

Fire Science Skills

- Purpose:** To provide the Health Science and Public Safety student with an opportunity to develop and demonstrate knowledge and skills as an entry level firefighter.
- Description of Event:** This event will consist of two rounds of competition. Round One will be a written, multiple choice test of knowledge and understanding. The top scoring competitors will advance to Round Two for the performance of selected skill procedure(s) identified in a written scenario. The scenario will require the use of critical thinking skills. The performance will be timed and evaluated according to the event guidelines.
- Dress Code:** Competitors shall wear proper business attire or official HOSA uniform, or attire appropriate to the occupational area, during the orientation and written test. Competitors will wear turnouts, helmet and appropriate PPE to the occupational area during the skill procedure(s). Bonus points will be awarded for proper dress.
- Rules and Procedures**
- Competitors in this event must be active members of HOSA in good standing in the category in which they are registered to compete (Secondary or Postsecondary/Collegiate). Competitors should compete in skill events at the highest level of their training.
 - The test shall be developed from a HOSA test item bank and will consist of fifty (50) multiple choice items. Competitors will be given 60 minutes to complete the test.

Round One: **Written Test Plan**

Fire Behavior.....	10%
Incident Command System.....	5%
Effective Communication Skills and Documentation	10%
Building Construction	10%
Wildland Firefighting	10%
Firefighter Safety.....	10%
History of Fire Service.....	5%
Firefighter Tools and Equipment.....	5%
Water Supply	5%
Basic Emergency Medical Care.....	10%
Fire Suppression.....	10%
Hazardous Materials	10%

- All competitors shall report to the site of the event orientation at the time designated. The Round One test will immediately follow the orientation. **No proxies will be allowed for the orientation.**

NOTE: *This is a Nevada only event, does not qualify for ILC.*

- All official references are used in the development of the written test. The specific reference selected for each procedure is listed in the Facilities, Equipment and Materials section of these guidelines.
 - Goodson, Carl and Lynne Murnane. *Essentials of Fire Fighting and Fire Department Operations*, Brady/Prentice Hall Publishing, Latest edition.
 - Jones and Jones. *Fire Fighter Skills*. Jones and Bartlett Publishing, Latest edition.

- NWCG, *Fireline Handbook*, National Wildland Coordination Group, Latest edition.
5. The test score from Round One will be used to qualify the competitor for the Round Two skill procedures, and will be used as a part of the final score for the event.
 6. For national competition, one, two or three skill procedures will be selected and may be evaluated as stand-alone skills, or in combination. The procedures approved for this event are:

Procedure I:	Portable Fire Extinguishers
Procedure II:	Deploying Fire Shelter
Procedure III:	Folding Salvage Cover
Procedure IV:	Rescue Firefighter Coat Drag
Procedure V:	Identification of Ladder Parts
Procedure VI:	Changing a SCBA Cylinder
Procedure VII:	Tie a Bowline Knot
Procedure VIII:	Donning and Doffing PPE
 7. The selected procedure(s) for Round Two, in the form of a Fire Science skill sheet (written scenario), will be presented to the competitor at the start of the skill to be performed. The timing for the skill will begin when the scenario is presented. The scenario will be the same for each competitor and will include a challenging component that will require the competitor to apply critical thinking skills.
 8. The scenario is a secret topic. Professional ethics demand that competitors DO NOT discuss or reveal the secret topic until after the event has concluded. Competitors who violate this ethical standard will be disqualified.
 9. In case of a tie, the highest test score will be used to determine the rank.
 10. Competitors must complete all steps of the procedure listed in the guidelines even if the steps must be simulated/verbalized. Steps may NOT be simulated/verbalized when the equipment/materials are available.
 11. The competitor must earn a score of 70% or higher on the combined skill procedure(s) of the event (excluding the test) in order to be recognized as an award winner at the SLC.
 12. Competitors will be stopped at the end of the time allowed for a selected procedure(s).
 13. Competitors must bring all items noted with *** in the materials section of these guidelines to the event.
 14. Competitors must be familiar with and adhere to the "General Rules and Regulations of the National HOSA Competitive Events Program."

