

*A firefighting study guide consisting of 900 multiple choice questions.*

## **Strategic and Tactical Considerations on the Fireground STUDY GUIDE - Fourth Edition**

by ret. Deputy Chief James P. Smith

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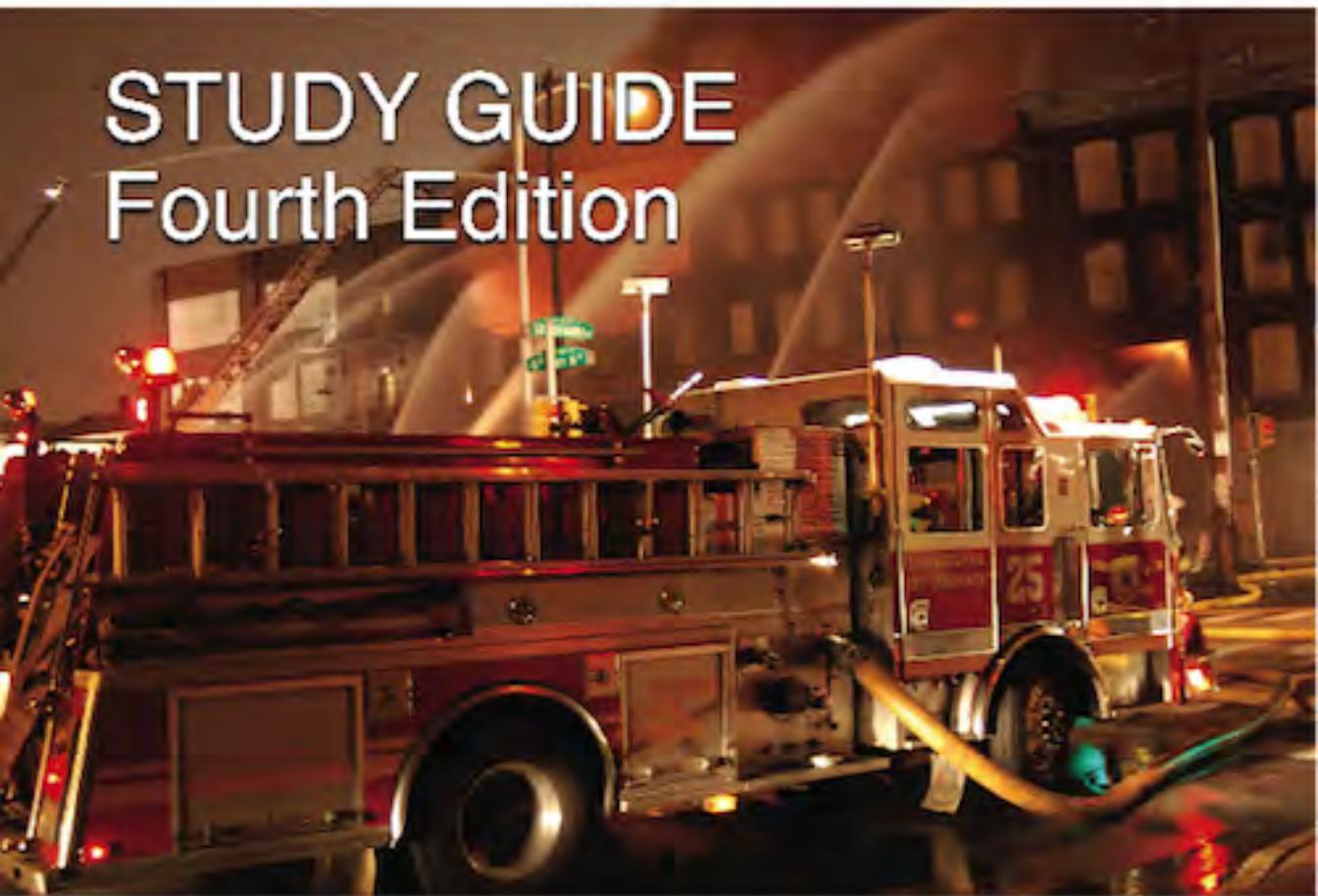
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# Strategic and Tactical Considerations on the Fireground

**STUDY GUIDE**  
Fourth Edition



**By Deputy Chief James P. Smith, ret.  
Philadelphia Fire Department**

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**Fourth Edition**

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James P. Smith is a retired Deputy Fire Chief with the Philadelphia, PA, Fire Department. He started his career in 1966 and retired in 2007 and held every civil service rank within the department. He currently serves with the Atlantic County All-Hazard Incident Management Team as their Safety Officer. He is an adjunct instructor at the National Fire Academy and the Emergency Management Institute in Emmitsburg, MD. He has developed programs on building construction, building collapse, firefighter safety, incident command, high-rise firefighting operations, church fires, and strategy and tactics, and presents seminars nationwide. He is published in various national publications and is contributing editor for *Firehouse* magazine, fire studies column. He is the author of the book *Strategic and Tactical Considerations on the Fireground*, fourth edition for which this study guide is written. He can be contacted at JPSmithPFD@aol.com

## **DEDICATION**

This book is dedicated to the fine firefighters that I have worked with in my career especially those who have lost their lives in the line of duty.

