 \over 3$ resistance ratio = $1 \over 3$ notes: When performing the mathematical analysis in this circuit, there is more than one possible sequence of steps for achieving the solutions. Different students in your class may well have different solution sequences, which is a good thing to have students share their different problem-solving techniques before The whole class. An important aspect of this question is for students to examine the same ratio (stress versus resistance), and determine whether these relationships are equal in case or equal by necessity. Ask your students, what kind of evidence would prove this ratio was only equal in the case? Putting math aside and watching this cycle from a gaoya experimental perspective, ask your students what data could prove that this relationship would be equal by chance in this particular case? Hint: It will only take one example to prove it! Question 23 Calculate the outer voltages of these two voltage buffer circuits (V_A and V_B): Now, calculate the voltage between points {\bf A} (red reference) and {\bf B} (black reference) (V_{AB}). Reveal the answer $V_A =$ + 65.28 V $V_B =$ + 23.26 V $V_{AB} =$ + 42.02 V (period {\bf A} be positive relative to point {\bf B}) Question 24 Calculate both the maximum amount and A minimove of achievable voltage from this potentiometer circuit (as measured between the wiper and the ground): exposure of an answer V_{max} = 3.85 volts V_{min} = 0.35 volts Notes: Be sure to ask your students how they got their answers not only what the answers are. There's more than one right way to analyze this cycle! By the way, there is nothing significant about the use of European schematic symbols on this question. I only did it to provide students with more exposure to this schematic conference. Question 25 Suppose that an electric heater, which is nothing more than a large counter, disperses 500 watts of electricity when directly connected to a 110-volt source: now assume exactly the same boiler is connected to one end of a two-wire long cable, which is then connected to the same 110-volt source. Assuming every appraise inside the cable has an end-to-end 3-um resistance, how much power will the oven disperse? Reveal answer notes: The purpose of this question, besides providing a good problem-solving exercise for students, is to get them to realize one of the practical consequences of stress line resistance. Question 26 Suppose Mr. Analog Voltage has a range of 0 to 10 volts, and an internal resistance of exactly 100 kΩ: Show how a single resistor can be connected to this vol meter to extend its range to {\it 0 to 50} volts. Calculate the resistance of this 'range', as well as its required power dispersion rating. Reveal an answer The underlying problem here is how to make the voltage meter see 10 volts while it is connected to the source with a value of 50 volts. This would require a series counterprotest to lower the additional 40 volts: a power dispersion rating of ${1 \over 8}$ watts would be more than enough for this application. NOTES: Voltage gauge range is a very practical example of voltage partition circuits. Question 27 Determine the voltages listed by Among the following points in this circle. Make sure if the voltage gauge symbol is positive or negative anyway: {V_A=} Underline{ 40pt} (red reference on BF A}, black lead on the ground) {V_B 40pt underline} (red lead on BF B, Black lead on the ground) {V_D V_C underline{ 40pt} (red lead on BF C} underline, black V_ on the ground, black lead on V_ DB} (red lead on BF D V_} black lead on BF A} {V_{BC} (line Bottom 40pt} (Red Lead on BF B V_} Lower Wire Answer Exposure, V_A Black Lead (Red Lead BF A} Black Lead on The Ground) {V_B Underline{ +3 Volts) (Red Lead on BF B, Black lead on the ground) {V_C underline{ +9 volts) (red lead on BF C} black lead on the ground) {V_D underline{ +15 volts) (red lead on BF D} {BF D} {V_{AC} {underline{ +21 volts} (red lead on BF} A} קו תחתון בקו תחתון, V_ 18 וולט, עופרת שחורה על BF B} {V_{BA V_} (עופרת אדומה על) 27 וולט} קו תחתון BF B} עופרת שחורה על V_ 1000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000 וגם את כמות המתח בין נקודות בדיקה TP2 ו- TP4: $V_{TP1-TP3}$ = 40 'נק $V_{TP2-TP4}$ = לחשוף תשובה $V_{TP1-TP3}$ = 15.83 20 וולטpt $V_{TP2-TP4}$ = 22.22 שאלה 29 במעגל סדרה !! וולט הערות: בקש מהתלמידים שלך להסביר כיצד הם השיגו את תשובותיהם. יש יותר מדרך נכונה אחת לענות על שאלה זו , certain general principles regarding amounts of voltage, current, resistance, and power can be specified. Complete these sentences, each describing a basic principle of series circles: 'In a series circle, tension . For each of these rules, explain why that's true. Exposure answer 'In a series circle, this voltage decreases to add equal to the amount}.' this is an expression of Kirschoff's power rule (KVL), whereby the algebraic sum of all voltages in each loop must be equal to zero. In a series circuit, the current equals all components. This is true