PRACTICE EXAM 11: FIREFIGHTER I & II SIMULATION (150 QUESTIONS)

1. An engine company arrives first at a two-story residential structure fire with heavy smoke from the second floor and visible fire venting from a bedroom window. The officer's initial size-up should be transmitted:

A. After the attack line has been pulled and the crew is approaching the entry point

B. Only if requested by the incident commander after the chief officer arrives on scene

C. Immediately upon arrival to establish command and inform incoming units of conditions

D. Once a primary search has been initiated to confirm victim location accuracy

2. A firefighter notes that her SCBA cylinder reads 4,500 psi during her morning equipment check. The cylinder is rated at 4,500 psi maximum service pressure. The required action is:

A. The cylinder is at full service pressure and is ready for use as part of the equipment check

B. The cylinder is overfilled by 10 percent and must be vented before being placed in service

C. The cylinder must be sent for hydrostatic testing before it can be used during a response

D. The cylinder reading is inaccurate and the regulator should be replaced with a calibrated unit

3. A compartment fire has reached the point where every exposed surface in the room is producing flame simultaneously. This condition is known as:

A. Rollover, with flames extending across the ceiling but no full involvement of the room

B. Backdraft, an explosive event caused by sudden introduction of oxygen into the space

C. Pyrolysis, the chemical breakdown of solid fuels into combustible gases by heat

D. Flashover, the rapid transition to a fully developed fire involving all combustibles

4. A firefighter notices floor sag and a "spongy" feel underfoot while advancing on an interior attack line in a residential structure. The most appropriate immediate action is to:

A. Continue advancing while keeping weight on the joists by walking along the wall

B. Retreat to a known safe area and notify command of the suspected floor weakness

C. Knock on the floor with a tool to verify whether structural members are still intact

D. Have one firefighter test the floor by jumping while the others stand on solid ground

5. A firefighter has worn her turnout coat in a structure fire and observes white residue and a sticky film on the outer shell after the response. The most appropriate action is to:

A. Decontaminate the gear on scene with gross decon and have it cleaned per NFPA 1851

B. Place the gear back in service after a thorough visual inspection during the shift

C. Hang the gear in sunlight for 24 hours to allow ultraviolet light to break down residues

D. Use a household washing machine and standard detergent to remove the contamination

6. The neutral plane in a compartment fire is defined as:

A. The horizontal level above which all combustibles are pyrolyzing and adding fuel to the gas layer

B. The vertical center of the room where the highest concentration of carbon monoxide is found

C. The horizontal interface between the upper layer of hot gases moving out and cooler air flowing in

D. The temperature point at which water applied to the fire converts completely into steam vapor

7. A life safety rope was used to lower a firefighter during a window rescue and was loaded to approximately 75 percent of its rated breaking strength. The rope should be:

A. Returned to service after a visual inspection for cuts, abrasion, or discoloration

B. Removed from life safety service and downgraded to utility or training use only

C. Kept in service if it passes a 200-pound load test before being placed back on the apparatus

D. Sent to the manufacturer for laboratory tensile testing before any further use of the rope

8. A firefighter needs to anchor a rescue rope to a fixed object such as a structural column. The most appropriate knot to use is a:

A. Square knot with safety knots tied on each working end for additional security

B. Becket bend tied around the column and secured with two half hitches afterward

C. Figure eight on a bight passed through a carabiner or around the anchor point itself

D. Sheet bend joining the rope to a sling that has been pre-tied around the column

9. A ground ladder placed against a building has the tip resting against the wall above an upper-story window. To create a proper climbing angle, the firefighter should:

A. Pull the butt away from the building by approximately one-half the working length

B. Push the butt closer to the building until it touches the fo-undation directly

C. Reposition the butt so it is one-fourth of the working length away from the wall

D. Leave the ladder in place since the tip position is more important than butt distance

10. The most appropriate hand tool for prying a residential storm door away from its frame is the:

A. Halligan tool used with the adz end driven into the gap between door and jamb

B. Pickhead axe used with the cutting edge wedged behind the door at the hinge side

C. Bolt cutters used to sever the strike plate screws from the frame for removal

D. Flathead shovel used to wedge open the bottom of the door for leverage entry

11. A search team enters a residential structure through the front door. To maintain orientation during a right-hand search of the first floor, the lead firefighter should:

A. Keep his left hand on the firefighter behind him while sweeping with his right

B. Keep both hands free for searching and rely on memory of the floor plan layout

C. Keep his right hand on a charged hoseline while the team follows in single file

D. Keep his right hand in continuous contact with the wall and search outward from it

12. A positive pressure attack (PPA) is being considered for a single-room residential fire. The most important factor to confirm before initiating PPA is:

A. The fan can produce at least 10,000 CFM at full operating speed and full RPM

B. An exhaust opening of appropriate size has been established at the fire room

C. The structure has been evacuated of all occupants verified by primary search teams

D. The interior attack crew has finished extinguishment and is exiting through the door

13. An engine company is laying a supply line from a hydrant to the fire scene. The first arriving engine drops off two firefighters and the supply hose at the hydrant, then proceeds to the fire to attack. This is known as a:

A. Reverse lay from the fire scene back to the hydrant for water supply purposes

B. Split lay where two engines work together to establish a continuous supply line

C. Forward lay from the hydrant to the fire scene while the engine advances to attack

D. Drop lay where the supply hose is left at the curb for the next-due engine company

14. A pumper is connected to a hydrant flowing 500 gpm. The pump operator observes the intake gauge dropping from 30 psi to 5 psi. The most likely cause is:

A. The pump is approaching the maximum flow the hydrant can supply at this pressure

B. Air has entered the pump intake and the priming valve must be opened immediately

C. The discharge pressure exceeds the pump rating and the relief valve has activated

D. The hydrant valve is partially closed and the operator must adjust the outlet stem

15. A 1.75-inch handline with a 7/8-inch smoothbore tip operating at 50 psi nozzle pressure delivers approximately:

A. 95 gpm at standard atmospheric pressure and sea level operating elevations

B. 125 gpm based on standard fire service flow calculations from the apparatus

C. 200 gpm for use as a master stream from a portable monitor device assembly

D. 161 gpm using the smoothbore flow formula $GPM = 29.7 \times d^2 \times \sqrt{NP}$ at this pressure

16. A 200-foot 2.5-inch attack line is operating with a smoothbore nozzle at 50 psi flowing 250 gpm with no elevation change. Using $FL = C \times Q^2 \times L$ with $C = 2$ for 2.5-inch hose, the pump discharge pressure should be set to approximately:

A. 50 psi which matches the smoothbore nozzle operating pressure at the discharge

B. 75 psi calculated as 50 psi nozzle pressure plus 25 psi of friction loss in the line

C. 100 psi for an automatic fog nozzle on a 200-foot 2.5-inch attack line setup

D. 150 psi to overcome standpipe friction loss and supply elevation in tall buildings

17. During salvage operations in a residential basement after the fire has been extinguished, a firefighter notes approximately 4 inches of standing water on the floor. The most efficient method of removing this water is:

A. Using a portable submersible pump and discharge hose to remove water through a window

B. Sweeping the water toward a floor drain located in the center of the basement floor

C. Allowing the water to evaporate naturally with ventilation fans set up around the room

D. Soaking up the water with multiple salvage covers and wringing them out outdoors

18. During overhaul of a wall that contained electrical wiring, the firefighter should:

A. Open the wall first and identify any energized wiring before disconnecting at the panel

B. Use only fiberglass tools to handle live wiring and continue the overhaul operations

C. Confirm the electrical service has been disconnected at the meter before opening walls

D. Cut all visible wiring with bolt cutters to ensure no live circuits remain in the wall

19. A firefighter is trapped inside a collapsed structure and transmits a Mayday. After completing the LUNAR transmission, the firefighter should:

A. Continue transmitting LUNAR information every 30 seconds until rescued by RIT

B. Activate the PASS device manually and remain still to conserve air supply

C. Move toward the nearest exterior wall to make rescue easier for the team

D. Attempt to remove the SCBA harness to free himself from any entanglement

20. A multi-criteria detector combines two or more sensing technologies in a single device to:

A. Reduce false alarms from cooking smoke, steam, and other non-fire conditions

B. Comply with NFPA 72 requirements for all newly constructed commercial occupancies

C. Provide a backup detection method when the primary sensor fails during an incident

D. Improve detection sensitivity to a wider range of fire types while reducing false alarms

21. The water supply to a wet-pipe sprinkler system has been shut off for maintenance. After repairs are completed, the system is restored. The firefighter responsible for restoration should:

A. Reopen the main control valve slowly to refill the system without water hammer damage

B. Reopen the main control valve quickly to restore full system pressure to all heads

C. Test each individual head to verify it has not been compromised during the maintenance

D. Leave the main control valve closed until a fire alarm panel reset has been completed

22. At a vehicle extrication, a hybrid electric vehicle is involved. After scene stabilization, the most important hazard-control action specific to the hybrid is to:

A. Cut all visible orange wiring with insulated tools to disable the high-voltage system

B. Remove the 12-volt battery and the high-voltage battery from the vehicle simultaneously

C. Identify the manufacturer's emergency response guide and disable per its instructions

D. Spray water on the high-voltage battery to cool it and prevent thermal runaway events

23. A wildland fire is burning upslope on a hillside with prevailing wind blowing in the same direction as the slope. The rate of fire spread will most likely be:

A. Slower than on level ground because gravity will resist the fire's upward movement

B. Approximately the same as on level ground since slope and wind cancel each other

C. Variable depending on the moisture content of the fuels in the path of the fire

D. Faster than on level ground because slope and wind preheat fuels ahead of the front

24. A firefighter is performing CPR on an adult patient who is unresponsive and not breathing. After 30 compressions, the firefighter delivers two ventilations using a bag-valve-mask. The most important indicator that ventilations are effective is:

A. The bag is fully compressed during each squeeze of the device by the rescuer

B. Visible chest rise is observed with each breath delivered to the patient's airway

C. The mask seal remains tight against the patient's face throughout the breath cycle

D. The reservoir bag refills completely between each ventilation delivered by the bag

25. At a hazmat incident involving a tank truck carrying chlorine, the wind is from the west at 10 mph. The command post should be established:

A. Upwind and uphill of the release at a distance sufficient to remain outside the warm zone

B. Downwind of the release so command can observe the vapor cloud movement directly

C. Crosswind to the release at the point where civilian observers have gathered already

D. As close to the release as safely possible to coordinate technician-level entry teams

26. Chlorine has a vapor density of approximately 2.5. In an indoor release, vapors will most likely:

A. Rise to the ceiling and accumulate at the highest point of the affected space

B. Disperse evenly throughout the room within minutes of the initial release event

C. Settle into low areas such as basements, pits, and floor drains in the building

D. React with humidity to form a non-toxic compound before significant dispersion

27. A firefighter discovers what appears to be a trailer pattern of charred floor in a hallway connecting two rooms. The most appropriate action is to:

A. Photograph the pattern and continue overhaul to expose any other potential evidence

B. Stop overhaul in that area, protect the pattern, and notify the fire investigator on duty

C. Sample the burned material with a tool from the apparatus for laboratory analysis

D. Remove the affected flooring and bag it as evidence in a clear plastic container

28. The most important reason for conducting pre-incident planning visits to target hazards in the district is to:

A. Generate goodwill between the fire department and the local business community

B. Identify code violations that can be referred to the fire marshal for follow-up action

C. Document the names and contact information of all employees working at the facility

D. Familiarize crews with the building, hazards, and resources before an emergency occurs

29. The recommended foam concentrate percentage for Class A foam used in structural firefighting is typically:

A. 0.1 to 1.0 percent by volume, varying with the foam concentrate and intended application

B. 3 to 6 percent by volume to match Class B AFFF concentration requirements precisely

C. 10 to 15 percent by volume for maximum penetration into deep-seated wood fuels

D. 25 percent by volume to maximize the suppression effect on smoldering combustibles

30. An aspirating foam nozzle differs from a non-aspirating nozzle in that the aspirating nozzle:

A. Mixes foam concentrate and water within the nozzle itself for ease of single-firefighter use

B. Is required by NFPA 11 for any application of Class B foam at a structural fire scene

C. Introduces air into the foam solution at the nozzle, producing foam with a higher expansion ratio

D. Reduces the percentage of foam concentrate needed to achieve a workable foam blanket on fuel

31. A firefighter observes thick black smoke pushing rapidly from cracks around a closed door, with the smoke appearing to puff in and out rhythmically. These signs are most consistent with:

A. Free-burning fire conditions inside the compartment with adequate ventilation present

B. A ventilation-limited fire that may produce backdraft when the door is opened to entry

C. A small incipient fire that will self-extinguish if no additional oxygen is introduced

D. Combustion of synthetic materials producing complete oxidation of all available fuel

32. The smoke from a structure fire is described as black, dense, fast-moving, and pushing under pressure. This indicates:

A. Plenty of available oxygen with complete combustion of all available wood fuels

B. A small incipient fire confined to a single fuel package such as a wastebasket

C. Mostly water vapor produced by suppression efforts already underway inside the building

D. Heavy fuel loading, high heat release, and a ventilation-limited fire on the interior

33. A heavy timber (Type IV) construction differs from ordinary (Type III) construction primarily in that Type IV uses:

A. Larger cross-section structural wood members that resist fire damage through self-protection

B. Steel members protected by gypsum board to achieve the same fire-resistance rating

C. Reinforced concrete walls with combustible roof framing constructed of heavy lumber

D. Lightweight metal trusses with engineered I-joists for floor and roof assembly systems

34. A pre-engineered metal building used as a warehouse poses what specific danger to firefighters during a working fire?