I have received advice and guidance from many individuals that have assisted me on and off of the fireground. This is especially true of my friend and aide for over 20 years Charlie Armstrong who was really the brains behind the scenes, Deputy Chief Bill Shouldis and my son Jim Smith, Chief of the Ocean City New Jersey Fire Department who have always been there to assist me in any endeavor and provided great advice in writing my textbook.

And to my grandchildren Ashley, Tyler, Justin, Brendan and Sarah who brighten my life by their presence.

## **DISCLAIMER**

This publication is designed to provide information that might be useful in developing firefighting strategies and tactics. It is intended only as an informational reference volume, and the reader is expressly cautioned to use all safety precautions, and to take appropriate steps to avoid hazards when engaging in the activities described within.

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This study guide includes 900 questions from the book *Strategic and Tactical Considerations on the Fireground, Fourth Edition*. Guides 1, 2, 3, and 4 cover Chapters 1 through 5. Guides 5, 6, 7, and 8 cover Chapters 6 through 11. Guides 4 and 8 are meant to be a midterm guide for the covered chapters. Guide 9 is a final review of the entire book. There is a key at the end of each guide listing the correct answer and a reference page(s) in the text to review the data.

## INTRODUCTION

This study guide is meant as an accompaniment to the book *Strategic and Tactical Considerations on the Fireground, Fourth Edition* written by retired Deputy Chief James P. Smith of the Philadelphia, PA, Fire Department and published by Pearson. It is not meant to be an all-inclusive text or to answer all-encompassing questions; it is meant to reinforce the text after it is read. In many cases the questions are narrow in design and emphasize specific points made within the text.

I strongly recommend that the text be read first, and then this study guide be used to reinforce it.

Naturally there are many methods of studying. An excellent way is not to use the study guide as a test; instead, without reading each question, mark the correct answer as noted in the key at the end of each set of questions. Then study the question and the correct answer(s). This permits one to study only correct information. The premise is that if you test your knowledge by answering the questions as if taking a test, you may find yourself defending incorrect answers, which then could become part of your base of knowledge and lead you astray when confronted with an actual test.

In any case, use this study guide in the way that you feel will assist you in your firefighting endeavors, and above all else "Be Safe."



# Study Guide 1 Chapters 1 through 5

1. **The stage of fire when the oxygen or fuel starts to diminish is called:**
  - a. fully developed stage.
  - b. growth stage.
  - c. decay stage.
  - d. underdeveloped stage.
  - e. none of the above.
2. **The action required when a backdraft situation is recognized is to**
  - a. shout backdraft loudly and run away from the building.
  - b. announce over the radio that a backdraft is about to occur.
  - c. provide adequate ventilation above the fire.
  - d. only a and b.
  - e. all of the above.
3. **1) Preincident planning is a method of gathering facts about a building, or a process within a building.**  
**2) Preincident planning lets a fire department evaluate conditions and situations in its area of responsibility prior to an emergency.**
  - a. Both statements are true.
  - b. Both statements are false.
  - c. Only statement number one is true.
  - d. Only statement number two is true.
4. **1) Historical data enables a fire department to select the most critical properties or specific problems in our community that should be preplanned.**  
**2) Preplanning data should assist a fire department in analyzing potential problems and developing a plan of action based upon what may occur.**
  - a. Both statements are true.
  - b. Both statements are false.
  - c. Only statement number one is true.
  - d. Only statement number two is true.
5. **1) Responders should review and update preplan information during site visits.**  
**2) The scheduling of multiple dates for site visitations so all fire department members can visit special preplanned sites is not necessary since the data should be incorporated into company drills to permit a constant refresher for all members.**
  - a. Both statements are true.
  - b. Both statements are false.
  - c. Only statement number one is true.
  - d. Only statement number two is true.

