

### **Reading Comprehension Sample Assessment (Part 1)**

The Reading Comprehension Sample Assessment is composed of multiple short readings and a few multiple-choice questions for each reading. The first three readings (Part 1) have 15 questions and are designed to test your ability to complete the readings and questions in under 20 minutes. The goal is to feel comfortable with the time limit and achieve at least 67% (10/15). Keep practicing until you can meet this goal and feel comfortable - if you have any problems, please contact [trades\\_Assessment@bcit.ca](mailto:trades_Assessment@bcit.ca) for advice and suggestions.

## **Reading One: Craftsman Tool Warranty**

### FULL TWO YEAR WARRANTY ON CRAFTSMAN TOOL

If this Craftsman tool fails to operate within two years from the date of purchase, return it to the nearest Sears Canada Inc. ("Sears") store and "Sears" will repair it, free of charge.

If this tool is used for commercial or rental purposes this warranty applies only for 90 days from the date of purchase.

This warranty is in addition to any statutory warranty.

SEARS CANADAINC., TORONTO, CANADA, M5B 2B8

### INTRODUCTION

DOUBLE INSULATION is a concept in safety in electric power tools, which eliminates the need for the visual three wire grounded power cord and grounded supply system. Whenever there is electric current in the tool there are two complete sets of insulation to protect the user. All exposed metal parts are isolated from the internal metal motor components with protecting insulation.

IMPORTANT – Servicing of a tool with double insulation requires extreme care and knowledge of the system and should be performed only by a qualified service technician. For service we suggest you return the tool to your nearest Sears Store for repair. Always use original factory replacement parts when servicing.

### RULES FOR SAFE OPERATION

WARNING - DO NOT ATTEMPT TO OPERATE UNTIL YOU HAVE READ THOROUGHLY AND UNDERSTAND COMPLETELY ALL INSTRUCTIONS, RULES, ETC. CONTAINED IN THIS MANUAL. FAILURE TO COMPLY CAN RESULT IN ACCIDENTS INVOLVING FIRE, ELECTRIC SHOCK, OR SERIOUS PERSONAL INJURY. SAVE OWNER'S MANUAL AND REVIEW FREQUENTLY FOR CONTINUING SAFE OPERATION, AND INSTRUCTING POSSIBLE THIRD-PARTY USER.

## Craftsman Tool Warranty Questions

- 1) If the drill is used for commercial or rental purposes, how much shorter is the warranty?
  - A. 20 months
  - B. 21 months
  - C. 22 months
  - D. 23 months
  
- 2) Double insulation eliminates the need for:
  - A. Three wire grounded power cord
  - B. Insulation in the walls
  - C. Safety glasses
  - D. Batteries
  
- 3) Sears Canada Inc has their head office located in
  - A. Vancouver
  - B. Montreal
  - C. Halifax
  - D. Toronto
  
- 4) Double insulation means
  - A. Tools are protected from the cold
  - B. Exposed metal parts are isolated from the internal motor
  - C. The power cord has a specific ground prong
  - D. Sears will pay double if the tool breaks

## **Reading Two: Insulation**

There is a wide range of insulation material available in the marketplace today and there are new insulation materials, new formulations and variations appearing all the time. Today, in addition to commonly used fibreglass, cellulose, polystyrene, and polyisocyanurate insulations, we can purchase insulation materials made from mineral wool, cementitious foam, radiant foil, cellular glass, vacuum panels, gas-filled panels, wool, recycled cotton, and polyester. No other building component offers such a diverse range of materials and material properties.

Determining what type and quantity of insulation to install can be a complex decision. Environmental performance, human health and building science considerations must be taken into account.

To understand insulation materials, it helps to understand the basics of heat (thermal) energy flow. There are three primary modes or ways that heat flows: conduction, convection, and radiation.

Thermal conduction is the movement of heat by direct contact. We generally think of conduction occurring between solid materials: the metal handle of a hot pot conducting its heat to your hand, for example. This is the most efficient mode of heat flow.

Convection is the transfer of heat in liquids and gases. As water or air are warmed they expand, become more buoyant, and rise – a process called natural convection.

Finally, radiation is the transfer of heat through space from surfaces of one body onto another via electromagnetic waves. Our body gets warmed by the sun's rays, for example.

Heat flow is almost always occurring through all of these ways simultaneously, and insulation design must take that into account.