A. Concrete tilt-up walls may fail at the connection points to the steel roof structure

B. Heavy timber columns may char through completely within the first 20 minutes of fire

C. Unprotected steel members may elongate, deflect, and fail rapidly at fire temperatures

D. Reinforced masonry will spall and expose the reinforcing steel to direct flame impingement

35. A firefighter's structural turnout coat shows extensive thermal damage to the outer shell after an interior attack, including visible charring and stiffness. The coat should be:

A. Returned to service after a thorough cleaning and visual inspection of the inner liner

B. Repaired by sewing reinforcement patches over the damaged areas at a tailor shop

C. Worn for training purposes only until the next scheduled replacement cycle of new gear

D. Removed from service permanently and replaced because thermal damage compromises protection

36. A firefighter discovers that her SCBA facepiece has been exposed to thermal damage during an interior attack, including melted areas on the lens. The facepiece should be:

A. Cleaned and returned to service if the melted area is small and outside the field of view

B. Replaced only if the structural integrity of the lens has been visibly compromised by fire

C. Disinfected and inspected by another firefighter before being placed back into rotation

D. Removed from service and replaced because thermal damage cannot be reliably repaired in field

37. A firefighter on an interior attack notes that her SCBA cylinder gauge reads 25 percent. The remaining air is best characterized as:

A. Half of the rated operating capacity available for ongoing fire suppression duties

B. Working air sufficient to continue an interior attack until the bell rings to exit

C. Emergency egress reserve that must be used to leave the IDLH atmosphere immediately

D. A small reserve that should be supplemented with the buddy's spare SCBA cylinder

38. A firefighter examines a life safety rope and finds an area where the outer sheath has been worn through and the kern (core) is visible. The rope should be:

A. Removed from life safety service permanently because sheath damage compromises strength

B. Repaired by wrapping the damaged area with rescue tape and returned to service for use

C. Used only for utility purposes such as hoisting tools to upper floors after marking it

D. Tested at the manufacturer's recommended load and returned to service if it passes the test

39. A firefighter is preparing to hoist a portable fan to an upper floor. The most appropriate knot for securing the fan handle is a:

A. Bowline with a half hitch placed around the handle to prevent the loop from sliding

B. Clove hitch with a half hitch placed near the working end to keep the fan oriented

C. Figure eight on a bight passed through the handle and connected with a carabiner

D. Becket bend tied around the handle and secured with two safety knots on the end

40. A firefighter at the top of an extension ladder is preparing to enter through a window. The ladder tip should be positioned:

A. Approximately 2 feet below the windowsill so the firefighter can climb in and out easily

B. Even with the windowsill so the firefighter can step directly from rung to sill smoothly

C. Approximately 5 feet above the windowsill to provide clearance for the SCBA equipment

D. Even with or slightly below the bottom of the window with the tip against the wall

41. A firefighter needs to reach a second-floor window with a sill height of approximately 12 feet at the proper 75-degree climbing angle. The minimum ground ladder length recommended is:

A. 16 feet, providing about 14 feet of working length sufficient to reach the windowsill

B. 35 feet, the longest extension ladder commonly carried on most engine apparatus today

C. 50 feet, requiring a Bangor pole ladder with multiple firefighters needed for raising it

D. 12 feet, since the ladder reach equals the height of the window when set straight up

42. The recommended order of operations for forcible entry on a residential inward-opening door is:

A. Strike, gap, set, force — striking the door to test it before placing any irons

B. Gap, set, strike, force — gapping the door first with the irons to expose the lock

C. Size up, try-before-you-pry, gap, set, force — confirming the door is locked first

D. Set, gap, force, strike — driving the tool fully home before applying any leverage

43. While forcing a metal-clad commercial door, a firefighter notes that the door has a vertical drop bar across the back. The most effective forcible entry method is to:

A. Cut a small inspection hole in the door panel and remove the drop bar by hand reach

B. Use a rotary saw with a metal-cutting blade to cut the door at the drop bar location

C. Pry the entire door from its hinges using two halligan tools applied simultaneously

D. Drive the halligan adz into the lock cylinder and pry the bar out of its mounting bracket

44. A search team operating in heavy smoke and zero visibility loses contact with the wall during a right-hand search. The most appropriate immediate action is to:

A. Continue searching in the direction last traveled and try to find another wall or feature

B. Have the team spread out and search outward to relocate the original entry doorway

C. Sound the PASS device immediately to alert other crews of the loss of orientation

D. Stop, stay together, communicate, and use thermal imaging or memory to relocate the wall

45. The VES (Vent-Enter-Isolate-Search) tactic is most appropriate for:

A. Rapid rescue of a known or suspected occupant from a specific identified bedroom or area

B. Searching an entire structure systematically before primary attack lines are positioned

C. Conducting a thorough secondary search after the fire has been extinguished by interior crews

D. Performing exterior reconnaissance from the windward side of a fully involved structure

46. The primary purpose of isolating the search area in VES is to:

A. Prevent the search team from becoming lost in the structure during the operation

B. Allow positive pressure ventilation to be initiated by the engine company simultaneously

C. Close the door to the room to prevent fire from drawing into the area being searched

D. Maintain radio contact with command throughout the search and rescue operation

47. A 200-foot 1.75-inch attack line delivers 150 gpm to a fog nozzle operating at 100 psi. Using the friction loss formula $FL = C \times Q^2 \times L$ with $C = 12$ for 1.75-inch hose, the friction loss in the line is approximately:

A. 15 psi total over the 200-foot length of attack hose used at this flow rate setting

B. 30 psi over the 200-foot length applying standard friction loss tables from textbook

C. 45 psi using the formula at the flow rate and length specified for this hose size

D. 54 psi calculated as $12 \times (1.5)^2 \times 2$ for this 1.75-inch hose configuration setting

48. A pumper is drafting from a static water source. The pump operator notes that the compound gauge shows 18 inches of vacuum and the pressure is steady. This reading indicates:

A. The pump is unable to lift water from the source and will not produce a stream

B. The pump is drafting successfully at a lift equivalent to about 18 inches of vacuum

C. The pump has cavitated and must be shut down to prevent further impeller damage

D. The intake strainer is partially blocked and must be cleaned before operations continue

49. The most reliable method for determining the flow available from a hydrant is to:

A. Perform a flow test using a pitot gauge to measure flow and a separate gauge for residual pressure

B. Read the color coding on the hydrant bonnet, which indicates expected flow ranges per NFPA 291

C. Use the static pressure measured from the cap gauge to predict flow at any required pressure

D. Calculate flow based on the size of the supply main feeding the hydrant from the water system

50. A firefighter is operating a 1.75-inch attack line with a fog nozzle on a structure fire. The most effective stream pattern for offensive interior attack is:

A. Wide fog pattern at maximum cone angle for the greatest heat absorption capability

B. Narrow fog pattern with a cone angle of approximately 60 degrees from the centerline

C. Straight stream or narrow fog allowing reach and penetration without disrupting thermal balance

D. Combination of straight stream and wide fog rotated continuously by the nozzle firefighter

51. An engine company arrives at a single-story residential structure fire with smoke showing from all windows on side A. The most appropriate initial tactic is to:

A. Apply a master stream from the apparatus deck gun through the front windows entirely

B. Stretch a 1.75-inch attack line to side A, begin a transitional attack, then make entry

C. Wait for the truck company to arrive and complete a primary search before any attack

D. Order all crews to defensive positions and let the fire burn to the foundation completely

52. A direct attack on a kitchen fire involving a pan of cooking oil should NOT use:

A. A Class K wet-chemical extinguisher specifically rated for cooking oil suppression use

B. A lid placed over the burning pan to smother the flames by oxygen exclusion methods

C. A dry-chemical extinguisher rated for Class B fires used from an appropriate distance

D. Water from a 1.5-gallon water can extinguisher applied directly onto the burning oil

53. The technique of folding a salvage cover in a manner that allows it to be deployed and spread by one firefighter is known as the:

A. One-firefighter spread, with the cover folded in accordion pleats for one-handed deployment

B. Balloon throw, with two firefighters tossing the cover over the contents being protected

C. Center fold, with the cover rolled from both edges toward the middle for storage

D. Bundle method, with the cover compressed into a small package for easy carrying

54. During overhaul, a firefighter observes wisps of smoke coming from a wall outlet that was not previously involved in the fire. The most appropriate action is to:

A. Spray water directly into the outlet to extinguish any electrical fire that may be present

B. Continue overhaul in the immediate area and monitor the outlet for signs of active flame

C. Confirm electrical disconnect, open the wall to investigate the source, and extinguish as needed

D. Leave the outlet alone and let the electrical inspector evaluate it after the fire is out

55. The standard fire ground accountability check known as a PAR is initiated by:

A. Any firefighter operating on the fire ground at any time during interior operations

B. The dispatcher at predetermined intervals throughout the duration of the incident

C. The first-arriving officer immediately upon establishing command of the incident scene

D. The incident commander at benchmark events or at regular intervals throughout the incident

56. A linear heat detection cable is typically used to:

A. Detect heat along a continuous run such as a conveyor, cable tray, tunnel, or parking garage

B. Replace spot-type heat detectors in standard residential occupancies for new construction

C. Provide smoke detection in large industrial facilities with high ceilings and open spaces

D. Activate the building's sprinkler system before the fusible link reaches activation temperature

57. A standpipe system designed for use by trained firefighters only, with 2.5-inch hose connections at each floor and no preconnected hose, is a:

A. Class II system intended for occupant use with preconnected 1.5-inch hose lines installed

B. Class III system providing both 2.5-inch and 1.5-inch connections at every level installed

C. Class I system providing 2.5-inch hose connections for fire department use at each floor

D. Wet automatic system with sprinkler heads connected to the same supply as the standpipe

58. The fire department connection (FDC) on a sprinkler or standpipe system is used to:

A. Drain the system after maintenance or activation has been completed during testing

B. Supplement or boost the water supply to the sprinkler or standpipe system from a pumper

C. Provide a primary water supply when the building's domestic water system is offline

D. Test the system annually with the use of a pumper truck connected to the building's main

59. The most appropriate hand tool for breaking laminated automobile glass during extrication is:

A. A halligan bar struck with a flathead axe to shatter the entire windshield safely outward

B. A pickhead axe used with the blade edge at a 45-degree angle to the windshield surface

C. A bolt cutter applied to the corner of the windshield to begin a tear across the glass

D. A spring-loaded center punch followed by a reciprocating saw or glass-cutting tool

60. The "Inner Circle" at a vehicle extrication scene consists of:

A. The area immediately around the vehicle where rescuers performing direct work are positioned

B. The cordoned-off area beyond the wrecked vehicles where bystanders and media are kept back

C. The triage and treatment area where patient assessment and packaging take place during care

D. The staging area for incoming apparatus and personnel waiting for assignment during the incident

61. The "Common Denominators" of fatal and near-miss wildland fire incidents include:

A. Inadequate fitness levels and lack of advanced wildland firefighting certification at scene

B. Fires on relatively small acreage that suddenly change behavior catching firefighters off guard

C. Large complex incidents where multiple resources are managed through a unified command

D. Pre-planned controlled burns that have escaped containment lines during night operations

62. The phenomenon of a wildland fire on flat terrain making an unexpected and rapid run up a hillside is known as a:

A. Backfire intentionally set to consume fuel ahead of the main fire's leading edge

B. Flanking fire moving along the side of the perimeter at a moderate spread rate

C. Crown fire moving from tree to tree at the top of the forest canopy elevation

D. Slope reversal or area ignition where the fire transitions to upslope behavior abruptly

63. A patient presents with chest pain, difficulty breathing, and pale, cool, diaphoretic skin. These findings are most consistent with:

A. Anaphylaxis triggered by an environmental allergen or insect sting at the scene location

B. Hypoglycemia in a diabetic patient who has missed a meal or taken too much insulin recently

C. Acute coronary syndrome with possible myocardial ischemia or infarction underway

D. A simple anxiety attack in a patient who has experienced a stressful event recently

64. The first action in caring for a patient experiencing chest pain consistent with cardiac origin is:

A. Administer oral aspirin and obtain a 12-lead electrocardiogram before any other intervention

B. Place the patient in a position of comfort, administer oxygen if hypoxic, and prepare for transport

C. Have the patient lie supine with legs elevated to improve venous return to the heart

D. Apply automated external defibrillator pads in case the patient deteriorates into arrest

65. A patient is found unresponsive with snoring respirations. The first action is to:

A. Open the airway using a head-tilt/chin-lift maneuver if no trauma is suspected here

B. Insert an oropharyngeal airway immediately to maintain a patent airway during transport

C. Begin chest compressions in case the patient is in cardiac arrest with agonal breathing

D. Apply high-flow oxygen via non-rebreather mask before assessing the airway position

66. A firefighter responds to a reported gas leak in a residential basement. The most important initial safety action is to:

A. Enter the basement with a 4-gas monitor to confirm the presence of natural gas vapors

B. Open the basement windows to ventilate the space before any further investigation begins

C. Turn off the main gas valve at the meter and then enter the basement to investigate

D. Avoid creating any spark or ignition source while approaching, including light switches and radios

67. The "Rule of Thumb" for initial isolation distance at a hazmat incident with unknown contents involves:

A. Extending the arm at full length with the thumb up to gauge distance from the release

B. Multiplying the radius of any visible vapor cloud by three for safe approach calculations

C. Holding the thumb up at arm's length and ensuring the thumb covers the entire incident scene

D. Calculating safe distance based on wind speed in knots multiplied by exposure time in minutes

68. During a hazmat incident, the level of personal protective equipment that provides the maximum protection from chemical exposure including respiratory protection is:

A. Level B PPE with chemical-resistant suit and self-contained breathing apparatus device

B. Level A PPE with fully encapsulating chemical-resistant suit and SCBA worn inside the suit

C. Level C PPE with chemical-resistant suit and air-purifying respirator suitable for the hazard

D. Level D PPE with standard work clothing and minimal respiratory protection equipment used

69. A firefighter assists the fire investigator by preserving evidence at the fire scene. The first principle of evidence preservation is to:

A. Disturb evidence as little as possible during firefighting and overhaul operations

B. Photograph all areas of the structure before any water is applied to the fire

C. Collect samples of suspected accelerant in clean glass jars from the scene of fire

D. Interview witnesses about the events leading up to the fire before they leave the scene

70. A pre-incident plan should be reviewed and updated:

A. Once every five years to confirm that the information remains accurate in the file folder

B. Only after major structural modifications to the building or change of occupancy use

C. At regularly scheduled intervals (typically annually) and whenever significant changes occur at the property

D. Only when the property owner requests an update to the existing plan on file

71. A foam concentrate that contains aqueous film-forming agent and is effective on hydrocarbon fuels is classified as:

A. AFFF, which produces a film on the fuel surface that suppresses flammable vapor release

B. AR-AFFF, which is used only on polar solvent fuels such as alcohols and acetates

C. Class A foam, designed for ordinary combustibles such as wood, paper, and cloth

D. High-expansion foam used to flood confined spaces and displace combustible vapor

72. An eduction ratio of 6 percent for foam concentrate means that:

A. For every 100 gallons of foam solution, 100 gallons of concentrate are needed

B. The foam expands to 6 times its original volume when discharged from the nozzle

C. For every 6 gallons of water, 100 gallons of foam concentrate are required at the eductor

D. For every 100 gallons of foam solution, 6 gallons of concentrate and 94 gallons of water are mixed

73. The "stratification" of smoke in a compartment fire refers to:

A. The chemical separation of combustion gases into their individual molecular components

B. The layering of smoke at different levels in the room based on temperature differences

C. The horizontal movement of smoke through hallways and corridors during fire growth

D. The vertical extension of smoke through stairways and elevator shafts in tall buildings

74. The autoignition temperature of a substance is:

A. The minimum temperature at which the substance produces enough vapor to ignite with a flame

B. The temperature of the flash fire when the substance burns under standard test conditions

C. The minimum temperature at which the substance will ignite without an external ignition source

D. The maximum temperature the substance can withstand without losing its physical properties

75. A building's "compartmentation" affects fire behavior by:

A. Increasing the available oxygen supply to the fire as compartments break down completely

B. Reducing the total fuel load by isolating contents in separate fire-resistant containers

C. Eliminating the need for sprinkler systems in fully compartmentalized commercial spaces

D. Limiting fire and smoke spread to the compartment of origin until barriers fail or open

76. A firefighter's gear is contaminated with diesel fuel after responding to a vehicle fire. The most appropriate decontamination is:

A. Gross decontamination on scene followed by laundering per NFPA 1851 advanced cleaning

B. Spraying the contaminated areas with degreasing solvent before returning to the apparatus

C. Wiping the contaminated areas with a cloth and returning the gear to service the same day

D. Disposing of the gear and replacing with a new ensemble before the next shift starts

77. "Particulate blocking" features in modern turnout gear are designed to:

A. Reduce the weight of the ensemble by removing the moisture barrier from the hood interior

B. Block particulate contaminants from reaching the firefighter's skin in interface areas of the gear

C. Allow vapor transfer through the ensemble to keep the firefighter cooler during long operations

D. Provide enhanced visibility through reflective trim placed on the back of the turnout coat

78. The "RIT pack" (also called RIC pack) used by Rapid Intervention Teams is:

A. The Rapid Intervention Tools package carried on the apparatus for forcible entry operations

B. The Reduced Inhalation Threshold device that protects firefighters from carbon monoxide

C. The Remote Indication Telemetry system that broadcasts the firefighter's location to command

D. A dedicated air supply with a regulator and mask designed to be brought to a downed firefighter

79. A firefighter is using a rope to lower a tool to a firefighter on a lower floor. The rope used should be:

A. Life safety rope rated for general-use applications under NFPA 1983 standards

B. Life safety rope rated for technical-use applications under NFPA 1983 standards

C. Utility rope that is not rated for life safety but is appropriate for tool work

D. Polyester webbing tied in a loop and used as a sling for the tool to be lowered

80. A firefighter ties a clove hitch around a vertical pole and notes the knot tends to slip downward under load. To prevent slipping, the firefighter should:

A. Add a half hitch around the standing line to lock the clove hitch in position against load

B. Replace the clove hitch with a square knot tied around the pole at the same location

C. Use a heavier rope diameter that creates more friction against the pole surface area

D. Wet the rope before tying to increase the grip between the rope and the pole surface

81. A firefighter is heeling a ground ladder while another firefighter climbs. The heeling firefighter should:

A. Stand on the bottom rung of the ladder with both feet to provide downward weight on it

B. Stand at the base facing the ladder with hands on the beams and one foot on the base

C. Stand 5 feet away from the ladder to avoid being struck by tools dropped by climbers above

D. Sit on the ground with feet pressed against the bottom rung for maximum stability there

82. A 24-foot extension ladder requires how many firefighters to safely raise it in most circumstances?

A. One firefighter only, since modern aluminum ladders are lightweight enough for solo raising

B. Three firefighters minimum, with two at the butt and one at the tip during the raise

C. Four firefighters minimum following the standard flat raise procedure for safety reasons

D. Two firefighters using a flat or beam raise procedure depending on the situation

83. A firefighter encounters a residential security door (gate) with vertical iron bars over a primary door. The most efficient method of entry is to:

A. Cut individual bars one at a time using bolt cutters or a hand-operated hacksaw

B. Use hydraulic spreaders to bend the bars outward enough to allow firefighter passage

C. Cut the hinges or lock on the security door using a rotary saw with a metal blade

D. Force the primary door behind the security gate without removing the security gate first

84. The "irons" carried by the truck company typically consist of:

A. A halligan tool and a flathead axe, married together for forcible entry use as one unit

B. A halligan tool, a flathead axe, and a sledgehammer carried together in a tool bag for entry

C. A pickhead axe and a halligan tool joined with rubber straps for combined ease of carry

D. A K tool, a halligan, and various adapter keys used in through-the-lock entry operations

85. The most reliable method of locating an unconscious victim in a smoke-filled bedroom is to:

A. Listen for sounds of breathing or movement from the doorway before entering the room

B. Use a thermal imaging camera to scan the room from the doorway in standing position

C. Crawl systematically along the walls until reaching a piece of furniture and stopping there

D. Conduct a systematic search of the room sweeping all areas including under beds and in closets

86. The RIT (Rapid Intervention Team) is activated when:

A. The interior attack team has been operating for more than 20 minutes without a break

B. A firefighter calls a Mayday or is reported missing, trapped, or in need of immediate assistance

C. The fire has been declared under control by the incident commander and crews are exiting

D. Multiple alarms have been struck and additional resources have arrived on scene to relieve crews

87. A firefighter performing vertical ventilation on a sloped roof should be:

A. Working from the leeward side of the structure to take advantage of wind direction

B. Tied off with a life safety rope to a fixed anchor at the ridge of the roof structure

C. Working from a roof ladder hooked over the ridge with sound footing on both rails

D. Positioned at the lowest point of the roof to keep below the path of escaping heated gases

88. The most effective sequence for positive pressure ventilation (PPV) is to:

A. Identify and create exhaust opening, position fan at entry, start fan, monitor for proper flow path

B. Start the fan in the cone position to clear smoke, then move it to the doorway for use

C. Open all windows in the structure, position the fan, and start it at high RPM immediately

D. Begin the fan at low speed near the door, then increase speed to clear the building gradually

89. An accordion load is a hose load characterized by:

A. Layers of hose folded in a flat configuration with each layer on top of the one below it

B. A spiral arrangement of hose coiled tightly to maximize storage capacity in the hose bed

C. A series of folds arranged horizontally with the couplings exposed on the outer edge

D. A series of vertical folds on edge with each fold leaning against the previous one in the bed

90. A pumper is laying a 1,000-foot supply line of 5-inch hose to the fire scene. The most appropriate use for this line is:

A. To supply a single 1.75-inch attack line from the pumper at the fire scene location

B. To supply large flows from a hydrant or another pumper to the attack engine on scene

C. To replace a smaller supply line that has been damaged during the firefighting operation

D. To establish a master stream operation directly from the hydrant without a pumper involved

91. The available fire flow from a hydrant can be estimated using $GPM = 29.83 \times c \times d^2 \times \sqrt{P}$, where d is the orifice diameter in inches and P is the pitot pressure in psi. For a 2.5-inch outlet flowing with a pitot reading of 30 psi and c = 0.9, the flow is approximately:

A. 919 gpm using $GPM = 29.83 \times 0.9 \times (2.5)^2 \times \sqrt{30}$ for this hydrant outlet at this pressure

B. 500 gpm rounded down to a conservative estimate for fire flow planning operations

C. 1,200 gpm based on the hydrant's color coding indicating high flow at standard pressure

D. 750 gpm using the simpler approximation of $25 \times d^2 \times \sqrt{P}$ for the flow rate at this outlet

92. A pumper is set up at a hydrant and is supplying water to attack lines. The pump operator notices that the master discharge pressure gauge fluctuates wildly when the attack lines are operated. The most likely cause is:

A. The relief valve is set too low and is opening and closing repeatedly with each pulse

B. The hydrant is being throttled by debris in the supply main feeding the operation

C. Air entrainment at the pump intake caused by an inadequate water supply to the pump

D. The pump's primer is engaged and is interfering with normal centrifugal pump operation

93. The "automatic" feature of an automatic fog nozzle refers to:

A. Automatic activation of the nozzle when the firefighter approaches the seat of the fire

B. Automatic shutdown of the nozzle when the operator releases the bail handle on the device

C. Automatic switching between straight stream and fog patterns based on fire conditions

D. Automatic adjustment of the orifice to maintain nozzle pressure across a range of flow rates

94. The advantage of using a smoothbore nozzle for interior attack compared to a fog nozzle is that:

A. Smoothbore nozzles operate at higher pressures than fog nozzles for the same flow rate

B. Smoothbore streams provide greater reach and penetration with less air entrainment overall

C. Smoothbore nozzles have less nozzle reaction at the same flow as automatic fog nozzles

D. Smoothbore nozzles can be adjusted to fog patterns by the firefighter at the nozzle position

95. The "OODA loop" referenced in modern fire ground decision-making stands for:

A. Observe, Orient, Decide, Act — a decision cycle adapted from military strategy concepts

B. Open the door, Operate the line, Direct the stream, Advance into the structure for attack

C. Overhaul, Overhead, Direct, Adjust — the four phases of an interior structural attack line

D. Origin, Outcome, Direction, Acceleration — the fire growth phases through a compartment

96. The salvage cover deployment method known as the "shoulder toss" involves:

A. Two firefighters placing the cover on one shoulder of one firefighter for transport

B. Throwing the folded cover across the room from the doorway to land on the contents

C. Placing the folded cover on one shoulder and rolling it across the contents with one firefighter

D. Using the cover to lift a heavy item by gathering the corners and placing it on the shoulder

97. The use of a "catchall" during salvage operations is to:

A. Capture all small debris and water before it can spread to other rooms of the structure

B. Create a temporary basin from a salvage cover that catches water dripping from above

C. Collect personal items belonging to the property owner during the salvage operation

D. Provide a single container for all damaged contents to be placed during removal

98. A firefighter on the fireground calls "emergency traffic" over the radio. This signal indicates:

A. The transmission is from the incident commander and takes priority over other traffic

B. The transmission is a routine update on operations and should be logged by dispatch

C. The transmission is from the dispatcher and contains information for all units on the channel

D. The transmission contains time-critical safety information and all other radio traffic must clear

99. A combination smoke detector that uses both ionization and photoelectric sensing technologies provides:

A. Broader detection across both fast-flaming and smoldering fire conditions than a single sensor

B. Compliance with NFPA 72 requirements for all residential occupancies in new construction

C. Backup detection in case one of the two sensors fails during an alarm event response

D. Reduced false alarms in commercial kitchens through delayed signal processing logic

100. A "pre-action" sprinkler system requires:

A. A single sprinkler head to activate before any water flows through the supply piping

B. Manual activation by an operator at the alarm panel before the system charges with water

C. Detection of a fire by a separate detection system in addition to a sprinkler head activation

D. A backup water tank with at least 30 minutes of supply for the entire system at full demand

101. The most appropriate way to gain access to a patient trapped in a vehicle that has come to rest on its side is to:

A. Force open the door that is now on the top side of the vehicle for vertical patient extraction

B. Cut the windshield and pull the patient out through the front of the vehicle in standard direction

C. Push the vehicle back onto its wheels before any access or disentanglement operations

D. Stabilize the vehicle thoroughly, then break tempered glass on the top-facing door for access

102. The "dash roll" (or dash lift) technique during vehicle extrication is used to:

A. Roll the vehicle over to facilitate access to the bottom of the chassis for patient extraction

B. Lift the dashboard away from a patient whose lower extremities are pinned beneath it

C. Roll a cargo strap around the dashboard to secure airbags before access operations begin

D. Position the patient onto a backboard by rolling them from the dash side of the vehicle

103. The "Ten Standard Firefighting Orders" in wildland firefighting are:

A. A safety checklist of fundamental rules that must be applied to every wildland incident

B. The standard suppression tactics used for direct attack on wildland fires by ground crews

C. The training topics required for wildland firefighter certification at the entry level only

D. The communication codes used between ground crews and aerial support during operations

104. The "18 Watch Out Situations" in wildland firefighting are:

A. Common environmental hazards encountered during structural fire fighting in urban areas

B. The standard operating procedures used for working at wildland-urban interface incidents

C. Specific situations that have led to fatal or near-fatal incidents and require special caution

D. The minimum qualifications required for a wildland firefighter to engage in direct attack

105. A patient is found unresponsive on the floor of a residence with a strong odor of natural gas. The first action is to:

A. Begin chest compressions to start CPR immediately while another firefighter ventilates

B. Check the airway and breathing while the rest of the team ventilates the structure

C. Apply oxygen via non-rebreather mask before moving the patient out of the building

D. Move the patient to fresh air immediately while ventilating the structure of natural gas

106. A patient presents with a deep laceration to the forearm with bright red blood spurting from the wound. The most appropriate immediate action is to:

A. Apply a topical hemostatic agent directly into the wound from a sterile package

B. Apply direct pressure with a sterile dressing and elevate the extremity above heart level

C. Apply a tourniquet immediately above the wound to control the arterial bleeding source

D. Pack the wound with gauze using a hemostatic dressing and apply continuous pressure for 3 minutes

107. The "rule of nines" is used during burn patient assessment to:

A. Estimate the percentage of body surface area affected by burns to guide fluid resuscitation

B. Determine the depth of burns based on appearance, sensation, and response to gentle touch

C. Calculate the airway and breathing concerns associated with inhalation injury in burn patients

D. Predict the duration of treatment and recovery time for the patient at the scene of the incident

108. The acronym "DECIDE" used in hazmat response stands for:

A. Determine, Establish, Coordinate, Identify, Decontaminate, Evacuate during operations

B. Detect, Evaluate, Contain, Isolate, Decide, Extinguish before any tactical actions are taken

C. Decontaminate, Evaluate, Confirm, Identify, Deactivate, Extract operations on scene

D. Detect, Estimate, Choose, Identify, Do, Evaluate — a decision-making sequence used by responders

109. The hazmat incident response operations level certification authorizes responders to:

A. Stop the release at its source using specialized plug and patch operations as needed

B. Perform defensive actions to contain and confine the release from a safe distance from it

C. Identify specific chemicals using monitoring equipment and chemical reference materials

D. Conduct technical decontamination of victims and rescuers using specialized equipment

110. A "low burn" pattern is typically found:

A. At the base of a wall directly above the most severely damaged floor area in the structure

B. At ceiling level where heated gases have collected during the fire growth phase

C. On the back side of furniture where the highest temperatures are typically observed

D. At or near the floor level of a room and may indicate an accelerant or unusual fire behavior

111. The most important section of a pre-incident plan for a target hazard is:

A. The administrative information including building owner's name, address, and contact data

B. The historical data on previous incidents that have occurred at the facility being planned for

C. The operational information needed to safely engage at the property, including access and hazards

D. The financial assessment of the property's value for insurance and inventory purposes

112. The minimum application rate of AFFF foam for a Class B fire on a hydrocarbon fuel spill is typically:

A. 0.10 gallons per minute per square foot of fuel surface area for non-aspirating nozzles

B. 1.0 gallons per minute per square foot of fuel surface area for total flooding applications

C. 5.0 gallons per minute per square foot of fuel surface area for maximum penetration

D. 10.0 gallons per minute per square foot of fuel surface area for high-expansion systems

113. A foam eductor produces foam solution by:

A. Using a centrifugal pump to mix concentrate and water in a calibrated mixing chamber

B. Using compressed air to inject foam concentrate into the water stream at the nozzle

C. Using a battery-powered metering pump to add concentrate to the water at a set rate

D. Using the Venturi principle to draw foam concentrate into the water stream through suction

114. The smoke produced by a fire involving primarily synthetic materials is characterized by:

A. Light gray color, slow movement, low volume, and low temperature at the ceiling

B. Dark color, fast movement, large volume, and high temperature with high toxicity content

C. White color, steady upward movement, moderate volume, and moderate temperature

D. Yellow color, downward movement, high volume, and ambient room temperature reading

115. The "thermal layer" in a compartment fire is the:

A. Hot gas layer that accumulates near the ceiling above the neutral plane during fire growth

B. Cold layer of air that enters the compartment through low openings during a fire event

C. Boundary between the room's contents and the structural members of the compartment

D. Outdoor air temperature surrounding the building at the time of the fire incident

116. A Type V wood-frame construction is most vulnerable during a fire because:

A. The exterior walls are made of unprotected steel that will rapidly elongate under heat

B. The roof structure is constructed of heavy timber that resists fire for a long time

C. The interior load-bearing walls are reinforced concrete that may spall under heat exposure

D. All structural elements are combustible and contribute to both fuel load and structural failure

117. A "rain roof" or "roof over a roof" is dangerous to firefighters performing ventilation because:

A. The roof has been reinforced with additional steel members that may fail under heat exposure

B. The roof is heavily loaded with HVAC equipment that can crash through during fire suppression

C. The new roof may conceal a void space between the old and new layers where fire can hide

D. The roof is sloped at an unusual angle and provides no footing during the ventilation operations

118. The function of "wristlets" in turnout coat construction is to:

A. Provide a snug closure at the wrist that prevents heat, smoke, and embers from entering the sleeve

B. Allow the wearer to adjust the coat sleeves to a custom length for individual fitting comfort

C. Provide additional thermal insulation specifically for the wrist area beyond the regular liner

D. Hold the gloves in place during operations so they do not fall off during physical activity

119. The recommended frequency for advanced cleaning of structural turnout gear under NFPA 1851 is:

A. Once every six months regardless of how frequently the gear has been used on responses

B. At least once every 12 months and whenever the gear is significantly contaminated by exposure

C. Once every two years as part of the standard preventive maintenance schedule for the gear

D. Only when visible contamination is present that affects the appearance of the outer shell

120. The SCBA "buddy breathing" (EBSS) capability allows a firefighter to:

A. Communicate with another firefighter through a voicemitter connection between facepieces

B. Share air with a partner by removing one facepiece and passing it back and forth between them

C. Connect a low-pressure hose to another SCBA to share air during an emergency on the fireground

D. Refill an empty cylinder from another firefighter's cylinder using a transfer hose connection

121. The diameter of life safety rope used for general-use applications is typically:

A. 12.5 mm (½ inch) or larger to achieve the minimum 8,992-pound breaking strength rating

B. 8 mm (5/16 inch) which is adequate for one-person loads in emergency escape situations

C. 6 mm (¼ inch) which is the standard utility rope diameter for fire service applications

D. 22 mm (7/8 inch) which is the maximum diameter allowed by NFPA 1983 for any use

122. The "double-loop figure eight" knot is most commonly used to:

A. Join two ropes of unequal diameter for a heavy-load rescue evolution off a structure

B. Create two fixed loops at the end of a rope for two-point anchor connections in rescue

C. Anchor a rope to a structural beam by passing the working end around the beam twice

D. Shorten an excessively long rope without cutting it during a technical rescue operation

123. The proper procedure for transferring weight from a ladder to a windowsill during a rescue is to:

A. Step from the ladder directly onto the windowsill in one motion using both hands on the sill

B. Lower the SCBA to the rescue partner first, then climb through the window without it on

C. Use a leg lock on the ladder for stability while reaching through the window for the victim

D. Swing one leg through the window while maintaining two contact points with the ladder beams

124. The "Bangor" ladder is characterized by:

A. A single-section ladder with rope-operated extension to a maximum of 35 feet of length

B. Two sections joined by a halyard with manual extension and folding storage for transport

C. Three sections with poles to assist with raising and stabilization for ladders over 40 feet

D. A folding configuration designed specifically for attic access through narrow scuttle openings

125. The "rabbit tool" is used to:

A. Cut chain links and padlocks using hydraulic shears mounted on the end of the tool itself

B. Spread inward-opening doors apart from their frames using hydraulic power for forcible entry

C. Pry the lock cylinder out of a door for through-the-lock entry without using a flathead axe

D. Reach into attic spaces during overhaul to pull insulation without exposing the firefighter

126. The "rotational displacement" technique using a halligan involves:

A. Driving the adz between door and jamb, then rotating the handle to displace the door from the lock

B. Spinning the halligan in the firefighter's hands to gain momentum before striking the door

C. Rotating the tool's fork end perpendicular to the door for maximum penetration into the wood

D. Pivoting the tool around the lock cylinder to break the cylinder from its mounting bracket

127. The "two-firefighter drag" rescue technique uses:

A. One firefighter at the head and one at the feet pulling the victim by the limbs to the exit

B. Two firefighters carrying the victim with one supporting the upper body and one the lower

C. Two firefighters each grabbing one shoulder strap of a webbing harness wrapped on the victim

D. Two firefighters using a backboard to immobilize and transport the victim through the building

128. A search line (rope) used in a large-area search should be marked at regular intervals with:

A. Knots only, tied at 10-foot intervals to indicate distance from the entry point

B. Colored tape indicating distance from the doorway in 10-foot increments along the length

C. Light sticks that activate when the search line is deployed and provide visual reference

D. Knots and directional markers (such as tabs) at regular intervals to indicate distance and direction

129. The most appropriate ventilation tactic for a working basement fire is to:

A. Positive pressure ventilation directed downward into the basement through the entrance

B. Coordinated horizontal ventilation through basement windows or walkout exits with attack

C. Vertical ventilation directly above the basement through the first-floor floor assembly

D. No ventilation until the fire has been extinguished by the interior attack crew operations

130. The "flow path" of a fire describes:

A. The route firefighters take during their initial attack on the fire from outside to inside

B. The piping arrangement that supplies water from the hydrant to the fire pump and discharge

C. The movement of air and combustion products through a structure from inlet to exhaust openings

D. The path of overhaul that firefighters follow after the fire has been controlled in the structure

131. The "minute man" hose load is designed to:

A. Allow one firefighter to deploy a preconnected attack line by carrying the load on the shoulder

B. Combine two preconnected attack lines into a single rapid-deployment package for big fires

C. Provide a fast-deploying supply line from a hydrant to the apparatus in a forward lay tactic

D. Store the supply hose in a tight bundle that can be deployed by hand without the apparatus

132. The most common cause of a hose-line burst during fire ground operations is:

A. Excessive water pressure exceeding the hose's burst rating during normal operations

B. A pre-existing defect or damage in the hose jacket missed during routine inspection

C. Sharp objects on the ground that cut the hose jacket during initial deployment

D. Improper coupling installation that allows the hose to fail at the connection points

133. A "tanker shuttle" operation is used when:

A. The municipal water supply at the fire scene is inadequate to supply the required fire flow

B. The fire scene has no hydrant access and water must be relayed from a fill site to a dump site

C. The fire is in a high-rise structure and water must be pumped to upper floors with relay

D. The fire involves a hazmat release that requires neutralizing agents to be transported

134. The "dump site" in a tanker shuttle operation is:

A. The location where tankers discharge water into portable tanks for use by the attack pumper

B. The location where the tankers fill their tanks from a static water source or hydrant

C. The location of the attack pumper at the fire scene supplying water to the fire fighting crews

D. The disposal location for any contaminated water collected during fire fighting operations

135. The "elevation pressure" component of pump discharge pressure accounts for:

A. The difference in elevation between the hydrant and the fire pump on the apparatus

B. The variation in atmospheric pressure between the pump and the nozzle along the line

C. The pressure required to overcome the friction loss in the elevation of a high-rise standpipe

D. The change in pressure due to gravity for hose lines operating above or below the pump

136. The elevation pressure change for a hose line operating 30 feet above the pump is approximately:

A. 5 psi loss because each foot of elevation reduces pressure by 0.17 psi at the nozzle

B. 10 psi loss based on the relationship between elevation and atmospheric pressure values

C. 13 psi loss using the formula EP = 0.434 × Height (in feet) for water column pressure

D. 30 psi loss because each foot of elevation reduces pressure by 1 psi due to water gravity

137. The "Bresnan distributor" is used to:

A. Apply water in a 360-degree pattern in a confined space such as a basement or crawl space

B. Direct a master stream from a portable monitor into an upper-floor window opening

C. Reduce the diameter of a 2.5-inch hose line to a 1.75-inch attack line at the apparatus

D. Combine two attack lines into a single larger line for master stream device operations

138. The "cellar nozzle" is designed to:

A. Distribute water from a fixed position on the apparatus deck for elevated stream attacks

B. Be lowered through an opening in a floor to apply water in a 360-degree pattern below

C. Apply water in a concentrated stream for piercing through walls during operations

D. Combine fog and straight stream patterns automatically as conditions in the room change

139. A "water vacuum" or wet vacuum used during salvage operations is most appropriate for:

A. Removing wet debris from the structure including burned materials after extinguishment

B. Drying the floor surfaces after standing water has been removed using other methods

C. Removing dust and ash from contents that have not been damaged by water during operations

D. Removing small volumes of standing water from floors, carpets, and similar surfaces during salvage

140. The use of a thermal imaging camera during overhaul allows the firefighter to:

A. See through smoke and locate trapped victims more quickly during the active fire phase

B. Determine the temperature of building components and exposure surfaces precisely in degrees

C. Identify hot spots in walls, ceilings, and concealed spaces that may indicate hidden fire

D. Document the fire scene for the investigator's report and the property owner's records

141. A "tactical worksheet" used by the incident commander is:

A. A standardized form completed after the incident for permanent records and analysis

B. A real-time decision-making tool that tracks assignments, resources, and progress during incident

C. A pre-printed list of agencies and resources to be called for various types of incidents

D. A daily log of company-level activities including training, equipment checks, and inspections

142. A "supervisory signal" from a fire alarm system indicates:

A. A condition that may impair the proper operation of the system such as a closed valve

B. An actual fire condition detected by the system at one or more of its initiating devices

C. A trouble condition with the wiring or power supply to the fire alarm control panel

D. A maintenance reminder that the system is due for scheduled annual testing services

143. The "OS&Y" valve on a sprinkler system is:

A. An Optical Sensor & Yoke valve that detects flow optically without mechanical components

B. An Operating Safety & Yield valve that releases pressure when system limits are exceeded

C. An Override Sensor & Yoke valve manually operated when the automatic system fails to work

D. An Outside Stem & Yoke valve where the stem position visually indicates if the valve is open or closed

144. The most appropriate method of cutting an A-post during vehicle extrication is to use:

A. A reciprocating saw with a metal-cutting blade to slowly cut through the post sections

B. A pneumatic chisel powered by compressed air to chip through the post in stages

C. Hydraulic cutters specifically designed for vehicle rescue applied at the proper angle on the post

D. A flathead axe driven by another firefighter using sledgehammer strikes to break the post

145. "Phase 3" of vehicle extrication is generally:

A. Scene assessment and hazard control before any physical contact with the vehicle

B. Disentanglement involving the actual removal of vehicle components from around the patient

C. Patient assessment performed by EMS personnel during the extrication process directly

D. Removal of the patient from the vehicle onto a backboard and into the awaiting ambulance

146. The standard "watch out" situation of fighting wildland fire on terrain you have not seen in daylight refers to:

A. The danger of unseen hazards such as cliffs, snags, and unburned fuel pockets in the dark

B. The need to wait until daylight before initiating any direct attack on the fire

C. The requirement to use only aerial attack at night because ground crews cannot work safely

D. The risk of friendly fire from other ground crews working in the same general area in the dark

147. A patient is showing signs of stroke including facial droop, slurred speech, and arm weakness. The most important action is to:

A. Administer aspirin orally to prevent further clotting in the cerebral arteries during transport

B. Place the patient supine with legs elevated to improve cerebral blood flow during transport

C. Note the time of symptom onset and transport rapidly to an appropriate stroke-capable hospital

D. Have the patient drink water to rule out dehydration as the cause of the apparent symptoms

148. The CPR ratio for a single rescuer performing CPR on a child (1 year to puberty) is:

A. 15 compressions to 2 ventilations, identical to two-rescuer CPR for the same age range

B. 5 compressions to 1 ventilation, the older AHA standard that has since been retired

C. 100 compressions per minute with no ventilations until ALS arrives on scene to take over

D. 30 compressions to 2 ventilations, the same ratio used for adult single-rescuer CPR procedures

149. The "warm zone" at a hazmat incident is the area where:

A. Contamination is present at the highest levels requiring the maximum level of PPE for entry

B. Decontamination is performed between the hot zone and cold zone of the operation

C. Command, staging, and rehabilitation operations are conducted in a contamination-free area

D. The general public and media are positioned at a safe distance from the incident scene perimeter

150. The "spalling" of concrete observed by a fire investigator may indicate:

A. The presence of an accelerant at the point where the concrete has flaked or chipped on surface

B. The use of substandard concrete materials in the construction of the affected building structure

C. Localized high temperatures, as steam pressure within the concrete causes the surface to flake

D. Water damage from suppression activities that has weakened the concrete over time after the fire

ANSWER KEY WITH EXPLANATIONS — PRACTICE EXAM 11

1. C — The initial size-up must be transmitted immediately upon arrival to establish command and provide critical information about conditions to incoming units. Early size-up sets the tactical framework for the incident and lets later-arriving companies stage appropriately or alter their approach. Delay deprives the IC and incoming companies of the situational awareness they need.

2. A — A cylinder reading 4,500 psi when rated for 4,500 psi service pressure is at full service pressure and ready for use. Cylinders are designed and stamped for the rated pressure, and gauge accuracy is verified during scheduled maintenance. No corrective action is required when the reading matches the rated pressure.

3. D — Flashover is the rapid transition from the growth stage to a fully developed fire, in which all exposed combustible surfaces in the room ignite nearly simultaneously. The condition described — every exposed surface producing flame at once — defines this transition. Recognizing the warning signs (rollover, darkening turbulent smoke, intense radiant heat) is critical to crew survival.

4. B — Floor sag or a spongy feel underfoot is an indicator of structural weakness that can lead to collapse without warning. The correct response is to retreat to a known safe area and notify command so the structure can be reassessed and other crews warned. Continuing to advance risks rapid floor failure and firefighter entrapment below.

5. A — Visible residue and a sticky film indicate contamination with combustion byproducts that must be removed to limit chemical exposure and preserve gear performance. NFPA 1851 requires gross on-scene decontamination followed by advanced cleaning by a verified ISP or trained department personnel. Returning contaminated gear directly to service exposes the firefighter to known carcinogens.

6. C — The neutral plane is the horizontal interface in a ventilated compartment fire where the upper layer of hot gases flowing out meets the lower layer of cool air flowing in. Its height indicates fire conditions: a low or descending neutral plane signals worsening conditions and increased risk of flashover. Reading the neutral plane is a core skill for interior crews.

7. B — NFPA 1983 and most departmental SOGs require life safety rope to be removed from service after any significant or shock loading because microscopic damage can occur within the kernmantle structure that is not visible externally. The rope can be downgraded to utility or training use but is no longer trustworthy for life safety. This conservative standard protects firefighters from undetected weakness.

8. C — A figure eight on a bight forms a strong, easily inspected fixed loop that is the standard knot for anchoring life safety rope at a fixed point. It can be passed through a carabiner or directly around the anchor and unties relatively easily after loading. The knot's visual signature makes it quick to verify in low-light or high-stress conditions.

9. C — Proper climbing angle is achieved using the one-fourth rule: the butt of the ground ladder is placed away from the wall by one-fourth of the working length, producing approximately a 75-degree angle. This angle balances stability against the building with rung load distribution for the climber. Steeper or shallower angles compromise both safety and structural integrity.

10. A — A residential storm door is light-framed and best opened by driving the adz end of the halligan into the gap between the door and the jamb at the lock side and prying. The adz provides the right surface area and leverage for the relatively thin frame. Heavier or specialized tools are unnecessary for this light-duty entry task.

11. D — In a right-hand search, the lead firefighter maintains continuous contact between the right hand (or right shoulder) and the wall while sweeping outward with the opposite hand or a tool. This contact provides reliable orientation and a known path back to the entry point. Losing wall contact is the most common cause of disorientation in zero-visibility conditions.

12. B — Positive pressure attack requires a properly sized exhaust opening at or near the fire room before the fan is started; without it, pressurized smoke and heat are pushed throughout the structure rather than driven out. Confirming the exit path is the single most important pre-PPV check. Skipping this step can rapidly worsen interior conditions.

13. C — A forward lay is a hose evolution in which the apparatus stops at the hydrant, drops off firefighters and the supply hose end, and then drives toward the fire while laying supply hose. The attack engine arrives at the fire with the supply line in place behind it. This is the standard approach when the first-due engine is also the attack engine.

14. A — A rapid drop in intake pressure as flow increases means the hydrant is reaching the limit of what the supply main can deliver at that demand. The operator must either reduce flow, add a second supply, or rely on the on-board tank to avoid cavitation. Continuing to increase flow risks losing prime and damaging the pump.

15. D — Using $GPM = 29.7 \times d^2 \times \sqrt{NP}$ for a smoothbore tip with d = 0.875 inch and NP = 50 psi: $29.7 \times 0.766 \times 7.07 \approx 161$ gpm. The smoothbore flow formula is fundamental for pump operations and quick mental flow estimation. Knowing flows by tip size and pressure is essential for setting proper PDP.

16. B — Friction loss $FL = C \times Q^2 \times L$ with C = 2, Q = 2.5 (hundreds of gpm), and L = 2 (hundreds of feet) yields $2 \times 6.25 \times 2 = 25$ psi. Adding the 50 psi nozzle pressure gives PDP = 75 psi. The IFSTA coefficient of 2 for 2.5-inch hose is standard for pump discharge pressure calculations.

