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# Fingerprint and impression analysis worksheet

Reference cards I have created reference cards for many of the units/activities listed below, which are designed to replace student tokens and some lab pages for these units. The cards are printed in stock of cards (back-to-back) and laminated for student use. Students use general markers to add notes to pages as we talk about each lesson and hold them for review for unit questionnaires. (You can also have students record their answers in a lab notebook instead of typing on pages.) At the end of the drive, clean them with a wet cloth and turn them on so they are ready for the next class! Less lost paper and less copy time – a double bonus! In addition, the format of the referral card will allow special education students (and other students with learning challenges) to focus on the lesson and avoid possible frustration by trying to keep up with class grades. They'll have all the information they need in one place. The daily challenges of the CSI begin each class period with a warming activity aimed at concepts of forensic sciences and other skills (observation, problem solving, etc.) The challenges are in the form of PowerPoint presentations and include spot-the-difference puzzles, mini mysteries, trivial challenges and vocabulary builders. I have also created several warm-ups that incorporate CSI-related videos that are available online. Click here to visit the Daily CSI Challenges page... Back to top

Unit 1: Crime Scene and Eyewitness Basics During this unit students learn basic vocabulary associated with crime scene analysis, as well as explore testimonial evidence (eyewitnesses and face composites software to create - see the list of supply companies at the bottom of this page.) They also have the opportunity to investigate a crime through the chin interactive investigator website, which helps introduce them to many of the topics we discuss throughout the quarter-long class. Presentation: Crime Scene Basics (PPT) Worksheet: Crime Scene Basics Student Notes (PDF) Presentation: Eyewitness Basics (PPT) Worksheets: Eyewitness Basics Student Notes (PDF) & Eyewitness Online (PDF) Also available ... CSI Web Adventures - Case 1: Rookie Training (PDF) - Students complete this spreadsheet and learn how to analyze tests in a crime lab while working through the different beginner training sections. I also challenge my students to resolve case 2, case 3 or case 4 at various points in the CSI unit. Reference cards: Crime Scene Basics (PDF) and Eyewitness Basics (PDF) - These documents replace crime scene basics and Eyewitness Basics files. Review: Unit 1 Review Worksheet (PDF) and Unit 1 Review Key (PPT) QuizOther General Resources: Unit 2: Introductory Presentation of Physical Evidence: Evidence Power: Physical Evidence (PPT) Student Spreadsheet: Physical Evidence Student Notes (PDF) Reference Reference Evidence power: Physical evidence card (PDF) - This two-part document replaces the worksheet listed above. Review: Power of Evidence Review (PDF) and Power of Evidence Review Key (PPT) Quiz: Power of Evidence Quiz (PDF) Other physical and trace evidence resources: The basics of fingerprinting During this unit students learn to identify different fingerprint patterns, as well as other details that help researchers match fingerprints. They are able to practice manufacturing and printing and are challenged to match strangers and acquaintances in the Fingerprint Challenge. I bought ink pads, black powder, brushes and other materials to make various kits to allow students to work in small groups. See the list of companies supplied at the bottom of this page. NOTE: I recommend magnetic fingerprint rods and dust if you have the money available to buy them. They are less messy than traditional black powder and fiber brushes. Presentation #1: Basic Concepts of Fingerprints (PPT) Worksheets: Fingerprinting Basics Student Notes (PDF), My Prints (PDF) Presentation #2: Science of Ridges (PPT) Worksheet: Science of Ridges Student Notes (PDF) #3: Latent Prints (PPT) Worksheet: Latent Prints Student Notes (PDF) Reference Card: Fingerprint Basics Card (PDF) – This two-part document replaces the worksheets for all fingerprint lessons. Questions about reference cards? See the note at the top of this page. Fingerprint Guide (PDF) - This one-page document includes examples for all patterns and crest features discussed in fingerprint lessons. Other fingerprint resources: Online fingerprints (PDF) - I use this spreadsheet after the first presentation. Visit the Children's Zone Forensic Sciences page for the sites. Fingerprint Challenge (PDF) - Students use their research skills to match fingerprint samples. Fingerprint analysis (PPT) - I use this activity with my students to analyze the distribution of fingerprint patterns in each class. After students complete the My Impressions spreadsheet and rank their impressions, they complete the top section of the Fingerprint Analysis spreadsheet. We calculate the percentages of each pattern and discuss how it relates to the expected percentages presented in class. We also analyze the distribution of patterns