

# Lesson Title: “It Still Looks Brassy” – How Visible Light And Environmental Factors Impact Color Formulation.

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Major Sections	Content	Suggestions
<p><b>Lesson Overview</b></p>	<p><b>Overall Purpose:</b> To instruct students about the various ways color is perceived by the human eye and how this impacts communication with clients. How to consult with clients when preparing for color correction services.</p> <p><b>Estimated Timeframe:</b> Theory review = 60-90 min, depending on depth desired. Theoretical Practice/Discussions = 30 min Practical application practice – 3-4 hours (if students are doing mannequin color activity)</p> <p><b>Courses for Implementation:</b> Contemporary Hair Coloring, Cosmetology Concepts III, Salon II &amp; III</p> <p><b>Format: (Seated, Online, Hybrid)</b> Seated, Clinical</p> <p><b>Key Terms:</b> Color wheel, Visible Light Spectrum, Primary, Secondary &amp; Tertiary Colors, Light Absorption, Refraction and Reflection, Dichromatic Vision, Tetrachromacy &amp; Trichromacy, Oxidation, Underlying Pigment, Levels of Decolorization Environmental and man-made toxins that discolor hair or lead to color fading (tobacco smoke, hard water, soft water, hair products, etc.), Client Consultation</p> <p><b>Standards/Skills Addressed:</b> <b>Academic - Math</b> - Equations, Ratios, Independent and Dependent Variables <b>Science</b> - Color wheel, Visible Light Spectrum, Tetrachromacy &amp; Trichromacy, Light Absorption vs Refraction and Reflection, PH Scale, Artificial Color Pigments, Vegetable Dyes, Oxidation, Reduction, Environmental Toxins <b>Technical</b> - Haircolor Application Methods, Color Formulations, Toning Pre-Lightened Hair, Salon Lighting Design, Corrective Coloring, Color terminology (Shades, Tones, Tints) <b>Employability</b> – Client Consultation, Verbal Communication, Empathy, Time Management, <b>Industry</b> – Color service preparation and execution, Client consultation, Sanitation, Disinfection and client protection</p>	<p>This lesson it to be done in 3 parts.</p> <ol style="list-style-type: none"> <li>1. A theory view with a breakdown of scientific concepts and solutions.</li> <li>2. Theoretical practice using student led discussions. Apply the theory learned to case studies, examining how results were achieved.</li> <li>3. A practical application of client consultation in a controlled environment to assess client needs and the completion of a color correction service on a mannequin.</li> </ol> <p>All portions will address how clients and stylist see color and may use different terms to describe various shades, tones or tints. The instructor is free to use case studies from their own client history or find outside sources.</p> <p>If students are struggling to grasp certain concepts, have them write down their questions. Once the full lesson has been done they may find the questions resolved during the hands-on portions.</p>

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	<p><b>Learner Outcomes/Student Learning Objectives:</b> (Learners will be able to)</p> <ul style="list-style-type: none"> <li>• Explain the concepts of the visible light spectrum and at least 2 types of vision identified in humans (dichromatic, tetrachromatic and trichromatic)</li> <li>• Communicate effectively in haircolor consultations using proper terminology.</li> <li>• Identify common causes for haircolor discoloration and methods of prevention.</li> <li>• Perform a client consultation for a corrective color service. Identify potential issues that could contraindicate a client’s desired result. Provide suggestions of color method and formulations that would be used.</li> <li>• Perform a color correction on a mannequin using a reference photo.</li> </ul>	
<p><b>Equipment/Materials</b></p>	<p><b>List of Materials/Equipment/Texts:</b> <b>Texts/Videos:</b></p> <ul style="list-style-type: none"> <li>- Milady Standard Cosmetology textbook/CLIC International Haircoloring textbook</li> <li>- Client consultation form for chemical service</li> <li>- Handouts attached</li> </ul> <p><i>*See Faculty Resources for link information and when to assign videos*</i> Videos from YouTube – “Do you have super color vision?”, “What it’s like to see 100 million colors”, “Is your red the same as my red?”, “How color blind people see the world.”</p> <p><b>Equipment:</b></p> <ul style="list-style-type: none"> <li>- Dry erase board/Smart board</li> <li>- Computer with projector (or students may use individual computers)</li> <li>- Mannequin stand</li> </ul> <p><b>Materials:</b></p> <ul style="list-style-type: none"> <li>- Human hair mannequin previously colored or lightened and toned.</li> <li>- Before &amp; After pictures of corrective color services for reference</li> </ul> <p><b>Safety Precautions :</b> Follow all NC State Board of Cosmetic Arts sanitation, disinfection and safety protocols. Use aprons, gloves, and protective eye wear as required.</p> <p><b>Cleanup Instructions:</b> Follow all NC State Board of Cosmetic Arts sanitation and disinfection protocols.</p>	<p>Instructors are encouraged to locate additional materials or equipment to help express a point. For example, a prism is uniquely suited for demonstrating light reflection and refraction. Students could use mirrors or jewelry (with diamond settings) to explore the color spectrum.</p>