17. A — A portable submersible pump with a discharge hose run to an exterior opening is the most efficient way to remove standing water from a basement during salvage. The pump moves large volumes quickly with minimal manual labor and limited risk to firefighters from contaminated water. Other methods are slower, less effective, or impractical in a residential setting.

18. C — Before opening any wall that may contain electrical wiring, the electrical service must be confirmed disconnected at the meter to eliminate the risk of electrocution from energized circuits. This is a basic overhaul safety step and is non-negotiable for crew safety. Visual inspection alone cannot confirm that a circuit is de-energized.

19. B — After transmitting the LUNAR message, the trapped firefighter should manually activate the PASS device and remain still to conserve air and provide an audible homing signal for the RIT. Movement

increases air consumption and can cause further entanglement. Staying calm and still maximizes survival time and rescue probability.

20. D — Multi-criteria detectors combine multiple sensing technologies (such as photoelectric, ionization, heat, and CO sensors) to extend detection across more fire types while filtering out non-fire events that would trigger a single-technology sensor. The result is broader effective detection and fewer nuisance alarms. NFPA 72 increasingly recognizes these detectors in design specifications.

21. A — The main control valve on a wet-pipe sprinkler system must be reopened slowly after maintenance to avoid water hammer that can damage piping, joints, and sprinkler heads. Slow filling allows trapped air to vent and pressures to equalize gradually. Rapid valve operation is a frequent cause of system damage following routine maintenance.

22. C — Hybrid and electric vehicles vary substantially in their high-voltage system layout, shutdown procedures, and identification of safe cut points. The manufacturer's emergency response guide provides specific, vehicle-correct instructions for disabling the system safely. Generic actions like cutting random orange cables risk arc flash, electrocution, and inadvertent system reactivation.

23. D — Fire spread on a slope with wind in the upslope direction is significantly faster than on level ground because both factors preheat fuels ahead of the fire front and align convective and radiative heat transfer. The flame leans toward the unburned fuel, increasing its exposure to radiant heat. This combination produces some of the most rapid wildland fire growth seen on a fireline.

24. B — The single most reliable indicator that a BVM ventilation is effective is visible chest rise with each delivered breath. Chest rise confirms that the airway is patent, the mask seal is adequate, and tidal volume is being delivered. Without chest rise, the ventilation is not reaching the lungs regardless of how the bag feels.

25. A — The command post at a hazmat incident must be located upwind, uphill, and upstream from the release to keep command and incoming resources outside the contamination zone. Chlorine is denser than air and will travel downwind and into low areas; positioning crosswind or downwind risks exposing command to the vapor cloud. ERG initial isolation distances guide actual standoff distance.

26. C — Chlorine's vapor density of approximately 2.5 means its vapors are 2.5 times heavier than air, so released vapors settle into basements, pits, floor drains, and other low areas. Search, rescue, and monitoring must address these low collection points. Knowing the vapor density of a released chemical is essential for predicting where exposure hazards will accumulate.

27. B — A trailer pattern (a path of localized char) suggests possible use of an accelerant and is potential evidence of arson. The firefighter must stop overhaul in that area, protect the evidence from disturbance, and notify the fire investigator. Disturbance, collection, or sampling by suppression personnel can compromise the legal value of the evidence.

28. D — The fundamental purpose of pre-incident planning is to familiarize response crews with the buildings, hazards, water supplies, access points, and special considerations of target hazards in their

district before an emergency occurs. Pre-plans translate directly into faster, safer, and more effective on-scene operations. Other benefits are secondary to operational readiness.

29. A — Class A foam concentrate is typically used at 0.1 to 1.0 percent by volume, depending on the application (interior structural attack, mop-up, or exposure protection). This is far lower than Class B foam percentages because Class A foam relies primarily on surfactant action to wet and penetrate fuels. The correct percentage maximizes effectiveness while minimizing concentrate consumption.

30. C — An aspirating foam nozzle draws air into the foam solution at the nozzle, mechanically generating bubbles and producing a foam with a higher expansion ratio and longer drain time than a non-aspirating nozzle. The result is a more cohesive foam blanket better suited to Class B fire suppression. Non-aspirating nozzles produce a thinner, faster-draining foam pattern.

31. B — Thick black smoke pulsing in and out under pressure with no visible flame indicates a ventilation-limited fire that has consumed most available oxygen but retains heat and unburned fuel gases. Introducing oxygen by opening a door can trigger backdraft. Recognition of these signs is critical before any forcible entry on a closed compartment.

32. D — Black, dense, fast-moving smoke pushing under pressure indicates heavy fuel loading, high heat release, and a ventilation-limited fire on the interior. Smoke color, velocity, density, and pressure together describe fire conditions and predict fire behavior. Reading these signs from the exterior is a core size-up skill.

33. A — Type IV (heavy timber) construction uses large cross-section wood structural members that resist fire damage through a self-protecting char layer; this is distinct from Type III (ordinary), which uses smaller-dimension lumber inside masonry walls. The heavy timber's mass slows burn-through and supports loads longer in a fire. Recognizing the difference informs collapse risk and tactical timing.

34. C — Pre-engineered metal buildings rely on unprotected lightweight steel for their structural frame. Under fire temperatures, the steel elongates, loses strength, and can deflect or fail rapidly, often within 10 minutes of significant fire exposure. This rapid potential for collapse should drive early withdrawal to defensive operations on these buildings.

35. D — Turnout gear with visible charring, stiffness, or other clear thermal damage to the outer shell has been compromised; thermal degradation reduces protective performance unpredictably. NFPA 1851 requires such gear to be removed from service permanently and replaced. No field repair or cleaning can restore the original protective properties.

36. D — A facepiece with melted areas on the lens has suffered thermal damage that cannot be field-repaired, and the structural integrity of the seal and lens cannot be guaranteed. The facepiece must be removed from service and replaced regardless of where the damage appears. Compromised SCBA protection in an IDLH atmosphere is potentially fatal.

37. C — When the SCBA cylinder reads 25 percent, the low-pressure alarm has already activated (typically at 33 percent) and the remaining air is considered emergency egress reserve, not working air.

The firefighter must leave the IDLH atmosphere immediately by the safest route. Treating reserve air as working air leaves no margin for delays or entrapment.

38. A — A life safety rope with visible kern (core) through the worn-through sheath has lost the integrity required for life safety use. The sheath protects the load-bearing core, and once compromised, the rope must be permanently removed from life safety service. Field repair is not permitted under NFPA 1983.

39. B — The clove hitch with a safety half hitch near the working end is the standard knot for hoisting tools with straight handles, including portable fans, pike poles, and axes. The clove hitch grips the handle, and the half hitch keeps the tool oriented correctly during the hoist. The combination secures both the hold and the orientation simultaneously.

40. D — For window entry or egress, the ladder tip is placed even with or slightly below the windowsill with the tip resting against the wall beside or below the window. This position allows the firefighter to step directly between the rungs and the sill while maintaining contact with the building. A tip above the sill obstructs the opening; well below makes the transition unsafe.

41. A — A 16-foot extension ladder provides approximately 14 feet of working length, which at a 75-degree climbing angle reaches a vertical height of about 13.5 feet — adequate to reach a windowsill at 12 feet. This is the minimum recommended length for typical second-floor windows. Shorter ladders cannot reach safely; longer ones are heavier and slower to deploy.

42. C — Modern forcible entry doctrine begins with size-up to choose the right method, followed by try-before-you-pry to confirm the door is actually locked, then the conventional gap-set-force sequence with the irons. Trying the door first prevents needless damage and wasted time on unlocked doors. The complete sequence is a fundamental skill for truck companies.

43. B — A metal-clad commercial door with a vertical drop bar cannot be defeated efficiently with hand tools; a rotary saw with a metal-cutting blade allows a triangular or pie-shaped cut at the drop bar location to release it. This technique is standard for heavily secured commercial doors. Other approaches waste time and rarely succeed.

44. D — When orientation is lost in zero visibility, the search team must stop, stay together, communicate calmly, and use thermal imaging or memory to relocate the wall or reference point. Continuing to move increases disorientation; spreading out fractures the team. Calm, deliberate action gives the best chance of safe recovery.

45. A — VES (Vent-Enter-Isolate-Search) is a targeted tactic used to rapidly reach a known or suspected occupant in a specific room when fire conditions make a primary search through the main interior impractical. The team enters through a window, immediately isolates the room by closing the door, and searches. It is not a general primary search tactic.

46. C — Isolating the search area in VES means closing the door to the involved area as soon as the room is entered, preventing the open window from creating a flow path that draws fire into the room being searched. Without isolation, the very act of venting the window can pull fire toward the search team. The closed door is what makes VES survivable.

47. D — Using FL = C × Q² × L with C = 12 for 1.75-inch hose, Q = 1.5 (hundreds of gpm), and L = 2 (hundreds of feet): 12 × 2.25 × 2 = 54 psi. The Q² relationship means small increases in flow produce large increases in friction loss. Knowing this calculation is essential for setting accurate pump discharge pressures.

48. B — A steady 18-inch vacuum reading on the compound gauge indicates the pump is drafting successfully and has overcome roughly 18 inches of mercury equivalent lift. The steady reading confirms the prime is holding and water is flowing. Drafting up to about 22 feet (≈19–20 inches Hg) is the practical limit before air entrainment.

49. A — A hydrant flow test using a pitot gauge to measure flow at a flowing hydrant and a separate gauge to record residual pressure at a nearby static hydrant provides the most accurate available fire flow at the desired residual pressure. Color codes are estimates and can be outdated. Calculation from main size cannot account for actual system performance.

50. C — Modern interior attack uses a straight stream or narrow fog to maximize reach and penetration while minimizing disruption of the thermal balance and steam production at the crew level. Wide fog patterns can convert too much water to steam, push fire toward unburned areas, and disturb the smoke layer. Stream pattern selection matters as much as flow rate.

51. B — With heavy smoke from all windows on one side, a 1.75-inch transitional attack — a brief exterior application to knock down the main body of fire before entry — cools the interior, improves conditions for the entry team, and limits flashover risk. This approach has been validated by UL and NIST research. Waiting or going straight to defensive operations is rarely appropriate at a single-story residential fire.

52. D — Water applied to burning cooking oil flashes to steam, ejecting flaming oil violently in all directions and dramatically worsening the fire. Class K wet-chemical agents, a lid (smothering), or a dry-chemical extinguisher are appropriate. Knowing what NOT to use on Class K fires is as important as knowing what to use.

53. A — The one-firefighter spread (or one-firefighter shoulder cover deployment) uses an accordion-folded salvage cover designed to be carried on a single firefighter's shoulder and unrolled over contents. This method allows a single firefighter to deploy the cover quickly without help. The fold pattern is built specifically for solo deployment.

54. C — Wisps of smoke from an outlet indicate possible hidden fire in the wall behind it. The firefighter must confirm the electrical service is disconnected, open the wall to investigate, and extinguish as needed. Spraying water into an outlet that may still be energized risks electrocution; ignoring the smoke risks rekindle.

55. D — Personnel Accountability Reports (PARs) are initiated by the incident commander at predetermined benchmark events (such as fire under control, after 20 minutes, change in strategy) and at regular intervals throughout the incident. The PAR verifies the location and welfare of every member on the fireground. Lower-ranking members do not initiate department-wide PARs.

56. A — Linear heat detection cable is designed to detect heat along a continuous run such as a conveyor belt, cable tray, tunnel, parking garage, or transformer vault. The cable activates wherever its temperature rating is exceeded along its length. It is well-suited to applications where spot detectors would not provide adequate coverage.

57. C — A Class I standpipe system provides 2.5-inch hose connections at each floor for use by trained firefighters and does not include preconnected hose. It is intended for fire department use with hose carried up from the apparatus or stretched from the pumper through the FDC. Class II is for occupants; Class III combines both.

58. B — The fire department connection (FDC) is used by the responding pumper to supplement or boost the water supply to the sprinkler or standpipe system. The FDC bypasses the building's normal supply when greater pressure or flow is needed during a fire. Supporting the FDC is a routine but critical engine company assignment at protected buildings.

59. D — Laminated automobile glass (used in windshields) cannot be shattered with a spring-loaded center punch alone because of the plastic layer between the two glass layers. The standard method is to make an initial penetration and then cut around the perimeter with a glass saw or reciprocating saw. Side and rear windows are tempered and shatter with a center punch.

60. A — The Inner Circle at a vehicle extrication scene is the area immediately around the vehicle where rescuers performing direct work (cutting, spreading, patient care) are positioned. The Outer Circle is the larger area where staged tools and additional personnel are located. Clear delineation of these zones controls scene chaos and improves safety.

