CONSTRUCTION SECTOR COUNCIL | CONSEIL SECTORIEL DE LA CONSTRUCTION

How Do Your Skills Measure Up?

SELF-ASSESSMENT

Construction Workers Workbook

Check your readiness for a career in construction

Developed by: SkillPlan | BC Construction Industry Skills Improvement Council

Funded by the Government of Canada

Canada

SkillPlan, the BC Construction Industry Skills Improvement Council, in collaboration with the Construction Sector Council (CSC) have produced this Essential Skills product.

SkillPlan was formed in response to the learning needs of an evolving industry. SkillPlan's mandate is to provide strategies for building a solid foundation of Essential Skills, the Velcro™ to which all other training sticks. Essential Skills are part of a person's life at work and underlie literacy in the wider community.

SkillPlan is a joint labour and management initiative of the construction industry in British Columbia. It was established as a not-for-profit society in March 1991.

SkillPlan | BC Construction Industry Skills Improvement Council
Suite 405 – 3701 Hastings Street
Burnaby, BC
V5C 2H6

This publication was designed by selecting and reformatting materials developed by SkillPlan and the Construction Sector Council for the website *How do your skills Measure Up?* at **www.skillplan.ca**.

The Construction Sector Council is a national organization committed to the development of a highly skilled workforce – one that will support the future needs of the construction industry in Canada. Created in April 2001, and financed by both government and industry, the CSC is a partnership between labour and business. To download no-charge additional copies of this Self Assessment workbook and Score Sheet, or other Essential Skills exercise books, go to **www.csc-ca.org**. Copies are also available in French.

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The Construction Sector Council
220 Laurier Ave. West, Suite 1150
Ottawa, Ontario, K1P 5Z9
Phone: 613 569-5552
Fax: 613 569-1220
info@csc-ca.org

Workbook Overview

Essential Skills are skills that allow workers in every occupation to get the job done. The nine Essential Skills are Reading Text, Document Use, Numeracy, Writing, Oral Communication, Thinking, Computer Skills, Working with Others and Continuous Learning.

Construction Workers use these skills to work efficiently and safely. They read material for information about achieving certification for journeyperson status. They enter information in forms as a self-employed tradesworker. They refer to data sheets for information on solvents. They read articles on how to choose proper eye protection. Workers learn and use hand signals to direct other workers on the job site. Formulas are used to calculate load weights. Every work-related task involves a strong foundation in these Essential Skills.

This workbook will allow you to practice Reading Text, Document Use and Numeracy. When you are finished the booklet, a score sheet will help you to assess your skills and give you a good idea which areas are your strengths and weaknesses.

The questions are grouped with a document that Construction Workers might encounter in a work situation. The documents include a Red Seal information page, a questionnaire form, a data table for pipe solvents, an article on eye protection, a hand signals reference sheet and a reference chart on load weights.

Don't rush, work carefully. Imagine yourself on the job in the situation suggested by the questions. The tasks are not meant to trick you but to allow you to show what skills you have. Remember that this is an assessment of Essential Skills. All the information to answer the questions is in the document samples. Complete all the tasks to the best of your ability.

Check Your Readiness for a Career in Construction

How do I mark the workbook?

1. Go to the Web site, **www.skillplan.ca**. Click on the ruler, *How do your skills Measure Up*?
2. Click on *Workbooks* under the heading *Choices of Activities* in the left sidebar.
3. Click on *Click here to try our Construction related Workbooks* beside the heading *Construction*.
4. Click on *Workbook Answers* beside the heading *Construction*. See the picture of the Web site page.
5. Use the answer key on pages 3 and 4 to mark your answers.
6. Mark your answers using the score sheet at the back of the Workbook. Remember to place a ✓ or an ✗ under the correct skill column.
7. Count the number of ✓ for each column and put the total number correct at the bottom of the column.
8. Remember that your goal is to score 80% or higher (8 out of 10 for each skill area).

Why do I need 80%?

We usually think about 'passing' a test as answering 50% of the questions correctly. It also means that up to 50% of the answers could be incorrect. In the construction industry, a 50% error rate translates into financial loss, safety concerns, training difficulties and a short career in the trades. International standards set 80% as a measure of 'competency'. This means that there is a good chance that tasks at the same difficulty level will be completed correctly.

What does it mean if I achieve 80%?

Remember, this is an informal assessment. That means that it has not been 'tested' extensively with hundreds of test takers. Completing only 10 tasks for each skill area will give you a general indication of your skill level. That said, 80% means that you are a competent and independent worker when faced with tasks with a similar level of difficulty as the questions represented. Technical training is fast-paced and requires solid Reading Text, Document Use and Numeracy skills.

What does it mean if I don't achieve 80%?

It usually means you can get some of the questions correct some of the time but not consistently. If you scored below 80% in a particular skill area, you should consider improving your skills in that area. Without upgrading, you may find technical training challenging.

How can I improve my skills?