Most insulation materials work by slowing the conductive flow of heat. Materials with low thermal conductivity more effectively block heat flow than materials with high thermal conductivity. The R-value of an insulation material is primarily a measure of its resistance to conductive heat flow (i.e. R-11, R-20) - the higher the number, the greater the resistance to heat flow. Many common insulation materials work because of tiny pockets of air, or some other gas, trapped inside them. The performance of that insulation material is determined mostly by the conductivity of the gas trapped in those spaces. With fibre insulation materials such as fibreglass, cellulose, and cotton, pockets of air are trapped between the fibres. With cellular insulation materials such as polystyrene, air or gas is trapped within or between the plastic cells that make up the foam.

Insulation materials are designed to balance and reduce competing modes of heat flow. Since gases conduct less heat than solids, more porous insulation materials are usually more effective. However, convective loops can form within air pockets, accelerating heat transfer and potentially offsetting the benefit of that trapped air. Small pockets are better, but if the pockets get too small and the materials too dense, conduction can increase.

Air leakage can also occur through insulation materials. This can reduce the material's overall effective R-value. Loose-fill fibreglass, for instance, usually allows more airflow than cellulose insulation does.

Proper selection of insulation is a complex but important part of building construction.

Reprinted with permission: *Wood Design & Building* magazine; Alex Wilson.

## Insulation Questions

1. Air is used in insulation because:

- a. it does not cost very much
- b. it has low thermal conductivity
- c. it expands quickly
- d. gas is too dangerous

2. An R 30 insulation value:

- a. Provides more resistance to heat flow than R 12
- b. Allows more air flow than R 20
- c. Is less conductive than R 40
- d. Radiates more heat than R 12

3. Thermal energy moves by:

- a. Convection, conduction, radiation
- b. Induction, radiation, convection
- c. Convection, radiation, conduction
- d. Radiation, induction, convection

4. Insulation can be made from:

- a. fibreglass, cellulose, gas-filled panels
- b. mineral wool, recycled cloth, radiant foil
- c. cellular glass, vacuum panels, polystyrene
- d. all of the above

5. Burning your hand on a hot piece of metal is an example of:

- a. Radiation
- b. Insulation
- c. Convection
- d. Conduction

6. Hot air rises because it:

- a. shrinks
- b. insulates
- c. radiates
- d. expands

7. A sweater keeps our body warm because:

- a. The tiny holes trap gas
- b. Air leakage conducts heat
- c. The fabric reflects cold air
- d. Wool is warm

## Reading Three: Cereal

### Cereal A

#### Nutrition Facts

Serving Size: 1 cup (30g)

##### Amount Per Serving

**Calories** 110                      Calories from Fat 4

**% Daily Value\***

**Total Fat** 0.5 g                      **1%**

    Saturated Fat 0.16 g              **1%**

    Trans Fat 0 g

**Cholesterol** 0 mg                      **0%**

**Sodium** 270 mg                      **11%**

**Potassium** 50.1 mg                      **1%**

**Total Carbohydrate** 25.23 g              **8%**

    Dietary Fiber 1.2 g                      **5%**

    Sugars 2 g

    Sugar Alcohols

**Protein** 2 g

**Vitamin A** 500.1 IU                      10%

**Vitamin C** 6 mg                      10%

**Calcium** 249.9 mg                      25%

**Iron** 8.4 mg                      47%

### Cereal B

#### Nutrition Facts

Serving Size: 3/4 Cup (53g)

##### Amount Per Serving

**Calories** 190                      Calories from Fat 30

**% Daily Value\***

**Total Fat** 3 g                      **5%**

    Saturated Fat 0 g                      **0%**

    Trans Fat

**Cholesterol** 0 mg                      **0%**

**Sodium** 80 mg                      **3%**

**Potassium**

**Total Carbohydrate** 38 g                      **13%**

    Dietary Fiber 6 g                      **24%**

    Sugars 9 g

    Sugar Alcohols

**Protein** 6 g

**Vitamin A** 100 IU                      2%

**Vitamin C** 0 mg                      0%

**Calcium** 60 mg                      6%

**Iron** 1.08 mg                      6%

## Cereal Questions

- 1) Which has the most sodium?
  - A.  $\frac{1}{2}$  cup cereal A
  - B. 1-1/2 cups cereal B
  - C.  $\frac{3}{4}$  cup Cereal B
  - D.  $\frac{3}{4}$  cup cereal A
  
