Firefighting I

8705 36 weeks / 280 hours

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Acknowledgments

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Office of Career, Technical, and Adult Education
Virginia Department of Education

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Course Description

Suggested Grade Level: 10 or 11

Firefighting requires discipline and attention to academic and professional standards to successfully fight live fires, address hazardous-materials (HAZMAT) incidents, and conduct search-and-rescue operations. Students
will become familiar with the procedures, equipment, and technologies used by fire departments. This course challenges students academically, mentally, and physically and meets the standards of National Fire Protection Association (NFPA) 1001-2013 leading to the opportunity to obtain a Firefighter I certification.

Note: Students must be at least 16 years old (40-1.79.1 Code of Virginia) by the first day of the course offering. Enrollment also requires parental consent. Additional requirements, including cardiopulmonary resuscitation (CPR) and HAZMAT operations, are stipulated for those students seeking NFPA 1001-2013 Firefighter I certification.

As noted in Superintendent's Memo #058-17 (2-28-2017), this Career and Technical Education (CTE) course must maintain a maximum pupil-to-teacher ratio of 20 students to one teacher, due to safety regulations. The 2016-2018 biennial budget waiver of the teacher-to-pupil ratio staffing requirement does not apply.

Task Essentials Table

- Tasks/competencies designated by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (○) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (*) are sensitive.

<table>
<thead>
<tr>
<th>Task Number</th>
<th>8705</th>
<th>Tasks/Competencies</th>
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</thead>
<tbody>
<tr>
<td>Practicing Safety</td>
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<td></td>
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<tr>
<td>39</td>
<td>⊕</td>
<td>Identify common causes of death in the fire service.</td>
</tr>
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<td>40</td>
<td>⊕</td>
<td>Identify causes of back injuries and methods for preventing them.</td>
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<td>41</td>
<td>⊕</td>
<td>Identify slip, trip, and fall injuries and methods for preventing them.</td>
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<td>42</td>
<td>⊕</td>
<td>Outline the physical fitness standards for firefighters.</td>
</tr>
<tr>
<td>43</td>
<td>⊕</td>
<td>Identify classroom safety rules and procedures.</td>
</tr>
<tr>
<td>44</td>
<td>⊕</td>
<td>Define risk management.</td>
</tr>
<tr>
<td>45</td>
<td>⊕</td>
<td>Identify the features of conducting an organized rapid escape.</td>
</tr>
<tr>
<td>46</td>
<td>⊕</td>
<td>Identify procedures to follow when an entrapment occurs.</td>
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<td>47</td>
<td>⊕</td>
<td>Identify the importance of the NFPA standards to the fire service.</td>
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<tr>
<td>Practicing First Aid</td>
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<tr>
<td>48</td>
<td>⊕</td>
<td>Identify first-aid terms and abbreviations.</td>
</tr>
<tr>
<td>49</td>
<td>⊕</td>
<td>Demonstrate techniques for controlling bleeding.</td>
</tr>
<tr>
<td>50</td>
<td>⊕</td>
<td>Demonstrate methods for detecting and caring for those in shock.</td>
</tr>
<tr>
<td>51</td>
<td>⊕</td>
<td>Care for those with the various classifications of burns.</td>
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<tr>
<td>52</td>
<td>⊕</td>
<td>Demonstrate treatment for musculoskeletal injuries.</td>
</tr>
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<td>53</td>
<td>⊕</td>
<td>Demonstrate treatment for environmental emergencies.</td>
</tr>
<tr>
<td>54</td>
<td>⊕</td>
<td>Identify the types, symptoms, and treatments of poisoning.</td>
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<tr>
<td>55</td>
<td>⊕</td>
<td>Demonstrate care for conscious and unconscious patients until proper care arrives.</td>
</tr>
<tr>
<td>Practicing Cardiopulmonary Resuscitation (CPR) [Note: Must be delivered by an approved provider]</td>
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<td>56</td>
<td>⊕</td>
<td>Assess scene safety for the rescuer and the patient.</td>
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<td>57</td>
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<td>Demonstrate removal of a foreign body airway obstruction.</td>
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<td>⊕</td>
<td>Demonstrate one- and two-rescuer CPR.</td>
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<td>59</td>
<td>⊕</td>
<td>Operate an automated external defibrillator (AED).</td>
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<tr>
<td>60</td>
<td>⊕</td>
<td>Demonstrate rescue breathing.</td>
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<tr>
<td><strong>Introducing the Fire Service</strong></td>
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<td></td>
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<tr>
<td>61</td>
<td>✫</td>
<td>Define the firefighter’s function and responsibilities.</td>
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<tr>
<td>62</td>
<td>✫</td>
<td>Write a mission statement for the fire service.</td>
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<tr>
<td>63</td>
<td>✫</td>
<td>Describe the history of the fire service.</td>
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<td>64</td>
<td>✫</td>
<td>Outline the organizational structure of the fire service.</td>
</tr>
<tr>
<td>65</td>
<td>✫</td>
<td>Describe the effects of the Civil Rights Act of 1991 and the Americans with Disabilities Act (ADA) on the employment and supervision of firefighters.</td>
</tr>
<tr>
<td>66</td>
<td>✫</td>
<td>List rules and laws that regulate the fire service.</td>
</tr>
<tr>
<td>67</td>
<td>✫</td>
<td>Identify standard operating procedures (SOPs) and standard operating guides (SOGs) in the fire service.</td>
</tr>
<tr>
<td>68</td>
<td>✫</td>
<td>Develop an organizational chart for the National Incident Management System (NIMS).</td>
</tr>
<tr>
<td>69</td>
<td>✫</td>
<td>List the allied agencies that assist with fire department operations.</td>
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<td>70</td>
<td>✫</td>
<td>Describe employee assistance programs.</td>
</tr>
<tr>
<td>71</td>
<td>✫</td>
<td>Compare engine, truck, and rescue/squad company operations and responsibilities.</td>
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<td><strong>Understanding Fire Behavior</strong></td>
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<tr>
<td>72</td>
<td>✫</td>
<td>Define fire and its characteristics.</td>
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<tr>
<td>73</td>
<td>✫</td>
<td>Describe the fire tetrahedron and its importance in the suppression of fire.</td>
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<tr>
<td>74</td>
<td>✫</td>
<td>Identify sources of heat energy.</td>
</tr>
<tr>
<td>75</td>
<td>✫</td>
<td>Describe the burning process, the transmission of heat, and the products of combustion.</td>
</tr>
<tr>
<td>76</td>
<td>✫</td>
<td>Explain key terms related to fire behavior.</td>
</tr>
<tr>
<td><strong>Using Personal Protective Equipment (PPE) and Self-Contained Breathing Apparatus (SCBA)</strong></td>
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<td></td>
</tr>
<tr>
<td>77</td>
<td>✫</td>
<td>Identify the conditions that require the use of SCBA and full PPE.</td>
</tr>
<tr>
<td>78</td>
<td>✫</td>
<td>Identify the components of SCBA and PPE.</td>
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<tr>
<td>79</td>
<td>✫</td>
<td>Demonstrate proper use, inspection, and maintenance of SCBA and PPE.</td>
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<tr>
<td>80</td>
<td>✫</td>
<td>Demonstrate emergency procedures in the event of SCBA malfunction or failure.</td>
</tr>
<tr>
<td>81</td>
<td>✫</td>
<td>Define the relationship between PPE and national standards and regulations.</td>
</tr>
<tr>
<td>82</td>
<td>✫</td>
<td>Don and doff PPE within the recommended guidelines of the NFPA.</td>
</tr>
<tr>
<td><strong>Understanding Building Construction</strong></td>
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<tr>
<td>83</td>
<td>✫</td>
<td>Describe building construction methods and materials.</td>
</tr>
<tr>
<td>84</td>
<td>✫</td>
<td>Define the five types of building construction and their associated hazards.</td>
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<tr>
<td>85</td>
<td>✫</td>
<td>Predict a fire’s growth and development according to type of building construction.</td>
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<tr>
<td>86</td>
<td>✫</td>
<td>Identify indications of potential building collapse and collapse-zone evacuation procedures.</td>
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<td><strong>Using Fire Detection, Protective, and Communications Systems</strong></td>
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</tr>
<tr>
<td>87</td>
<td>✫</td>
<td>List procedures for citizens to report an emergency.</td>
</tr>
<tr>
<td>88</td>
<td>✫</td>
<td>Describe the local fire department’s emergency response procedures.</td>
</tr>
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<td>89</td>
<td>✫</td>
<td>Identify methods of receiving reports.</td>
</tr>
<tr>
<td>90</td>
<td>✫</td>
<td>Describe business and personal phone procedures.</td>
</tr>
<tr>
<td>91</td>
<td>✫</td>
<td>Perform radio communications.</td>
</tr>
<tr>
<td>92</td>
<td>✫</td>
<td>Identify the value of and need for protective systems to help preserve life and property.</td>
</tr>
<tr>
<td>93</td>
<td>✫</td>
<td>Identify types, components, and valve types of sprinkler systems.</td>
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<tr>
<td>94</td>
<td>✫</td>
<td>Halt the flow of water from an automatic sprinkler head.</td>
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<tr>
<td>95</td>
<td>✫</td>
<td>Describe the methods used to return a sprinkler system to service.</td>
</tr>
<tr>
<td>96</td>
<td>✫</td>
<td>Identify standpipe systems and connections.</td>
</tr>
<tr>
<td>97</td>
<td>✫</td>
<td>Describe the value of sprinkler systems to on-the-scene firefighting.</td>
</tr>
<tr>
<td>98</td>
<td>✫</td>
<td>Locate sprinkler connections.</td>
</tr>
<tr>
<td><strong>Using Water Supply, Hoses, and Nozzles</strong></td>
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<tr>
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</tr>
<tr>
<td>99</td>
<td>4</td>
<td>Describe types and uses of fire streams and hoses.</td>
</tr>
<tr>
<td>100</td>
<td>4</td>
<td>Operate various fire streams.</td>
</tr>
<tr>
<td>101</td>
<td>4</td>
<td>List the fundamental components of a modern water system.</td>
</tr>
<tr>
<td>102</td>
<td>4</td>
<td>List causes of friction loss in water mains.</td>
</tr>
<tr>
<td>103</td>
<td>4</td>
<td>Compare wet-barrel and dry-barrel hydrants.</td>
</tr>
<tr>
<td>104</td>
<td>4</td>
<td>Operate a hydrant.</td>
</tr>
<tr>
<td>105</td>
<td>4</td>
<td>Describe alternative static water sources.</td>
</tr>
<tr>
<td>106</td>
<td>4</td>
<td>Connect a fire department pump to a water supply.</td>
</tr>
<tr>
<td>107</td>
<td>4</td>
<td>Describe the procedures for loading and off-loading a mobile water supply apparatus.</td>
</tr>
<tr>
<td>108</td>
<td>4</td>
<td>Identify techniques for rolling, repacking, and deploying hose lines.</td>
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<tr>
<td>109</td>
<td>4</td>
<td>Identify use and maintenance of a fire hose.</td>
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</tbody>
</table>

