

FIRE FIGHTER I

TOPIC: CHARACTERISTICS AND FUNCTIONS OF FIRE SERVICE HAND TOOLS

TIME FRAME: 2:00

LEVEL OF INSTRUCTION: Level II

AUTHORITY: 1997 NFPA 1001 3-3.3

BEHAVIORAL OBJECTIVE:

Condition: A written test

Behavior: The student will confirm a knowledge of the characteristics and functions of fire service hand tools by completing the written test

Standard: With a minimum 80% accuracy according to the information contained in the Essentials of Fire Fighting, IFSTA, Fourth Edition, Chapter 8 or Firefighter's Handbook, Delmar, 2000 Edition, Chapter 17

MATERIALS NEEDED:

- Writing board with markers/erasers
- Appropriate audiovisual equipment
- Appropriate audiovisual materials

REFERENCES:

- Essentials of Fire Fighting, IFSTA, Fourth Edition
- Firefighter's Handbook, Delmar, 2000 Edition
- Forcible Entry, IFSTA, Seventh Edition
- Truck Company Operations, John Mittendorf, 1998 Edition

PREPARATION:

A variety of hand tools have been adapted for fire suppression and rescue operations. When properly maintained and used, they are tremendously effective. Selection of the proper tool may make the difference in whether the job faced is successful. Efficiency in the use of a tool under emergency situations is directly affected by your familiarity with the tools' function.

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PRESENTATION	APPLICATION
<ul style="list-style-type: none"> • When paired with a prying tool <p>b) Pick-head axe</p> <ol style="list-style-type: none"> 1) 6 or 8 pound head weights 2) Handle sizes vary <ul style="list-style-type: none"> • Wood or fiberglass 3) More versatile to piercing and pulling <ul style="list-style-type: none"> • Pick end used to make a starting point to begin cutting or to pierce materials <p>C. Handsaws</p> <ol style="list-style-type: none"> 1. Great advantage is portability 2. Disadvantage <ol style="list-style-type: none"> a) Extremely slow 3. Can be used in places where power equipment is not feasible 4. Should be chosen according to type of material to be cut 5. Most cut in one direction only 6. Uses <ol style="list-style-type: none"> a) Cut a specific type of material at a specific rate 7. Types <ol style="list-style-type: none"> a) Carpenter's saw <ol style="list-style-type: none"> 1) Rip cut or crosscut 2) Used for cutting wood 	<p>What types of handsaw are used in the fire service?</p>

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<p>b) Keyhole saw</p> <ol style="list-style-type: none"> 1) Used for cutting keyholes in wood <p>c) Hacksaw</p> <ol style="list-style-type: none"> 1) Most common 2) Used for cutting metal <p>d) Coping saw</p> <ol style="list-style-type: none"> 1) Used for cutting small curves in wood <p>D. Metal cutting devices</p> <ol style="list-style-type: none"> 1. Uses <ol style="list-style-type: none"> a) Cut bolts, metal bars, pins, cables, hasps, chains, wires, and some padlock shackles 2. Types <ol style="list-style-type: none"> a) Bolt cutter <ol style="list-style-type: none"> 1) Variety of sizes 2) Most common is 36 inches <ul style="list-style-type: none"> • Will cut steel up to $\frac{3}{8}$ inches thick 3) High-security chains, hasps, and padlock shackles cannot be cut with bolt cutters <ul style="list-style-type: none"> • May have to use a torch 	
<p>III. PRYING TOOLS</p> <p>A. Use the basic principle of a lever to provide a mechanical advantage</p> <ol style="list-style-type: none"> 1. Can generate more force on an object with the tool than without it <p>B. Must select the proper tool</p> <p>C. Bit part must have a long, narrow taper</p> <ol style="list-style-type: none"> 1. For entering into narrow spaces to start or widen openings 	

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<p>D. Uses</p> <ol style="list-style-type: none"> 1. Break locks 2. Open doors 3. Force windows 4. Pry up objects 5. Spread apart a door from its jamb <p>E. Types</p> <ol style="list-style-type: none"> 1. Claw tool 2. Crowbar 3. Flat bar 4. Halligan-type bar 5. Hux bar 6. Kelly tool 7. Pry axe 8. Pry (pinch) bar <p>F. Tool names may be different from department to department</p> <p>IV. PUSHING/PULLING TOOLS</p> <p>A. Provide a reach advantage when performing certain tasks</p> <ol style="list-style-type: none"> 1. Stay out of the way of falling glass when used to break a window <p>B. Available in various styles and lengths</p> <p>C. Should not be depended upon for leverage</p> <p>D. Come in lengths from 6 feet to 16 feet</p>	<p>What are some tools used for prying?</p>