To improve, you need to practice. Practice may mean independent study, or for some, it may require formal upgrading at an educational or training institution. Your score will indicate which is most appropriate for you. For more practice, visit **www.skillplan.ca** and click on the ruler, *How do your skills Measure Up?*

Who should use this workbook?

If you are interested in a career in the trades and want to assess your current Essential Skills using typical construction workplace tasks, then this workbook is for you. Please note that this workbook is not intended for use as a screening tool, nor is it meant to be used as a substitute for actual training instruction. This workbook gives you an indication of your readiness for technical training.

Check Your Readiness for a Career in Construction

What skills does this workbook assess?

Essential Skills are skills that allow workers in every occupation to get the job done. The nine Essential Skills are:

- Reading Text,
- Document Use,
- Numeracy,
- Writing,
- Oral Communication,
- Thinking,
- Computer Skills,
- Working with Others and
- Continuous Learning.

This workbook will allow you to assess your Reading Text, Document Use and Numeracy skills. When you are finished the workbook, a score sheet will help you to assess your skills and give you a good idea which areas are your strengths and weaknesses.

How do I use this workbook?

The questions are grouped with a document that trades people might encounter in a work situation. The documents include a Red Seal information page, a questionnaire form, a data table for pipe solvents, an article on eye protection, a hand signals reference sheet and a reference chart on load weights.

Don't rush, work carefully. Imagine yourself on the job in the situation suggested by the questions. The tasks are not meant to trick you but to allow you to show what skills you have. Remember that this is an assessment of Essential Skills. All the information to answer the questions is in the document samples. Complete all the tasks to the best of your ability.

Where can I find materials to practice these skills?

Additional trades-related activities are available at **www.skillplan.ca**. Click on the ruler *How do your skills Measure Up?*

Another way to practice is to review the questions you got wrong. The Answer Book contains step by step directions for finding the answer to each question. The steps are called *One way to get this answer* because there is often more than one way to arrive at an answer. Use the steps as a model of strategies to find solutions to similar questions or tasks.

Eye Protection

Sheet Metal Workers wear personal protection equipment to protect them from hazards on the job. Look at the safety eyewear article The Eyes Have It.

20 Highlight, underline or circle 2 key messages to workers about safety eyewear protection in this article.

Answer **Any 2 of:**

- **Proper fit is critical**
- **Don't take it off**

See the Eye Protection question 20 answer page.

One way to get this answer

1. Scan the page and headings using the keywords *key messages to workers about safety eyewear protection.*
2. Recognize that headings can be main ideas or key messages.
3. Scan the headings and locate *Types of protection, Proper fit is critical* and *Don't take it off.*
4. Understand that key messages give advice or give information about what to do.
5. Decide which headings contain key messages.
6. Decide that *Types of protection* is important but is not a key message because it does not give advice or information about what to do.
7. Decide that headings such as *Proper fit is critical* and *Don't take it off* give key messages.

Note: Other answers are possible.

Level CLB Reading Text, Level 3
7, 8 & 9 (estimated performance)

SkillPlan

Red Seal Program

Construction trades workers research the Internet to learn about required certification. Look at the Red Seal Program sheet.

1. What is the name of the examination that apprentices must successfully complete to obtain "Red Seal" endorsement?
Reading Text

2. Highlight, underline, or circle the words that state that Red Seal certification allows a tradesperson to work in more than one province or territory (outside the province where they trained). Mark your answer on the document.
Reading Text

3. Why is this certification called "Red Seal"?
Reading Text

4. Where does the apprentice go to take the Interprovincial Standards Examination?
Reading Text

RED SEAL PROGRAM

What is the Interprovincial Standards "Red Seal" Program?

The Red Seal Program was established to provide greater mobility across Canada for skilled workers. Through the program, apprentices who have completed their training and certified journeypersons, are able to obtain a "Red Seal" endorsement on their Certificates of Qualification and Apprenticeship by successfully completing an Interprovincial Standards Examination.

The program encourages standardization of provincial and territorial apprenticeship training and certification programs. The "Red Seal" allows qualified tradespersons to practice the trade in any province or territory in Canada where the trade is designated without having to write further examinations. To date, there are **forty-five trades** included in the Red Seal Program on a national basis.

Legislation permits provinces and territories to designate trades and develop apprenticeship programs for their own requirements. Thus, in excess of 300 apprenticeship programs are available across Canada. The **Ellis Chart**, a comparative chart of apprentice training programs across Canada, is produced by HRSDC in collaboration and consultation with the provinces and territories and provides training and certification details for all of these apprenticeable programs.

Who administers the Interprovincial Standards "Red Seal" Program and how does it work?

The program is administered in each province and territory under the guidance of the Canadian Council of Directors of Apprenticeship (CCDA). Each province and territory has an appointed Director of Apprenticeship for this purpose.

A national occupational analysis, developed for each Red Seal trade, is used as a base document for the development of interprovincial standard examinations and is encouraged to be used by the provinces and territories for curriculum development.