**Practicing Fire-Suppression Techniques**

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<tr>
<td>110</td>
<td>4</td>
<td>Describe fire-extinguishment theory.</td>
</tr>
<tr>
<td>111</td>
<td>4</td>
<td>Outline fire-suppression techniques and measures.</td>
</tr>
<tr>
<td>112</td>
<td>4</td>
<td>Describe utility control and rescue operations involving electrical hazards.</td>
</tr>
<tr>
<td>113</td>
<td>4</td>
<td>Describe the classifications of fire and their corresponding extinguishment methods.</td>
</tr>
<tr>
<td>114</td>
<td>4</td>
<td>Identify types of foam for fire suppression.</td>
</tr>
<tr>
<td>115</td>
<td>4</td>
<td>Demonstrate the suppression of Class A and Class B fires, using a hose line.</td>
</tr>
<tr>
<td>116</td>
<td>4</td>
<td>Demonstrate the suppression of Class A, B, and C fires, using portable fire extinguishers.</td>
</tr>
<tr>
<td>117</td>
<td>4</td>
<td>Identify the types and ratings of portable fire extinguishers.</td>
</tr>
<tr>
<td>118</td>
<td>4</td>
<td>Identify the extinguishment theory for fighting wildland fires.</td>
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</tbody>
</table>

**Using Ladders**

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>119</td>
<td>4</td>
<td>Identify ladder types, parts, and safety features.</td>
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<tr>
<td>120</td>
<td>4</td>
<td>Perform ladder carries.</td>
</tr>
<tr>
<td>121</td>
<td>4</td>
<td>Perform ladder raises.</td>
</tr>
<tr>
<td>122</td>
<td>4</td>
<td>Describe maintenance, cleaning, and inspection procedures for ladders.</td>
</tr>
</tbody>
</table>

**Using Ropes**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>123</td>
<td>4</td>
<td>Differentiate between types of ropes and knots.</td>
</tr>
<tr>
<td>124</td>
<td>4</td>
<td>Demonstrate the types of knots required for hoisting or securing.</td>
</tr>
<tr>
<td>125</td>
<td>4</td>
<td>Describe maintenance, cleaning, and inspection functions for life-safety and utility rope.</td>
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</tbody>
</table>

**Following Forcible Entry Procedures**

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<tr>
<td>126</td>
<td>4</td>
<td>Identify types of forcible entry tools.</td>
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<tr>
<td>127</td>
<td>4</td>
<td>Demonstrate methods for forcing windows and doors.</td>
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<tr>
<td>128</td>
<td>4</td>
<td>Describe maintenance, cleaning, and inspection functions for forcible-entry tools.</td>
</tr>
<tr>
<td>129</td>
<td>4</td>
<td>Describe methods, components, and considerations of forcible entry.</td>
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</table>

**Following Rescue Procedures**

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<tr>
<td>130</td>
<td>4</td>
<td>Identify hazards associated with types of rescue situations.</td>
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<tr>
<td>131</td>
<td>4</td>
<td>Demonstrate victim-extrication, victim-lifting, and victim-movement processes.</td>
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<tr>
<td>132</td>
<td>4</td>
<td>Conduct primary and secondary searches in a structure.</td>
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</tbody>
</table>

**Understanding Ventilation**

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</thead>
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<tr>
<td>133</td>
<td>4</td>
<td>Describe the need for ventilation at a fire scene.</td>
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<tr>
<td>134</td>
<td>4</td>
<td>Identify the types of ventilation.</td>
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<tr>
<td>135</td>
<td>4</td>
<td>Demonstrate methods for creating horizontal, vertical, mechanical, and hydraulic ventilation.</td>
</tr>
<tr>
<td>136</td>
<td>4</td>
<td>Set up portable power plants and lighting equipment.</td>
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</tbody>
</table>

**Determining Salvage, Overhaul, and Cause of Fire**
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</thead>
<tbody>
<tr>
<td>137</td>
<td>+</td>
<td>Describe salvage and overhaul needs and techniques.</td>
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<tr>
<td>138</td>
<td>+</td>
<td>Describe the need for evidence preservation.</td>
</tr>
<tr>
<td>139</td>
<td>+</td>
<td>Identify methods for legally securing a building after emergency operations are complete.</td>
</tr>
<tr>
<td>140</td>
<td>+</td>
<td>Demonstrate use of salvage covers to protect property.</td>
</tr>
<tr>
<td>141</td>
<td>+</td>
<td>Describe maintenance, cleaning, and inspection functions for salvage and overhaul.</td>
</tr>
</tbody>
</table>

Adhering to HAZMAT Standards

| 142         | +    | Identify basic HAZMAT standards and resources for handling an incident. |
| 143         | +    | Identify hazardous materials that may be involved in terrorist attacks. |
| 144         | +    | Describe procedures for responding to a terrorist attack. |

Addressing Fire Prevention and Public Fire Education

| 145         | +    | Explain the programs, actions, and services that prevent the loss of life and property associated with fire and other risks to the community. |
| 146         | +    | Deliver a fire-safety education presentation. |
| 147         | +    | Research NFPA certification options and regional education opportunities. |

Legend: ✦ Essential  ○ Non-essential  ☐ Omitted

Curriculum Framework

Practicing Safety

Task Number 39

Identify common causes of death in the fire service.

Definition

Identification should include

- cancer
- heart attack (the most common) and stroke (stress)
- falls
- falling objects
- asphyxiation
- burns
- equipment failure
- exposure to chemicals.

Teacher resource:
Fire Fighter Cancer Foundation
Task Number 40

Identify causes of back injuries and methods for preventing them.

Definition

Identification should include

- causes of back injuries
  - improper lifting techniques
  - slips and falls
  - improper use of tools or equipment

- methods for preventing back injuries
  - keeping oneself fit
  - reporting existing impairments or injuries
  - training
  - lifting with one's legs, not with one's back.

Process/Skill Questions

- How does one determine the weight one can safely lift without risk of injury?
- How can one strengthen the back?
- What can cause muscle strains?
- How should one lift a heavy object/person?

Task Number 41

Identify slip, trip, and fall injuries and methods for preventing them.

Definition

Identification should include types of injuries caused by

- overexertion
- fatigue
- improper procedures
- misunderstanding an element within the accident chain (e.g., environment, human factors, equipment, event, injury).
The methods of preventing injuries should include:

- taking time to rest/rehabilitate
- monitoring air flow when using self-contained breathing apparatus (SCBA)
- following all departmental safety and task procedures
- analyzing other accidents and the accident chain
- training and improving technique.

**Process/Skill Questions**

- Why are slip, trip, and fall injuries so common in firefighting?
- How can improper attire cause injuries?
- What environmental elements can affect the occurrence of injuries? (e.g., snow)
- What is the importance of proper rehabilitation?
- What is the jurisdictional standard for rehabilitation?

**Task Number 42**

**Outline the physical fitness standards for firefighters.**

**Definition**

Outline should include:

- an annual health screening
- a fitness program
- nutritional education
- knowledge regarding the effects of drugs (both legal and illegal) and alcohol on physical performance.

**Teacher resources:**

- Critical Incident Stress Management (CISM)
- Mental Health First Aid for Fire and Emergency Medical Services (EMS)

**Process/Skill Questions**

- How does nutrition affect physical fitness?
- Where can information be found about maintaining well-being?
- Why are stretching, balance, and flexibility important in maintaining physical fitness?
- What is an annual health screening, and what are the benefits?
- What are some methods of coping with the loss of fellow firefighters?

**Task Number 43**

**Identify classroom safety rules and procedures.**

**Definition**
Identification should include

- refraining from actions that may result in a preventable accident
- reflecting school safety pledge/code/requirements
- adhering to posted classroom rules.

**Process/Skill Questions**

- Why are personal discipline and integrity important to firefighters?
- Why is it important to set a positive example for others?
- What personal characteristics affect education and learning?

**Task Number 44**

**Define risk management.**

**Definition**

Definition should include

- risk management as the process of minimizing the chance, degree, or probability of damage, loss, or injury
- the situations in which a firefighter may or may not risk his/her own life for the protection and safety of others or of property
- a description of **weighted risk**
- the risk management plan as a requirement of the National Fire Prevention Association (NFPA) and local jurisdiction.

**Process/Skill Questions**

- What could occur if a risk is too great?
- What is the relationship between risk and heroism?
- What can force firefighters to withdraw or terminate an operation?
- What is an accident? What is a preventable vs. nonpreventable accident?

**Task Number 45**

**Identify the features of conducting an organized rapid escape.**

**Definition**

Identification should include

- pre-planning
- reporting the need
- acknowledging the signal
- leaving behind all equipment
• escaping from a room, roof, or balcony
• using self-rescue
• using a ladder to escape
• reporting a successful escape.

Process/Skill Questions

• What is preplanning?
• What situations would require a rapid escape?
• Why is it important to get a personal accountability report (PAR) after a rapid escape?

Task Number 46

Identify procedures to follow when an entrapment occurs.

Definition

Identification should include

• signaling for help
• signaling for help/calling a Mayday
• assessing the situation (i.e., injuries, entrapment, immediate danger)
• assessing the condition of equipment and SCBA
• assessing self-extrication potential
• assessing remaining breathing time.

Process/Skill Questions

• Why is it imperative to remain calm in an entrapment situation?
• What are ways to signal for help?
• What is the local jurisdiction’s policy on calling/recognizing a Mayday?
• What is LUNAR?

Task Number 47

Identify the importance of the NFPA standards to the fire service.

Definition

Identification should include

• defining NFPA
• defining the organization’s objectives (i.e., to provide educational and performance guidelines to enhance uniform training).

Process/Skill Questions
• Why did the NFPA create standards?
• Why do NFPA standards need to be followed?
• Why do NFPA standards take precedence over local requirements?
• What would be required for a locality to fully adopt NFPA standards?

Practicing First Aid

Task Number 48

Identify first-aid terms and abbreviations.

Definition

Identification should include

• airway, breathing, circulation (ABCs)—the techniques involved in assessing airway, breathing, and circulation
• compressions, airway, breathing (CABs)—cardiac arrest or major bleeding
• signs—what the examiner can objectively see
• symptoms—what a patient subjectively complains of
• shock—a state in which the body is hypoperfused, resulting in inadequate oxygenation of cells, tissues, and organs.