Required Personnel

1. One Event Manager per event
2. One Section Leader per section
3. One judge per procedure selected per section (with expertise in the specific skill area)
4. Proctors for testing
5. One-two event assistants per section
6. Clients as required by the scenario (per section)
7. Holding room attendant(s)
8. Timekeepers (if necessary)
9. One QA to provide quality assurance for the event by ensuring that the guidelines are followed and all event documents are complete.

Facilities, Equipment and Materials (Per Section)**General**

1. Facility for skill testing.
2. Holding rooms or areas for competitors
3. Written scenario (one copy per competitor and judge)
4. Calculators, note pads, pencils for judges
5. Certificates for each competitor that completes Round One
6. Event evaluations and pencils
7. Stopwatch
- *** 8. Gloves
- *** 9. Watch with second hand
- *** 10. Pens and pencils for all procedures
11. Assorted props.
- *** 12. Print or electronic copy of the event guidelines for the event orientation

Round One: Written Test (Reference: All resources)

1. One test copy per competitor
2. Scantron forms
3. Paper for scratch paper/cover sheet

Round Two:**Procedure I Portable Fire Extinguishers**

1. Fire Extinguisher
2. Simulated Fire Prop
- *** 3. PPE

Procedure II Deploying Fire Shelter (Reference: NWCG, A New Generation Fire Shelter)

- *** 1. Fire Shelter
2. Posters marking areas
- *** 3. PPE

Procedure III Folding Salvage Cover

1. Salvage Cover
- *** 2. PPE

Procedure IV Rescue Firefighter Coat Drag

1. Manikin with Turnouts
- *** 2. PPE

Procedure V Identify Parts of a Ladder

- ***
1. Ladder
 2. PPE

Procedure VI Change SCBA Cylinder

- ***
1. SCBA with Harness and extra cylinder
 2. PPE

Procedure VII Tie a Bowline Knot

- ***
1. Rope
 2. PPE
 3. Structure to adhere knot (Ladder, tool)