Continuing efforts are underway both to expand the program and to streamline the existing process for the development and revision of national occupational analyses and examinations.

How to obtain a Red Seal?

In certain trades, holders of provincial and territorial Certificates of Qualification can apply to write an Interprovincial Examination; if successful, they receive a distinctive "Red Seal" which is affixed to their Certificate of Qualification.

An Interprovincial Standards Red Seal can be obtained in the trades designated as Red Seal by:

1. a) either graduating from a recognized provincial or territorial apprenticeship training program; or
   b) obtaining a Journeyperson level certificate from a province or territory;
2. passing the Interprovincial Standards Examination for that trade.

The Interprovincial Standards "Red Seal" Examinations are administered through the provincial and territorial certification and apprenticeship offices.

Independent Operator Questionnaire

Employers may require framers to complete forms to show that they have insurance. Look at Independent Operator Questionnaire.

5 A framer works 7½ hours per day, 3 days per week. Enter the number of hours worked per week on the form.
Numeracy

6 A framer owns and uses their own power saws, hand tools, compressor, table saw, and air tools. Enter this information on the form.
Document Use

7 The framer works on his own, without hiring any help. Enter this information on the form.
Document Use

8 Complete the information for questions 7 and 8 on the form. Enter either the information the framer needs to provide, or enter "n/a" if no information is needed.
Document Use

9 Highlight items the framer might have to provide with the completed form. Mark your answer on the document.
Document Use

10 The Workplace Safety and Insurance Board decides that the framer is an Independent Operator. What might the framer have to do to be hired by a contractor?
Document Use

WSIB ONTARIO CSPAAT

Mail to:
200 Front Street West,
Toronto ON M5V 3J1

OR Fax to:
416 344-3200

Please print in black ink

Construction Industry Questionnaire Attachment

print reset

Thank you for contacting the Workplace Safety & Insurance Board (WSIB). In order for us to make a determination regarding your status under the Workplace Safety and Insurance Act, the following form must be completed in full and supporting documentation attached.

Please read and complete this form and the attached Construction Industry Questionnaire. Attach the requested documents and return to the WSIB by fax, mail or in person.

Start Information

1. How many hours per week do you work for your current contractor?

2. On what basis is your salary calculated (hourly, weekly, piecework, etc.)?

3. What equipment is necessary to complete your work?

4. Who provides the equipment?

5. Who pays for the equipment?

6. Do/did you hire (please check either yes or no)

Part-time help?	☐ Yes	☐ No	Full-time help?	☐ Yes	☐ No
Subcontractors?	☐ Yes	☐ No	Family members?	☐ Yes	☐ No
			Casual help?	☐ Yes	☐ No

If you answered yes to any box in question **6**, please advise:

7. How many helpers do you hire?

8. Date hired (dd/mmm/yyyy)

Upon signing the Construction Industry Questionnaire, you agree to provide the WSIB the right to verify your responses.

Please include copies of:

- Canada Revenue Agency, CRA (formerly Canada Customs & Revenue Agency) Employer Number (if applicable), and Business Registration/Articles of Incorporation from the Ministry of Consumer and Business Services (MCBS).
- Brochures/pamphlets/yellow page ad used to advertise your business, if applicable.
- Proof that you file GST.
- All invoices and contracts for work completed for your current contractor within the last six (6) months. If not available, please explain:

- Five (5) to seven (7) invoices or contracts for work completed for other contractors within the last six (6) months. If not available, please explain:

- Purchase orders/receipts for materials supplied within the last three (3) to six (6) months. If not available, please explain:

- Last filed tax return with CCRA - T1 General with Statement of Business Activities (T2124).

Cellular Telephone No. ( )

e-mail address (if applicable)

Additional Information

The **Workplace Safety and Insurance Act** does not automatically cover individuals ruled to be Independent Operators. These individuals may request coverage through the **WSIB's Optional Insurance Policy.**

2023A (02/06) **Please return with the completed Construction Industry Questionnaire.** www.wsib.on.ca

Pipe Data–Solvent Cementing

Steamfitters and pipefitters refer to handbooks when assembling fittings and pipes. Look at Pipe Data–Solvent Cementing.

11 Why is it necessary to remove all burrs and ridges from the pipe end?
Reading Text

12 What is the initial set time needed for a 90 mm pipe if the temperature is 10°C?
Numeracy

13 Solvent cement is used to join a 250 mm pipe and fitting. If the temperature is 20°C and the weather is very humid, how many hours are needed to allow for cure time?
Numeracy

14 A pipefitter has just cemented the joint of an 80 mm pipe. The temperature is 10°C and it is raining. Cementing is finished at 1:00 pm. What is the earliest time of the day that the pipefitter can test the pipe by applying line pressure?
Numeracy

15 A pipefitter cements a 500 millimetre pipe on a hot, humid day (28° C). How many days must pass before the cement completely cures?
Numeracy

PIPE DATA | Selection/Solvent Cementing | 75

Selection & Usage

Reinforced Thermosetting Resin Pipes (RTRP).