6. 1) **Wire-glass windows may crack from radiant heat.**  
2) **Smoke-proof doors and smoke-removal systems can assist in minimizing evacuation problems.**
- a. Both statements are true.
  - b. Both statements are false.
  - c. Only statement number one is true.
  - d. Only statement number two is true.
7. 1) **Resource utilization includes securing the services of outside agencies, such as the police, Red Cross, private security companies, public works, public health, utilities, or Federal, State, or local agencies.**  
2) **Outside agencies should not be used for evacuation purposes at incidents attended by the fire department.**
- a. Both statements are true.
  - b. Both statements are false.
  - c. Only statement number one is true.
  - d. Only statement number two is true.
8. **Implementation of a preplan during a simulated exercise can be used to adjust the preplan. It is beneficial to know:**
- a. What problems the fire department encountered.
  - b. If the community was involved in the exercise, were there any problems?
  - c. Did the plant or facility find any discrepancies in the plan?
  - d. Only a and b.
  - e. All of the above.
9. **According to the National Fire Academy's fire flow formula, for a fire involving 25 percent of the first floor of a 3-story building that is 30-feet by 40-feet with exterior exposures on two sides the fire flow would be**
- a. 100 gallons per minute.
  - b. 200 gallons per minute.
  - c. 400 gallons per minute.
  - d. 500 gallons per minute.
  - e. None of the above.
10. **Accordingly to the National Fire Academy's fire flow formula, if an exterior exposure becomes involved in fire what amount of fire flow should be added to the original fire flow?**
- a. 10-percent of the original fire flow.
  - b. 15-percent of the original fire flow.
  - c. 25-percent of the original fire flow.
  - d. 50-percent of the original fire flow.
  - e. None of the above.

11. 1) **If the National Fire Academy's fire flow requirements for water supply exceed the fire flow capability of available resources, a defensive mode of operation usually is required.**
- 2) **Situations will occur where fire is attacking lightweight structural components and, though there is a sufficient water supply and resources at the scene, the conditions will be too dangerous for an offensive attack.**
- a. Both statements are true.  
b. Both statements are false.  
c. Only statement number one is true.  
d. Only statement number two is true.
12. 1) **Company officers can be successful if they praise their firefighters' good behavior publicly and criticize their mistakes privately.**
- 2) **A company officer, when reviewing a misdeed with a firefighter, must ensure that the discussion focuses on the mistake that was made and not become a discussion of personalities.**
- a. Both statements are true.  
b. Both statements are false.  
c. Only statement number one is true.  
d. Only statement number two is true.
13. 1) **Safe procedures will occur on an incident scene if the company officer allows the firefighters to perform their assignments without interference from the company officer.**
- 2) **The implementation of safety in practice evolutions will carry over to the emergency scene.**
- a. Both statements are true.  
b. Both statements are false.  
c. Only statement number one is true.  
d. Only statement number two is true.
14. 1) **Delegation permits subordinates to assume responsibility and to make decisions. It permits a supervisor to assess the skills of subordinates, and can lead to suggestions on how they can improve.**
- 2) **Delegation is a necessary training process whereby company officers can learn the duties and responsibility of the chief officer.**
- a. Both statements are true.  
b. Both statements are false.  
c. Only statement number one is true.  
d. Only statement number two is true.

15. 1) **The ability to command an incident scene takes preparation and development on the part of the Incident Commander.**  
2) **Command is a demanding position that often needs decisions to be made by a committee.**  
a. Both statements are true.  
b. Both statements are false.  
c. Only statement number one is true.  
d. Only statement number two is true.
16. 1) **Leadership starts with the ability to possess self-discipline and one who can recognize potential incident problems.**  
2) **When indecisive orders are issued, they leave doubt in the minds of those on the receiving end of those orders and can lead subordinates to question their validity.**  
a. Both statements are true.  
b. Both statements are false.  
c. Only statement number one is true.  
d. Only statement number two is true.
17. 1) **Firefighters who realize they are a prime consideration of the Incident Commander in his or her decision making process will often give that extra effort to ensure success of their assignments.**  
2) **The lessons learned from an incident in another jurisdiction are just as helpful in enabling us to prepare for a similar occurrence in our area.**  
a. Both statements are true.  
b. Both statements are false.  
c. Only statement number one is true.  
d. Only statement number two is true.
18. **ICS allows emergency responders:**  
a. An organizational structure adaptable to any emergency or incident to which response agencies would be expected to respond.  
b. A system applicable and acceptable to users throughout the country.  
c. Readily adaptable to new technology.  
d. Ability to expand in a logical manner from an initial fire attack situation into a major incident.  
e. All of the above.
19. **ICS allows emergency responders:**  
a. Basic common elements in organization, terminology, and procedures.  
b. Implementation with the least possible disruption to existing systems.  
c. Effectiveness in fulfilling all management requirements costs.  
d. All of the above.  
e. None of the above.