Procedure VIII Donning and Doffing PPE

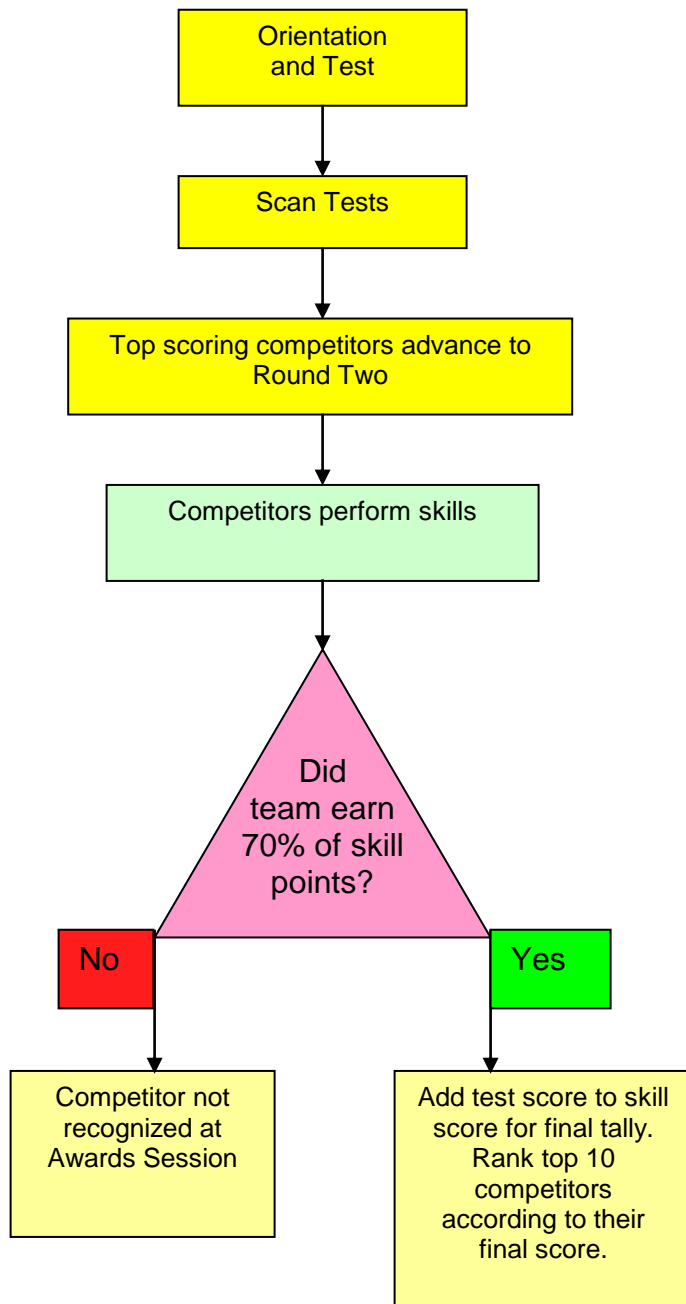
- ***
1. PPE

*** Equipment brought to the event by the competitor.

Sample Round One Test Questions

1. PIV stands for:
 - A. post indicator valve
 - B. pre indicator valve
 - C. private indicator value
 - D. post incident valuable
2. Rescue breathing for infants does not include:
 - A. check for responsiveness
 - B. applying AED
 - C. correct airway if closed
 - D. check for signs of foreign objects
3. The fire tetrahedron includes:
 - A. nitrogen, heat, fuel
 - B. oxygen, fuel, heat
 - C. fuel, heat, nitrogen, self-sustained chemical reaction
 - D. oxygen, fuel, heat, self-sustained chemical reaction

Event Flow Chart



Fire Science

Competitor #: _____ Judge's Signature: _____

Procedure I	Portable Fire Extinguishers (Time: 3 minutes)	Possible	Awarded
1.	Select correct extinguisher for type of fire. <ul style="list-style-type: none"> • Choose the A-B-C portable extinguisher 	4	0
2.	Check pressure gauge.	2	0
3.	Pull pin and squeeze handle to test extinguisher.	2	0
4.	Approach fire upwind/upgrade.	3	0
5.	Correctly extinguish simulated fire by sweeping the nozzle back and forth at the base of the flames. <ul style="list-style-type: none"> • Simulates squeezing the handle. • Uses sweeping motion at base of fire. 	2	0
6.	Correct PPE. (clothing, eye protection) <ul style="list-style-type: none"> • Have either turnouts or wildland gear on • Correct eye protection 	2	0
TOTAL POINTS -- PROCEDURE I		15	

***If a student jeopardizes the patient's or his/her own safety or fails to perform a critical technique and does not take immediate action to correct the error, the total points for the procedure or specific subpart(s) will be deducted.*

FIRE SCIENCE

Competitor #: _____ Judge's Signature: _____

Procedure II	Deploying a Fire Shelter (Time: 1 minute)	Possible	Awarded
1.	Select appropriate deployment area. • Flat area with no fuel load.	3 0	
2.	Use pull strap to remove the shelter from its case.	2 0	
3.	Verbalize removing plastic bag from shelter.	2 0	
4.	Grab shake handles and unfold shelter with opening toward your body.	2 0	
5.	Lie face down in shelter with feet toward the flames. • Shelter is completely covering the firefighter.	3 0	
6.	Slip hands or arms through holddown straps or handles.	2 0	
7.	Removed flammable items and has gloves and hardhat still on. • Pack items that are flammable and other items that could be considered fuel.	3 0	
8.	Correct PPE. • Turnouts or Wildland Gear. • Eye Protection	3 0	
TOTAL POINTS -- PROCEDURE II		20	

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FIRE SCIENCE

Competitor #: _____ Judge's Signature: _____

Procedure III	Folding a Salvage Cover (Time: 5 minutes)	Possible	Awarded
1.	Spread salvage cover flat on ground.	3 0	
2.	Fold cover to reduce side <ul style="list-style-type: none"> • Flip outside edges to create a fold at quarter point. 	3 0	
3.	Fold with finish side out. <ul style="list-style-type: none"> • Folded edges should meet at middle of the cover. 	3 0	
3.	Finish cover by rolling or folding.	3 0	
4.	Correct PPE.	3 0	
TOTAL POINTS -- PROCEDURE III		15	