RTRP pipe and fittings are supplied in various colors depending on the manufacturer. It is used in all types of industrial and commercial applications.

The methods used to join RTR piping include: butt, bell and spigot adhesive bonding, flanged and threaded connections.

It is supplied in rigid lengths and has maximum operating temperatures of:

- Glass Reinforced Epoxy 300 degrees F (149 degrees C).
- Glass Reinforced Polyester 225 degrees F (107 degrees C).
- Glass Reinforced Vinylestes 250 degrees F (121 degrees C).
- Glass Reinforced Furan 300 degrees F (149 degrees C).

Solvent Cementing

Solvent cementing is the most common method used to join thermoplastic (ABS, PVC, and CPVC) pipe and fittings. The following give a brief description of the steps involved in the assembling of a solvent cement joint:

1. Cut the pipe squarely with a miter box and hand saw or with a plastic pipe cutter.
2. Remove all burrs and ridges from the pipe end. ***Ridges or raised beads on the pipe will have a tendency to wipe away the cement when fitting the joint together.***
3. Wipe the end of the pipe and socket of the fitting to remove any dirt, moisture or grease.
4. Select the appropriate applicator for the size of pipe used. See table #13.
5. The joining surfaces must be softened by the use of primer, cement or a combination of both primer and cement.

Note: Primer is not required on ABS.

PIPE DATA | Solvent Cementing | 76

Solvent Cementing

6. Apply sufficient cement to pipe and fitting to fill the gap space in the joint. See illustration #14.
7. Assemble the pipe and fitting while the cement is still wet and fluid. Twist the pipe slightly while assembling, and when bottomed, hold for approximately 30 seconds to prevent push out from the tapered fitting.
8. Wipe off any excess cement from the assembled joint. Handle the joint with care during set time. Table #14 gives initial set times for various pipe sizes and temperatures.

APPROPRIATE APPLICATOR BRUSH SIZE

Nominal Pipe Size		Maximum Width		Minimum Length	
Inches	Millimetres	Inches	Millimetres	Inches	Millimetres
1 to 1¼	25 to 32	1	25	1½	40
1½ to 2	40 to 50	1½	40	2	50
3	80	2½	65	3	80
4	100	3	80	3½	90
6	150	5	125	5½	140
8	200	6	150	6	150

Table #13 – Applicator Brush Sizes

PIPE DATA | Solvent Cementing | 77

Set and Cure Times

INITIAL SET AND CURE ITEMS

Temperature Range	Initial Set Time ½" to 1¼" (15 mm to 32 mm)	1½" to 3" (40 mm to 80 mm)	3½" to 8" (90 mm to 200 mm)	10" to 14" (250 mm to 350 mm)	16" to 24" (400 mm to 600 mm)
60° - 100°F 15° - 40°C	15 MIN.	30 MIN.	1 HR.	2 HR.	4 HR.
40° - 60°F 5° - 15°C	1 HR.	2 HR.	4 HR.	8 HR.	16 HR.
0° - 40°F - 20° - + 5°C	3 HR.	6 HR.	12 HR.	24 HR.	48 HR.
Cure Times					
60° - 100°F 15° - 40°C	1 to 6 HR.	2 to 12 HR.	6 to 24 HR.	24 HR.	48 to 72 HR.
40° - 60°F 5° - 15°C	2 to 12 HR.	4 to 24 HR.	12 to 48 HR.	72 HR.	120 HR.
0° - 40°F - 20° - + 5°C	8 to 48 HR.	16 to 96 HR.	48 to 192 HR.	192 HR.	240 to 336 HR.

Note: 1. Initial set time indicates joints will withstand normal installation and handling stresses.
2. Cure times indicates required time before testing or before line pressure can be applied.
3. 50% more cure time is required in damp or humid conditions.

Table #14 – Set and Cure Times

Eye Protection

Sheet Metal Workers wear personal protection equipment to protect them from hazards on the job. Look at the safety eyewear article *The eyes have it*.

16 The worker needs to learn about eye protection. Highlight, underline or circle the words in the subtitle that explain what this article is about. Mark your answer on the document.
Reading Text

17 Flying particles are one example of a workplace hazard. Name 4 other hazards or job conditions that require safety eyewear protection.
Reading Text