Process/Skill Questions

• What occupations use medical terminology and vocabulary? How are signs commonly misunderstood?
• What are ways of verifying causes?
• Why is it important to be a good listener when dealing with a conscious subject?
• When should one switch from ABCs to CABs?

Task Number 49

Demonstrate techniques for controlling bleeding.

Definition

Demonstration should include the following steps:

• Apply direct pressure with a dressing, if possible, to the bleeding site, exerting firm, constant force (i.e., direct pressure on the wound).
• If bleeding continues, apply a tourniquet.

Process/Skill Questions
• What are the first steps a responder should take before encountering a patient?
• What precautions should be taken when dealing with a bleeding subject?
• How are biohazards handled at the conclusion of a call?
• How can the color of the blood help one to assess the situation?
• What is the proper use of a tourniquet?

Task Number 50

Demonstrate methods for detecting and caring for those in shock.

Definition

Demonstration should include identifying the signs of shock, such as

- restlessness and anxiety
- weak and rapid pulse
- cold and wet skin
- pale skin
- breathing irregularities
- dilation of the pupils
- complaint of thirst
- vomiting
- falling blood pressure
- decreased level of consciousness
- cardiovascular system failure.

Caring for those in shock should include

- conducting an ongoing scene survey and ensuring body substance isolation
- conducting a first responder assessment
- ensuring the airway is open
- ensuring that the patient is breathing and has a pulse, and if not, administering CPR
- treating injuries
- maintaining the patient’s body temperature
- putting the patient in a stable position
- providing comfort and reassurance to the patient.

Process/Skill Questions

- Why is it important to treat shock?
- What role does an altered mental state play in relation to shock?
- How can the elderly be convinced that they are in shock and that they need to seek medical attention?

Task Number 51
Care for those with the various classifications of burns.

Definition

Care should be determined by type of burn (e.g., thermal, chemical, electrical) and by burn extent (e.g., superficial, partial thickness, full thickness burns).

Process/Skill Questions

- What is the function of the skin?
- What type of dressing should be used on burns?

Task Number 52

Demonstrate treatment for musculoskeletal injuries.

Definition

Demonstration may include

- identifying signs and symptoms
  - obvious deformity to skeletal components of the body
  - bruising
  - lack of function or motion/flexibility in the components
- testing
  - pulse
  - movement
  - sensation
- treating
  - splinting
  - immobilizing methods.

Process/Skill Questions

- What are mechanisms of injury?
- When treating injuries, when should pulse, motor skills, and sensation be checked?

Task Number 53

Demonstrate treatment for environmental emergencies.

Definition

Demonstration should include environmental emergencies such as
• drowning
• envenomation (i.e., stings and bites)
• frostbite
• frostnip
• heat-related injuries such as
  o heat cramps
  o heat exhaustion
  o heatstroke.

Treatments should include

• gentle handling
• passive rewarming in a safe area
• removal of wet clothing and jewelry
• bandaging and splinting
• moving to a cooler area
• passive cooling of the body.

Process/Skill Questions

• What is the relationship between water temperature and feasible revival time?
• What is the proper care for an embedded stinger?

Task Number 54

Identify the types, symptoms, and treatments of poisoning.

Definition

Identification should include

• types
  o ingestion
  o inhalation
  o injection
  o absorption
• symptoms
  o altered mental state
  o increasing heart rate
  o seizure
  o decreasing respiratory rate
  o respiratory arrest
  o hypotension
  o cardiac arrest
  o breath odor
  o diarrhea
  o nausea
  o vomiting
- skin discoloration or irritation
- chemical burns around the mouth
- abdominal pain
- chills
- fever
- pain
- headache

- treatments
  - establishing scene safety
  - monitoring life-threatening problems (i.e., ABCs)
  - requesting additional resources and medical assistance
  - contacting poison control.

**Process/Skill Questions**

- What is the classification for overdose and alcohol poisoning?
- What safety precautions should firefighters take when entering a suspected inhalation emergency?

**Task Number 55**

**Demonstrate care for conscious and unconscious patients until proper care arrives.**

**Definition**

Demonstration of care for the conscious should include

- establishing scene safety
- checking the ABCs
- reassuring/comforting the patient
- placing the patient in a position of comfort.

Demonstration of care for the unconscious should include

- establishing scene safety
- checking the ABCs
- placing the patient in a recovery position
- administering ongoing reassessment of the patient’s condition
- continuing with patient care (e.g., checking for additional injuries).

**Process/Skill Questions**

- How can witnesses or bystanders be helpful when caring for patients, especially those who are unconscious?
- What must be considered prior to moving a patient?
Task Number 56
Assess scene safety for the rescuer and the patient.

Definition
Assessment should include
- determining environmental cause-and-effect regarding the patient’s situation
- using observation techniques
- asking pertinent questions
- remaining calm and in control.

Process/Skill Questions
- What environmental issues are firefighters likely to encounter upon arrival at a scene?
- What pre-arrival information can be beneficial to the responder?
- Why should firefighters be familiar with handling animals?
- What is the Good Samaritan law, and what are some of its effects?

Task Number 57
Demonstrate removal of a foreign body airway obstruction.

Definition
Demonstration should include clearing the obstructed airway in conscious and unconscious patients of all ages (e.g., infant, child, adult) using approved techniques.

Process/Skill Questions
- What is the most common airway obstruction for adults?
- What is the most common airway obstruction for infants?
- What is the difference between partial and complete airway obstruction?

Task Number 58
Demonstrate one- and two-rescuer CPR.

Definition

Demonstration should include CPR for an infant, a child, and an adult using approved techniques.

Process/Skill Questions

- Why is it important to be certified in CPR before attempting to use it in a live situation?
- What effect can chest compressions have on elderly subjects?

Task Number 59

Operate an automated external defibrillator (AED).

Definition

Operation should include

- establishing scene safety
- managing the patient
- placing the pad in the correct position
- following safety considerations (e.g., all clear)
- following local protocols and manufacturer recommendations.

Process/Skill Questions

- What problem may occur while using an AED in a moving ambulance?
- How does an AED work? What does it do to the heart?

Task Number 60

Demonstrate rescue breathing.

Definition

Demonstration should include using approved rescue breathing techniques for an infant, a child, and an adult.

Process/Skill Questions

- What can happen to a patient as a result of improper ventilation?
- What is the difference between oxygenation and ventilation?
Introducing the Fire Service

Task Number 61

Define the firefighter’s function and responsibilities.

Definition

Definition should include

- identifying the department’s organizational structure and operating procedures
- identifying the department’s response area or district, including streets and hazards
- performing all duties safely
- maintaining firefighting equipment, especially personal protective equipment (PPE)
- responding to alarms as a member of a trained unit/company
- using self-contained breathing apparatus and PPE
- rescuing people endangered by the fire
- using fire department tools to conduct forcible entry, ventilation, and fire repression at structure, vehicle, and ground-cover fires
- conducting overhaul operations at a fire scene
- conducting fire-prevention inspections
- presenting fire-safety information to the community
- providing emergency medical care.

Process/Skill Questions

- Why is it important for fire service personnel to be intimately familiar with the area’s geography, neighborhoods, and streets?
- What important information can a firefighter provide to the community?
- Why is continual training vital to the firefighter?

Task Number 62

Write a mission statement for the fire service.

Definition

Writing should demonstrate attention to grammar and mechanics and should include

- area and population of service
- chief services
- philosophy, values, priorities, and goals
• strengths
• public image
• concern for employees.

Process/Skill Questions

• What is a mission statement?
• What role does the mission statement play for the firefighter and for the community?
• Why is it important that values represented in the mission statement remain secular?
• Why is it important that the mission statement reflect goodwill toward the community?
• What is the local jurisdiction’s mission statement?

Task Number 63

Describe the history of the fire service.

Definition

Description should include the

• ancient Greek and Roman response to fire
• symbols and the Knights of Malta
• medieval response to fire
• early American fire service and its importance among the founding fathers
• effects of the Civil War on fire service (e.g., development of command and control)
• great American fires (e.g., Chicago, Peshtigo)
• effects of the Industrial Revolution on the fire service (e.g., sprinklers and technological improvements)
• twentieth century advances (e.g., standardization, effect of World War II)
• modernization and the contemporary service (e.g., HAZMAT, terrorism, public awareness, search and rescue).

Process/Skill Questions

• How did the military influence the fire service in America?
• What modern advances have affected the fire service?
• How has terrorism affected the fire service?

Task Number 64

Outline the organizational structure of the fire service.

Definition

Outline should include representations of the chain of command for large and small departments and the interdependence between the fire service and the community it serves.

Process/Skill Questions
• Why is it important for the fire service to have a clear organizational structure and chain of command?
• What checks and balances do firefighters maintain within the organizational structure?
• What is the importance of accountability in the fire service?

Task Number 65

Describe the effects of the Civil Rights Act of 1991 and the Americans with Disabilities Act (ADA) on the employment and supervision of firefighters.

Definition

Description should include

• the background of each legislation
• the effects of ADA on applicants and employers (i.e., to prevent discrimination).

Process/Skill Questions

• What physical disabilities could prevent an individual from being an effective firefighter?
• What are some hiring restrictions the fire service imposes?
• What jobs in the fire service are open to applicants with physical disabilities?
• What is the Family Medical Leave Act (FMLA), and who is affected by it?

Task Number 66

List rules and laws that regulate the fire service.

Definition

List should include

• National Fire Protection Association–NFPA (standards)
• Occupational Safety and Health Administration–OSHA (regulatory agency)
• Americans with Disabilities Act of 1990–ADA (law)
• local (departmental) rules
• international fire and building codes
• United States Environmental Protection Agency–EPA.

Process/Skill Questions

• What is OSHA’s primary objective as an organization?
• Why is it important to have a building code?
• What is the EPA’s primary objective as an organization?

Task Number 67
Identify standard operating procedures (SOPs) and standard operating guides (SOGs) in the fire service.

Definition

Identification of SOP and SOG topics should include

- the who, what, when, where, and how of a task
- the procedures for firefighter safety
- the breakdown of complicated procedures
- comprehensive firefighter duties
- the importance of setting a review and revision schedule (e.g., at least once every three years).

Process/Skill Questions

- How often are SOPs/SOGs reviewed and why?
- What purpose do SOPs/SOGs serve?

Task Number 68

Develop an organizational chart for the National Incident Management System (NIMS).

Definition

Development should include symbolic references to

- modular organization
- integrated communications
- consolidated incident action plans
- span of control.

Other functional areas may include

- command
- operations
- staging
- planning
- finance administration
- logistics
- other command staff positions.