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FIRE SCIENCE

Competitor #: _____ Judge's Signature: _____

Procedure IV Rescue Firefighter Coat Drag (Time: 3 minutes)	Possible	Awarded
1. Place firefighter face-up.	3 0	
2. Grasp fire coat by collar.	2 0	
3. Work to move victim to safe area. • Area will be marked.	3 0	
4. Move victim 40 feet.	3 0	
5. Correct PPE. • Turnouts, Gloves and Helmet. • Eye Protection	4 0	
TOTAL POINTS -- PROCEDURE IV	15	

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FIRE SCIENCE

Competitor #: _____ Judge's Signature: _____

Procedure V	Identification of Ladder Parts (Time: 5 minutes)	Possible	Awarded
1.	Identify the Beam.	1 0	
2.	Identify the Bed Section.	1 0	
3.	Identify the Heel, Foot, Base, or Butt.	1 0	
4.	Identify the Fly Section.	1 0	
5.	Identify the Cleat, Shoes, or Butt Plates.	1 0	
6.	Identify the Dogs, Pawls, Rung Locks/Ladder Locks.	1 0	
7.	Identify Halyard.	1 0	
8.	Identify the Guides or Channels.	1 0	
9.	Identify the Sensor Label.	1 0	
10.	Identify the Hooks (Roof Ladder).	1 0	
11.	Identify the Rungs.	1 0	
12.	Identify the Rails.	1 0	
13.	Identify the Stops.	1 0	
14.	Correct PPE.	2 0	
TOTAL POINTS -- PROCEDURE V		15	

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FIRE SCIENCE

Competitor #: _____ Judge's Signature: _____

Procedure VI	Changing a SCBA Cylinder (Time: 5 minutes)	Possible	Awarded
1.	Place SCBA on ground. • Harness is face down.	2 0	
2.	Locate a full cylinder.	1 0	
3.	Close a cylinder value. • Hand tight.	2 0	
4.	Bleed off pressure.	2 0	
5.	Disconnect the high pressure hose from the cylinder.	2 0	
6.	Release the cylinder closing device.	2 0	
7.	Replace empty cylinder with a full cylinder.	1 0	
8.	Secure full cylinder in harness.	2 0	
9.	Connect high pressure hose to the cylinder.	2 0	
10.	Open the cylinder and check the operation of the gauge.	2 0	
11.	Correct PPE. • Turnouts and helmet. • Eye protection	2 0	
TOTAL POINTS -- PROCEDURE VI		20	

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FIRE SCIENCE

Competitor #: _____ Judge's Signature: _____

Procedure VII	Tie a Bowline Knot (Time: 3 minutes)	Possible	Awarded
1.	Select correct length of rope. <ul style="list-style-type: none"> • Selected the long length versus the short length. 	3 0	
2.	Tie correct knot with overhand safety in correct position. <ul style="list-style-type: none"> • Bowline knot is secure. • Safety knot is positioned above the knot. 	4 0	
3.	Correct PPE <ul style="list-style-type: none"> • Turnouts on properly. • Eye Protection on properly • Gloves on properly. 	3 0	
TOTAL POINTS -- PROCEDURE VII		10	

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FIRE SCIENCE

Competitor #: _____ Judge's Signature: _____

Procedure VIII	Donning and Doffing PPE (Time: 5 minutes)	Possible	Awarded
1.	Don hood (hood maybe rolled down around collar of coat).	2	0
2.	Don and fasten all closures on pant/boots and coat.	2	0
3.	Collar turned up on coat.	2	0
4.	Don helmet and tighten chin strap, helmet ear flaps down.	2	0
5.	Don gloves.	3	0
6.	Doff protective clothing and place back in service. <ul style="list-style-type: none"> • Placed in gear bag 	3	0
7.	Completed skill in allotted time. <ul style="list-style-type: none"> • Turnout gear is donned properly • Turnout gear is doffed properly. 	4	0
8.	Correct attire underneath gear. <ul style="list-style-type: none"> • Wearing appropriate station uniform.* 	2	0
TOTAL POINTS -- PROCEDURE VIII		20	

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**Station uniform includes protective boots. Belt, appropriate slacks that are Class A or B uniform, or polo.*