20. **How many interactive components does ICS have?**
- a. 5.
  - b. 6.
  - c. 7.
  - d. 8.
  - e. 9.
21. **The ICS interactive components provide the basis for an effective ICS concept of operation. These components include:**
- a. Common terminology.
  - b. Modular organization.
  - c. Integrated communications.
  - d. Unified Command structure.
  - e. All of the above.
22. **The ICS interactive components provide the basis for an effective ICS concept of operation. These components include:**
- a. Consolidated action plans.
  - b. Manageable span of control.
  - c. Designated incident facilities.
  - d. Comprehensive resource management.
  - e. All of the above.
23. **ICS requires common terminology which includes:**
- a. Major organizational functions.
  - b. Units that are predesignated and titled.
  - c. Terminology is standard and consistent.
  - d. Each incident should be named.
  - e. All of the above.
24. **Common terminology in ICS requires that common names are established and used for**
- a. all personnel.
  - b. equipment.
  - c. resources conducting tactical operations.
  - d. for all facilities in and around the incident area.
  - e. all of the above.
25. 1) **When units are designated a function they will no longer use their standard call letters. They will adopt their new designation for all communications.**
- 2) **If Engine 1's officer is assigned as Division 1 Supervisor he or she will use Engine 1 as the call sign for all radio communications and not Division 1.**
- a. Both statements are true.
  - b. Both statements are false.
  - c. Only statement number one is true.
  - d. Only statement number two is true.

26. 1) **The ICS organizational structure develops in a modular fashion from the top down at any incident.**  
2) **The functional areas, which are implemented as the need develops, are Command, Operations, Logistics, Planning and Finance/Administration.**
- Both statements are true.
  - Both statements are false.
  - Only statement number one is true.
  - Only statement number two is true.
27. **The command function within ICS may be conducted in two general ways:**
- 1) **Single command may be applied when there is no overlap of jurisdictional boundaries.**
  - 2) **Unified Command may be applied when the incident is within one jurisdictional boundary, but more than one agency shares management responsibility.**
- Both statements are true.
  - Both statements are false.
  - Only statement number one is true.
  - Only statement number two is true.
28. **Every incident needs an incident action plan (IAP). Written IAP's usually are required when:**
- The incident is long duration or involve multiple operational periods.
  - When multiple jurisdictions are involved in the response.
  - It is required by agency policy.
  - All of the above.
  - None of the above.
29. **Span of control refers to the number of personnel reporting to any given individual. Optimal span of control in the ICS is?**
- Three.
  - Four.
  - Five.
  - Six.
  - Seven.
30. **Designated incident facilities include:**
- Command post.
  - Incident base.
  - Staging area.
  - None of the above.
  - All of the above.

- 31. The Incident Command System is a combination of:**
- a. Personnel.
  - b. Facilities.
  - c. Equipment.
  - d. Communications.
  - e. All of the above.
- 32. The Command Staff consists of:**
- a. Operations Officer.
  - b. Safety Officer.
  - c. Liaison Officer.
  - d. All of the above.
  - e. Only b and c above.
- 33. An incident scene where there is a response of multiple agencies demands a point of contact person for these agencies. This function is best performed by the:**
- a. Safety Officer.
  - b. Incident Commander.
  - c. Liaison Officer.
  - d. Information Officer.
  - e. Finance Officer.
- 34. A command post should be located**
- a. at a vantage point from which to view the incident.
  - b. with a view of the front and the most critical of the two sides of the structure.
  - c. with a view of the direction toward which a fire may spread.
  - d. only a and b.
  - e. all of the above.
- 35. Dispatch can use the status report to**
- a. prepare for move-ups of companies.
  - b. notify mutual-aid companies of the situation.
  - c. pass along information to senior officers who may have response duties.
  - d. only a and c.
  - e. all of the above.
- 36. A final status report should be given**
- a. when the chief decides to give the report.
  - b. at the time a fire is placed under control.
  - c. when the fire is completely extinguished.
  - d. after overhaul is completed.
  - e. during the salvage operation.