for males vs. females and discuss the results after students have completed the bottom section of the worksheet. The Finger print sheet (PDF) - Students are always interested in examining their finger impressions to see how they compare to their fingerprints. Instead of using the fingerprint drive incapax, students create their own ink by rubbing pencils on an index card and then pressing it at their feet. They use a piece of light tape to lift the print and record it at the right point in the worksheet. Lip printing activity (PDF) - Thanks to Dina Sbarra Sbarra sharing their lip print mystery activity. He turned the school around and got lip marks from several teachers at his school on paper and then put them on sheet protectors. She had a teacher also mark her lips in a plastic cup (the criminal who destroyed her room). Booking.com is part of Booking Booking Nord, in 1753, and the end on the web, the bed very well, the bed very well, the room very large and the bed very well. He put the fingerprints of his lips on the screen so they could look at the different types to help them rank the fingerprints on their lips and identify that of the culprit. Impression Evidence I use this presentation to introduce the subject of printing tests and then students investigate tire tracks, tool marks and shoe prints. Introductory Presentation: Print Evidence (PPT) Worksheet: Impression Evidence Notes (PDF) Reference Card: Impression Evidence (PDF) - This document replaces the student spreadsheet for introductory presentation and can be used as a guide for the challenges listed below. Questions about reference cards? See the note at the top of this page. Tire Tracks Challenge (PDF) - This lesson idea was presented by Sandy Powell, a member of the Middle School Science Yahoo Group. The activity challenges students to match the tire tracks of 8-10 small cooking cars. Teacher information, a student spreadsheet and an example page of my challenge are provided in the download. A PowerPoint is available to enter the activity and challenge. Tool Marks Challenge (PDF) - This activity challenges students to match tool printouts of a 12-tool set. Teacher information and student spreadsheet are provided for download. Also available ... my challenge page and a PowerPoint to enter the activity and challenge. Bite Mark Evidence (PDF) - This activity allows students to practice the manufacture and analysis of bite mark prints using styrofoam plates and a variety of soft candies. This activity goes along with the material presented in the introductory presentation mentioned above. A PowerPoint is available for this activity. NOTE: As with any laboratory involving food, consider food allergies that may be a concern for your students. Forensic Files: Tourist Trap - This episode of Forensic Files fits well with the printing evidence unit as it includes analysis of bite marks. Students complete the chips while watching the Episode Past Lives of Forensic Files DVD. The DVD set is to rent from Netflix and can be found in online stores. Worksheets (includes answer key) are available for the following episodes: Past Lives (PDF), Zodiac Killer (PDF), Over & Out (PDF) Back to the top hairs and fiber hairs and fibers (PPT) – I use this presentation to introduce the use of hairs and fibers as evidence. This unit includes an up-close look at the hairs and fibers using microscopes and an assortment of prepared slides. At the end of the lesson, I have students complete hair and fiber to test their ability to identify various samples. Spreadsheet of the note of hairs and fibers (PDF) - Student spreadsheet for the presentation. Reference card: Hairs and fibers (PDF) - This two-sided document replaces the student spreadsheet for presentation. Questions about reference cards? See the note at the top of this page. Hair Lab Spreadsheet (PDF) - Students examine their own hair sample as well as other animal hairs to complete this spreadsheet. Spreadsheet of the hair and fiber laboratory (PDF) - Students use microscopes to draw images of 6 hair and 6 samples of fiber. NOTE: I created slide sets of 9 animal hairs and 6 fibers for students to use for this activity. A spreadsheet is also available for this number of samples. Hair & Fiber Challenge (PDF) - I used my microscope camera to capture images of the different hairs and fibers that students observed in class. I printed several sets of this spreadsheet in card stock and laminar them to keep them for future classes. I challenge students to use their notes and observation pages to identify each one. Back to higher chromatography During this lesson students learn about the use of chromatography in criminal investigations and use paper chromatography to test black markers. At the end of the drive, I use four of the proven markers to create a mystery pen challenge. The students take the test of the four mystery markers and compare them to the samples they had previously tested. The challenge is set up as a race to see which team of students can be the first to identify them correctly. Presentation: Chromatography (PPT) Worksheet: Chromatography Notes (PDF) Reference card: Chromatography Basics (PDF) - This two-part document