18 What are 3 types of safety eyewear protection?
Reading Text

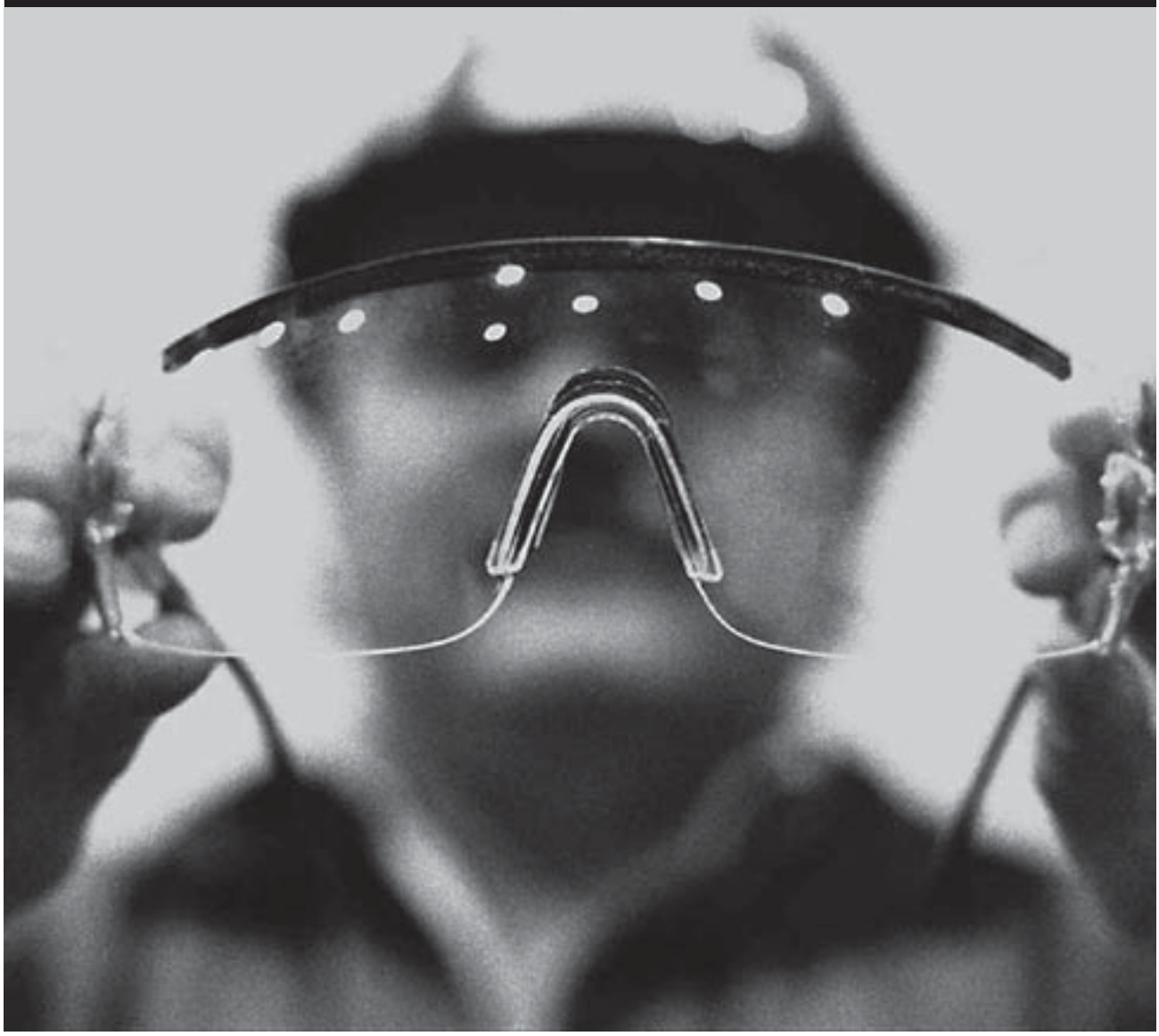
19 What are 2 actions workers can do to get maximum benefit from safety eyewear?
Reading Text

20 Highlight, underline or circle 2 key messages to workers about safety eyewear protection in this article.
Reading Text

The eyes have it

Eye protection can save your vision – even your life. Here's what you need to know.

See next page for full article.



The eyes have it

Eye protection can save your vision – even your life. Here's what you need to know.

By Gina Lego

Safety eyewear is an essential piece of personal protective equipment, but all too often workers wear the wrong kind or, even worse, don't wear it at all. The statistics are startling. In the five-year period ending 2004, WorkSafeBC accepted more than 9,200 short-term and long-term disability claims (excluding health care and rehabilitation costs) related to workplace eye injuries, at a cost of more than $28 million.

Types of protection

Conducting a worksite assessment is the first step in determining the correct fit between eye protection needs and job conditions. Whether a worker is exposed to flying particles from drilling or scaling, UVA/UVB rays, welding light and electrical arcs, or even bloodborne pathogens, each worksite is unique and will require careful selection of proper eye protectors.

Safety glasses provide minimum protection and are for general working conditions where dust, chips, or flying particles may present a hazard. They are available in a variety of styles and provide side protection in the form of shields or wraparound arms. Lenses should have an anti-fog treatment. Goggles provide higher impact, dust, and acid or chemical splash protection than safety glasses. Molded goggles, like those used for skiing, are suitable when workers are continually exposed to splash or fine dust, and should have indirect venting. For less fogging when working with large particles, direct-vent goggles are recommended.