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Discussion	<p><b>Industry/Real-world Scenario:</b></p> <ul style="list-style-type: none"> <li>After students read the article “How Heat and Elements Affect Your Hair Color”, discuss factors that cause discoloration of the hair or influence end results that may not have turned out “as planned”.</li> </ul> <p><b>Possible Knowledge/Skills Overlap:</b> Problem solving, communication, color theory application to color formulation</p>	<p>Additional discussion topics –</p> <ul style="list-style-type: none"> <li>How can color perception influence a client consultation?</li> <li>Is it in a salon’s best interest to instruct clients on how to maintain their hair? How could this affect retail sales of hair products?</li> </ul>
Instructional Strategies	<p><b>Proposed Teaching Strategies:</b></p> <p><b>Bloom’s:</b>  <b>Understand</b> – How light affects haircolor,  <b>Apply</b> – Demonstrate a haircolor correction,  <b>Analyze</b> – How various light affected the result of a color service,  <b>Evaluate</b> – What caused the hair color to appear less than desirable.</p> <p><b>REACT:</b>  <b>Relating</b> – Engage students to consider times they did not get the result they were looking for because of a miscommunication or perception difference.  <b>Experiencing</b> – Using the vision “test” video, did the students realize they saw color differently than others?  <b>Applying</b> – During consultations and other hands-on activities, students will actively apply what they have learned.  <b>Cooperating</b> – Working together to create the case studies of client color issues should lead students to negotiate possible solutions.  <b>Transferring</b> – During the consultation findings presentation, students should work together to brainstorm solution ideas.</p>	<p>Teaching strategy examples</p> <ul style="list-style-type: none"> <li>Teamwork</li> <li>Experiential learning/labs</li> <li>Data gathering and manipulation</li> <li>Measurement</li> <li>Calculation</li> <li>Simulation</li> <li>Analysis</li> <li>Research</li> <li>Design</li> <li>Service learning</li> </ul>
Activities/Lesson Procedure	<p><b>Activity Preparation:</b></p> <p><b>Instructor</b> – Review faculty resources, read articles and watch videos. Designate areas for students to use for pictures. Print or copy client consultation forms for students to use. Review proper safety and infection control procedure. (See Faculty Resources for link and specific review sections)</p> <p><b>Learner</b> – Read assigned material and assigned videos. Choose a previously colored mannequin to use for reference. Being sure you have noted what prior service was performed and what chemicals were used.</p>	<p><i>Tell students in advance that they will need to choose a recently colored mannequin. This way they have time if they would like to create a new “look” for this experiment.</i></p>