Process/Skill Questions

- What purpose does the organizational chart serve?
- What are some different models of the NIMS?
- How can NIMS be used in every incident from major to minor?
Task Number 69

List the allied agencies that assist with fire department operations.

Definition

List should include

- law enforcement
- emergency medical services (EMS)
- state and local agencies, such as
  - Virginia Department of Emergency Management (VDEM)
  - Virginia Department of Fire Prevention (VDFP)
  - Virginia Office of Emergency Medical Services (VAOEMS)
- Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA)
- Environmental Protection Agency (EPA)
- public works
- utility companies
- private businesses
- American Red Cross
- nonprofit organizations.

Process/Skill Questions

- What resources can be shared between agencies?
- What role has the fire service played in recent national incidents?
- Who in Virginia provides coordination for the state’s response to an emergency?

Task Number 70

Describe employee assistance programs.

Definition

Description should include services for

- drug and alcohol dependence
- depression
- worker relationships
- job stress
- financial well-being
- tobacco/vapes cessation.

Process/Skill Questions

- When should an employee ask for assistance?
- What laws protect employees who ask for assistance?
• What effect may random drug testing have on employees?

Task Number 71

Compare engine, truck, and rescue/squad company operations and responsibilities.

Definition

Comparison should include the

• engine company
  o secures the water source
  o deploys hand lines
  o suppresses fire
  o acts as the rapid intervention team/crew (RIT or RIC) operations
  o may perform truck and squad operations
• truck company
  o performs forcible entry
  o performs ventilation operations
  o deploys ladders
  o performs salvage/overhaul
  o performs search and rescue
• rescue/squad company
  o conducts search and rescue
  o conducts specialized rescue (e.g., trench, high angle)
  o conducts vehicle extrication.

Process/Skill Questions

• Who fills the role of a truck company when a locality lacks an aerial device?
• What additional training might be required when transferring departments?
• How does the two in/two out rule affect staffing?

Understanding Fire Behavior

Task Number 72

Define fire and its characteristics.

Definition

Definition should include the concepts that
• fire/burning/combustion is a simple chemical/chain reaction, the effect of which is rapid persistent chemical change that releases heat and light
• fire is often accompanied by a visible flame.

Process/Skill Questions

• How has the perception of fire changed throughout history?
• How can one alter the chemical reaction that causes fire?
• How does fire naturally affect the geologic evolution of the planet?

Task Number 73

Describe the fire tetrahedron and its importance in the suppression of fire.

Definition

Description should include the four components of fire:

• Heat
• Fuel
• Oxygen
• Chemical/chain reaction

Process/Skill Questions

• Why did the symbolic representation of fire change from the fire triangle to the fire tetrahedron?
• What happens when one of the four elements is removed from the tetrahedron?
• What is the most abundant natural gas that contributes to combustion?

Task Number 74

Identify sources of heat energy.

Definition

Identification should include

• chemical
• electrical
• mechanical
• nuclear.

Process/Skill Questions

• Where is nuclear energy used?
- What are some manifestations/applications of electrical heat energy?
- What are some manifestations/applications of chemical heat energy?

**Task Number 75**

**Describe the burning process, the transmission of heat, and the products of combustion.**

**Definition**

Description of the burning process should include

- oxidation
- pyrolysis
- vaporization.

Description of heat transmission should include

- conduction
- convection
- radiation.

Description of the products of combustion should include

- smoke
- gases (toxic)
- heat release
- light.

**Process/Skill Questions**

- What are the effects of fire on iron?
- How is heat energy best transported from one location to the next?
- What makes a flame blue? What makes a flame white?

**Task Number 76**

**Explain key terms related to fire behavior.**

**Definition**

Explaination should include

- *vapor density*
- *flammable range*
- *specific gravity*
- *backdraft*
• smoke explosion
• boiling, liquid, expanding, vapor, explosion (BLEVE)
• stages of fire (i.e., ignition, growth, peak, decay)
• endothermic and exothermic reactions
• flashover
• rollover
• thermal layering
• ignition temperature
• lower and upper exclusive limits
• classes of fire (i.e., A–D/K)
• temperature measurements (e.g., Fahrenheit, Celsius, British Thermal Units [BTUs])
• states of matter (e.g., solid, liquid, gas).

Process/Skill Questions

• Why is it important to understand the temperature at which elements change state?
• What effects does heat have on steam production?
• What are some examples of endothermic and exothermic reactions?
• What do chemical suffixes (e.g., -ines, -ates, and -ides) indicate about the nature of chemicals, their composition, and how to extinguish the fires with which they are associated?

Using Personal Protective Equipment (PPE) and Self-Contained Breathing Apparatus (SCBA)

Task Number 77

Identify the conditions that require the use of SCBA and full PPE.

Definition

Identification should include any environment that is

• oxygen deficient
• generating heightened temperatures
• immediately dangerous to life and health (IDLH).

Process/Skill Questions

• How does one determine when it is safe to remove SCBA and PPE?
• What determines the gear worn during an incident?
• Why is it important to follow manufacturer's guidelines?

Task Number 78
Identify the components of SCBA and PPE.

Definition

Identification should include

- the difference between open- and closed-circuit SCBAs
- backpack and harness
- air cylinder
- regulator
- face mask
- personal alert safety system.

Process/Skill Questions

- How much air do humans need to remain conscious?
- What does the term *bunkers* mean?
- What is a proximity ensemble?

Task Number 79

Demonstrate proper use, inspection, and maintenance of SCBA and PPE.

Definition

Demonstration should incorporate an explanation of

- the reasons for wearing complete gear in the recommended fashion to manufacturer specifications regarding limitations of use, sizing, adjustment, storage, cleaning, and inspection procedures
- the way incomplete or sloppy dress can inhibit performance and endanger lives.

Process/Skill Questions

- How often does the SCBA need to be tested?
- How often does the SCBA need to be cleaned?
- When is it time to retire worn PPE?

Task Number 80

Demonstrate emergency procedures in the event of SCBA malfunction or failure.

Definition
Demonstration should include

- bypass breathing
- skip breathing
- buddy breathing
- RIT/RIC
- self-rescue techniques
- signal for assistance and using Mayday.

Process/Skill Questions

- What can be done in the case of SCBA failure?
- How is the two in/two out rule a safeguard if SCBA failure occurs?
- Why is it important to train with the SCBA and fellow firefighters?

Task Number 81

Define the relationship between PPE and national standards and regulations.

Definition

Definition should include

- how the NFPA and OSHA outline the standards for firefighter safety and survival
- how they influence equipment manufacturing standards.

Process/Skill Questions

- What happens if the PPE and national standards and regulations are not followed to the letter?
- How does budget affect the current equipment in a firehouse and the safety of firefighters?
- What penalties can be assessed for failure to adhere to apparel and gear standards?

Task Number 82

Don and doff PPE within the recommended guidelines of the NFPA.

Definition

Donning and doffing must adhere to requirements and be completed within a set standard of time. SCBA donning procedures should include

- overhead
- coat
- seat mount.
Process/Skill Questions

- How is the correct SCBA selected for an incident?
- Why is it important to be proficient in all positions for donning and doffing?
- What determines the length of time a firefighter has to effectively don and doff PPE and SCBA?

Understanding Building Construction

Task Number 83

Describe building construction methods and materials.

Definition

Description should include

- beam construction and connection points
- column construction and connection points
- wall construction and connection points.

Description of materials should include

- wood
- steel
- concrete
- masonry
- composites.

Process/Skill Questions

- Why is it important for firefighters to be familiar with building materials?
- What is the difference between a load-bearing wall and a non-load-bearing wall?
- How does fire affect building construction and connection points?

Task Number 84

Define the five types of building construction and their associated hazards.

Definition

Definition should include
<table>
<thead>
<tr>
<th>Type of Building Construction</th>
<th>Associated Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I–fire-resistive</td>
<td>loading, or the weight of building materials or objects in a building</td>
</tr>
<tr>
<td>Type II–noncombustible</td>
<td>rapid roof failure due to lightweight steel construction and loading</td>
</tr>
<tr>
<td>Type III–ordinary</td>
<td>age of the building</td>
</tr>
<tr>
<td>Type IV–heavy timber</td>
<td>fire cuts</td>
</tr>
<tr>
<td>Type V–wood frame/lightweight</td>
<td>balloon or platform construction, including fire stopping</td>
</tr>
</tbody>
</table>

**Process/Skill Questions**

- What types of building construction are found in the local area?
- What are the potential hazards with the five types of construction, and how do they affect firefighting efforts?
- What are the hazards associated with lightweight truss roofs?

**Task Number 85**

**Predict a fire’s growth and development according to type of building construction.**

**Definition**

Prediction should include identifying

- typical hazards associated with occupancy usage (e.g., residential, commercial, educational, business, industrial)
- roof construction (e.g., hip, gable, gambrel, mansard, butterfly, shed, intersecting, flat, arched/bowstring)
- other construction features (e.g., parapet walls, stairs, void spaces, windows).

**Process/Skill Questions**

- How do suppression efforts in balloon-frame construction differ from those in platform construction?
- What is fire load?
- What is void space?

**Task Number 86**

**Identify indications of potential building collapse and collapse-zone evacuation procedures.**

**Definition**

Identification should include
• overall age and condition of the building
• deterioration of mortar joints and masonry
• cracks
• signs of building repair
• large open spans
• bulging and bowing walls
• sagging floors
• abandoned buildings
• large volume of fire
• long-duration firefighting operations
• smoke coming from cracks in walls
• dark smoke coming from truss roof or floor spaces
• multiple fires in the same building or damage from previous fires.

Evacuation procedures should include

• identifying collapse zone, based on 1 1/2 times the area of the building height
• searching the building for personnel
• completing evacuation, according to departmental/company SOPs and SOGs.

Process/Skill Questions

• What is a collapse zone?
• What are the indications of a possible building collapse?
• What are emergency evacuation procedures? When are they necessary?

Using Fire Detection, Protective, and Communications Systems

Task Number 87

List procedures for citizens to report an emergency.

Definition

List should include the information citizens must confirm when reporting an emergency, such as

• location of the emergency
• nature of the emergency
• call-back number
• caller location and situation.

Process/Skill Questions
- What are the local department’s procedures for taking a report from a citizen?
- Why is it often difficult to communicate clearly with someone who is reporting an emergency?
- What is the most important information about an emergency that a communications department should know?

**Task Number 88**

**Describe the local fire department’s emergency response procedures.**

**Definition**

Description should include

- notifying aid
- following an SOP or SOG, according to local procedures
- mutual aid
- automatic aid.

**Process/Skill Questions**

- What are the resources the local jurisdiction assigns to assorted incidents, such as a residential structure fire, commercial structure fire, or motor vehicle collision?