Face shields protect the full face from injury and they offer the highest impact protection and shelter from spraying, chipping, grinding, chemicals, and bloodborne hazards. A face shield is considered a secondary safeguard to protective eyewear; it should never be worn without safety glasses or goggles.

Proper fit is critical

In order to get the maximum benefit from safety eyewear, individuals should be test fitted and assigned a personal set of protective eyewear, then instructed on its care and maintenance. As with any personal item, safety eyewear is more likely to be used if it offers the right look and fit for the individual.

"One of the key factors in getting workers to wear safety eyewear is to offer a choice of styles that suits their individual needs," says Kevin Birnie, WorkSafeBC (WCB)

occupational safety officer. "People have a real preference for the type of eye protection they wear."

Darren Giesbrecht, shop foreman at the Oakmont Industries Division of Guardian Building Products in Surrey, agrees. "Our workers are offered a choice of about six different styles.

If we don't supply a style they like, we'll reimburse them for one of their own choosing."

Don't take it off

Choosing the right safety eyewear is important, but remember it can't protect you if you're not wearing it. "Accidents happen when and where you least expect," says Ken Kirby, a WorkSafeBC engineer. "We often see eye injuries occurring outside of a worker's usual workspace — not where the obvious hazards exist. For example, a worker will take off his protective eyewear to do a job in another area, and that's when the accident occurs."

That's why Kirby feels workers can never be too careful. "Employers are encouraged to consider a general policy where workers are required to wear their protective eyewear at all times while on a worksite."

Eye safety resources

For more information, contact your WorkSafeBC officer, call the WorkSafe Call Centre at 604 276-3100, toll-free at 1 888 621-7233, or visit the following web sites:

- Occupational Health and Safety Regulation, Part 8: Eye and face protection ***http://regulation.healthandsafetycentre.org/s/Part8.asp#SectionNumber:8.14***
- Canadian Centre for Occupational Health and Safety, Safety Glasses and Face Protectors ***www.ccohs.ca/oshanswers/prevention/ppe/glasses.html***

Thanks to WorkSafeBC for permission to reprint "The eyes have it" from WorkSafeBC Magazine (pages 4 and 5, Sept./Oct. 2005 edition). Copies of this document and other workplace health and safety materials are available free of charge at WorkSafeBC.com.

Hand Signals Reference Sheet

Crane Operators use cranes to lift and move equipment and materials on a construction site. They need to understand hand signals to move items safely. Look at the Hand Signals Reference Sheet.

21 Which track is locked when the Travel (One Track) signal is used?
Document Use

22 Which 2 hand signals are for crawler cranes only?
Document Use

23 Which hand signal can be combined with any motion signal?
Document Use

24 Which 2 hand signals can be done with either one or both hands?
Document Use

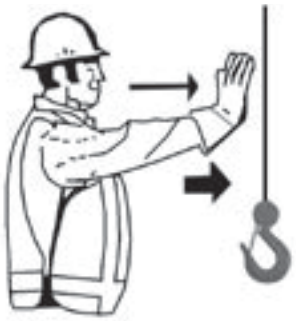
25 Circle the 3 signals used to direct a crawler crane to retract its boom and move forward about 5 metres on both tracks. Place 1, 2, or 3 inside each circle to show the order each signal is used. Mark your answer on the document.
Document Use

Hand Signals Reference Sheet

Standard hand signals for controlling crane operations - crawler, locomotive and truck cranes.

MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example).

STOP. Both arms outstretched at the sides horizontally, fingers outstretched.



TRAVEL. Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.

DOG EVERYTHING. Clasp hands in front of body.

TRAVEL. (Both Tracks). Use both fists in front of body, making a circular motion about each other, indicating direction of travel; forward or backward. (For crawler cranes only.)

TRAVEL. (One Track). Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of body. (For crawler cranes only.)

EXTEND BOOM. (Telescoping Booms). Both fists in front of body with thumbs pointing outward. One hand signal may be used.

RETRACT BOOM. (Telescoping Booms). Both fists in front of body with thumbs pointing toward each other. One hand signal may be used.

Load Weights

Boilermakers repair boilers, vessels, tanks, heat exchangers and other heavy-metal structures. A critical part of the work is preparing heavy loads for rigging. Look at the Load Weights - Calculating page.

