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Orientation Task 1 - ESSENTIAL SKILLS WALL CHART- Recommended

**Document Use, Oral Communication****Thinking Skills: Decision Making, Critical Thinking, Finding Information**

Goal:

This task will provide students with information about Essential Skills. It creates an opportunity for them to reflect on their own learning. It will also open up a group discussion about Essential Skills.

When delivering this task explain the following:

- This task will be used at the end of **every** class
- Everyone will have the opportunity to identify the most important Essential Skill they developed or demonstrated in class

Facilitator Tips:

- ✓ Use this task as a “warm up” for the task called “**Essential Skills Checklist**”
- ✓ Ask for a student volunteer to check off the skills on the chart during the discussion
- ✓ Erase the chart after each class

Note: If this task is presented during the Orientation, it can be used to introduce the nine Essential Skills. It can also be used at the end of the Orientation session to assist students in identifying the Essential Skills they demonstrated during the Orientation. For example, during the Orientation students may demonstrate the skills:

- Reading Text – reading the Student Notes
- Document Use – completing a form or reading a bulleted list in a task
- Oral Communication – participating in a group discussion

In the welding classes that follow the Orientation you can use this task as an Essential Skills summary at the end of each day.

Orientation Task 2 - ESSENTIAL SKILLS CHECKLIST – Recommended



Reading Text, Document Use, Writing

Thinking Skills: Decision Making, Critical Thinking

Goal:

This task will provide students with information about Essential Skills and create an opportunity for them to reflect on their own learning. This exercise will also provide students with an opportunity to work independently on an assigned task.

When delivering this task explain the following:

- This task is completed individually at the end of each class
- The checklist will help them track the Essential Skills they demonstrated in class
- The checklist covers the entire course
- The checklist includes all nine of the Essential Skills
- The checklist will not cover every Essential Skills example, however there is space to add to the list

Facilitator Tips:

- ✓ Ask students to put this checklist at the back or front of their Student Notes so that it will be easy for them to find at the end of each class
- ✓ You may need to assist students individually with this task
- ✓ This task works well as a follow up to the “**Essential Skills Wall Chart**” task

Orientation Task 3 - ESSENTIAL SKILLS PROFILE REVIEW



Reading Text, Document Use, Oral Communication

Thinking Skills: Decision Making, Critical Thinking

Goal:

This task will provide students with information about Essential Skills. It will also provide information about the Essential Skills website and Essential Skills profiles. Finally, students are introduced to a resource to use in their career and job search.

When delivering this task explain the following:

- This course is not designed to train you to work as a Welder
- It's not necessary to read the entire profile word for word. Scanning means running your eyes over the text quickly to locate keywords and find specific information needed to complete a task or make a decision.

Facilitator Tips:

- ✓ Offer to help students search the Essential Skills website individually whenever they have spare time
- ✓ If students are not familiar with scanning you could use the task in the Orientation section called “**Scanning**” as an introduction

Answers:

- How could reading Essential Skills profiles help you make a career decision or help you with your job search?
 - **The discussion might include; finding words to use on a résumé, researching career options, identifying current skills, identifying skills they wish to learn**
- The top Essential Skills identified in the Essential Skills Welders Profile are Document Use and Numeracy
- It is more important to lead a discussion about why students picked the three Essential Skills they did not whether they picked the skills listed in the profile

Orientation Task 4 - GIVING AND RECEIVING FEEDBACK – Recommended

Document Use, Writing, Oral Communication

Goal:

This task will prepare students to give and receive constructive feedback.

When delivering this task explain the following:

- This task is designed to make giving and receiving feedback a bit easier

Facilitator Tips:

- ✓ Once students have created a list of things that will help them give and receive constructive feedback, post the list so that they can refer to it throughout the course

Answers:**Step One** – Things to remember when giving and receiving feedback

- Criticism – usually directed at someone - opinion or judgment of what is wrong or bad about somebody or something, pointing out faults – negative, judgmental, harsh, accusatory, stereotyping, disrespectful and may include put downs
- Constructive Feedback – done with someone – helpful opinions and informative.
Not personal

Note: This task can be used on its own or in conjunction with the task called “**Present Your Work Daily**”.

Answers:**Step Two**

- Giving Feedback (some things students may consider):
 - Think about what you want to say before saying it
 - Ask yourself – will it be helpful?
 - Think about how you are feeling – e.g. if you have just had a disagreement with the person, or you are upset about something, wait until you have cooled down
 - Wait until you are asked before you provide your feedback
 - The most important thing is to maintain your relationship with the other person
 - Ask questions first
 - Be respectful
 - Point out the positives
 - Be supportive, direct and specific
 - Offer both positive and constructive feedback

- Receiving Feedback (some things students may consider):
 - Try to be open to hearing feedback from others – think about how you are feeling before responding
 - Listen to what is being said and if you are unsure, ask them to clarify
 - Hear the positives without trying to discredit them
 - Try not to justify or defend your work
 - Move on after you get the feedback – don't spend time worrying
 - Take time to think before you respond
 - Decide how and if you want to use the feedback
 - You may not like what you hear, or agree with what you hear, but you can still say thank you
 - Think about it after

Orientation Task 5 - USING THE INTERNET



Reading Text, Document Use, Computer Use

Thinking Skills: Decision Making, Finding Information

Goal:

This task will provide students with the opportunity to use web browsers and search engines. They will also learn to bookmark a website. This exercise also provides students with an opportunity to work independently on an assigned task.