replaces the student spreadsheet for presentation. Questions about reference cards? See the note at the top of this page. Also try this ... Permanent marker chromatography - We used permanent markers and rubbed alcohol to decorate our lab aprons or white T-shirts that students wore to class. Back to top blood basics During this unit students learn about the basics of blood evidence. From the composition of blood and blood types to the analysis of blood stain patterns, students are investigating how blood tests can be used in a criminal investigation. I use simulated blood samples purchased from Ward's. See the list of companies supplied at the bottom of this page. #1: Blood Basics (PPT) Worksheet: Blood Basics Student Notes (PDF) Presentation #2: Ernie's Exit Blood Typing Lab (PPT) Worksheet: Blood Writing (PDF) (Include Teacher Notes) Need a cheaper version of the Blood Typing Laboratory? The version below uses milk, vinegar and water instead of the regular simulated blood kits available at science supply companies. Presentation: Ernie's Exit Blood Typing Lab - Cheap Version (PPT) Worksheet: Blood Typing Basics - Cheap Version (PDF) (Includes Teacher Notes) teacher) #3: Bloodstain Science (PPT) Worksheet: Bloodstain Science Student Notes & Lab (PDF) & Angle Guide (PDF) (Needed for Part 4 of lab) EDPuzzle: Blood Evidence 2018 (PDF) - Updated worksheet using EDPuzzle videos to enter blood splatter drive. The videos are displayed on the blood basics section on the Forensic Sciences page of the Children's Zone Reference Cards: Blood Basics Card w/ Blood Typing Lab - This two-part document replaces the worksheets for the first two presentations and the blood writing lab. Bloodstain Science Card with Blood Spatter Lab - This two-part paper replaces the worksheets for the bloodstain science presentation and laboratory. Blood Basics & Bloodstain Science Card (PDF) - This two-part paper goes with presentations by Blood Basics, Blood Typing and Blood Spatter. It does not include the laboratory sheets – you will have to print them separately. Questions about reference cards? See the note at the top of this page. Review: Blood Basics Review (PDF) and Blood Basics Review Key (PPT) Quiz: Blood Basics Quiz (PDF) Other Resources for Blood Evidence: Nobel Prize - Blood Typing Game - I created this worksheet for an overview of blood types and transfusions. The final activity challenges students to write down the blood of three patients and determine what types of blood could be given to them for a transfusion. Blood Typing Booklet – Thanks to Christina Beatty for sharing her brochure she uses with her students to help them understand blood typing. Available materials: Blood typing brochure, brochure clippings and key DNA testing from the brochure During this unit students learn about DNA and its use in forensic science. After discussing referral card information, students create DNA keychains, which are used for an identification activity in which students must match their keychains to a paper model. Other lessons and activities are listed below. Presentation: DNA Evidence (PPT) Reference Card: DNA Evidence (PDF) Student Worksheet: DNA Evidence (PDF) Other resources: PBS Learning Media - Forensics - A great lesson with links to additional project ideas from their archives. Use your site search to find a lot of resources! Who ate the cheese - Students simulate electrophoresis and DNA fingerprint to solve a crime. DNA Resources – Check out the collection of links available on the site for activities investigating DNA. Also check out online activities and information on the Forensic Sciences page in the Children's Area. Back to the top reference card: Card Forensic (PDF) - This two-sided document replaces the worksheet for the entomology lesson. Questions about reference cards? See the note at the top of this page. Online Lessons and Resources for Forensic Entomology: Crime Solving Insects (PDF) – This 4-H organization unit provides a wealth of information for teaching teaching Entomology. Notes: 1 – I developed a PowerPoint presentation, activity card (notes on the front page and lab on the back), and case cards to go along with this unit. I have created 6 evidence packages for each of the four cases – samples pipe cleaners of lobsters and pupae together with a case card. I laminar activity cards and students will use general markers to record their data and write answers to questions. 