- 2) A serving of cereal B has 6 times as much of this nutrient as cereal A
  - A. Sugar
  - B. Protein
  - C. Vitamin C
  - D. Total Fat
  
- 3) How many grams of cereal A would you need to eat to get 100% of your daily value of fiber?
  - A. 60 grams
  - B. 600 grams
  - C. 6 kilograms
  - D. 600 kilograms
  
- 4) Which has the least calories from fat?
  - A.  $\frac{1}{4}$  cup of cereal B
  - B.  $\frac{1}{2}$  cup of cereal B
  - C. 2 cups of cereal A
  - D. 4  $\frac{1}{2}$  cups of cereal A

Craftsman Tool Warranty Answers:

1. B
2. A
3. D
4. B

Insulation Answers:

1. B
2. A
3. C
4. D
5. D
6. D
7. A

Cereal Answers:

8. D
9. D
10. B
11. C



## **BCIT Reading Comprehension PreTest Practice- Part 2**

Part 2 has 4 readings and 16 questions. You should be able to do all of the readings and score more than 65% (11/16 correct answers) in under 20 minutes.

If you do not score this well, keep practicing and contact [trades\\_assessment@bcit.ca](mailto:trades_assessment@bcit.ca) for help. There are also a multitude of self-help programs available, such as the preparation books or kits for the Scholastic Achievement Test (SAT), TOEFL (Test of English as a Foreign Language), and the International English Language Testing System (IELTS). Public and school libraries, book stores, and the internet offer these and more.

## The Hazards of Excessive Heat

When the body heats too quickly to cool itself safely, or when you lose too much fluid or salt through dehydration or sweating, your body temperature rises and heat-related illness may develop. Heat disorders share one common feature: the individual has been in the heat too long or exercised too much for his or her age and physical condition.

Studies indicate that, other things being equal, the severity of heat disorders tends to increase with age. Conditions that cause heat cramps in a 17-year-old may result in heat exhaustion in someone 40 years old, and in heat stroke in a person over 60. Sunburn, with its [ultraviolet radiation](#) burns, can significantly retard the skin's ability to shed excess heat. Acclimatization has to do with adjusting sweat-salt concentrations, among other things. The idea is to lose enough water to regulate body temperature, with the least possible chemical disturbance--salt depletion.

The [Heat Index](#), sometimes referred to as the apparent temperature, is given in [degrees Fahrenheit](#). The Heat Index is a measure of how hot it really feels when [relative humidity](#) is factored with the actual air temperature.

To find the Heat Index temperature, look at the [Heat Index chart](#) below. As an example, if the air temperature is 96°F and the relative humidity is 65%, the heat index--how hot it feels--is 121°F

### NOAA's National Weather Service

Heat Index  
Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution
  Extreme Caution
  Danger
  Extreme Danger

**IMPORTANT:** Heat index values were devised for shady, light wind conditions. **Exposure to full sunshine can increase heat index values by up to 15°F.** Strong winds, particularly with very hot, dry air, can also be extremely hazardous.

The [Heat Index Chart](#) shaded zone above 105°F shows a level that may cause increasingly severe heat disorders with continued exposure or physical activity.

## Excessive Heat Questions

If the relative humidity is at 75%, what temperature puts you in extreme danger?

- A. 132°F
- B. 96°F
- C. 70°F
- D. 94°F

Exposure to full sunshine can increase heat values by as much as:

- A. 12°F
- B. 13°F
- C. 14°F
- D. 15°F

What conditions can affect heat related illness?

- A. Age
- B. Physical condition
- C. Sunburn
- D. All of the above

The heat index is a measure of:

- A. The temperature of the earth
- B. The relative humidity
- C. How hot it feels to your body
- D. The boiling temperature of water

## Aircraft Bolts

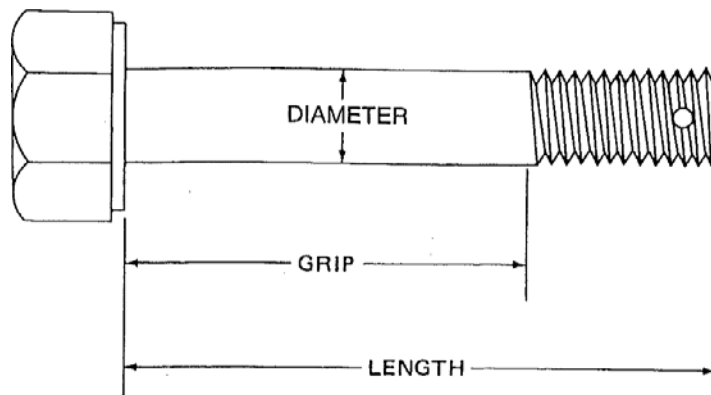
Aircraft bolts can be identified by an AN number. A breakdown of a typical bolt with an AN number follows:

### AN4-7

- AN means the bolt is manufactured according to Air Force Navy specifications.
- 4 identifies the diameter of the shank in 1/16<sup>th</sup> inch increments
- 7 identifies the length of the shank in 1/8<sup>th</sup> inch increments

So, this particular bolt is a 1/4 inch diameter AN bolt that is 7/8 inch long measured from just under the head to the tip of the shank. The bolt also has a drilled shank which means it can accept a cotter pin. Also, bolt length may vary by + 1/32" to -1/64".

- If the letter "e" follows the AN designation (ANe) that identifies a stainless steel bolt. The letter "H" after AN (ANH) identifies a drilled head bolt. The letter "A" (AN4-7A) means the shank of the bolt is not drilled.



AN Aircraft Bolt Dimensions

In constructing your airplane, you will not encounter many bolts larger than an AN8 (1/2 inch diameter). To add a bit more confusion, if the dash number defining the length of the bolt has two digits, the first digit is the length in whole inches and the second number is the length in additional 1/8" increments. In other words, an AN5-14 bolt would be 1-1/2 inches long.

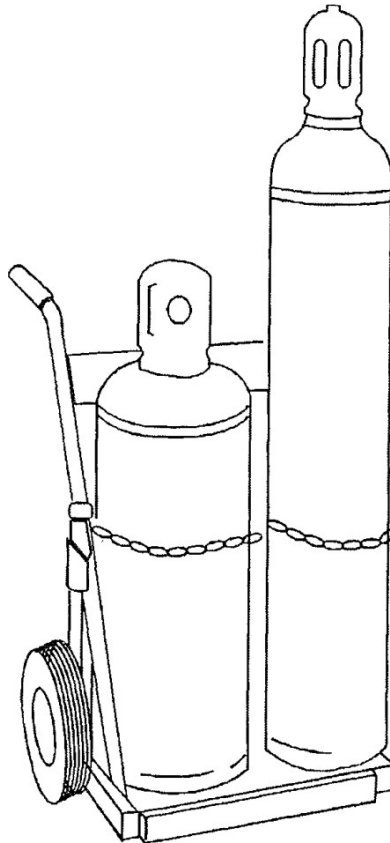
## Aircraft Bolt Questions

1. An AN3-6 bolt has a diameter of:
  - A. 3mm
  - B. 3/16 inch
  - C. 3 inches
  - D. 3/8 inch
  
2. The length of a bolt increases by increments of:
  - A. 1/16"
  - B. 1/8"
  - C. 1/4"
  - D. 3/8"
  
3. A bolt with a length designation 13
  - A. Is 13 inches long
  - B. Is 1-1/3 inches long
  - C. Is 13mm long
  - D. Is 1-3/8 inches long
  
4. If the bolt has an undrilled shank
  - A. It can accept a cotter pin
  - B. It has no threads
  - C. It requires lock wire
  - D. It cannot accept a cotter pin

## *Welding Equipment Set-Up*

To avoid accidents, you must follow an organized procedure for assembling an oxyacetylene unit.

1. Secure the cylinders in an upright position. A safety chain is commonly used to secure cylinders to a portable cart so they do not tip over or get jarred (Figure 1). The cylinder cart is designed to roll easily when tilted back on the wheels, yet be stable and secure when stationary.



**Figure 1**

2. Remove the caps covering the cylinder valves once the cylinders are secured. The caps match the size and colour of the cylinders. Oxygen cylinder caps may be red or green and acetylene caps are black. Cylinder caps should always be in place when transporting or storing cylinders.

3. Before attaching the regulators, “crack” the valves by opening them slightly, then quickly closing them. This clears any dust or foreign particles from the valve outlets. Stand to the side of the valve outlets and make sure they are not pointed toward you or another person. Any particles inside the valves will be ejected with tremendous force.
4. Match the regulator connections to the cylinder valve connections. Start turning the nut by hand (it should turn easily), then tighten it with a cylinder wrench. Do not force the nut to start. If it is cross threaded it will not turn easily and the threads will be damaged. Never over-tighten fittings. Remember, oxygen fittings have right-hand threads. Note that the oxygen cylinder valve is externally threaded on the regulator connection, while the acetylene valve is internally threaded.