26 Calculate the load weight of 200 cubic feet of steel.
Numeracy

27 What is the area of the aluminum disk? The area of a circle is approx. 80% of its diameter squared (diameter × diameter)
Numeracy

28 How many pounds per square foot does the 3" thick aluminum disk weigh?
Numeracy

Pounds / Square Feet	
Aluminum plate	
1/4"	3.50

29 What is the total load weight of the aluminum disk?
load weight of the disk = area of the disk × weight of the disk in pounds/square foot
Numeracy

30 What is the outside circumference of the pipe?
• $\pi = 3.2$ (approx.) • Circumference = πd
Numeracy

Load Weights – Calculating

Materials and Liquids – Pounds/Cubic Feet

Aluminum	165	Iron Casting	450
Asbestos	153	Lead	708
Asphalt	81	Lumber- Fir	32
Brass	524	Lumber- Oak	62
Brick	120	Lumber- RR Ties	50
Bronze	534	Oil Motor	58
Coal	56	Paper	58
Concrete, Reinf.	150	Portland Cement	94
Crushed Rock	95	River Sand	120
Diesel	52	Rubber	94
Dry Earth, Loose	75	Steel	480
Gasoline	45	Water	63
Glass	162	Zinc	437

Pounds / Square Feet

Steel plate	
• 1/8"	5
• 1/4"	10
• 1/2"	20
• 1"	40
Aluminum plate	
• 1/8"	1.75
• 1/4"	3.50
Lumber	
• 3/4" Fir	2
• 3/4" Oak	4

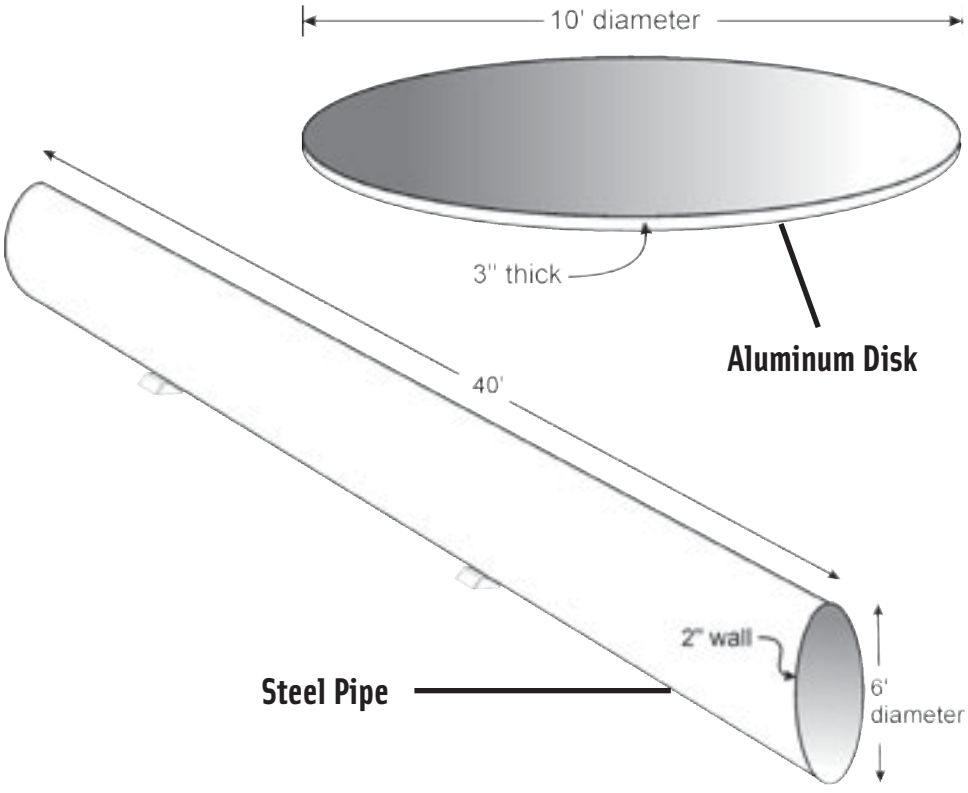
Pounds / Gal.

Gas	6.0
Diesel	7.0
Water	8.3

- 7.5 gallons of liquid to a cubic foot
- 27 cubic feet to a cubic yard
- 2,000 lbs. = 1 U.S. ton

Formulas and Information

- H = Height
- W = Width
- L = Length
- d = diameter
- r = ½ diameter
- π = 3.2 (approx.)
- Area of square or rectangle = LW
- Volume of cube = HWL
- Area of circle = πr2
- Circumference = πd
- The area of a circle is approx. 80% of its diameter squared (diameter × diameter)
- Load Weight (to estimate) = Volume in cu. ft. × 500 lbs. × density factor 0.02, 0.05, 0.10, 0.20, 0.30, etc.