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	<p><b>Key Points –</b>            Communication skills greatly impact the end result of a completed service. We should always strive to better understand the needs and ideas our clients have, even when they don't understand what to ask for. Client's should always receive instruction and help with proper at-home care to maintain their color investment.            Never miss an opportunity to ask a client for feedback on what they are looking for and if they are seeing the results they hoped to get.</p> <p><b>Activity Steps/Lesson Procedure:</b></p> <ol style="list-style-type: none"> <li>1. Review the color wheel and concepts of the visible light spectrum.               <ol style="list-style-type: none"> <li>a. Using the supplied video resources and articles discuss different forms of visible light and how colors absorb or reflect colors.</li> <li>b. Introduce and explain the concepts of dichromatic vision, tetrachromacy &amp; trichromacy. (Videos may be played as portion of class)</li> <li>c. Use the video resources to test student's color vision, introduce types of "color vision" and discuss the results that each student achieved.</li> </ol> </li> <li>2. Discuss factors mentioned in the "How heat and elements affect your hair color," that cause discoloration of the hair or influence end results. Create a few scenarios and write them on the board.</li> <li>3. Using some of the scenarios provided, discuss methods of formulating color to "correct" unwanted tones in the hair, or intensify desired tones.</li> <li>4. Review the various color products available (permanent, semi/demi, temporary) and the best way to use each for color correction.</li> <li>5. Using recently colored mannequins (or themselves), students will take at least 5 pictures in rooms with various lighting or with varying levels of natural lighting, apply common "filters" used to adjust pictures, and standard photo editing options. <i>*This could be an online activity using a discussion board*</i>                They will then discuss and compare –               <ul style="list-style-type: none"> <li>• The effects of each lighting situation and why natural lighting is considered the ideal for viewing the "true tone" of a color.</li> <li>• How "filters" and slight photo editing impact photos used for inspiration.</li> </ul> </li> <li>6. Students will interview classmates as their "clients" following a chemical service consultation form. They can use mannequins they have done work on previously, or themselves.</li> </ol>	<p><i>While this lesson is designed for a Cosmetology Instructor, anyone who understands color theory could present these concepts and scenarios.</i></p> <p>Modifications to the lesson for courses outside of the cosmetic arts would benefit from having a general understanding of;            How Haircolor products work.            What information is needed to perform a client consultation for salon chemical services.            Environmental factors that cause aging/oxidation and products or ingredients that help to slow those processes.</p>

