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| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Law, Public Safety, Corrections, & Security |
| **Course Name** | Firefighter I |
| **Lesson/Unit Title** | Forcible Entry Tools |
| **TEKS Student Expectations** | **130.334. (c) Knowledge and skills**  (18) The student describes the handling of different types of accidents and hazards. The student is expected to:  (A) Describe the procedures for terminating utility services to a building  (B) Explain hazards that exist and describe procedures to be used in electrical emergencies  (19) The student identifies safety procedures for ensuring a safe environment. The student is expected to:  (E) Describe procedures for safe operation at emergency scenes |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | The student will be able to:   * Safely demonstrate tools used for forcible entry * Describe procedures for safe operation of those tools at emergency scenes |
| **Rationale** | * Forcible entry techniques are used by fire personnel to gain entry into buildings, vehicles, aircraft, and other areas of confinement when normal means of entry are locked or blocked (IFSTA) * To effectively perform forcible entry, firefighters need to be familiar with the firefighter tools used to force entry and how to use them safely * When done correctly, forcible entry minimizes property damage and provides quick access at the emergency scene. Forcible entry should only be done only when traditional means of access are not available. It needs to be done correctly and safely. This lesson will discuss the safe use of forcible entry tools and how to use them effectively |
| **Duration of Lesson** | This lesson should take 5 hours. |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* |  |
| **Materials/Specialized Equipment Needed** | * Assorted forcible entry tools * Salvage cover * Index cards |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | Engage your students in a discussion on firefighter safety and effective tool use. Ask the students what tools are used for forcible entry, and ask them for specific examples of each tool’s use. Discuss what types of tools can be used for what building components and/or if they must be used only for specific purposes. Discuss safe uses for each, and identify bad habits that firefighters might develop if they become complacent with a tool. |
| **Direct Instruction \*** | I. Firefighting Tools Commonly Used for Forcible Entry  A. Cutting tools  1. Axes  a. Pick-head axe  i. 6- or 8-pound head  ii. Very versatile tool  iii. Often used in ventilation to open up roofs and create ventilation openings  iv. The pick of the axe can also be used to break windows for ventilation  b. Flat-head axe  i. 6- or 8-pound head  ii. Used to open up roofs and create ventilation openings  iii. Not as versatile as a pick-head axe  2. Metal Cutting tools  a. Bolt cutters  i. Used on bolts, chains, lock hasps, padlocks, and shackles  ii. Do not use on case-hardened steel  b. Rebar cutters  i. Hydraulic or manual  ii. Can often cut metal items that bolt cutters cannot  iii. Excellent for use on security bars  c. Cutting torches  i. Effectively cut materials that other cutting tools cannot  ii. Oxyacetylene cutting torch  (a) Burns oxygen and acetylene  (b) Flame temperature of 5,700 degrees F  (c) Unstable gas  (d) Must be kept in an upright position  (e) Use is diminishing in the fire service  d. Burning bars  i. Also called exothermic cutting tools  ii. Can cut through most metallic, semi-metallic, and composite materials  iii. Produces temperatures in excess of 10,000 degrees F  iv. Rods range from ¼ inch to 1 inch in diameter, and from 18 inches to 10 feet long  e. Plasma cutters  i. Produce temperatures up to 25,000 degrees F  ii. Require a power supply and a compressed gas like air, nitrogen, or other inert gas or gas mixture  f. Cutting flares  i. Cut metal or concrete  ii. Exothermic  iii. Approximately the size of highway flares  iv. Produce a 6,800 degrees F  v. No power supply is necessary and they are portable  3. Handsaws  a. Carpenter’s handsaw (rip and crosscut)  b. Hacksaw  c. Drywall saw  d. Keyhole saw  4. Power saw  a. Chain saws  i. Commonly used during ventilation operations  ii. When equipped with a carbide tip they can cut rapidly through many different types of roofing materials  b. Rotary saws – have many uses, but if the blade is changed to cut wood, they are effective in ventilation operations  c. Reciprocating saws  i. Powerful  ii. Versatile  iii. Easy to control  iv. Short, straight blade that moves in and out  v. Use of different materials to be cut  d. Circular saws  i. Originally designed for construction use  ii. Can be used when power (electrical) is readily available  iii. Small battery units are also available  B. Pushing/pulling tools – have very limited use in forcible entry  1. Pike pole – used for pushing or pulling down ceilings in ventilation operations to provide a path for