**Task Number 89**

**Identify methods of receiving reports.**

**Definition**

Identification should include

- conventional telephone
- wireless/cellular
- texting 911
- emergency call boxes
- telecommunications device for the deaf (TDD) equipment
- automatic alarm systems
- walk-ups or still alarms
- municipal fire alarms.

**Process/Skill Questions**

- What are the advantages and disadvantages of receiving reports via wireless 911?
- Where might one find a local building equipped with automatic fire alarm systems?
- What is the typical response to an automatic fire alarm?

**Task Number 90**
Describe business and personal phone procedures.

Definition

Description should include

- how to operate a fire station telephone and intercom system
- what to say when answering a call (e.g., providing one's name and station/department)
- professional etiquette.

Process/Skill Questions

- What is the local department’s procedure for answering non-emergency phone calls?
- What are the non-emergency numbers for the local fire station?
- How are telephone messages properly received and documented?

Task Number 91

Perform radio communications.

Definition

Performance should include

- ensuring channel clarity
- depressing push-to-talk button
- operating the emergency activation (EA) button
- waiting two seconds before speaking
- holding the microphone an inch or two from one's mouth
- speaking clearly and concisely.

Process/Skill Questions

- What types of radios are used in the local jurisdiction?
- What are the radio procedures for declaring an emergency or Mayday?
- What are examples of local radio terminology?

Task Number 92

Identify the value of and need for protective systems to help preserve life and property.

Definition
Identification should include

- benefits of early detections and warnings
- cost effectiveness
- ability to detect threats that are not easily recognized by humans (e.g., carbon monoxide, combustible vapor).

**Process/Skill Questions**

- What is the difference between a manual and an automatic fire detection system?
- How do smoke detectors function?
- How do heat detectors function?

**Task Number 93**

**Identify types, components, and valve types of sprinkler systems.**

**Definition**

Identification should include

- **types**
  - wet pipe
  - dry pipe
  - deluge systems
  - pre-action systems
  - residential and commercial systems
- **components**
  - sprinkler head and fusible link (e.g., upright, pendant, pendant sidewall)
  - piping
  - water supply
- **valve types**
  - outside, screw, and yoke (O, S, and Y)
  - indicator and post-indicator valves
  - wall-indicator valve
  - check valve.

**Process/Skill Questions**

- How are sprinkler heads activated?
- What buildings in the local jurisdiction have sprinkler systems?
- What are the differences between wet and dry sprinkler systems?

**Task Number 94**

**Halt the flow of water from an automatic sprinkler head.**
Definition

Halting the flow involves using a wooden wedge or a commercial sprinkler stopper until the main control device is turned off.

Process/Skill Questions

- What tools are needed to stop the flow of water from an activated sprinkler head?
- Why is property conservation important?
- What safety procedures should be followed prior to stopping the flow of water?

Task Number 95

Describe the methods used to return a sprinkler system to service.

Definition

Description should include

- following SOPs
- replacing heads
- restoring the system.

In cases when the system is not restored, fire watch is recommended until the system is restored.

Process/Skill Questions

- Why should fire departments use a sprinkler company to return a sprinkler system to service?
- What are some potential liabilities of a fire department returning a sprinkler system to service?
- Why is it essential to ensure the fire is out prior to returning a sprinkler system to service?

Task Number 96

Identify standpipe systems and connections.

Definition

Identification should include

- Class 1–fire department use only with fire department hose lines
- Class 2–building occupants use for fire attack
- Class 3–combination of Class 1 and Class 2.

Components should include
• piping
• valves
• fire department connection (FDC)
• pressure-regulating device
• pumping device.

Process/Skill Questions

• What types of standpipes are in place locally?
• What are the items commonly carried in a high-rise or standpipe pack?
• What is the difference between a wet and a dry standpipe system?

Task Number 97

Describe the value of sprinkler systems to on-the-scene firefighting.

Definition

Description should include the following concepts:

• Systems are often so effective with early activation that fires are extinguished prior to firefighters arriving at the scene.
• Installation can be in areas not immediately accessible to arriving firefighters.
• Residential systems are focused on life safety rather than property safety.

Process/Skill Questions

• What are residential sprinkler systems, and how are they similar to and different from commercial systems?
• How can having a commercial or residential sprinkler system affect insurance rates?
• How do fire suppression techniques in a building with sprinklers differ from those in a building without sprinklers?

Task Number 98

Locate sprinkler connections.

Definition

Location should be identified for connecting

• from a particular room within a structure
• directly to the FDC (often on the exterior of the structure, or near sprinkler room).

Process/Skill Questions

• Why are pre-incident fire plans important in a building with sprinkler systems?
Using Water Supply, Hoses, and Nozzles

Task Number 99
Describe types and uses of fire streams and hoses.

Definition
Description should include

- solid, broken, and fog streams
- stream selection and utilization
- automatic nozzles
- fixed gallonage nozzles
- attack lines
- supply lines
- hose construction.

Process/Skill Questions

- What diameter and length of fire hose should be carried on fire apparatus, per the NFPA standard?
- What are the common methods for connecting a fire hose?
- What factors are involved in fire stream selection?

Task Number 100
Operate various fire streams.

Definition
Operation should include using fog, broken stream, and solid stream and opening and closing the valve slowly to prevent water hammer.

Process/Skill Questions

- What is nozzle reaction?
- What is an effective fire stream?
- What is the difference between hand lines and master stream devices?
Task Number 101

List the fundamental components of a modern water system.

Definition

List should include

- water source
- means of moving water
- water processing or treatment facilities
- water distribution systems.

Process/Skill Questions

- What are common sources of water supply for the fire service?
- Which type of water distribution system is used in the local jurisdiction?
- Why is multidirectional supply important when a large volume of water is required for the operation?

Task Number 102

List causes of friction loss in water mains.

Definition

List should include

- damaged valves
- trash and/or debris
- sediment build up/encrustations.

Process/Skill Questions

- What is friction loss?
- How can a firefighter prevent friction loss?
- How are static, residual, and flow pressures determined?

Task Number 103

Compare wet-barrel and dry-barrel hydrants.

Definition

Comparison should include
- wet-barrel hydrant
  - has water in the barrel up to the valves of each outlet
  - is used in areas that are not subject to freezing temperatures
  - is controlled by independent valves that allow for additional connection without main shutdown
- dry-barrel hydrant
  - is used in climates with freezing temperatures
  - is controlled by valve at the base that requires main shutdown to add connections.

**Process/Skill Questions**

- What climates require wet-barrel hydrants?
- Where are dry-barrel hydrants located?
- What types of hydrants are present locally?

**Task Number 104**

**Operate a hydrant.**

**Definition**

Operation should include

- using a hydrant wrench
- removing the steamer or spuds
- positioning personnel away from discharges
- opening slowly
- closing slowly and checking for proper draining.

**Process/Skill Questions**

- How is a dry-barrel fire hydrant opened and closed?
- What equipment is necessary for connecting a fire apparatus to a fire hydrant?
- What safety procedures should be followed when operating a fire hydrant?

**Task Number 105**

**Describe alternative static water sources.**

**Definition**

Description may include

- ponds
- pools
- rivers
creeks
dry hydrants.

**Process/Skill Questions**

- Where is a local water supply site?
- What are considerations when choosing a static water source?
- What equipment is needed for drafting?

**Task Number 106**

**Connect a fire department pump to a water supply.**

**Definition**

Connecting should include using the appropriate supply hose (i.e., soft sleeve or hard sleeve).

**Process/Skill Questions**

- What is the dry-hydrant system?
- When should the low-level strainer be used?
- What pump accessory is needed to remove air from the suction hose?

**Task Number 107**

**Describe the procedures for loading and off-loading a mobile water supply apparatus.**

**Definition**

Description should include

- loading operations for fill site (e.g., static, municipal)
- nursing operations/shuttle operations
- dump site operations and selection of the dump tank
- gravity dumping
- jet dumping
- apparatus-mounted pumps for off-loading
- combination systems.

**Process/Skill Questions**

- What should be checked prior to placing the portable tank on the apparatus?
- Who is ultimately in charge of a water shuttle system?
- What other agencies would be needed to complete a water shuttle system?
Task Number 108

Identify techniques for rolling, repacking, and deploying hose lines.

Definition

Identification should include

- the straight, donut, twin donut, self-locking donut rolls
- the accordion, flat, horseshoe, minuteman, or other load used in the jurisdiction
- forward, split, and reverse hose lays.

Process/Skill Questions

- Why should the male coupling always be rolled inside?
- Why is it advantageous to place a loop in/near the middle of a cross lay?
- What muscles are used when deploying a hose from an apparatus?

Task Number 109

Identify use and maintenance of a fire hose.

Definition

Identification should include

- cleaning after use
- visual inspection for any flaws/damage.

Process/Skill Questions

- What harm can be done when repacking a wet hose?
- What are the effects of direct sunlight on a wet hose?
- What determines the life expectancy of a fire hose?

Practicing Fire-Suppression Techniques

Task Number 110

Describe fire-extinguishment theory.

Definition
Description should include the removal of heat, fuel, oxygen, or the continuous chemical reaction.

Process/Skill Questions

• What factors determine how a fire should be controlled?
• What were the tragic events of the Great Chicago Fire? When did it occur?
• What is meant by thermal layering of gases?

Task Number 111

Outline fire-suppression techniques and measures.

Definition

Outline should include

• locating the fire and determining its extent
• developing a plan of attack
• developing a mode of attack
  o offensive
  o defensive
  o transitional
• determining the method of attack
  o direct
  o indirect
  o transitional.

Other considerations should include

• rescue, exposures, confinement, extinguishment, and overhaul (RECEO)
• vent, enter, search (VES)
• rescue, fire control, and property conservation
• rescue, exposures, ventilation, attack, and salvage (REVAS)
• factors that affect the selection of fire stream, including
  o proper stream type
  o stream size
  o stream placement
  o timing
  o water supply or quantity of water
  o stream reach
  o mobility needs
  o tactics required
  o speed of deployment
  o personnel available.

Process/Skill Questions

• What are the responsibilities of the first and second engine companies to arrive at the scene of a fire?
• What are some of the hazards involved with modern vehicle fires?
• What factors might affect arrival time after a call is made?

Task Number 112

Describe utility control and rescue operations involving electrical hazards.

Definition

Description should include

• acting as if all wires and objects are in contact with wires that are live
• locating and shutting off the main power supply, if possible, or requesting shutoff from the power company
• assessing the situation by determining water hazards and other hazards determining the safe distance from a given point of live electrical contact.