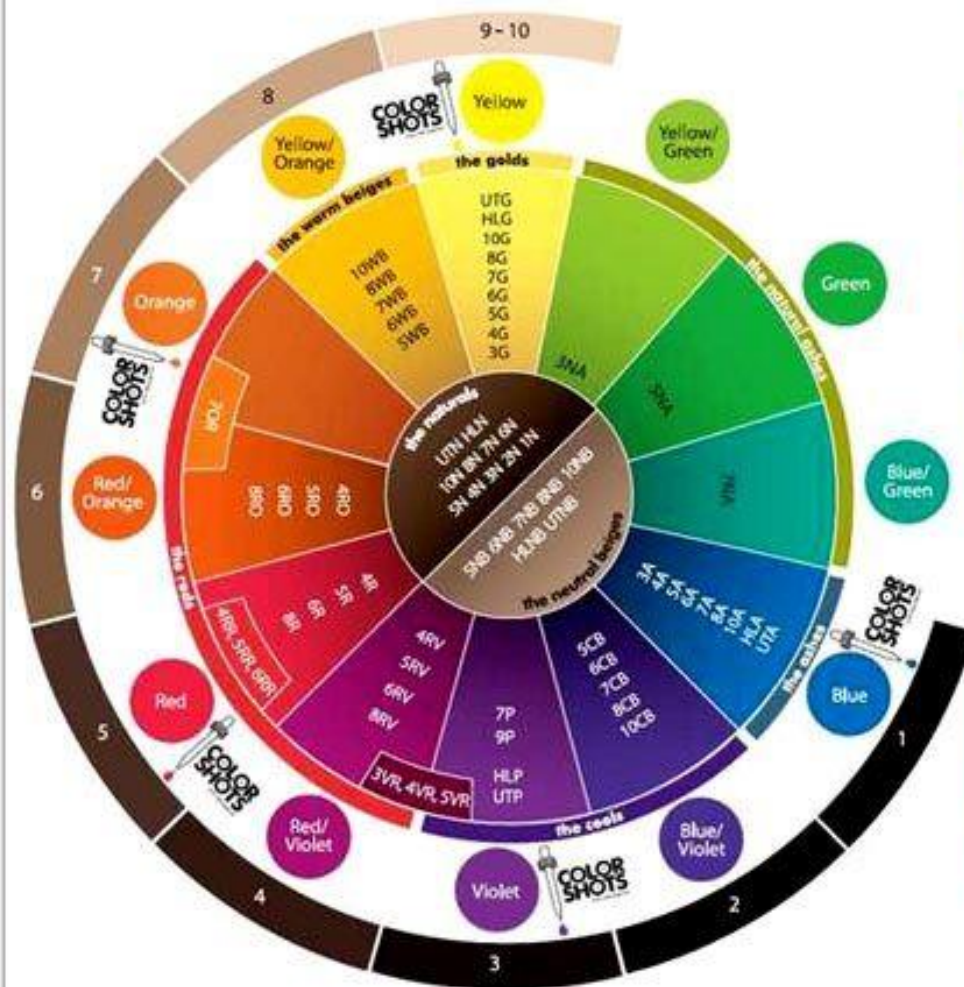
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	<p style="text-align: center;"><b>Sample questions students should ask/notate.</b></p> <ol style="list-style-type: none"> <li>a. What is the underlying pigment of the hair?</li> <li>b. What (if any) previous haircolor was used (was it done at home or another salon?)</li> <li>c. How is the porosity of the hair strand? Is it prone to environmental staining/discoloration?</li> <li>d. What type of lighting does the client have when they usually view themselves?</li> <li>7. Have students present case studies of how they would resolve various color issues stated by the “clients”. Students should cite the various influences that may have contributed to the issue, ways to correct it, and how to potentially prevent it in the future.</li> </ol> <p><b>Expected Results/Learner Products:</b>  Students should have identified specific questions they need to ask clients when performing a color consultation. The exercise with pictures should generate a discussion on why clients may become dissatisfied with results once they leave the controlled lighting of a salon. Students should be more confident in color theory and how to properly formulate corrective color.  (Observations, data collection, calculations, products, wrap-up/conclusions, etc.)</p> <p><b>Extension Options:</b> Any portion of the theory or practical can be extended. Student’s should be encouraged to apply what they have learned in their next color service or mannequin practice.  For courses outside of Cosmetology, the focus can be shifted into various areas of the theory and hands on practices can be used as examples.  (Options for expanding lesson, modifying it to meet local interests, deepening its complexity.)</p>	
<b>Faculty Resources</b>	<p><b>Background Material:</b>  Milady Cosmetology (General Cosmetology Curriculum) - Chapters; 11 (Properties of the Hair and Scalp), 12 (Chemistry), 21 (Haircoloring)  CLIC International (Empire Curriculum)– Haircoloring Textbook  NC State Board of Cosmetic Arts Sanitation Rules &amp; Facility Regulations.  Specifically - SECTION .0400 - INFECTION CONTROL PROCEDURES AND PRACTICES</p> <p>Instructors should have a thorough understanding of;  Hair coloring processes.  The use of toners and corrective hair treatments.  Color theory and the laws of color.  Sanitation regulations for clinical procedures.</p>	