2 - I also did the optional activity described in the unit during the summer to provide real samples of lobster and pupa for students to examine as we dispelled the Forensic Entomology PPT. I collected a variety of magnifying glasses (spices and sizes) as well as pupa and kept them in glass vials with 50% isopropyl alcohol. Forensic Entomology Unit - An excellent resource for high school students; includes background information, case studies and a set of forensic entomology. Visible tests: Entomology in action - This lesson introduces students to the life cycle of the coup fly and cumulative grade time (ADHD) used by forensic entomologists to estimate the time of death. Back to first unit 4: Forensic anthropology During this unit, students learn to identify the main bones in the human body, as well as investigate the role of forensic anthropologists in crime solving. The presentation includes links to various online videos along with other information and two activities. Introductory presentation: Bone Basics (PPT) Student worksheet: Bone Basics (PDF) & Skeleton Worksheet (PDF) Activity Materials: Bag O' Bones – I bought bone sets from an online company for use with this activity. You will also need large butcher paper. Bone Challenge – I have prepared several sets of skeleton cuts. You'll also need blindfolds for students and timers. Other resources: Past Lives Forensic Files (PDF)- This episode of Forensic Archives fits well with the anthropology unit as it involves the investigation of human remains by Dr. Bill Bass. Students complete the chips while watching the Episode Past Lives of Forensic Files DVD. The DVD set is available to rent from Netflix and can be found in online stores. Worksheets (includes answer key) are available for the following episodes: Tourist Trap (PDF), Zodiac Killer (PDF), Over & Out (PDF) Kids Discover - Bones Magazine - A great resource available in the Kids Discover store that provides a good background of information about bones, joints and more. I purged a set of 15 for students to use in pairs and created a spreadsheet for with the magazine. Unit 5: Arson Research Through the help of our local fire department, students explore the basics of fire science and fire research. They also include lessons on fire safety and reinforcing the fact that playing with fires can cause major damage and deaths. If possible, they have member of its local fire department present a fire safety program for its students. Presentation: Fire Science (PPT) Worksheet: Fire Science (PDF) Reference Card: Fire Science Card (PDF) - This two-part paper replaces the worksheet for the Fire Science lesson. Questions about reference cards? See the note at the top of this page. Drive Review: Fire Basics Review (PDF) and Fire Basics Review Answer Key (PPT) – Thanks to Christopher Hunter for sharing these materials. Unit Evaluation: Fire Basics Quiz (PDF) – Thanks to Christopher Hunter for sharing this quiz. Other resources: 20/20 Arson Investigation (PDF) - Thanks to Dana Long for sharing this video and worksheet investigating the science of fire investigation. Update 2016: The video is available from Flame Test Flame Test Video on Back to top Unit 6's YouTube fire safety checklist: Reconstruction of accidents During this unit students investigate Newton's movement laws to analyze an accident scene to determine the sequence of events leading up to the crash, explain the damage resulting from the crash and resolve the cases. I use CRASH activities: The Science of Collisions, which is oriented towards the high school level, but several of the activities targeting Newton's laws can be used at the junior top level. Our district bought the CRASH kit and I share it with the high school physics teacher. Many of the lessons could also be incorporated into the driver's education classes. Use the contact form on your website to see if your institute can receive the program for free! Other resources: Understanding car accidents: it's basic physics – lessons and videos are available on this page. Scroll down to find the information and see the other resources available. Back at the top CSI Adventure I have developed this geocaching activity for use with the CSI summer camp program at the Smithsonian in DC. For this activity, student teams use GSP recipients to find 10 evidence falls. Each cache contains a cache card with 3-4 questions that students must answer or tasks they need complete. Each cache has a different theme and relate to the material that students researched during the camp. After a team completes a cache and has all the correct answers, they are provided with a track card that will help them determine the next step point in the adventure. Materials: Teacher information CSI Adventure Presentation (PPT) Cache Cards (PDF) Clue Cards (PDF) Answer Group Sheet (PDF) Answer Key (PDF) Back to major supplied companies – The following links are provided to give teachers information about the forensic science supplies I use with my classes. My Supply List – Includes links to supply companies and item numbers, along with the amounts each I bought for my classes. Ward's - A great selection of for a forensic science class, including the Forensic Detective Laboratory I use in my classes. Also buy my simulated blood kits from them. Educational Innovations - Visit the Forensic Kits area for the Room Forensic Detective Laboratory that includes an assortment of materials and the FACES software I use for facial compounds. I've also been good luck with your perfect ink fingerprint ink ink bearings listed on the Genuine Forensic Materials and Crime Scene page. Lynn Peavey - My source of fingerprint brushes and other fingerprint equipment. Good rates and service! Cafe Press - My favorite place for CSI T-shirts! Precision Forensic Testing – Visit this site for an assortment of great kits for your forensic science program. | Back to the top |

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