Process/Skill Questions

• How is a safe standing distance from the point of contact of a live wire determined?
• What happens when water meets electricity?
• What is dielectric equipment, and when is it used?

Task Number 113

Describe the classifications of fire and their corresponding extinguishment methods.

Definition

Description should include the following fire classifications and extinguishment methods:

<table>
<thead>
<tr>
<th>Classification of Fire</th>
<th>Extinguishment Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A</td>
<td>Lower Temperature</td>
</tr>
<tr>
<td>Class B</td>
<td>Oxygen Elimination</td>
</tr>
<tr>
<td>Class C</td>
<td>Fuel Elimination</td>
</tr>
<tr>
<td>Class D</td>
<td>Chemical Flame Suppression</td>
</tr>
<tr>
<td>Class K</td>
<td>Oxygen/Fuel Elimination</td>
</tr>
</tbody>
</table>

Process/Skill Questions

• How can water act as a cooling agent, a mechanical tool, a substitute medium, and a protective cover?
• What is the difference between natural gas and liquefied petroleum gas?
• Why are lockout/tagout devices recommended?
Task Number 114

Identify types of foam for fire suppression.

Definition

Identification should include

- definition of foam—an aggregate of gas-filled bubbles formed from aqueous solutions of specially formulated concentrated liquid foaming agents
- types of foam available, including
  - protein foam
  - fluoroprotein foam–aqueous film-forming foam (AFFF)
  - fluoroprotein film-forming foam (FFFP)
  - detergent-type foams.

Process/Skill Questions

- What are the differences between low-, medium-, and high-expansion foams?
- What foam is specifically used on polar solvents?
- Why is aeration critical during a foam operation?

Task Number 115

Demonstrate the suppression of Class A and Class B fires, using a hose line.

Definition

Demonstration should include

- using hose lines that have been pulled and placed in service by the department’s SOP/SOGs
- using the teamwork concept on the fireground (i.e., two in/two out).

Process/Skill Questions

- What type of hose line can be used by a single firefighter?
- What are the advantages of a smooth bore-hand line versus an automatic fog nozzle?
- What type of fire attack involves using a master stream device?

Task Number 116
Demonstrate the suppression of Class A, B, and C fires, using portable fire extinguishers.

Definition

Demonstration should require the four-step process:

1. Pull the pin.
2. Aim the nozzle at the base of the fire.
3. Squeeze the handle.
4. Sweep the area of the fire.

Process/Skill Questions

- What is a portable fire extinguishing agent that is no longer used in the fire service? Why is it no longer used?
- How often should employees be trained on the use of the fire extinguisher?
- When should an extinguisher be discharged and recharged?

Task Number 117

Identify the types and ratings of portable fire extinguishers.

Definition

Identification should include

- the class of fire, based on fuels, listed on the extinguisher
- the rating of the fire extinguisher, as identified by colored geometrical shapes with letter designations or by picture system.

Process/Skill Questions

- How does halon affect the ozone?
- What NFPA standard covers the care and maintenance of fire extinguishers?
- How is an Indian tank used?

Task Number 118

Identify the extinguishment theory for fighting wildland fires.

Definition

Identification should include the factors affecting wildland fires, such as
• weather—temperature, relative humidity, atmospheric stability, wind speed and direction, precipitation
• fuels—fuel loading, size and shape, compactness, horizontal and vertical continuity, chemical content
• topography—elevation, position on slope, aspect, shape of country, grade of slope.

Identification should also include a method for confining the spread of a wildland fire by surrounding it with hose lines, removing the fuel, and choosing from among

• point of attack—considered the anchor point
• direct attack—focusing on working the flack of the fire toward the head or progressive end
• parallel method—involving direct attack on the opposite flank
• indirect attack—focusing on removing fuel in front of the head
• interfacing firefighting and aerial operations.

Process/Skill Questions

• What type of vehicle is used by the forestry service to assist in wildland firefighting?
• Where do aircraft get their fire-suppression agents?
• What does a topographical map illustrate?

Using Ladders

Task Number 119

Identify ladder types, parts, and safety features.

Definition

Identification should include the construction, parts, and safety features for

• wall/straight ladder
• extension ladder
• roof ladder
• attic ladder
• extension ladder with poles
• aerial ladder
• other aerial devices (e.g., tower, telesquirt, snorkel)
• special-purpose ladders (e.g., A ladder, folding ladder, pompier ladder)
• solid-beam ladder
• truss-beam wood ladder
• aluminum ladder
• wood- and aluminum-truss ladder
• fiberglass ladder.

Process/Skill Questions
• What is the cafeteria raise?
• Why are wooden ladders no longer used in the fire service?
• What are some limitations of aerial ladders?

Task Number 120

Perform ladder carries.

Definition

Performance should include

• beam carry
• flat carry
• one-person carry
• two-person carry
• alternate two-person carry
• three- or four-person carry
• five- or six-person carry.

Process/Skill Questions

• What parts of the body should be used to lift a ground ladder?
• When would it be advantageous to carry a roof ladder butt-first?
• What ladder requires a six-person carry?

Task Number 121

Perform ladder raises.

Definition

Performance may include

• flat raise
• beam raise
• perpendicular raise
• parallel raise
• one-person flat raise
• two-person perpendicular raise using a wall ladder
• two-person perpendicular raise using an extension ladder
• two-person parallel beam raise using a wall ladder
• two-person parallel beam raise using an extension ladder
• two-person parallel flat raise using a wall ladder
• two-person parallel flat raise using an extension ladder
• two-person roof ladder raise for a one-story building
• two-person roof ladder raise for a two-story building
• three- or four-person perpendicular flat raise using an extension ladder
• five- or six-person perpendicular raise
• five- or six-person parallel raise
• overhead obstruction raise.

Performance should also include positioning the bottom of the ladder at a distance from a vertical plane equal to 1/4 the total working length of the ladder. The ideal ladder angle is 75.5 degrees.

Process/Skill Questions

• How can a 75-degree angle be determined without an instrument?
• Why should the wind direction be determined prior to raising a ladder?
• How can a ladder be secured after it is raised?

Task Number 122

Describe maintenance, cleaning, and inspection procedures for ladders.

Definition

Description should include visual inspection and testing requirements

• before placing the ladder in service for the first time
• after the ladder has been subjected to loads exceeding the NFPA recommended level
• after the ladder has been used in any unusual manner
• after the ladder has been repaired
• any time there is a question regarding ladder safety.

Methods for maintenance should include

• wiping wood ladders dry after they have been wet
• oiling all pawls and pulleys
• lubricating guides, grooves, and other bearing surfaces
• applying varnish to wood ladders when needed
• sharpening dull spurs
• removing any splinters or burrs
• replacing worn parts when needed.

Process/Skill Questions

• How often should a ladder be tested?
• What device detects damage that has occurred to a ladder?
• What NFPA standard references ladder maintenance?
Using Ropes

Task Number 123

Differentiate between types of ropes and knots.

Definition

Differentiation should include

- using life-safety and utility ropes
- explaining dynamic and static construction
- explaining when life-safety rope becomes utility rope.

Process/Skill Questions

- What natural fibers, other than manila, are used in rope construction?
- Why is it advantageous to use synthetic rope?
- What does NFPA say about rope elongation?

Task Number 124

Demonstrate the types of knots required for hoisting or securing.

Definition

Demonstration should include tying a

- bowline for hoisting or securing an object
- clove hitch for securing and/or hoisting
- figure 8
- figure 8 follow through
- figure 8 on a bight
- Becket bend
- waterman’s knot
- half hitch
- safety knot.

Process/Skill Questions

- Why should a double-overhand knot be used with most tied knots?
- What other terms describe the working end?
- What advantage is there to using a figure 8 over a bowline knot?
Task Number 125

Describe maintenance, cleaning, and inspection functions for life-safety and utility rope.

Definition

Description should include

- adhering to manufacturer's specifications
- keeping a rope log
- following manufacturer's cleaning recommendations
- following air-drying procedures
- conducting routine inspections after use
- looking for damage and rope degradation.

Process/Skill Questions

- What are common methods of rope storage?
- What are ways of washing rope?
- When should a rope be downgraded?

Following Forcible Entry Procedures

Task Number 126

Identify types of forcible entry tools.

Definition

Identification should include the tool family or use group and the common names for tools that perform the following functions:

- Striking—flathead ax, maul, sledgehammer, battering ram, hammer, punch/chisel, lock breaker
- Prying—crowbar, halligan tool, hux, claw tool, pry bar, hydraulic, pry tools
- Cutting—axes, saws, torches, bolt cutters
- Pulling—hooks, pike poles
- Going through-the-lock—K tool, A tool, pick/key tool, vise grip/channel-lock pliers, REX tool

Process/Skill Questions
• What precautions should be taken when starting power saws?
• What is the hazard involved with acetylene?
• What types of tools are used primarily during vehicle extrication?

Task Number 127

Demonstrate methods for forcing windows and doors.

Definition

Demonstration should include

• following department SOPs/SOGs
• wearing PPE, including hand and eye protection
• operating safely with others in the immediate work area
• ensuring tools are in operating condition prior to use
• securing loose, unused tools to prevent tripping or other hazards
• storing tools neatly and making them easily accessible.

Process/Skill Questions

• What should be done prior to forcing entry?
• What is important to know about building construction prior to conducting forcible entry?
• How might the wind factor into forcible entry?

Task Number 128

Describe maintenance, cleaning, and inspection functions for forcible-entry tools.

Definition

Description should include

• checking fuel and fluid levels for gas-operated tools
• following manufacturer instructions for maintenance
• removing from service and/or repairing when defects are found
• checking metal heads and parts
  o removing dirt and/or rust with steel wool or emery cloth
  o maintaining file cutting edge to proper profile, sharpening edge, and removing burrs
  o avoiding over-sharpening or bench grinding, which may cause damage after use
  o lightly oiling metal parts, but not painting
• caring for fiberglass handles
  o washing with soap and water; drying completely
  o checking for cracks and damage
• securing metal parts
• caring for wooden handles
  • washing with soap and water, rinsing, and drying completely
  • checking for damage and sand splitters
  • applying boiled linseed oil, if desired (do not paint)
• securing metal parts.

Process/Skill Questions

• What is the advantage of using boiled linseed oil over paint for wooden handles?
• What can cause a hydraulic tool to fail?
• What are the limitations of cordless tools?

Task Number 129

Describe methods, components, and considerations of forcible entry.

Definition

Description should include

• forcing the locking device(s)
• attacking the fastenings
• cutting gates or bars.

Techniques for breaching floors and roofs should include cutting through wooden floors or roofs with power saws and axes. Other factors affecting forcible entry might include building construction and available tools.