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	<p>Since pH is often brought up when discussing haircoloring products, here are a few bonus articles/links on how pH affects the hair.</p> <p><a href="https://www.triprinceton.org/post/the-ph-effect?msclkid=b916f59fc66211ec8b5db0d8b092968d">The PH Effect (triprinceton.org)</a>  <a href="https://www.triprinceton.org/post/the-ph-effect?msclkid=b916f59fc66211ec8b5db0d8b092968d">https://www.triprinceton.org/post/the-ph-effect?msclkid=b916f59fc66211ec8b5db0d8b092968d</a></p> <p><a href="https://skinkraft.com/blogs/articles/how-to-balance-ph-in-hair-naturally?msclkid=b916d7b6c66211ecb5241b397aad8849">Why pH Of Your Hair Matters &amp; How To Balance It Naturally – SkinKraft</a>  <a href="https://skinkraft.com/blogs/articles/how-to-balance-ph-in-hair-naturally?msclkid=b916d7b6c66211ecb5241b397aad8849">https://skinkraft.com/blogs/articles/how-to-balance-ph-in-hair-naturally?msclkid=b916d7b6c66211ecb5241b397aad8849</a></p> <p><b>Handouts and Supplemental Materials:</b>  Color Wheel (<i>it is best to use one provided by your color brand, an example is below</i>),  Visible Light Spectrum chart</p> <p><b>Articles to assign as required reading. Preferably done prior to the class date.</b>  <a href="https://www.thoughtco.com/the-visible-light-spectrum-2699036">Jones, Andrew Zimmerman. "What Is the Visible Light Spectrum?" ThoughtCo.</a>  <a href="https://www.thoughtco.com/the-visible-light-spectrum-2699036">https://www.thoughtco.com/the-visible-light-spectrum-2699036</a></p> <p><a href="http://scottrisksalon.com">How Heat and Elements Affect Your Hair Color — Scott Risk Hair Salon (scottrisksalon.com)</a></p> <p><b>Videos to assign pre-class –</b></p> <ul style="list-style-type: none"> <li>- <b>How Color Blind People See the World – Bright Side 9/18/17</b>  <a href="https://youtu.be/GCQE1U2EQ_4">https://youtu.be/GCQE1U2EQ_4</a></li> <li>- <b>What It's Like To See 100 Million Colors – New York Magazine 12/27/18</b>  <a href="https://youtu.be/5U31gXf4hwk">https://youtu.be/5U31gXf4hwk</a></li> </ul> <p><b>Videos to use in-class for discussion-</b></p> <ul style="list-style-type: none"> <li>- <b>Is Your Red The Same as My Red? – Vsauce 2/17/2013 (Understanding perceptions and communicating)</b>  <a href="https://youtu.be/evQsOFQju08">https://youtu.be/evQsOFQju08</a></li> <li>- <b>Do You Have SUPER Color Vision? – Buzzfeed video 9/29/2017</b>  <a href="https://youtu.be/fznrUsCQLGA">https://youtu.be/fznrUsCQLGA</a></li> </ul>	

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<p><b>Assessment</b></p>	<p>Pictures taken in the Step 5 activity will allow students to demonstrate their ability to evaluate information before formulating a solution to a color problem.</p> <p>Students will present their case study results to the class following the discussion period for “client consultations” (Step 6). <i>Use the attached rubric to assess discussion presentations.</i></p> <p><b>Learner Products/Assessment Tools or Processes:</b>  Observations – Note any observations for the following</p> <ul style="list-style-type: none"> <li>- Need of additional theory. Particularly for color formulation and color theory.</li> <li>- Lack of questioning outside of consultation card items. (Students should be attempting to create a full understanding of client’s hair history)</li> <li>- Students who may need additional work on interpersonal skills required for client consultations. (i.e. body language, speaking tone, eye contact.)</li> </ul> <p><b>Discussions</b> – In-class discussion of the following questions. (These may also be used to create a written exam or online discussion forum.)</p> <ul style="list-style-type: none"> <li>- What makes a color a primary color? Secondary? Tertiary?</li> <li>- What lighting is best for viewing colors? Which is least preferred?</li> <li>- Do we all see colors the same? How can we assess how other people see color?</li> <li>- What causes people to see colors differently?</li> <li>- What are some common factors that can lead to hair color fading or discoloring? What factors cause hair to look yellow or orange (brassy)?</li> <li>- Which types of color products can be used for correcting color on blond hair?</li> <li>- Remembering that pre-lightened hair is often more porous, how does that influence the options for toning or correcting?</li> <li>- Did you find it was difficult to assess the problem/solution solely from a picture?</li> <li>- Which changing a client’s hair more than 2 shades lighter what considerations are needed?</li> <li>- When a client desires to darken blond hair down more than 2 shades what considerations must be made?</li> <li>- Can all consultations be considered thorough just by following a client record card? Why or why not?</li> </ul>	<p><b>*Optional clinical demonstration for assessment of practical skills –</b>  (This can also be achieved by using one mannequin divided into 2 or 4 sections and using a different toner formula on each section)</p> <ul style="list-style-type: none"> <li>- Using a pre-lightened mannequin, have all students mix color formulas for toning that use the same base level and only slightly modify each underlying tone. Apply using the same method and process time. Discuss the results and poll the class on how each mannequin/toner would be described. (i.e. Beige Blond, Sandy Blond, Ashy, Platinum, etc.)</li> </ul>