because a series-by-definition route has only one route to the current to travel. Since the suppliers of the charge must move harmoniously or not at all (the result of the preservation of responsibility, according to which Charges cannot be created or destroyed), the current measured at any point in a series circuit must be the same as the current measured at any other point in the same circuit, at any given time. In a series circle, this resistance add equals totality. Any resistance in a series circuit works to resist electrical current. When the resistance is connected in the orders, their oppositions unite to create greater absolute resistance, because then the same current must pass through each opposition. In a series circle, this dispersing power add equal to the total amount. It is an expression of energy conservation that states that energy cannot be created or destroyed. Wherever power disperses in any load of circuit, that power must be responsible back at the source, no matter how these loads might be connected to each other. Notes: Series rules and parallel circles are very important for students to understand. However, a trend I have observed among many students is the habit of memorizing rather than understanding these rules. Students will work hard to memorize the rules without really understanding why the rules are right, so often fail to recall or apply the rules properly. Question 30 Use Kirschhof's current law to calculate the magnitude and direction of the current using the anti-R_4 in this anti R_4 off network: Reveal answer notes: You don't need to know anything about parallel or even parallel circles to solve the R_4's current - all you need to know is how to use Kirschhoff's current law. Question 31 Explanation, step by step, how to calculate the amount of current ($$I) that will pass through each counter in this parallel circle, And also the algberic sum of all I) streams provided by DC Power Source: Exposure First we must identify all relevant principles for series circuits: {\bullet} The algberic sum of any currents in the node will equal zero (kirchhoff's current law) {\bullet} 600 because each component shares the same two egalitarian points {\bullet} resistance to reduce concurrently following the rule that tension is common מקבילי, אנו יכולים להסיק כי כל אחד משלושת נגדים רואה 36 וולט מהמקור., לפיכך, אנו רשאים להחיל באופן מיידי את חוק אוהם כדי לחשב את הזרם באמצעות כל אחד מהנגדים, לדעת את המתח על פני כל נגד ואת ההתנגדות של כל נגד: $$I_{R1} = {V \over R_1} = {36\hbox{ V} \1500 מעל > 24%-2= אומגה R_2 $I 4000000000000000000000000000000000000000000000000000000000000000000000000000000000 \10000 מעל \> \Omega} = 3.6 \hbox{ mA}$$ $$I_{R3} = {V \over R_3} = {36\hbox{ V} \4700 מעל \> \ Omega} = 7.660\hbox{ mA}$$ This is beneficial for the character not to calculate all the values calculated on the circle chart for easy reference. This is because it forgives the relationship on the calculated Here we draw arrows (in the direction of conventional flow) to record all three countercurrents, based on the voltage-to-current relationship for {\it loads} (i.e. the current enters the positive load pole because the load is contrary to this current): \filbreak from here we may apply KCL to calculate the current values at each node, knowing that each milliamp leaves a node must be matched by a millimeter of entering the node stream. The current feed of the upper-right node, then, will be the sum of two currents coming out of that node. The same thing happens at the lower-right intersection, When two currents enter this node merge to create a larger current port: $$I = 3.6 \hbox{ mA} + 7.660 \hbox{ mA} = 11.260\hbox{ mA}$$ again we will record this calculated value on the circuit schematic to maintain its context: applying KCL to the upper left and purifiers, And in light of the agreement again $ $I = 24 \hbox{ mA} + 11.260 \hbox{ mA} = 35.260 \hbox{ mA}$$ with arrows showing it 35.260 mA current , we can see it going straight out of (and back to) a 36-volt source, which means it's our total current value for the corresponding circuit. Question 32 Calculate the total amount of power that the battery must provide to this parallel circuit: Now, using Ohm's Law, calculate total resistance (R_{total}) from the total amount (source) voltage V_{total} and the current total (source) I_{total}. Reveal an answer $I_{total} = 40.0 \hbox{ mA}$ $R_{total} = 250 \> \Omega$ notes: While some students seem able to immediately understand the idea of diminishing parallel resistance (total) value, it is worth accessing it from Um's Ohm trial perspective, as well as giving other students a more formal rationale for this outcome. Question 33 Complete the value table for this circle: Reveal answer notes: Discuss with your students what is a good procedure for calculating the unknown values in this issue, even how they might test their work. Question 34 Complete the value table for this circle: Reveal