Description might also include breaching types of doors, such as

• wooden—panel, slab, or ledge
• metal—hollow core or metal clad, overhead, commercial or residential garage doors, or roll-down
• glass—metal or tubular frame, tempered or frameless, sliding, or revolving.

When breaching doors or windows, consider

• frame/jamb materials (whether rabbeted or stopped)
• mounting hardware
• locking device
• direction of door swing.

Types of glass might include

• regular or plate
• tempered
• laminated (i.e., safety)
• wire
• polycarbonate.
Types of windows might include

- double hung
- check rail
- energy efficient
- casement
- awning
- jalousie
- projected
- fixed.

Types of locks might include

- key-in-the-knob
- mortise—dead bolt, dead bolt and latch, pivoting dead bolt
- rim locks—surface locks
- tubular locks
- padlocks
- special locks.

Types of walls, floors, and roofs might include

- wood-framed
- masonry (e.g., block, brick)
- concrete reinforced
- metal.

Process/Skill Questions

- What hazard do firefighters encounter when forcing an overhead door?
- What products are available on the market to assist with nondestructive entry?
- What should be considered after forcing entry through a fenced area?

Following Rescue Procedures

Task Number 130

Identify hazards associated with types of rescue situations.

Definition

Identification should be made prior to rescue attempt and should include

- incomplete information (e.g., structure, entrances and exits, ventilation, occupants)
- entrapment
• loss of guy wire
• contaminants/chemicals
• malfunctioning equipment.

Process/Skill Questions

• Why is it important for a firefighter to have as much information as possible before attempting a rescue?
• What are the possible outcomes of attempting a solo rescue?
• What type of equipment should rescuers always have?

Task Number 131

Demonstrate victim-extrication, victim-lifting, and victim-movement processes.

Definition

Demonstration should include using all related equipment to perform removal of victim by one and two rescuers, using proper techniques.

Process/Skill Questions

• Why is it best to have two-rescuer teams?
• How can a single rescuer avoid injury to self and to the victim?
• What is the first thing a rescuer should do at a potential rescue scene?

Task Number 132

Conduct primary and secondary searches in a structure.

Definition

Conducting searches should include

• pre-search planning (e.g., surveying situation, retrieving information, securing equipment)
• working in pairs
• staying low
• relying on sense of touch
• searching one room completely before systematically moving on
• reporting deteriorating conditions
• maintaining situational awareness
• searching under beds, under covers, and in closets
• staying alert, listening attentively for signs of victims
• communicating continuously with rescuers and victims.
Process/Skill Questions

- Why is it important to work in pairs?
- How would a rescuer know whether a room has already been searched?
- Why is it important to stay low when searching?

Understanding Ventilation

Task Number 133

Describe the need for ventilation at a fire scene.

Definition

Description should include how ventilation

- promotes rescue operations
- provides a means for fire attack and extinguishment
- conserves property
- controls fire spread
- reduces flashover potential
- reduces backdraft potential.

Process/Skill Questions

- What thermodynamic mechanism affects ventilation?
- How does ventilation reduce the potential for flashover or backdraft?
- How can ventilation aid in property conservation?

Task Number 134

Identify the types of ventilation.

Definition

Identification should include

- vertical ventilation
- horizontal ventilation
- forced ventilation
  - mechanical
  - hydraulic.
Process/Skill Questions

- What determines the type of ventilation used?
- What tools are necessary for vertical ventilation?
- How does forced ventilation aid the mission?

Task Number 135

Demonstrate methods for creating horizontal, vertical, mechanical, and hydraulic ventilation.

Definition

Demonstration should include

- horizontal ventilation, accounting for
  - weather conditions
  - exposures
  - location of openings
- vertical ventilation, accounting for
  - roof types
  - safety
  - existing roof opening
  - trench or strip
  - tools
- mechanical ventilation, accounting for positive and negative pressure
- hydraulic ventilation, accounting for use of a hand line.

Process/Skill Questions

- When using horizontal ventilation, how are the locations of the openings determined?
- What safety precautions need to be followed when using vertical ventilation?
- What determines the choice to use positive or negative pressure for mechanical ventilation?

Task Number 136

Set up portable power plants and lighting equipment.

Definition

Setup should include

- using proper lifting procedures
- inspecting the generator's spark plug and spark plug wire, and replacing, if necessary
- using fresh fuel to fill the generator and discarding fuel older than three weeks
• checking the generator's oil level and replenishing or changing it, as needed
• inspecting all electrical cords
• testing the lighting equipment and replacing light bulbs as needed.

Process/Skill Questions

• When is fuel considered old? Why might using old fuel in a generator be problematic?
• How is the wattage of a replacement light bulb determined?
• How is the generator's oil level checked?

Determining Salvage, Overhaul, and Cause of Fire

Task Number 137

Describe salvage and overhaul needs and techniques.

Definition

Description should include the following:

• Salvage operations include using the materials and processes that affect the removal of or provide protection from harmful atmospheres.
• Overhaul is the process of breaching walls, ceilings, floors, and attics to verify that all the fire is extinguished.
• Basic equipment needs may include salvage covers, floor runners, water vacuums, and fastening tools for salvage. Shovels, axes, pike poles, buckets, thermal cameras, and heat sensors are tools commonly used for overhaul.

Process/Skill Questions

• What advantages are there to using plastic salvage covers?
• What factors are considered when predicting salvage and overhaul needs?
• What is the main purpose of overhaul?

Task Number 138

Describe the need for evidence preservation.

Definition

Description should include the signs of origin and cause.
Process/Skill Questions

- What types of evidence do investigators search for at a fire scene?
- What qualifies as evidence?
- Why is it important to recognize and preserve evidence?

Task Number 139

Identify methods for legally securing a building after emergency operations are complete.

Definition

Identification should include

- securing access to the building from entry of weather, the public, the owner, and the utility providers, so that no further injury will occur to victims or to the building
- contacting outside resources (e.g., American Red Cross) to assist with personal needs.

Process/Skill Questions

- Why is it important to secure a building after operations are complete?
- What is the best method for physically securing a building?

Task Number 140

Demonstrate use of salvage covers to protect property.

Definition

Demonstration may involve several methods of rolls and folds used for one- or two-person deployment, including

- balloon toss
- catch all
- water chute.

Process/Skill Questions

- Which deployment method is best when protecting property?
- What determines the deployment method?

Task Number 141
Describe maintenance, cleaning, and inspection functions for salvage and overhaul.

Definition
Description should refer to SOPs/SOGs, manufacturer's recommendations, and instructor guidelines.

Process/Skill Questions
- Where are the methods for maintenance found?
- What is the most commonly recommended method for cleaning?

Adhering to HAZMAT Standards

Task Number 142
Identify basic HAZMAT standards and resources for handling an incident.

Definition
Identification should include
- Federal Hazardous Waste Operations and Emergency Response Act
- North American Emergency Response Guidebook
- Department of Transportation’s Emergency Response Guidebook
- HAZMAT placards
- safety data sheets (SDS).

Process/Skill Questions
- What are hazardous materials are typically found in residences?
- Where should placards be located on vehicles transporting hazardous materials?
- Where is the SDS typically located in a commercial establishment?

Task Number 143
Identify hazardous materials that may be involved in terrorist attacks.

Definition
Identification should include
- explosive and incendiary devices
- chemical agents
- biological agents
- radiological agents.

**Process/Skill Questions**

- What are signs that a biological agent has contaminated the area?
- What are signs that a nerve agent has contaminated the area?
- What are signs of a nuclear detonation?

**Task Number 144**

**Describe procedures for responding to a terrorist attack.**

**Definition**

Description should include

- establishing a safe and quick approach
- using additional precautions associated with terrorist acts
- identifying hazards related to terrorism
- connecting with specialized resources (e.g., Federal Bureau of Investigations [FBI], FEMA).

**Process/Skill Questions**

- Who has authority at the scene of a terrorist attack?
- How far from a scene should the command post be established?
- What is the purpose of decontamination?

**Addressing Fire Prevention and Public Fire Education**

**Task Number 145**

**Explain the programs, actions, and services that prevent the loss of life and property associated with fire and other risks to the community.**

**Definition**

Explanation should include
• fire and life safety education programs
• emergency preparedness.

Process/Skill Questions

• What is the benefit of fire and life safety programs?
• What is emergency preparedness?
• What fire and life safety education programs are run by the local jurisdiction?

Task Number 146

Deliver a fire-safety education presentation.

Definition

Delivery should include

• choosing methods of delivery, based on audience and duration of presentation
• focusing on a specific message (e.g., how to make the home safe, what to do if a fire should occur).

Process/Skill Questions

• What are the benefits of fire-safety education programs?
• Who should be the target audience in fire-safety education programs, and why?
• Why is public relations important to the fire department?

Task Number 147

Research NFPA certification options and regional education opportunities.

Definition

Research should include

• using reputable online resources
• identifying NFPA certification requirements (e.g., where and when the written exam is offered, identification requirements, prerequisite credentials, and coursework completion)
• creating a timeline for achieving NFPA requirements
• identifying regional programs that offer skills training and/or help with preparing to earn the NFPA certification
• identifying alternative career opportunities based on firefighting coursework
• identifying alternative postsecondary education and training routes.

Process/Skill Questions
- What are the primary Virginia certifications associated with firefighting?
- What are additional certification opportunities related to firefighting?
- What are additional postsecondary education opportunities?