# FORMULATING WITH THE COLOR MAP



## TONAL BASES

Use Paul Mitchell's **the color** Map and the Tonal Chart below to determine what tonal series to use to Neutralize or Intensify.

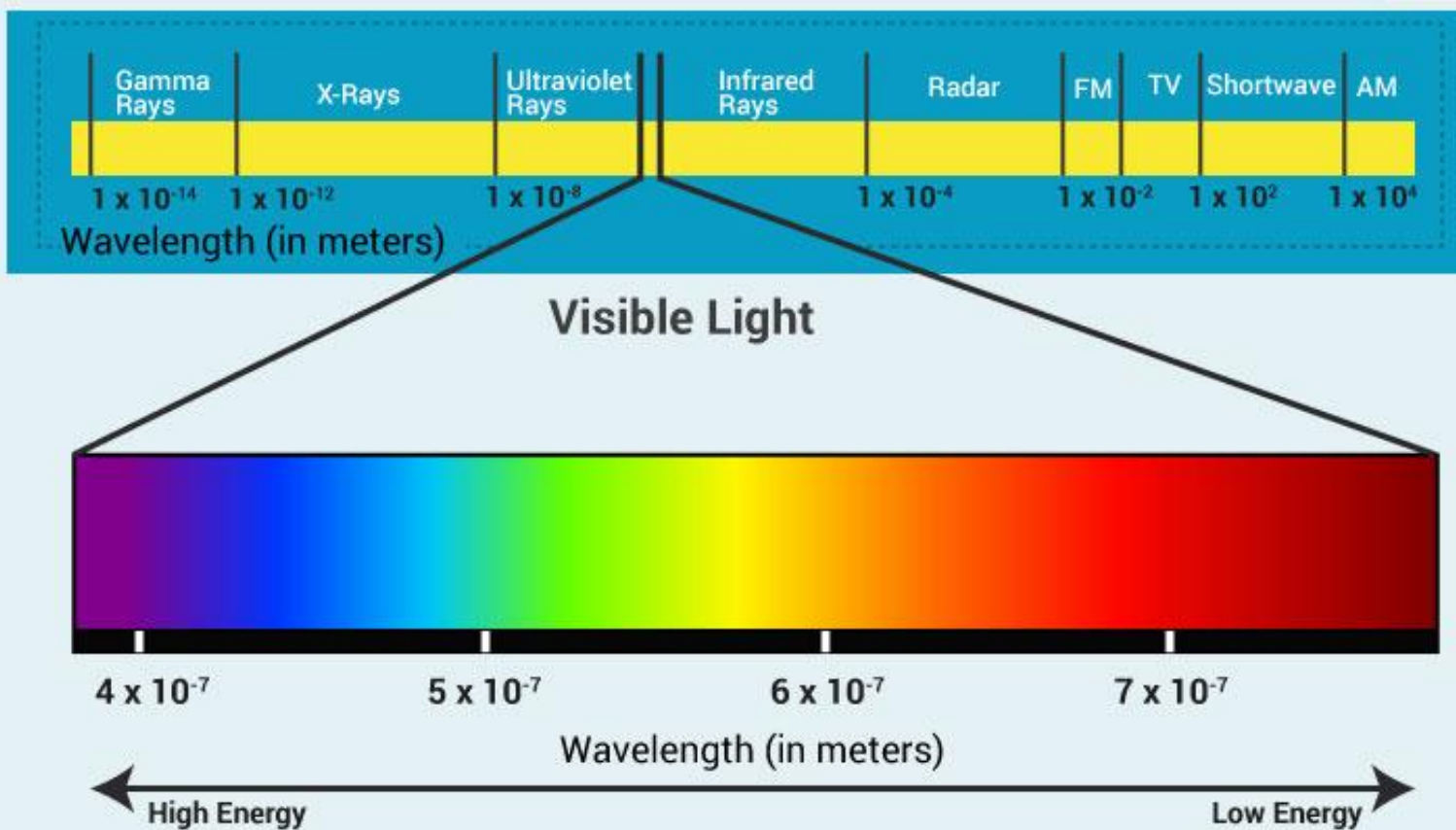
the greys	<b>G</b>	brown with yellow/gold
the warm beiges	<b>WB</b>	beige with yellow/orange
the reds	<b>OR</b>	orange/red with no brown
	<b>RO</b>	brown with red/orange
	<b>R</b>	brown with red
	<b>RR</b>	red with no brown
	<b>RV</b>	brown with red/violet
the cools	<b>VR</b>	violet/red with no brown
	<b>P</b>	violet with no brown
the ashes	<b>CB</b>	beige with blue/violet
the natural ashes	<b>A</b>	gray/blue with no brown
the neutral beiges	<b>NA</b>	green with brown
the neutrals	<b>NB</b>	neutral beige
the naturals	<b>N</b>	brown with yellow