37. **A method must be in place to clear a radio band if an important message has to be given. Which of the following methods can accomplish this?**
- a. Emergency traffic.
  - b. Mayday.
  - c. Priority.
  - d. Only a and b.
  - e. All of the above.
38. **In regards to a formal written incident action plan:**
- a. Forms 201, 202, 203, 204, 205, 206 and 208 are all part of the plan.
  - b. Forms 201, 202, 203, 204, 205, 206, 208, 215 and 215A are all part of the plan.
  - c. Forms 202, 203, 204, 205, 206 and 208 are all part of the plan.
  - d. Forms 201, 215 and 215A are all part of the plan.
  - e. None of the above.
39. **The command sequence is based on how many levels?**
- a. 2.
  - b. 3.
  - c. 4.
  - d. 5.
  - e. 6.
40. **Incident stabilization includes**
- a. confining the fire to as small an area possible.
  - b. stabilizing a patient on a medical response.
  - c. stopping a leak at a hazardous materials incident .
  - d. only a and c.
  - e. all of the above.
41. **Size-up**
- a. gathers information for the development of strategic goals.
  - b. is a mental process weighing all factors of the incident against the available resources.
  - c. can be looked at as solving a problem.
  - d. only b and c.
  - e. all of the above.
42. **A 360-degree walk-around**
- a. can be accomplished by actually walking around the incident scene.
  - b. can be accomplished by driving around the scene in an apparatus or chief's vehicle.
  - c. is not necessary if not responding on a multi-unit response.
  - d. only a and b.
  - e. all of the above.

43. **Water supply may be supplemented by**
- a. having the Water Company increase the pressure on the hydrant systems.
  - b. using a private hydrant system.
  - c. having secondary hydrant systems.
  - d. only b and c.
  - e. all of the above.
44. **The most important factor of size-up is**
- a. water supply.
  - b. sufficient number of firefighters.
  - c. life safety.
  - d. only b and c.
  - e. all of the above.
45. 1) **Narrow aisles, high-piled stock and heavy smoke conditions assist firefighters in finding a fire.**
- 2) **High ceilings can cause fires to go undetected for a longer period of time and allow fire extension.**
- a. Both statements are true.
  - b. Both statements are false.
  - c. Only statement number one is true.
  - d. Only statement number two is true.
46. **An Incident Commander can request additional units for the following reasons.**
- a. To accomplish a specific assignment.
  - b. To relieve units already operating at the scene.
  - c. To remain in staging for anticipated problems.
  - d. Only b and c.
  - e. All of the above.
47. **When considering the size-up factor “weather”**
- a. reduced hydrant pressure may occur due to illegally opened hydrants.
  - b. heat and high humidity can drain the strength of firefighters.
  - c. extreme heat will require more frequent relief for firefighters.
  - d. only b and c.
  - e. all of the above.
48. **The size-up factor “height” should consider**
- a. any structure more than one story in height.
  - b. the floors above the fire will pose a threat due to possibility of vertical spread of fire.
  - c. attached or adjacent structures of equal or greater height as immediate exposures.
  - d. only b and c.
  - e. all of the above.

49. **In order to know how to fight a fire, the contents of the fire building must be determined. Signs on the exterior of the building can be helpful. Highly combustible stock produces a high rate of fire spread, and certain manufacturing processes create situations allowing flash fires or rapid spread. The previous statement would apply to which size-up factor?**
- a. Auxiliary appliances.
  - b. Exposures.
  - c. Weather.
  - d. Time.
  - e. Occupancy.
50. **Time can affect our response due to**
- a. rush hour traffic in and around cities.
  - b. seasonal shopping in downtown shopping districts and malls.
  - c. seasons of the year may have increased fire loading.
  - d. only a and b.
  - e. all of the above.
51. **In regard to strategy:**
- a. Problems identified through size-up can be solved by implementing the necessary strategies.
  - b. Many firefighters group strategy, tactics, and tasks together
  - c. Tactics achieve the strategies.
  - d. Only a and c.
  - e. All of the above.
52. **In regard to strategy:**
- a. It should be viewed as overall "goals" and "what" you want to accomplish.
  - b. It accomplishes the tasks portion of the command sequence
  - c. There is no specific definition.
  - d. Only a and b.
  - e. All of the above.
53. **Exposure protection considers the potential for fire to involve**
- a. internal exposures.
  - b. external exposures.
  - c. the immediate fire area.
  - d. only a and b.
  - e. all of the above.
54. **Overhauling ensures that**
- a. all fire has been extinguished.
  - b. areas where fire could still be burning are checked.
  - c. smoldering contents are removed to the exterior.
  - d. only b and c.
  - e. all of the above.