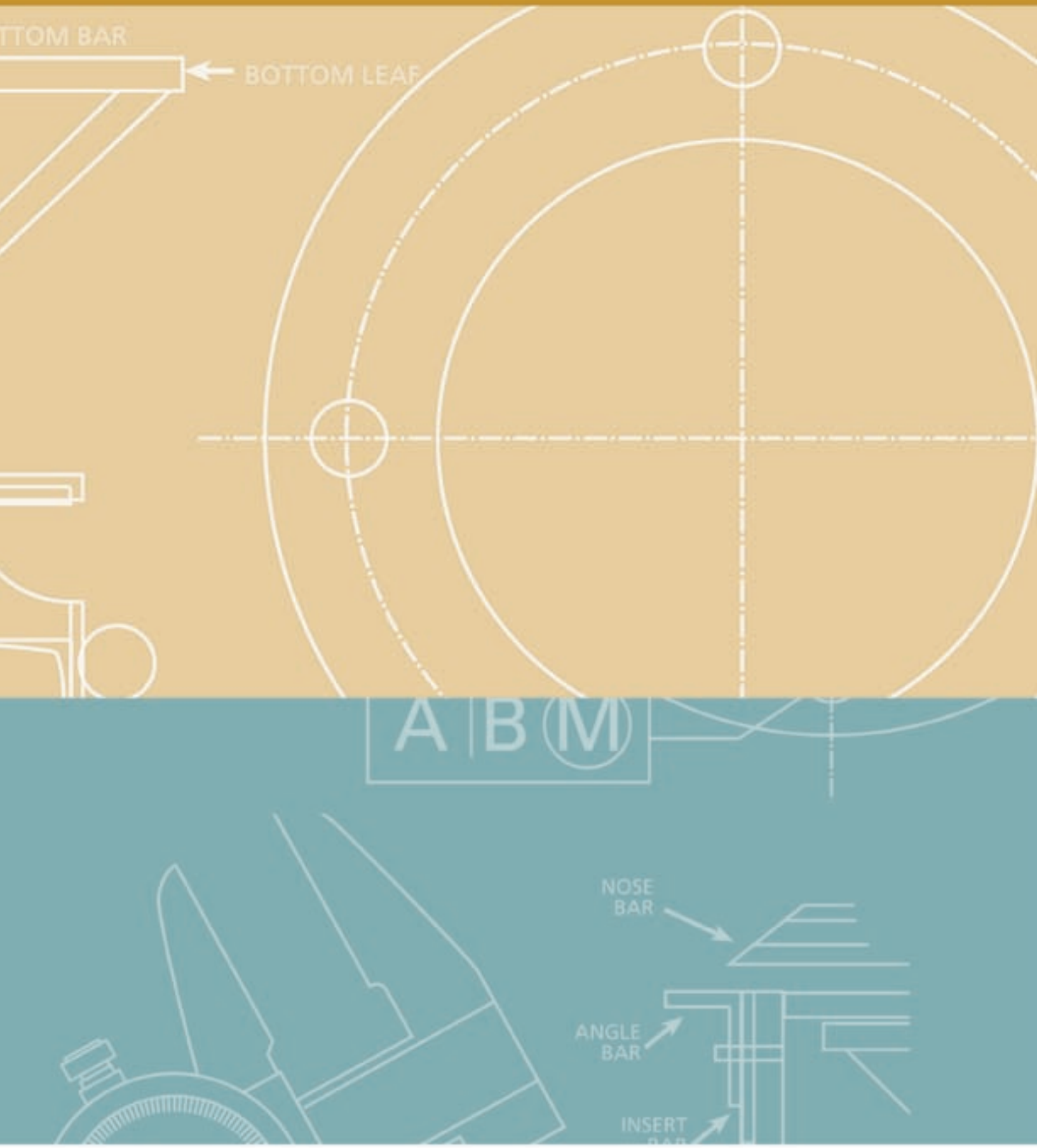
Construction Workers Workbook – Score Sheet

Record your scores from the Answer Key found at **www.skillplan.ca**. Mark your scores with a check mark (use the symbol ✓or an ✗).

Question Number	Score		
	Reading Text	Document Use	Numeracy
Red Seal Program			
1	❑		
2	❑		
3	❑		
4	❑		
Independent Operator Questionnaire			
5			❑
6		❑	
7		❑	
8		❑	
9		❑	
10		❑	
Pipe Data – Solvent Cementing			
11	❑		
12			❑
13			❑
14			❑
15			❑
Eye Protection			
16	❑		
17	❑		
18	❑		
19	❑		
20	❑		
Hand Signals Reference Sheet			
21		❑	
22		❑	
23		❑	
24		❑	
25		❑	
Load Weights			
26			❑
27			❑
28			❑
29			❑
30			❑
Your score			
Total Possible	**10**	**10**	**10**

Question Number	Score		
	Reading Text	Document Use	Numeracy
Red Seal Program			
1	❑		
2	❑		
3	❑		
4	❑		
Independent Operator Questionnaire			
5			❑
6		❑	
7		❑	
8		❑	
9		❑	
10		❑	
Pipe Data – Solvent Cementing			
11	❑		
12			❑
13			❑
14			❑
15			❑
Eye Protection			
16	❑		
17	❑		
18	❑		
19	❑		
20	❑		
Hand Signals Reference Sheet			
21		❑	
22		❑	
23		❑	
24		❑	
25		❑	
Load Weights			
26			❑
27			❑
28			❑
29			❑
30			❑
Your score			
Total Possible	**10**	**10**	**10**

Your goal is to score 8 out of 10 (80%) or higher in each skill area.


TTOM BAR
BOTTOM LEAF
NOSE
BAR
ANGLE
BAR
INSERT