Facilitator Tips:

- ✓ Ask students about their computer skills
 - **Note:** Some students may require more assistance than others with computer related tasks
- ✓ Provide time for students to read the introduction to this task or you can read it as a group
- ✓ Facilitate a group discussion around the definitions in this task
- ✓ Ask students to work on their own to complete the steps in the task
 - If students have very limited computer skills you may consider working on this task as a group
 - Students can also work in small groups if they prefer
 - If you assign this task, students can work on it whenever they have time and access to a computer (in the classroom or at home)
 - If assigned, follow up with students individually to make sure the task has been completed
- ✓ Ensure that there are sites bookmarked on the classroom computer
- ✓ If possible, have two web browsers available. For example, Firefox and Internet Explorer

Orientation Task 6 - SCANNING



Reading Text, Document Use, Writing

Thinking Skills: Decision Making, Critical Thinking

Goal:

This task will prepare students to scan written text for information. It will also provide students with information about welding.

Facilitator Tips:

- ✓ Discuss scanning before students begin this task
- ✓ Identify a time limit for completing this task
 - By providing a time limit on this task you will encourage students to scan the material
- ✓ Discuss scanning again after students have completed this task

Answers:

1. Who is the artist this article profiles?
Derek Arnold
2. How much does Cateraptasaurus weigh?
“The sculpture weighs more than 12,000 lbs and balances on two feet.”
3. How many pounds of 7018 electrode did he use when he was stick welding the Cateraptasaurus?
“went through about 500 lbs. of 7018 electrode.”
4. When he was calculating the degrees of rotation for his Kinetic Art, what spreadsheet program did he use?
“Arnold created a spreadsheet in Microsoft Excel and calculated three different degrees of rotation, such as 0, 90, and 270 degrees.”
5. When this article was written the artist was just starting a new project. What was this new project?
“True to his restless nature, Arnold currently is designing a ship—a 32-ft.-tall, freestanding outdoor sculpture”

Orientation Task 7 – ONTARIO SKILLS PASSPORT



Document Use, Oral Communication, Computer Use

Thinking Skills: Decision Making, Finding Information

Goal:

This task will provide students with an opportunity to use a computer and the internet. It will introduce students to a web resource that can help them with their career and job search.

When delivering this task explain the following:

- You may want to return to this site to do an assessment or develop a plan
- You may want to return to this site when you are starting your job search or developing your résumé

Facilitator Tips:

- ✓ Assist students in using the job bank to find job postings for their area
- ✓ Provide some printed examples of job postings as an introduction or as an alternative

Answers:

1. How could you use the information in these sites?

Developing a résumé and cover letter

Finding and identifying transferable skills

Exploring career options

2. How will your knowledge of Essential Skills help you with your job search?

Knowledge of Essential Skills and the information on the job postings can help you

highlight your Essential Skills on your résumé and in interviews

Orientation Task 8 – CONTEST



Reading Text, Document Use, Writing

Thinking Skills: Critical Thinking

Goal:

This task will encourage students to become aware of role welding plays in their community. It also adds some friendly competition to the course.

Facilitator Tips:

- ✓ You will need to create and print ballots, create a ballot box and buy a prize
- ✓ Present this task early in the course so students can begin their search
- ✓ Set out the draw box and ballots at the start of each class so student can fill them in before the class starts
- ✓ Have the draw and the awarding of the prize on the final day

Example Contest Ballot:

Name:

What You Saw:

The Location:

FACILITATOR TASK SELECTION CHART

Orientation Tasks

Task	Recommended	Time	Individual / Group / Both	Follow Up Required	Covered in Class	Adaptations	Use
Task 1 Essential Skills Wall Chart	R						
Task 2 Essential Skills Checklist	R						
Task 3 Essential Skills Profile Review							
Task 4 Giving and Receiving Feedback	R						
Task 5 Using the Internet							
Task 6 Scanning							
Task 7 Ontario Skills Passport							
Task 8 Contest							

Safety Task 1 – MATERIAL SAFETY DATA SHEETS – Recommended



Reading Text, Document Use, Oral Communication, Writing

Thinking Skills: Finding Information

Goal:

This task will introduce students to Material Safety Data Sheets and the technique of scanning to find information.