- 55. Constant reevaluation of an incident is necessary to ensure**
- a. that the strategies, tactics and tasks are accomplishing the needed goals.
  - b. that the Incident Commander keeps busy until the fire is extinguished.
  - c. that legal ramifications will be met, and that the fire department will not be liable should any errors occur at an incident.
  - d. only a and c.
  - e. all of the above.
- 56. Crew Resource Management (CRM) was initially developed by:**
- a. United States Marine Corps.
  - b. United States Army.
  - c. National Fire Academy.
  - d. Emergency Management Institute.
  - e. Airline industry.
- 57. In regard to hose-line placement in occupied buildings**
- a. the first hose-line should be placed between the fire and the occupants.
  - b. the second hose-line can be used to back up the first hose-line.
  - c. the third hose-line can protect any secondary exits.
  - d. only a and c.
  - e. all of the above.
- 58. Probably no other component is as important in achieving success at an incident scene as the proper placement of the hose-lines. The Incident Commander must realize that**
- a. our ability to control and extinguish a fire often is dependent solely on this factor.
  - b. the size of the fire will dictate the number and size of hose-lines required.
  - c. for an interior attack to be successful, units must be able to advance the hose-line to the seat of the fire.
  - d. only a and c.
  - e. all of the above.
- 59. In regard to hose-line usage:**
- a. Ventilation allows the hose-line crew to advance into the fire area.
  - b. If ventilation has not occurred, the opening of the hose-line into a closed room or fire area will make it untenable to fight the fire.
  - c. When advancing a hose-line and fire is encountered, a solid stream should be played on the ceiling and quickly rotated around the room.
  - d. Only a and b.
  - e. All of the above.

60. **In regard to exposures**
- a. the ability to protect exposures will be in direct proportion to the distance between the exposure and the fire buildings.
  - b. frame structures create the greatest challenge due to the large amount of combustible material.
  - c. where adjoining buildings are encountered, the possibility of extension is greatly reduced.
  - d. only a and b.
  - e. all of the above.
61. **A hose stream operating at an exterior fire operation that is not hitting the fire**
- a. is ineffective.
  - b. steals water from other appliances.
  - c. causes unnecessary damage and can further weaken the structure.
  - d. only a and c.
  - e. all of the above.
62. **If a fire is beyond the ability of hand-lines to control, master streams can be used to knock down the fire in a "blitz" attack. After knockdown, the building can be checked for structural stability and, if sound, an interior attack then can commence. In this particular instance the mode of attack employed is referred to as**
- a. offensive.
  - b. defensive.
  - c. offensive/defensive.
  - d. defensive/offensive.
  - e. nonintervention.
63. **In determining strategy the Incident Commander must**
- a. take a proactive approach considering the potential for immediate fire spread.
  - b. decide what can reasonably be accomplished.
  - c. know what resources are needed.
  - d. only a and c.
  - e. all of the above.
64. 1) **It is seldom necessary to stretch a hose-line larger than 1½-inch or 1¾-inch into dwelling units.**
- 2) **The 1½-inch or 1¾-inch hose-line can be ineffective or less effective when fighting fires in commercial properties containing a heavy fire load.**
- a. Both statements are true.
  - b. Both statements are false.
  - c. Only statement number one is true.
  - d. Only statement number two is true.

- 65. The selection of the number and size of hose-lines must consider**
- a. the type of fire.
  - b. the size of the fire.
  - c. the mode of attack.
  - d. only a and b.
  - e. all of the above.
- 66. The most effective method of fire control and life safety in any structure is:**
- a. A fully staffed and properly trained fire department.
  - b. A water system with adequate sized water mains and a sufficient number of hydrants.
  - c. A properly designed and installed sprinkler system.
  - d. Aggressive and well trained firefighters.
  - e. Fire departments that have specialized equipment and advanced training facilities.
- 67. 1) A one-directional search of a room should be made by keeping close to the walls and reaching out as the room is encircled.**
- 2) Thermal imaging is of little help in search and rescue operations.**
- a. Both statements are true.
  - b. Both statements are false.
  - c. Only statement number one is true.
  - d. Only statement number two is true.
- 68. In regard to search and rescue, the rescuers should use**
- a. full protective gear.
  - b. a hand tool, light, and portable radio.
  - c. a protective hose-line is required of all teams.
  - d. only a and b.
  - e. all of the above.
- 69. In regard to laddering**
- a. the front of the fire building should be reserved for the truck company.
  - b. the first-due engine should either stop before reaching the front of the fire building or pull past it to permit access for the truck.
  - c. the front of the fire building places the truck in a position for ready access of the portable ladders on the truck.
  - d. only a and b.
  - e. all of the above.