61. B — The Common Denominators of Tragedy Fires identifies that most fatal and near-miss wildland incidents occur on relatively small fires or small portions of larger fires when fire behavior suddenly changes. Complacency on small fires kills firefighters. This pattern is built into NWCG training and incident debriefs.

62. D — When a wildland fire on flat terrain encounters a slope, the fire's behavior can rapidly transition to an upslope run as preheating and convective transport accelerate. This shift can also include area ignition — simultaneous ignition of preheated fuels across a wide front. Predicting these transitions is essential for crew safety in mixed terrain.

63. C — Chest pain combined with dyspnea and pale, cool, diaphoretic skin is a classic presentation of acute coronary syndrome with possible myocardial ischemia or infarction. The skin findings reflect sympathetic nervous system activation in response to cardiac stress. Rapid recognition allows for early oxygen, aspirin, and transport to a cardiac center.

64. B — The first action for a patient with suspected cardiac chest pain is to place them in a position of comfort (typically semi-Fowler's), administer oxygen if hypoxic ($SpO_2 < 94$ percent per AHA), and prepare for rapid transport. Aspirin is given subsequently per protocol. Excessive interventions before stabilization delay definitive care.

65. A — Snoring respirations indicate partial upper airway obstruction from the tongue falling against the posterior pharynx. The first action is to open the airway with a head-tilt/chin-lift maneuver (or jaw-thrust if trauma is suspected). Manual airway opening alone often relieves the obstruction without any device.

66. D — In a suspected natural gas leak, any spark or ignition source can detonate the accumulated gas-air mixture. Avoiding light switches, radios, doorbells, and any device that may arc is the most important initial safety action. The space must be approached carefully with non-sparking tools and ventilated only after the ignition risk is controlled.

67. C — The fire service "rule of thumb" for initial standoff at a hazmat incident is to hold the thumb out at arm's length: if the thumb covers the incident, the responder is at a reasonably safe distance for awareness-level operations. This rough check is not a substitute for the ERG isolation distances, but provides an immediate, no-equipment estimate.

68. B — Level A provides the highest level of skin, respiratory, and eye protection: a fully encapsulating, chemical-resistant suit with SCBA worn inside the suit. Level A is used when the highest level of protection against unknown or known severe hazards is required. Lower levels reduce protection in exchange for greater mobility and reduced heat stress.

69. A — The first and most important principle of evidence preservation at a fire scene is to disturb evidence as little as possible during firefighting and overhaul. This means avoiding unnecessary movement of items, preserving burn patterns where possible, and being conscious of where suppression streams are directed. Suppression personnel are not investigators and should not collect or sample evidence.

70. C — Pre-incident plans should be reviewed at regularly scheduled intervals (NFPA 1620 recommends annually) and whenever significant changes occur at the property, such as renovation, occupancy change, or new hazards. Stale pre-plans give responders inaccurate information that can lead to bad decisions on the fireground. Currency is what makes a pre-plan operationally valuable.

71. A — Aqueous film-forming foam (AFFF) is a Class B foam concentrate that produces a film on the surface of a hydrocarbon fuel. The film suppresses vapors and excludes oxygen from the fuel surface. AR-AFFF (alcohol-resistant) is required for polar solvents because standard AFFF film breaks down on those fuels.

72. D — A 6 percent foam concentrate ratio means 6 gallons of concentrate are mixed with 94 gallons of water to produce 100 gallons of foam solution. The percentage refers to the proportion of concentrate in the final mixed solution. Setting the eductor to the correct percentage is essential for foam quality and effectiveness.

73. B — Smoke stratification is the layering of smoke at different levels in a compartment based on temperature differences: the hottest gases rise to the ceiling, while cooler smoke sits lower or may hover in mid-room when temperatures begin to equalize. This layering affects search tactics and ventilation decisions. Reading the layering is part of compartment fire size-up.

74. C — Autoignition temperature is the minimum temperature at which a substance will ignite spontaneously without an external ignition source. It is higher than the flash point, which is the temperature at which vapors will ignite given an external source. The distinction matters for hazmat planning and fire prevention.

75. D — Building compartmentation — rated walls, floors, and barriers — limits the spread of fire and smoke to the compartment of origin for the duration that the barriers remain intact and closed. Open doors, breached walls, and failed assemblies defeat compartmentation. Recognizing intact and breached compartmentation guides interior tactics and exposure protection.

76. A — Diesel fuel contamination is removed by gross on-scene decontamination followed by advanced cleaning per NFPA 1851. Solvent application in the field is uncontrolled and can damage the gear; returning contaminated gear to service exposes the firefighter to fuel and combustion byproducts. The standard's cleaning protocols are the only validated method.

77. B — Particulate-blocking turnout gear features specialized fabrics or designs at sleeve cuffs, collar, waist, and other interface areas where contaminants can otherwise reach the skin. Studies have shown a significant percentage of firefighter contamination occurs through these gaps. Particulate-blocking gear is part of the modern occupational cancer reduction strategy.

78. D — A RIT pack (or RIC pack) is a dedicated SCBA — a cylinder with a regulator and mask assembly — staged near the entry point ready to be brought to a downed firefighter by the rapid intervention team. The pack supplies air to the downed firefighter during rescue. It is one of the most important pieces of RIT-staged equipment.

79. C — A rope used to lower or hoist tools should be utility rope (often called manila or polypropylene utility line) rather than life safety rope, because utility rope is rated for non-life loads and is purpose-built for tool work. Reserving life safety rope for human loads preserves its integrity and inspection log. Designation by use is standard fire service rope management.

80. A — A clove hitch on a vertical pole tends to slip downward under load; adding a half hitch around the standing line locks the clove hitch in position. This combination (sometimes called a "clove hitch with safety") is standard for securing the rope around a pole or post. The half hitch is the simple, reliable fix for clove hitch creep.

81. B — The proper heeling position is at the base of the ladder, facing it, with hands on the beams and one foot placed on the bottom rung to anchor the butt. This stance prevents kickout and maintains a clear line of communication with the climber. Standing far away or sitting on the ground both compromise heeling effectiveness.

82. D — A 24-foot extension ladder is typically raised by two firefighters using either a flat raise or a beam raise depending on conditions. Two-firefighter raises balance speed, control, and the load each firefighter must handle. Single-firefighter raises are limited to lighter ladders; three- and four-firefighter raises are reserved for longer extension or Bangor ladders.

83. C — A residential security door with vertical iron bars is most efficiently defeated by cutting the hinges or lock with a rotary saw equipped with a metal-cutting blade, allowing the entire gate to be moved aside. Cutting individual bars is slow and rarely sufficient; spreading them risks tool damage and incomplete entry. The rotary saw is the right tool for this job.

84. A — The "irons" are the marriage of a halligan tool and a flathead axe, carried together as a single set for forcible entry. The flathead axe serves as the striking tool and the halligan as the prying/cutting tool. Carrying the irons together ensures both tools arrive at the door simultaneously and ready to use.

85. D — Locating an unconscious victim in a smoke-filled bedroom requires a systematic search that includes all areas of the room — under beds, in closets, between furniture, and along walls. Listening or thermal imaging from the doorway can supplement but not replace a physical search. Victims are often found in places not visible from the door.

86. B — The Rapid Intervention Team is activated when a firefighter calls a Mayday or is reported missing, trapped, or in need of immediate assistance. RIT remains staged and ready throughout the incident specifically for this purpose. Routine fatigue or relief is not a RIT trigger; RIT is an emergency rescue reserve only.

87. C — Vertical ventilation on a sloped roof should be performed from a roof ladder hooked over the ridge with the firefighter's feet on the rails, providing sound footing and preventing slips on the slope. Working without a roof ladder on a pitched roof is highly hazardous, especially with smoke, water, and heat-weakened decking. Roof ladder use is a basic safety practice.

88. A — The correct PPV sequence is to identify and create the exhaust opening first, position the fan at the entry point, start the fan, and monitor the flow path through the structure. Starting the fan without an exhaust opening pressurizes the building and worsens conditions. The ordered sequence is what makes PPV safe and effective.

89. D — An accordion load is characterized by hose folded vertically on edge with each fold leaning against the previous fold in the hose bed. The vertical orientation allows the hose to be pulled cleanly during deployment and provides good visibility of couplings. The fold pattern resists tangling during a hand-line stretch.

90. B — Five-inch large-diameter hose (LDH) is intended to supply large flows — often 1,000 gpm or more — from a hydrant or another pumper to the attack engine. Its low friction loss makes it ideal for long supply lays. Using LDH for attack lines or replacement of smaller hose is inappropriate for the design intent.

91. A — Using $GPM = 29.83 \times c \times d^2 \times \sqrt{P}$: $29.83 \times 0.9 \times (2.5)^2 \times \sqrt{30} = 29.83 \times 0.9 \times 6.25 \times 5.477 \approx 919$ gpm. The coefficient $c = 0.9$ reflects typical 2.5-inch outlet flow characteristics. Hydrant flow testing using this formula is the basis for available fire flow determination.

92. C — Wildly fluctuating discharge pressure when attack lines are flowed indicates air entrainment at the pump intake, typically caused by an inadequate supply (hydrant maxed out, supply line too small, or

partial obstruction). Air bubbles disrupt the centrifugal pump's ability to maintain pressure. The fix is to reduce flow or improve the supply, not adjust discharge gates.

93. D — The "automatic" feature of an automatic fog nozzle is its ability to automatically adjust the orifice (waterway) opening to maintain a constant nozzle pressure (typically 100 psi) across a range of flow rates. This keeps stream quality and reach consistent as flow changes. It distinguishes automatic nozzles from constant-gallonage and selectable-gallonage fog nozzles.

94. B — Smoothbore nozzles deliver greater reach and penetration than comparable fog nozzles because the solid stream entrains less air and stays cohesive over a longer distance. This makes smoothbore preferred for deep-seated fires, high-flow handlines, and many interior attack applications. The trade-off is the absence of a fog protection pattern.

95. A — The OODA loop — Observe, Orient, Decide, Act — was developed by USAF Colonel John Boyd and has been adopted by the fire service as a framework for tactical decision-making in dynamic environments. The loop captures the cyclical nature of size-up and re-evaluation. Faster, more accurate OODA cycles produce better fireground outcomes.

96. C — The shoulder toss salvage cover deployment uses a folded cover placed on one firefighter's shoulder, which is then rolled or thrown across the contents in a controlled manner. This is a single-firefighter technique that allows fast deployment in tight spaces. It is one of several salvage cover deployment methods carried in standard truck company training.

97. B — A catchall is a temporary water-collecting basin formed from a salvage cover with its edges rolled or supported, positioned to collect water dripping from above or pooling in a localized area. The catchall prevents the water from spreading further into the structure. It is one of the standard improvised salvage techniques.

98. D — "Emergency traffic" is the radio signal that the transmission contains time-critical safety information; all other radio traffic must clear the channel to allow the message to be heard. Common uses include Mayday, withdrawal orders, and immediate hazards. The discipline of clearing the channel saves lives.

99. A — A combination smoke detector with both ionization and photoelectric sensors detects fast-flaming fires (ionization strength) and slow smoldering fires (photoelectric strength) effectively. The combination provides broader detection across the range of fire types encountered in residential settings. Single-sensor units miss some fire types until later in development.

100. C — A pre-action sprinkler system requires two events to discharge water: activation of a separate detection system (heat, smoke, or both) and operation of a sprinkler head. This double-interlock arrangement prevents accidental water discharge in sensitive areas such as data centers, museums, and archives. Other sprinkler types have different actuation requirements.

101. D — A vehicle on its side must be thoroughly stabilized first (typically using struts and cribbing) to prevent further movement during extrication. After stabilization, breaking the tempered glass on the top-

facing window provides access without compromising the patient. Pushing the vehicle back onto its wheels could injure the patient and violates basic extrication doctrine.

102. B — The dash roll (also called the dashboard lift or dash displacement) uses hydraulic tools to lift the dashboard up and away from a patient whose lower extremities are pinned beneath it. The procedure typically involves relief cuts in the A-posts and rocker panel followed by lifting with spreaders. It is a fundamental extrication skill for entrapment of lower extremities.

103. A — The Ten Standard Firefighting Orders are a fundamental safety checklist developed by the U.S. Forest Service that must be applied to every wildland firefighting incident. The Orders address fire behavior, communications, supervision, and safety. They are the foundation of wildland firefighter safety training.

104. C — The 18 Watch Out Situations are specific high-risk conditions identified from fatal and near-fatal wildland incidents that demand special caution. Examples include unfamiliar terrain, unburned fuel between you and the fire, and weather becoming hotter and drier. They complement the Ten Standard Orders in the wildland safety system.