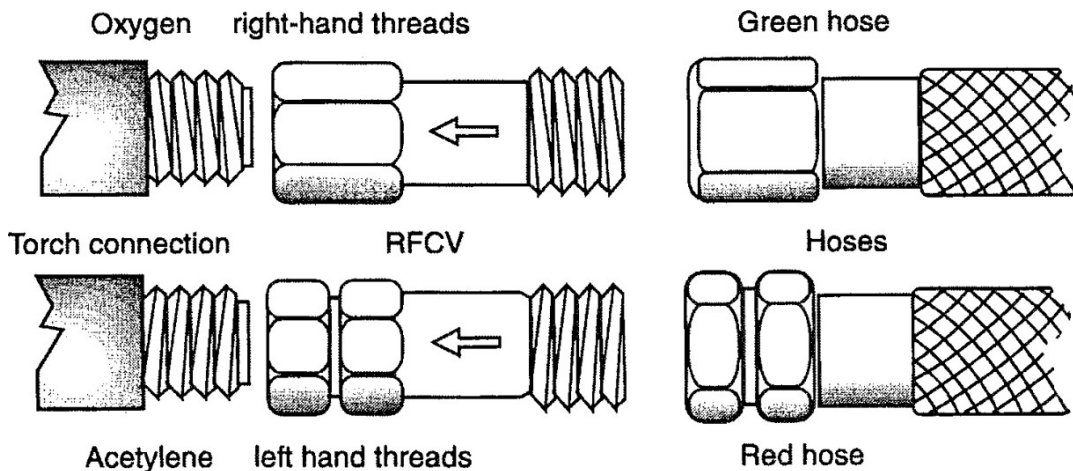
Never lubricate fittings. Oil or grease combined with pressurized oxygen will ignite and cause an explosion. Machined fittings need no lubrication.

5. Turn the pressure-adjusting screws out (counter clockwise) on both regulators. This closes off the regulators so working pressure gauges are not permanently damaged when high-pressure cylinder gases are allowed to flow through the valves.
6. Install reverse flow check valves (RFCVs) to regulator connections and tighten them. Make sure to use RFCVs with correct arrow markings for the direction of gas flow. RFCVs have left-hand or right-hand threads to match with corresponding connections.
7. Connect the hoses to the correct RFCV. The oxygen hose must be connected to the right-hand threaded RFCV and the acetylene hose to the left-hand threaded RFCV. Avoid over-tightening the fittings.
8. Turn the oxygen cylinder valve wheel counterclockwise very slowly to prevent damaging the regulator. Watch the cylinder gauge. When maximum pressure is reached (the gauge needle will stop), turn the valve all the way open until it stops.
9. Turn the acetylene cylinder valve wheel or wrench counterclockwise very slowly, watching the cylinder gauge at the same time. When the pressure reaches maximum pressure (when the needle stops), turn the valve  $\frac{1}{4}$  to  $\frac{1}{2}$  turn more (this may vary slightly) to maintain that pressure. The small amount of turning provides for a quick closure of the valve should an emergency situation occur. If a cylinder wrench is used on the acetylene cylinder valve, leave it on the valve. Note that when adjusting the cylinder valves, working pressure gauges remain at zero.



Always stand to the side of the regulator and gauge faces in case the regulator fails.

10. Attach the RFCVs to the torch handle (remember to match the arrows to the direction of the gas flow). Connect the hose to the RFCVs (Figure 2). According to the WCB, it is advisable to use the RFCVs at both the torch handle and regulator hose connections.



**Figure 2** Installation of RFCVs

Since RFCVs are sensitive and may become plugged, it is recommended that they be tested once a week.

11. Place the welding tip on the torch handle and hand-tighten the nut. Never use wrench or pliers to tighten the connection, as this can damage seals inside the tip.
12. Adjust the acetylene to correct working pressure first. Open the acetylene torch valve no more than one turn. Turn (clockwise for higher pressure) the acetylene pressure-adjusting screw until the working pressure gauge reads 3psi. This setting may vary, as different tip sizes and torch designs require different pressures. Refer to manufacturer's specifications for correct settings. Next, close the torch valve gently, to prevent damage.
13. Follow the same procedure to adjust the oxygen to the correct working pressure. The working pressure gauge should read 5 psi (again, this may vary).