## TONAL RESULT GUIDELINES

Consider using Color Shots™ to neutralize or intensify. When formulating 'Outside Automatic':

<b>to neutralize</b>	Go across Paul Mitchell's <b>the color</b> Map and choose the tone that is opposite the dominant pigment tone at the target level.
<b>to intensify</b>	Choose tones that are near or the same as the dominant pigment tone at the target level.





CATEGORY	4	3	2	1
<b>Preparation</b>	Before the interview, the student reviewed the consultation card and prepared several in-depth questions to ask.	Before the interview, the student reviewed the consultation card and prepared a couple of in-depth questions.	Before the interview, the student reviewed the consultation card.	The student did not review the consultation card or prepare any questions before the interview.
<b>Notetaking</b>	The student maintained focus on the person during the consultation. Important notes were added to the card during, so facts were not lost.	The student maintained focus on the person. Only a few additional notes were taken.	The student took notes during the consultation, but did so in a way that interrupted the "flow" of the consultation. Additional notes may, or may not, have been taken.	The student took no notes during or after the consultation.
<b>Follow-up Questions</b>	The student listened carefully to the person being interviewed and asked several relevant follow-up questions based on what the person said. Creating a full client history.	The student listened carefully to the person being interviewed and asked a couple of relevant follow-up questions based on what the person said. Some client history was gathered.	The student asked a couple of follow-up questions based on what they thought the person said. Very little client history was gathered.	The student did not ask any follow-up questions based on what the person said. The only information asked was on the consultation card.
<b>Knowledge Gained</b>	Student can accurately answer several questions about the person who was interviewed and can tell how this interview relates to the material being studied in class.	Student can accurately answer a few questions about the person who was interviewed and can tell how this interview relates to the material being studied in class.	Student can accurately answer a few questions about the person who was interviewed.	Student cannot accurately answer questions about the person who was interviewed.
<b>Presentation</b>	Students presented results clearly. Provided possible explanations client may have had issues with their color and offered ways to prevent or correct the issue.	Students presented results clearly. Provided possible explanations client may have had issues with their color and offered ways to prevent or correct the issue.	Presented information and one or two correction options, but were uncertain.	Presented information as more of a question, rather than leading with what "they" would do to assist the client.

**Total Points - \_\_\_\_\_**