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<p>E. Uses</p> <ol style="list-style-type: none"> 1. Forcible entry <ol style="list-style-type: none"> a) Break glass, gypsum board, and sheetrock b) Open up concealed spaces, walls, and ceilings 2. Vent windows 3. Pull up roof boards or other building materials 4. Hoisting tools <p>F. Types</p> <ol style="list-style-type: none"> 1. Standard pike pole 2. Clemens hook 3. Drywall hook 4. Multipurpose hook 5. Plaster hook 6. Roofman's hook 7. San Francisco hook <p>V. STRIKING TOOLS</p> <ol style="list-style-type: none"> A. Basic hand tool B. Consisting of a weight head and a handle <ol style="list-style-type: none"> 1. Wood or fiberglass handles 	<p>What are some uses for pushing/pulling tools?</p> <p>What are some tools used primarily for pushing or pulling objects?</p> <p>If I needed to hit or strike something, what tools are available?</p>

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<p>C. Uses</p> <ol style="list-style-type: none"> 1. Deliver impact force on an object 2. Drive another tool <p>D. Types</p> <ol style="list-style-type: none"> 1. Flat-head axe <ol style="list-style-type: none"> a) Used to drive the Halligan tool b) Together they form the "irons" <ol style="list-style-type: none"> 1) The most important and useful of all forcible entry tools 2. Sledgehammer/maul <ol style="list-style-type: none"> a) 8-16 pounds <ol style="list-style-type: none"> 1) 10-pound most common b) Can also be combined with the Halligan tool to form the "irons" 3. Battering ram <ol style="list-style-type: none"> a) Used by two or more rescuers to break through a door or wall <ol style="list-style-type: none"> 1) Swinging motion b) Round end for battering c) Forked end for breaking and penetrating 4. Hammer 5. Lock breaker 6. Mallet 7. Pick 8. Punch and chisel <p>VI. LOCK-ENTRY TOOLS</p> <p>A. Many of these have been developed by fire fighters after years of experimentation</p> <p>B. Uses</p> <ol style="list-style-type: none"> 1. Pull lock cylinders 	

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<p>C. <u>Always wear appropriate personal protective equipment (PPE)</u></p> <p>D. <u>Do not attempt to cut material other than that for which a blade or tool was designed</u></p> <p>E. <u>Ensure tools are in proper working condition</u></p> <p>F. <u>Never attempt to use tools alone that require two or more fire fighters</u></p> <p>G. <u>Operate with regard to safety for others in the immediate work area</u></p> <p>H. <u>Watch for obstructions</u></p> <ol style="list-style-type: none"> 1. <u>Bystanders</u> 2. <u>Overhead</u> 3. <u>Anything within arc of swing</u> <p>I. <u>Concentrate on impact area</u></p> <ol style="list-style-type: none"> 1. <u>Prevent ricochet or glancing blow</u> 2. <u>Avoid rocks and other hard objects</u> 3. <u>Avoid hazards</u> <ol style="list-style-type: none"> a) <u>Beehives</u> b) <u>Electrical wires</u> c) <u>Barbed wires</u> <p>J. <u>Secure each tool when done using</u></p> <ol style="list-style-type: none"> 1. <u>Prevent injury to self and others</u> <p>K. <u>Store tools in an easily accessible area</u></p>	<p><u>What are some safety precautions you should follow?</u></p> <p><u>What type of obstructions might you expect around the fire or rescue scene?</u></p>

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<p>D. <u>Striking tools</u></p> <ol style="list-style-type: none"> 1. <u>Tool head close to the ground</u> 2. <u>Maintain a firm grip</u> <ol style="list-style-type: none"> a) <u>These tools are heavy and may slip</u> <p>IX. <u>MARIPOSA COUNTY FIRE SPECIFIC</u></p> <p>A. <u>You should never take on a task asked of you at an emergency unless you are comfortable in accomplishing the order with your level of training, experience, or physical limitations</u></p> <ol style="list-style-type: none"> 1. <u>If you are uncomfortable with the order you can:</u> <ol style="list-style-type: none"> a. <u>Explain to the person your level of training, experience, or physical limitations.</u> b. <u>Refer the person to your captain or engine company officer</u> <p><u>With appropriate supervision assist in accomplishing the task</u></p>	

SUMMARY:

Hand tools are often the best choice for the job or assignment. Fire fighters must be able to identify the proper application and safety concerns related to each hand tool available to them.

EVALUATION:

The student will complete the written test at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read Essentials of Fire Fighting, IFSTA, Fourth Edition Chapter 8 or Firefighter's Handbook, Delmar, 2000 Edition, Chapter 17 in order to prepare yourself for the upcoming test. Study for our next session.