smoke, heat, and fire gases to exit the building through established ventilation openings  2. Roofman’s Hook – used to sound roofs and can be used to pry roof shingles if necessary  3. Clemens hook  4. Plaster hook  5. Drywall hook  6. San Francisco hook  7. Multipurpose hook  8. Rubbish hook  C. Prying tools  1. Manual prying tools  a. Crowbar  b. Halligan bar – part of a “set of irons” (when paired with a flat-head axe)  c. Pry bar  d. Hux bar  e. Claw tool  f. Kelly (through the lock) tool  g. Pry axe  h. Flat bar (nail puller)  i. Ram bar  2. Hydraulic Prying Tools  a. Rescue tools  i. Spreaders used for vehicle extrication can spread up to 32 inches  ii. Hydraulic ram bars have a spreading range from 36 to 63 inches  iii. Hydraulic door opener  II. Tool Safety  A. Cutting tools  1. Make sure you have the correct tool for the job  2. Wear your personal protective equipment (PPE) while doing the job. Gloves, eye protection, and hearing protection should all be used  3. Maintain situational awareness  4. Keep unauthorized people out of the work area  B. Metal cutting tools  1. Bolt cutters – firefighters should wear face shields and eye protection to protect their eyes and face  2. Rebar cutters – make sure that they are operated according to the manufacturer’s specifications  3. Cutting torches  a. Oxyacetylene Cutting Torch  i. Flame temperature of 5,700 degrees F  ii. Unstable gas  iii. Must be kept in an upright position  4. Burning bars  a. Also called exothermic cutting tools  b. Produces temperatures in excess of 10,000 degrees F  5. Plasma cutters –temperatures up to 25,000 degrees F  6. Cutting flares –temperatures up to 6,800 degrees F  C. Handsaws – be aware of sharp edges and keep hands and extremities away from the blades  D. Power saws  1. Operate in accordance with the manufacturer’s specifications and safety instructions  2. Be aware of sharp edges and blades, and keep hands and extremities away from the blades  3. Wear gloves as well as eye and hearing protection  E. Pushing/pulling tools  1. When pushing or pulling ceilings with a pike pole, be aware of falling ceiling and roofing material  2. Don’t use prying tools as pulling tools or pulling tools as prying tools. Use the tools how they are intended  3. Maintain tool handles to avoid splinters and other damage  III. Scene Safety/Life Safety Hazards Associated With Forcible Entry  A. The first consideration is always life safety, both the lives of the firefighters and the building occupants  1. Understand the different types of security barriers and the hazards associated with each  2. Select the appropriate tool for the job  3. Wear the proper Personal Protective Equipment (PPE) |
| **Guided Practice \*** |  |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | * Have students complete some assigned reading from the text about forcible entry tools and tool safety. After reading the assignment, have students describe the safe operations of at least 10 tools used at emergency scenes. Use the Writing Rubric for assessment. * Lay out a salvage cover and place examples of forcible entry tools on the cover. Pass out index cards with the name and use of a forcible entry tool on each. Have students match the card(s) handed out to them with the appropriate tool. Students will then demonstrate the safe operation of each tool (simulate if necessary). Use the Individual Work Rubric for assessment. * Demonstrate for the students the Forced Entry through an Outward-Swinging Door Wedge-End Method. Then partner students and have them take turns demonstrating the skill using the Forced Entry through an Outward-Swinging Door Checklist as a guide and assessment. |
| **Lesson Closure** |  |
| **Summative/End of Lesson Assessment \*** | * Forcible Entry Quiz and Key * Forced Entry through an Outward-Swinging Door Checklist * Discussion Rubric * Individual Work Rubric * Writing Rubric |
| **References/Resources/**  **Teacher Preparation** | * ISBN: 0135151112, *Essentials of Firefighting* (5th Edition), International Fire Service Training Association (IFSTA). |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** | Cross-disciplinary Standards  I. Key Cognitive Skills  C. Problem solving  1. Analyze a situation to identify a problem to be solved.  2. Develop and apply multiple strategies to solve a problem. |
| **Recommended Strategies** | |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** |  |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication**  **90 Second Speech Topics** |  |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | Students will participate in situational awareness exercises, and classroom discussion and training exercises. |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | SkillsUSA |
| **Service Learning Projects** |  |
| **Lesson Notes** |  |

1. Visit the Texas College and Career Readiness Standards at <http://www.thecb.state.tx.us/collegereadiness/CRS.pdf>, Texas Higher Education Coordinating Board (THECB), 2009. [↑](#footnote-ref-1)