70. 1) **A ladder placed to gain access to a roof should extend at least three rungs above the roof.**  
2) **A ladder placed to play a stream of water from a hose-line into a window should have the head of the ladder resting on the wall above the opening.**  
a. Both statements are true.  
b. Both statements are false.  
c. Only statement number one is true.  
d. Only statement number two is true.
71. 1) **When the base of the ladder is set too close to the building, the top of the ladder will tend to pull away from the building as the climber nears the head or top of the ladder.**  
2) **When the base of the ladder is set too far from the building, the base will tend to creep or walk away from the building.**  
a. Both statements are true.  
b. Both statements are false.  
c. Only statement number one is true.  
d. Only statement number two is true.
72. **Many fire departments paint the tips of their ladders with fluorescent paint to**  
a. allow each truck company to identify its ladders.  
b. allow firefighters to locate the ladder easily when operating on a roof.  
c. to prevent deterioration of the tips of the ladders.  
d. only a and b.  
e. all of the above.
73. **In regard to ventilation:**  
a. It is a 'must' of structural firefighting.  
b. Addressing ventilation as an afterthought leads to poor fireground operations.  
c. If no civilians are endangered, ventilation should be done after a charged hose-line is laid.  
d. Only a and b.  
e. All of the above.
74. **When performing roof ventilation**  
a. skylights should be removed intact.  
b. falling glass from skylights can injure firefighters operating below.  
c. if unable to completely remove a skylight, it should be broken and pulled back onto the roof.  
d. only a and b.  
e. all of the above.

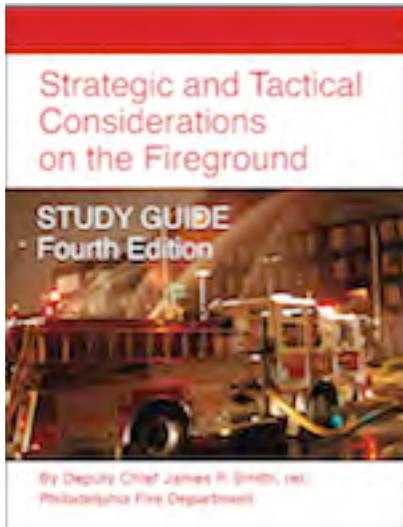
75. **Negative ventilation is accomplished by**
- placing fans to push the smoke or toxic fumes from a building.
  - using fog nozzles to push smoke or toxic fumes from a building.
  - placing fans to pull the smoke or toxic fumes from a building.
  - only a and b above.
  - all of the above.
76. **Fire burning through a roof that is too weak to support firefighters should**
- be saturated with water from ladder pipes and tower ladders to protect surrounding buildings.
  - be allowed to burn through the roof to create a ventilation opening.
  - be cooled with hose-lines from adjoining roofs.
  - only a and c.
  - all of the above.
77. 1) **Overhaul is "the checking of a fire scene to determine that no fire remains." A close examination should be made to ensure that every location where hidden fire could still be burning is thoroughly searched.**
- 2) **A rekindled fire often is attributed to poor overhaul practices.**
- Both statements are true.
  - Both statements are false.
  - Only statement number one is true.
  - Only statement number two is true.
78. **In regard to water damage encountered during firefighting and overhauling**
- the best way to minimize water damage is strict control of all hose-lines.
  - when operating a hose-line the firefighter should open the nozzle when fire is encountered and close it after the fire has been knocked down.
  - water damage should not be a concern of firefighters.
  - only a and b.
  - all of the above.
79. **In regard to firefighter safety during overhauling:**
- 1) **Portable lighting should be used when overhauling building interiors during nighttime operations, though it is not necessary during daytime operations.**
- 2) **It should be assumed that, since the smoke has lifted at a fire scene, it is safe to remove self-contained breathing apparatus.**
- Both statements are true.
  - Both statements are false.
  - Only statement number one is true.
  - Only statement number two is true.