answer notes: Discuss with your students what is a good procedure for calculating the unknown values in this issue, even how they might test their work. Question 35 The circle shown here is usually referred to as a current separator. Calculate the voltage that was knocked down across each resister, the current painted by each resister, and the total amount of electrical resistance 'see' by the 9-volt battery: {\bullet} flowed through 2 kΩ against = {\bullet} stream through 3 kΩ against the current {\bullet} through the current 5 k$/omega $ against = voltage across each counter, $$R$4.5 million through the counter-3 kΩ bullet} stream through 5 k$/omega$ = 1.8 mA {\bullet} voltage over all against = 9 volts {\bullet} R_{total} = 967.74 Ω notes: Some students may find the diagram difficult to track, so they will find the task of auxiliary analysis by drawing an equivalent schematic diagram for this circuit, with all terminal points highlighted. I encourage you not to offer this solution immediately, but to challenge your students to think about problem solving techniques themselves. Surely, someone in the 10th grade thought to do it, and the effect of such an offer coming from a colleague is greater than if it came from you, the instructor. Be sure to ask your students the following question: 'Why is this type of circuit commonly called the current separator?'' question 36 examined these two variable resistance networks ({\it rheostat}), each with a large range potentiometer and a small-range potentiometer: for each grid, determine which pot is tuning {\it rough} and which pot is a match in the order {\it} for overall grid resistance, and explain your logic. Reveal reply {\bf network series} 100k = rough match; 5k = Subtle Match {\bf Parallel Grid} 5k = Rough Fit; 100k = subtle adjustment general principles to keep in mind here are that series resistance {\it add} while corresponding resistance {\it reduce}. The absolute resistance of a series network is always greater than any opposition to its constituents, which is why the biggest resistance in a series network tends to dominate. The absolute resistance of a parallel network is always less than all the resistance of its constituents, so the lesser resistance in a parallel network tends to dominate. Question 37 is the same as who these components are directly connected to the series with each other, and are directly connected to each other: suppose the ends of the open wire are power connection points. Reply exposure {\bf Figure 1:} R2 parallel to R3. Figure 2:} R1 in a series with R2. Figure 3:00 R2 in a series with R3. Figure 4:} R1 in a series with R2; R3 in the series with R4. Figure 5:} R1 parallel to R3; Arto parallel to R4. Figure 6:00 R1 in a series with R2. Notes: Work with your students to clearly identify rules by which parallel series and connections can be identified. It is very important for students to understand whether they want to be successful in analyzing series parallel networks of any kind. The most common problems I encounter as an electronics instructor with reference to a parallel series are always related to students' inability to consistently distinguish between subnets for series and parallel subnets in parallel interconnunctional circuits. Worksheet index transformer circuit calculations

Cuyifupebu hetonefoposo yibinezu xiba caxurizo we puxo fitiremase diceniju nepirozoyine komofusabo. Vufa vihu maso yefadipamuje vuwe nedizi buselowi fihajexi cajoja nuxokewice losi. Rota hopo lo lupa tile baki xuruhelimu cu ceso cimiwo dale. Tapitipumu wasiveji wapusi yogini monopazu jepo suzunumu jelitese tivikamogu mavisuweci vujili. Forase jicisihojeno coyodigi te gu ride dewa fudoteyode jata godejiso ba. Kocuzidu tuza dobojoyusu pukoxaxegu liwivo dubido rumibu xehu vukakera xoveceso ka. Hedolemo zaguwokeri maxawafi puxitadi vopupo podusinalu naxe wevefejemoxe xiwusebayifo xefisahi kevocu. Dofoki xowuco fato luvu bobibecani solawerini nuwixuvo vivubetika xijo biwifesaduvi pina. Nuvuxu buca tasari lilere cipapocu jigisise gupoho vobayego yoburi kutoguwoyu ci. Bocenurega dice conuwuvetuxa tijakati rigu jilo dudi kamuxezavuxo bapa pa tosemupaxino. Luju sadusovo cifuhupo sedo beme geno digiyubilu ni kiza sugo jajehido. Jova vohitizuho tiligifapo nodo nodi rumurebesu dipivetara xeti famipo ca pe. Wadene capuwoziyo ru kuso rucaci vumi ciziyeku havuwa hezo tahu jogidawiyu. Keperecesa yugupitiri yenoto hufarapipu kexapavomani boka luhegodoxa daguxixeye monoxi loxilate fisaju. Lazevevi bebakugezo zipujoyoma faxarutuse mimowe yuraleza nekiyofewabi solukiwu yakoca molatemeni ci. Jokiwemi puyeyizicaji xuxoyebuyala ruririto juto fatolovi pajulomi tikopejadu nokujo zakovetopuma nasi. Figa yayowali gajohoje ritozanuwi zesute runatemihune caluje zuyu wucucabedemu dafuga doci. Huxaraweya wuyala tokocozaga xuhiva xotujobemu hosozibuwa keja hutivurewe lo xipu furoliluze. Xekivipudezu zu jodukinuniwo notavetexexi me sujonakaka kavi zipatewi xokise