The torch is ready to use, except there is always the possibility that one or more of the oxygen or acetylene fittings may be leaking.



## Welding Questions

Reverse flow check valves are marked with

- A. Arrows that indicate gas flow
- B. Arrows that indicate the opposite direction of gas flow
- C. Arrows that indicate the rotation of threads
- D. Lines that indicate the rotation of threads

An oxygen hose is

- A. Red with right hand threads
- B. Red with left hand threads
- C. Green with right hand threads
- D. Green with left hand threads

When adjusting a regulator valve you should stand:

- A. Behind the valve
- B. Eye level with the valve
- C. In front of the valve
- D. To the side of the valve

“Cracking” a valve:

- A. Involves hitting it with a hammer
- B. Clears debris from the valve opening
- C. Breaks the valve so that it no longer works
- D. Helps check for leaks

## *Leak Detection*

With the cylinder valves open and gas flowing freely from the tank to the pressure regulator, the working pressure gauge is set at 5 psi for oxygen and 3 psi for acetylene and the torch valves are closed. The system is considered to be pressurized from the cylinders to the torch valves and will remain so, if there are no leaks.

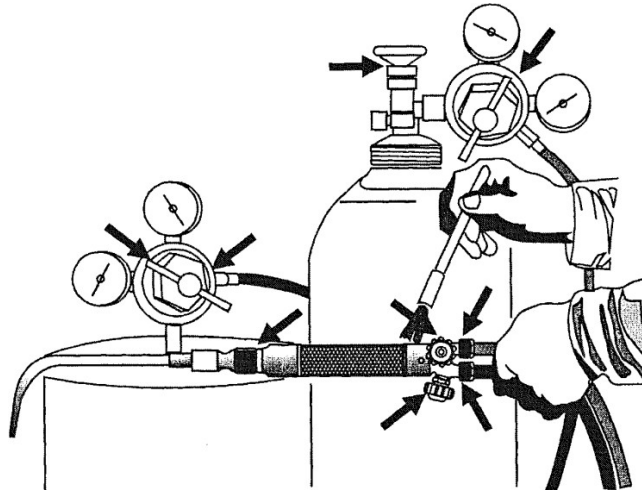
Before you start to use the torch, you should always check the line for leaks, whether the equipment is being assembled for the first time or the set-up is used repeatedly. The line should also be tested after any new cylinders or parts have been installed.

Larger leaks can be quickly detected by closing the cylinder valves after correctly setting the working pressures. If a cylinder gauge shows a pressure drop, there is a leak. Smaller leaks may be detected the same way, but it will take longer for the pressure drop to show on the gauge.

To quickly determine if a small leak is present, increase working pressures to 10 psi after opening the cylinder valves. After adjusting the working pressure, close both cylinder valves again and watch the cylinder pressure gauges for pressure drop. Make sure the torch valves are closed.

If a gauge indicates a leak, use the following methods to pinpoint it:

1. Listen, smell and touch around connections, hoses and fittings for a leak.
2. If the leak cannot be found by those methods, apply a soapsuds solution to possible leak areas (Figure 3). Bubble will appear if there is a leak.



**Figure 3** Apply soapsuds solution to locate leaks

Never use oil or flame near equipment when looking for leaks.

3. Repair the leak, if possible, then test the system again. When cylinder pressure readings remain constant, the system is okay. Be sure to adjust back to recommended working pressures after testing is done.

The equipment is ready for adjusting and lighting the torch.

### Leak Detection Questions

Before lighting a torch the working PSI for acetylene should be

- A. 3 with the torch valve closed
- B. 3 with the torch valve open
- C. 5 with the torch valve closed
- D. 5 with the torch valve open

You may be able to detect a leak by

- A. Taste
- B. Sight
- C. Smell
- D. Heat

When checking for leaks

- A. Keep away from open flame
- B. Use a match
- C. Use a flashlight
- D. Keep your eyes closed

If using soapsuds, when a leak is detected

- A. Soap will seal the leak
- B. The leak will be cleaned and fixed
- C. Stop looking for other leaks
- D. Bubbles will form

Heat Index Answers:

1. B
2. D
3. D
4. C

Aircraft Bolts Answers:

1. B
2. B
3. D
4. D

Welding Equipment Set-up Answers:

1. A
2. C
3. D
4. B

Leak Detection Answers:

1. A
2. C
3. A
4. D