## SOL Correlation by Task

<table>
<thead>
<tr>
<th>Task</th>
<th>English:</th>
<th>History and Social Science:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify common causes of death in the fire service.</td>
<td>10.5, 11.5</td>
<td>VUS.8, WHII.8</td>
</tr>
<tr>
<td>Identify causes of back injuries and methods for preventing them.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify slip, trip, and fall injuries and methods for preventing them.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Outline the physical fitness standards for firefighters.</td>
<td>10.6, 10.7, 11.6, 11.7</td>
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<tr>
<td>Identify classroom safety rules and procedures.</td>
<td>10.5, 11.5</td>
<td>VUS.8, WHII.8</td>
</tr>
<tr>
<td>Define risk management.</td>
<td>10.3, 10.5, 11.3, 11.5</td>
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<tr>
<td>Identify the features of conducting an organized rapid escape.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify procedures to follow when an entrapment occurs.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify the importance of the NFPA standards to the fire service.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify first-aid terms and abbreviations.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Demonstrate techniques for controlling bleeding.</td>
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<tr>
<td>Demonstrate methods for detecting and caring for those in shock.</td>
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<tr>
<td>Care for those with the various classifications of burns.</td>
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<tr>
<td>Demonstrate treatment for musculoskeletal injuries.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Demonstrate treatment for environmental emergencies.</td>
<td>10.5, 11.5</td>
<td></td>
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<tr>
<td>Identify the types, symptoms, and treatments of poisoning.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Demonstrate care for conscious and unconscious patients until proper care arrives.</td>
<td>10.5, 11.5</td>
<td></td>
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<tr>
<td>Assess scene safety for the rescuer and the patient.</td>
<td>10.5, 11.5</td>
<td></td>
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<tr>
<td>Demonstrate removal of a foreign body airway obstruction.</td>
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<tr>
<td>Demonstrate one- and two-rescuer CPR.</td>
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<tr>
<td>Operate an automated external defibrillator (AED).</td>
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<tr>
<td>Demonstrate rescue breathing.</td>
<td></td>
<td></td>
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<tr>
<td>Define the firefighter’s function and responsibilities.</td>
<td>10.3, 10.5, 11.3, 11.5</td>
<td>VUS.8, WHII.8</td>
</tr>
<tr>
<td>Write a mission statement for the fire service.</td>
<td>10.6, 10.7, 11.6, 11.7</td>
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<tr>
<td>Topic</td>
<td>Required Knowledge</td>
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<td>----------------------------------------------------------------------</td>
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<tr>
<td>Describe the history of the fire service.</td>
<td>English: 10.5, 11.5</td>
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<tr>
<td>Outline the organizational structure of the fire service.</td>
<td>English: 10.5, 10.6, 10.7, 11.5, 11.6, 11.7</td>
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<tr>
<td>Describe the effects of the Civil Rights Act of 1991 and the Americans with Disabilities Act (ADA) on the employment and supervision of firefighters.</td>
<td>History and Social Science: VUS.13, VUS.14</td>
<td></td>
</tr>
<tr>
<td>List rules and laws that regulate the fire service.</td>
<td>English: 10.6, 10.7, 11.6, 11.7</td>
<td></td>
</tr>
<tr>
<td>Identify standard operating procedures (SOPs) and standard operating guides (SOGs) in the fire service.</td>
<td>English: 10.5, 11.5</td>
<td></td>
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<tr>
<td>Develop an organizational chart for the National Incident Management System (NIMS).</td>
<td>English: 10.1, 11.1</td>
<td></td>
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<tr>
<td>List the allied agencies that assist with fire department operations.</td>
<td>English: 10.6, 10.7, 10.8, 11.6, 11.7, 11.8</td>
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<tr>
<td>Describe employee assistance programs.</td>
<td>English: 10.5, 11.5</td>
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<tr>
<td>Compare engine, truck, and rescue/squad company operations and responsibilities.</td>
<td>English: 10.5, 11.5</td>
<td></td>
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<tr>
<td>Define fire and its characteristics.</td>
<td>English: 10.3, 11.3</td>
<td></td>
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<tr>
<td>Describe the fire tetrahedron and its importance in the suppression of fire.</td>
<td>English: 10.5, 11.5</td>
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<tr>
<td>Identify sources of heat energy.</td>
<td>English: 10.5, 11.5</td>
<td></td>
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<tr>
<td>Describe the burning process, the transmission of heat, and the products of combustion.</td>
<td>English: 10.5, 11.5 Science: ES.12</td>
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<tr>
<td>Explain key terms related to fire behavior.</td>
<td>English: 10.5, 11.5</td>
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<tr>
<td>Identify the conditions that require the use of SCBA and full PPE.</td>
<td>English: 10.5, 11.5</td>
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<tr>
<td>Identify the components of SCBA and PPE.</td>
<td>English: 10.5, 11.5</td>
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<tr>
<td>Demonstrate proper use, inspection, and maintenance of SCBA and PPE.</td>
<td>History and Social Science: VUS.8, WHIL.8</td>
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<tr>
<td>Demonstrate emergency procedures in the event of SCBA malfunction or failure.</td>
<td>History and Social Science: VUS.8, WHIL.8</td>
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<tr>
<td>Activity</td>
<td>English:</td>
<td>History and Social Science:</td>
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<td>-------------------------------------------------------------------------</td>
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<td>Define the relationship between PPE and national standards and regulations.</td>
<td>10.3, 11.3</td>
<td>VUS.8, WHI.8</td>
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<tr>
<td>Don and doff PPE within the recommended guidelines of the NFPA.</td>
<td>10.8, 11.8</td>
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<tr>
<td>Describe building construction methods and materials.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Define the five types of building construction and their associated hazards.</td>
<td>10.3, 11.3</td>
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<tr>
<td>Predict a fire’s growth and development according to type of building construction.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify indications of potential building collapse and collapse-zone evacuation procedures.</td>
<td>10.5, 11.5</td>
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<tr>
<td>List procedures for citizens to report an emergency.</td>
<td>10.6, 10.7, 11.6, 11.7</td>
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<tr>
<td>Describe the local fire department’s emergency response procedures.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify methods of receiving reports.</td>
<td>10.5, 11.5</td>
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<td>Describe business and personal phone procedures.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Perform radio communications.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify the value of and need for protective systems to help preserve life and property.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify types, components, and valve types of sprinkler systems.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Halt the flow of water from an automatic sprinkler head.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Describe the methods used to return a sprinkler system to service.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify standpipe systems and connections.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Describe the value of sprinkler systems to on-the-scene firefighting.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Locate sprinkler connections.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Describe types and uses of fire streams and hoses.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Operate various fire streams.</td>
<td>10.5, 11.5</td>
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<tr>
<td>List the fundamental components of a modern water system.</td>
<td>10.6, 10.7, 11.6, 11.7</td>
<td>VUS.8, WHI.8</td>
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<tr>
<td>List causes of friction loss in water mains.</td>
<td>10.6, 10.7, 11.6, 11.7</td>
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<tr>
<td>Compare wet-barrel and dry-barrel hydrants.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Operate a hydrant.</td>
<td>10.5, 11.5</td>
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<td>Describe alternative static water sources.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Connect a fire department pump to a water supply.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Describe the procedures for loading and off-loading a mobile water supply apparatus.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify techniques for rolling, repacking, and deploying hose lines.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Identify use and maintenance of a fire hose.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Describe fire-extinguishment theory.</td>
<td>10.5, 11.5</td>
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<tr>
<td>Outline fire-suppression techniques and measures.</td>
<td>10.6, 10.7, 11.6, 11.7</td>
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<td>Description</td>
<td>English: 10.5, 11.5</td>
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<tr>
<td>Describe utility control and rescue operations involving electrical hazards.</td>
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<tr>
<td>Describe the classifications of fire and their corresponding extinguishment methods.</td>
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<tr>
<td>Identify types of foam for fire suppression.</td>
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<tr>
<td>Demonstrate the suppression of Class A and Class B fires, using a hose line.</td>
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<tr>
<td>Demonstrate the suppression of Class A, B, and C fires, using portable fire extinguishers.</td>
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<tr>
<td>Identify the types and ratings of portable fire extinguishers.</td>
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<tr>
<td>Identify the extinguishment theory for fighting wildland fires.</td>
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<tr>
<td>Identify ladder types, parts, and safety features.</td>
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<tr>
<td>Perform ladder carries.</td>
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<tr>
<td>Perform ladder raises.</td>
<td>Mathematics: G.8</td>
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<tr>
<td>Describe maintenance, cleaning, and inspection procedures for ladders.</td>
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<tr>
<td>Differentiate between types of ropes and knots.</td>
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<tr>
<td>Demonstrate the types of knots required for hoisting or securing.</td>
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<tr>
<td>Describe maintenance, cleaning, and inspection functions for life-safety and utility rope.</td>
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<tr>
<td>Identify types of forcible entry tools.</td>
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<tr>
<td>Demonstrate methods for forcing windows and doors.</td>
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<tr>
<td>Describe methods, components, and considerations of forcible entry.</td>
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<tr>
<td>Identify hazards associated with types of rescue situations.</td>
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<tr>
<td>Demonstrate victim-extrication, victim-lifting, and victim-movement processes.</td>
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<tr>
<td>Conduct primary and secondary searches in a structure.</td>
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<tr>
<td>Describe the need for ventilation at a fire scene.</td>
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<tr>
<td>Identify the types of ventilation.</td>
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<tr>
<td>Demonstrate methods for creating horizontal, vertical, mechanical, and hydraulic ventilation.</td>
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<tr>
<td>Set up portable power plants and lighting equipment.</td>
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<tr>
<td>Describe salvage and overhaul needs and techniques.</td>
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<tr>
<td>Describe the need for evidence preservation.</td>
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<tr>
<td>Identify methods for legally securing a building after emergency operations are complete.</td>
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<tr>
<td>Demonstrate use of salvage covers to protect property.</td>
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<tr>
<td>Describe maintenance, cleaning, and inspection functions for salvage and overhaul.</td>
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<tr>
<td>Identify basic HAZMAT standards and resources for handling an incident.</td>
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<tr>
<td>Identify hazardous materials that may be involved in terrorist attacks.</td>
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<tr>
<td>Task</td>
<td>Level</td>
<td>Code</td>
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<tr>
<td>----------------------------------------------------------------------</td>
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<tr>
<td>Describe procedures for responding to a terrorist attack.</td>
<td>English: 10.5, 11.5</td>
<td>History and Social Science: VUS.14, WG.17, WHII.14</td>
</tr>
<tr>
<td>Explain the programs, actions, and services that prevent the loss of life and property associated with fire and other risks to the community.</td>
<td>English: 10.5, 11.5</td>
<td>History and Social Science: VUS.14, WG.17, WHII.14</td>
</tr>
<tr>
<td>Deliver a fire-safety education presentation.</td>
<td>English: 10.1, 11.1</td>
<td></td>
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<tr>
<td>Research NFPA certification options and regional education opportunities.</td>
<td>English: 10.8, 11.8</td>
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</tbody>
</table>
Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- College and Work Readiness Assessment (CWRA+)
- Customer Service Examination
- Customer Service Specialist (CSS) Examination
- Emergency and Fire Management Services Assessment
- Firefighter I Certification Examination
- National Career Readiness Certificate Assessment
- Professional Communications Certification Examination
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.

- Emergency Medical Telecommunications (8337/36 weeks)
- Firefighting II (8706/36 weeks, 140 hours)

Career Cluster: Law, Public Safety, Corrections and Security

<table>
<thead>
<tr>
<th>Pathway</th>
<th>Occupations</th>
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<tbody>
<tr>
<td>Emergency and Fire Management Services</td>
<td>Dispatcher</td>
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<tr>
<td></td>
<td>Emergency Medical Technician, Paramedic</td>
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<td></td>
<td>Fire Investigator</td>
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<td>Firefighter</td>
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<tr>
<td></td>
<td>Hazardous Materials Removal Worker</td>
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</table>