105. D — A patient unresponsive in a natural gas atmosphere is being actively poisoned and possibly anoxic; the first action is to move the patient to fresh air immediately while ventilating the structure. Care provided in a contaminated atmosphere endangers both patient and rescuers. Removal from the hazard precedes definitive medical care.

106. B — Bright red, spurting blood from a forearm laceration is arterial bleeding controlled first by direct pressure with a sterile dressing and elevation of the extremity above heart level. Most arterial bleeding can be controlled this way before resorting to tourniquets. Tourniquets are reserved for bleeding that cannot be controlled by direct pressure.

107. A — The rule of nines estimates the percentage of body surface area (BSA) affected by burns using anatomical regions assigned multiples of nine percent. The estimate guides fluid resuscitation (using formulas such as Parkland) and triage decisions. It does not determine burn depth or assess airway involvement.

108. D — The National Fire Academy's DECIDE model is: Detect the presence of hazmat, Estimate likely harm, Choose response objectives, Identify action options, Do the best option, Evaluate progress. It provides a structured decision-making sequence for hazmat incidents. Other arrangements of the letters are not the standard model.

109. B — Operations-level hazmat responders are trained to take defensive actions — diking, damming, diverting, vapor suppression — from a safe distance to contain and confine a release. They do not attempt to plug, patch, or stop the release at its source; those are technician-level actions. Knowing the scope of training and authorization is critical to safe operations.

110. D — A low burn pattern (charring at or near the floor level) is unusual because heat normally rises; this pattern can indicate an accelerant pour, a fire that originated very low, or unusual conditions such as

ventilation that drove fire downward. The pattern is a flag for the investigator to examine. Suppression personnel should preserve the pattern.

111. C — The operational information section of a pre-incident plan — access, hazards, water supplies, building features, special considerations — is the most directly useful section for crews on a working incident. This information dictates how crews approach, position, and engage. Administrative and historical sections are secondary to operational content.

112. A — NFPA 11 specifies a minimum AFFF application rate of 0.10 gpm per square foot of fuel surface area for unignited hydrocarbon spills using non-aspirating nozzles. Higher rates may be required for difficult fuels or ignited fires. Application rate is essential to achieving and maintaining suppression of the fuel surface.

113. D — A foam eductor uses the Venturi principle: water flowing through the eductor creates a low-pressure zone that draws foam concentrate into the water stream from a pickup tube. The result is a metered foam solution at the eductor's calibrated percentage. This passive, mechanical proportioning is reliable and widely used.

114. B — Synthetic materials produce dark, fast-moving, voluminous smoke at high temperature with high toxicity (carbon monoxide, hydrogen cyanide, and other products of incomplete combustion). This contrasts with the lighter smoke of natural materials such as wood. Modern fire loads dominated by synthetics drive aggressive size-up and PPE discipline.

115. A — The thermal layer in a compartment fire is the hot gas layer that accumulates near the ceiling above the neutral plane. The layer drives radiant heat transfer to other fuels and is the precursor to flashover. Cooling the thermal layer with brief water pulses is a core modern attack technique.

116. D — Type V (wood-frame) construction uses combustible materials for all structural elements — walls, floors, roof, framing. The structure itself becomes part of the fuel load and contributes to both fire growth and collapse risk. Type V is the most vulnerable of the five construction types under fire conditions.

117. C — A rain roof (a new roof installed over an old one) creates a void space between the layers that can hide fire extension. Firefighters performing vertical ventilation may cut through the top layer and find the void underneath, with potentially active fire below the deck. This void is a serious hazard for ventilation crews.

118. A — Wristlets are knitted fabric cuffs on the inside of turnout coat sleeves that provide a snug closure at the wrist, preventing heat, smoke, embers, and water from entering the sleeve. They are a key interface barrier between the gear and the skin. Properly worn wristlets are part of complete particulate-blocking practice.

119. B — NFPA 1851 requires advanced cleaning of structural turnout gear at least once every 12 months and whenever the gear is significantly contaminated. Routine soiling from regular fire ground use is presumed to be significant. Annual minimum is the floor, not the ceiling, on cleaning frequency.

120. C — Emergency Breathing Support System (EBSS), commonly called buddy breathing, uses a low-pressure hose connection between two SCBA units to allow one firefighter to share air with another in an emergency. The connection is made through a manufacturer-designed coupling at the regulator. Removing the facepiece for buddy breathing is dangerous and obsolete.

121. A — General-use life safety rope under NFPA 1983 must have a minimum diameter of approximately 12.5 mm (½ inch) or larger to achieve the minimum 40 kN (8,992 pounds force) breaking strength. The larger diameter provides the load capacity for two-person rescue loads. Technical-use rope is smaller (≥ 9.5 mm) and rated for one-person loads.

122. B — The double-loop figure eight (also called the bunny ears) forms two fixed loops at the end of a rope, allowing connection to two independent anchor points simultaneously. This creates a load-distributing anchor or allows two clip-in points. It is widely used in technical rescue rigging.

123. D — Transferring from a ladder to a windowsill is performed by swinging one leg through the window opening while maintaining two contact points (typically both hands on the beam or one hand on each beam) with the ladder. The firefighter pivots gradually into the window without ever fully releasing the ladder. This preserves stability throughout the transfer.

124. C — A Bangor ladder is a long extension ladder (typically 40 feet or longer) with three sections and stabilizing poles (tormentor poles) that assist in raising and stabilizing the ladder. The poles allow several firefighters to control the ladder during the raise. Bangor ladders are heavy and require coordinated crew operations.

125. B — The rabbit tool is a small, portable hydraulic spreader used to force inward-opening doors apart from their frames. It is inserted into the gap between door and jamb and activated to spread the door open with significant mechanical force. It is a powerful entry tool for doors that resist conventional irons.

126. A — Rotational displacement is a halligan technique in which the adz is driven between door and jamb, then the handle is rotated to displace the door from the locking mechanism. The rotation produces a powerful prying action without requiring repeated striking. This technique can be more efficient than the conventional gap-set-force sequence on certain doors.

127. C — The two-firefighter drag uses a webbing harness wrapped around the victim (such as a Hasty harness on the SCBA shoulder straps), with each rescuer grabbing one shoulder strap. This distributes the load and allows controlled movement of the victim. It is faster and more ergonomic than dragging by limbs.

128. D — A large-area search line is marked at regular intervals with both knots (for distance) and directional markers (tabs, sleeves, or other tactile indicators of direction back to entry). The combination allows a firefighter to determine both distance traveled and orientation toward the exit by feel. Tactile markers are essential because visibility is typically zero.

129. B — A basement fire is best ventilated through coordinated horizontal openings (basement windows, walkout doors) timed with the interior attack. Positive pressure pushing downward and vertical ventilation

through the first floor are both contraindicated because they can drive fire into living spaces above. Basement fire ventilation requires careful coordination with the attack crew.

130. C — A flow path is the movement of air and combustion products through a structure from an inlet opening to an exhaust opening, driven by pressure differentials, temperature, and wind. Understanding flow paths is essential for safe attack positioning because operating in the flow path exposes crews to rapidly increasing heat and fire travel.

131. A — The minute man load is a preconnected attack line load designed to allow one firefighter to deploy the entire line by carrying the load on the shoulder while walking toward the fire. The hose pays off the shoulder as the firefighter advances. The load is widely used for 1.75-inch preconnected attack lines.

132. B — A pre-existing defect or damage in the hose jacket missed during routine inspection is the most common cause of fire hose bursts on the fireground. Damage such as cuts, abrasion, or mildew weakens the jacket over time, and burst occurs under operating pressure. Thorough post-incident and routine inspections are the primary prevention.

133. B — A tanker shuttle is used when the fire scene has no hydrant access and water must be relayed from a fill site (water source) to a dump site (near the fire) using tankers. The shuttle provides continuous water supply where municipal infrastructure is absent. Tanker shuttle operations are common in rural fire protection.

134. A — The dump site is the location at the fire scene where tankers discharge their water into portable tanks for use by the attack pumper. The attack pumper drafts from the portable tank. The fill site, by contrast, is where tankers refill from the static or hydrant source.

135. D — Elevation pressure is the change in pressure caused by gravity for hose lines operating above or below the pump. Lines operating above the pump lose pressure due to elevation; lines below the pump gain pressure. The pump operator must adjust PDP accordingly to deliver the desired nozzle pressure.

136. C — Elevation pressure is calculated as EP = 0.434 × height in feet. For 30 feet of elevation: 0.434 × 30 = 13.02 psi loss. This figure must be added to the pump discharge pressure when the hose line is operating above the pump. The 0.434 constant reflects the weight of a column of water.

137. A — A Bresnan distributor is a fitting with multiple discharge openings that produces a 360-degree water pattern when lowered into a confined space such as a basement, attic, or crawl space. It is used for indirect attack on inaccessible fires. The device extinguishes by steam conversion in the confined volume.

138. B — A cellar nozzle is designed to be lowered through an opening cut in a floor to apply water in a 360-degree pattern in the space below. It is used for cellar and basement fires where direct access is unsafe. The nozzle is purpose-built for above-floor application onto an unreachable fire.

139. D — A water vacuum (wet vacuum) is used during salvage operations to remove small volumes of standing water from floors, carpets, and similar surfaces. It is not designed for large pools — which are

handled with submersible pumps or chutes — but is ideal for residual water after primary removal. Mixed wet/dry vacuums also pick up debris.

140. C — A thermal imaging camera during overhaul reveals hot spots in walls, ceilings, voids, and other concealed spaces where fire may still be smoldering. The TIC allows targeted opening rather than blind tearing of finish materials. It dramatically reduces the chance of rekindle and limits unnecessary property damage.

141. B — A tactical worksheet is a real-time decision-making and tracking tool used by the incident commander to record assignments, resources, benchmarks, and progress during the incident. It provides documentation of decisions and supports accountability. The worksheet is reviewed after the incident for after-action analysis.

142. A — A supervisory signal indicates a condition that may impair the proper operation of the fire alarm or sprinkler system, such as a closed control valve, low building temperature, or low water tank level. It is distinct from a trouble signal (system component fault) or alarm signal (actual fire). Supervisory signals require investigation but not necessarily emergency response.

143. D — OS&Y stands for Outside Stem and Yoke valve, where the threaded stem extends visibly outside the yoke when the valve is open and retracts when closed. This visual indication makes it easy for inspectors and responders to confirm valve position. OS&Y valves are standard on sprinkler and standpipe systems for this reason.

144. C — Hydraulic cutters designed specifically for vehicle rescue are the standard tool for cutting an A-post during extrication. The cutters apply controlled high force and provide a clean cut without sparks or excessive vibration that could injure the patient. Reciprocating saws are slower and produce metal shavings.

145. B — Phase 3 of vehicle extrication is disentanglement: the actual removal of vehicle components from around the patient using hydraulic tools and other equipment. Phase 1 is scene assessment, Phase 2 is stabilization, Phase 4 (or later) is patient removal. The phased approach ensures safety before any extrication work begins.

146. A — The Watch Out Situation "fighting fire on terrain you've not seen in daylight" addresses the hazard of unseen terrain features — cliffs, snags, unburned fuel pockets, drainages — that can entrap or injure crews. Night operations limit situational awareness even with portable lighting. Pre-shift terrain reconnaissance in daylight is the standard mitigation.

147. C — For a patient showing signs of stroke (facial droop, slurred speech, arm weakness — the Cincinnati Prehospital Stroke Scale), noting the time of symptom onset and rapid transport to a stroke-capable hospital are the most important actions. The time window for thrombolytic therapy depends on accurate onset documentation. Field aspirin and supine positioning are contraindicated in suspected stroke.

148. D — Single-rescuer CPR on a child (1 year to puberty) uses the same 30:2 ratio as adult single-rescuer CPR. Two-rescuer pediatric CPR uses 15:2 to allow more frequent ventilations. The simplification to 30:2 for lay rescuers and single-provider professionals improves recall and quality.

149. B — The warm zone at a hazmat incident is the area where decontamination is performed, located between the hot zone (contamination present) and the cold zone (uncontaminated support area). It exists to contain contamination and protect the cold zone from exposure as personnel and equipment are decontaminated. Zone designation is a fundamental hazmat site organization element.

150. C — Spalling of concrete observed by a fire investigator indicates localized high temperatures during the fire. Moisture trapped within the concrete heats and converts to steam, creating internal pressure that breaks the surface in flakes and chips. Spalling patterns help investigators identify areas of intense fire involvement.