80. **In regard to concrete:**
- a. It can spall under some conditions.
  - b. Cracks can weaken a concrete wall.
  - c. It will withstand any type of fire condition.
  - d. Only a and b.
  - e. All of the above.
81. **When operating on an insulated bar joist roof, it is sometimes difficult to determine the location of a fire below since**
- a. the usual visible signs found on a non-insulated roof may not be present.
  - b. it is a built up roof and it is further from the fire.
  - c. the bar joist are spaced further apart than 24-inches on center.
  - d. only a and c.
  - e. all of the above.
82. **Ordinary constructed buildings contain walls constructed of**
- a. concrete.
  - b. stone.
  - c. brick.
  - d. all of the above.
  - e. none of the above.
83. **In ordinary constructed buildings the bearing walls normally will be**
- a. the shortest walls in length.
  - b. the longest walls in length.
  - c. the front and rear walls.
  - d. the side walls.
  - e. none of the above.
84. **Void spaces in ordinary constructed buildings are**
- a. commonly found.
  - b. rarely found.
  - c. only found in balloon construction.
  - d. only a and c.
  - e. none of the above.
85. **Heavy timber construction**
- a. provides an excellent degree of fire resistance.
  - b. provides a minimal amount of fire resistance.
  - c. affords firefighters time for an aggressive attack on a fire.
  - d. only a and c.
  - e. none of the above.

- 86. In regard to heavy timber construction**
- a. the exterior walls are of masonry and can be up to eight stories in height.
  - b. larger structures contain fire walls.
  - c. the floors are built to carry heavy loads.
  - d. only b and c.
  - e. all of the above.
- 87. The heavy timber building**
- a. as built, is not prone to collapse.
  - b. will withstand attack by fire and give firefighters time to control and extinguish a fire.
  - c. may have been modified or be in a deteriorated condition.
  - d. only a and b.
  - e. all of the above.
- 88. When fighting fires in heavy timber buildings**
- a. a fire above the first floor will be fought initially from the stairways.
  - b. if the fire threatens the floor above, a hose-line should be immediately stretched to that location.
  - c. there is no need to stretch hose-lines to back up those already in place.
  - d. only a and b.
  - e. all of the above.
- 89. The characteristics of log frame construction are**
- a. logs are used in log cabin homes and small commercial buildings.
  - b. the logs may be finished on the interior or covered with paneling or drywall.
  - c. under heavy fire conditions the walls usually withstand the effects of the fire.
  - d. only a and b.
  - e. all of the above.
- 90. Frame row dwellings as a rule**
- a. use the adjoining sidewalls as bearing walls.
  - b. have more support under fire conditions than a free-standing building.
  - c. will magnify the exposure problem due to the interconnection of buildings.
  - d. only b and c.
  - e. all of the above.
- 91. The exterior walls of frame buildings**
- a. can include materials that will supply fuel to a fire.
  - b. can include noncombustible finishes.
  - c. can include stucco, stone facing, or brick veneer.
  - d. only b and c.
  - e. all of the above.

92. **The parallel chord truss is used in**
- lightweight truss only.
  - heavy timber truss only.
  - lightweight and heavy timber truss.
  - bowstring truss.
  - none of the above
93. **Which part of a structure is the most important factor in determining whether a building will fail under fire conditions?**
- Bearing walls.
  - Floors.
  - Roof.
  - Nonbearing walls.
  - None of the above.
94. **Timber truss roofs that contain sloping hip rafters**
- have four bearing walls.
  - use the side walls as the only bearing walls.
  - can have a violent collapse of all four walls.
  - only a and c.
  - all of the above.
95. **When lightweight building components are used in a building**
- they are dependent on proper installation and bracing.
  - trusses are built with set bearing points.
  - trusses fail more readily than conventional construction when under attack by fire.
  - only a and c.
  - all of the above.
96. **Collapse of wooden “I” beams occurs due to weakening of the beam by**
- improper installation and alterations.
  - openings in the web that are too large.
  - openings in the web that are too close together.
  - only a and b.
  - all of the above.
97. **A problem for responding firefighters is that lightweight building components are especially dangerous during two distinct time periods:**
- Under construction.
  - Under demolition.
  - During transportation to the construction site.
  - Only a and b.
  - All of the above.

- 98. Interconnection of void spaces within buildings containing parallel chord truss assemblies**
- a. contains a sufficient amount of air to sustain a fire.
  - b. is not a problem for firefighters.
  - c. can combine horizontal truss voids with vertical voids.
  - d. only a and c.
  - e. all of the above.
- 99. In buildings containing lightweight building components a void space fire**
- a. may not be recognizable to the firefighters operating above.
  - b. may damage flooring where firefighters can easily fall through it.
  - c. if suspected in any concealed space, that area should be opened quickly.
  - d. only a and b.
  - e. all of the above.
- 100. There are a number of considerations for firefighters when confronted with a fire in a building that may use lightweight building components as structural members. They should**
- a. read a building for indicators that would denote the presence of a truss.
  - b. realize draft-stopping may add fuel to a fire..
  - c. recognize that triangular truss roof spaces are often used for storage.
  - d. only a and c.
  - e. all of the above.



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