Facilitator Tips:

- ✓ If students are not familiar with scanning you could use the task in the Orientation section called “Scanning” as an introduction to this task
- ✓ In addition to printing this task you will need to print a copy of the Material Safety Data Sheet example called “**MSDS Shielding Gas**”
 - The PDF “**MSDS Shielding Gas**” is a MSDS for an actual product, however it is not a product that students will be using in this course
 - Ask the welding art instructor for a copy of a MSDS for a product that students will be using in the course
 - Review this additional MSDS with students

Answers:

1. What would you do if this gas came in contact with your eyes?
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention if symptoms occur
2. When you are storing this gas, what is the maximum temperature the storage area can reach?
Do not allow the temperature where cylinders are stored to exceed 52°C/125°F.
3. What personal protection is recommended for people using this product?
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Wear suitable gloves for the application. Splash goggles. Wear appropriate personal protective suit. Metal cap, safety shoes are recommended when handling cylinders

Safety Task 2 - SAFETY CHECKLIST – Recommended



Reading Text, Document Use, Oral Communication

Thinking Skills: Critical Thinking, Finding Information

Goal:

This task will ensure that students have received the information they need to work safely.

Facilitator Tips:

- ✓ Present this task at the end of the Orientation
- ✓ You can also present this task at the end of the first welding class, after the welding instructor has delivered their safety session

Safety Task 3 - WEB SEARCH



Reading Text, Document Use, Computer Use

Thinking Skills: Decision Making, Finding Information

Goal:

This task provides additional information about safety. It also provides students with the opportunity to demonstrate/develop their computer skills.

When delivering this task explain the following:

- It is possible to work on this task at home if you are interested in learning more about safety issues

Facilitator Tips:

- ✓ If you notice that a student is having trouble with this task you may want to offer one-to-one assistance
 - There is a task called “**Using the Internet**” found in the Orientation folder that you may want to use as an introduction to this task
- ✓ You may want to work with the whole group or have students work in small groups depending on computer availability and your timelines
- ✓ If you assign this task for students to work on independently, make a note to check-in during a future class to confirm that it has been completed

Safety Task 4 - WORKPLACE HEALTH AND SAFETY - Recommended



Reading Text, Document Use, Computer Use

Thinking Skills: Finding Information

Goal:

This task will provide information about general workplace safety. It will also introduce students to online resources.

When delivering this task explain the following:

- This site is designed for people starting out in their working career, however, it will be of interest to seasoned workers also - it is a good overview
- This is a long task so you could consider asking students to:
 - work on this task at home
 - return to this task when they have time available in class

Facilitator Tips:

- ✓ High speed internet access is important for this task
 - Recommend that students select the “Launch high speed” option
- ✓ If a student is having trouble with this task you may want to offer one-to-one assistance
 - You could also refer them to the task called “**Using the Internet**” found in the Orientation folder

FACILITATOR TASK SELECTION CHART

Safety Tasks

Note: Although the safety tasks are in a separate section, they should be delivered during the Orientation. This will ensure that students have some safety information before their first welding lesson. They will also know what to wear to their first class.

Note: Explain to students that this is an introduction to safety. The arts instructor will cover safety in more detail in the first class.

Task	Recommended	Time	Individual / Group / Both	Follow Up Required	Covered in Class	Adaptations	Use
Task 1 Material Safety Data Sheets	R						
Task 2 Safety Checklist	R						
Task 3 Web Search							
Task 4 Workplace Health and Safety	R						

Initial Stage Task 1 – PROGRESS EVALUATION

**Document Use, Oral Communication, Computer Use****Thinking Skills: Decision Making, Critical Thinking, Finding Information**

Goal:

This task will provide students with the opportunity to evaluate their own progress, set goals and revisit timelines. It also provides a list of activities to choose from if they have any spare time in class.

When delivering this task explain the following:

- ✓ This task could be used in every class; therefore it is best if a copy is placed at the front or back of the Student Notes
 - This will make it easier to find

Facilitator Tips:

- ✓ Use this task if students are falling behind schedule
- ✓ Use this task if students are not sure what to do with their spare time
- ✓ Work with students individually on this task if you notice anyone having trouble managing their time
- ✓ Post a list of things students can do if they need a break from their welding

Initial Stage Task 2 – PRESENT YOUR WORK – DAILY - Recommended



Reading Text, Document Use, Oral Communication

Thinking Skills: Decision Making, Critical Thinking

Goal:

This task will provide students with the opportunity to reflect on the welding they are creating and begin planning their next steps. It will also give them the opportunity to develop skills in giving and receiving feedback.

Note: The task called “**Giving and Receiving Feedback**” in the Orientation section will prepare students for this task. You may also want to ask the welding instructor to co-facilitate this task.

When delivering this task explain the following:

- This task is completed at the end of **each** class
- This task uses the list that was developed when the task called “**Giving and Receiving Feedback**” was completed
 - If the task called “**Giving and Receiving Feedback**” was not completed, facilitate a general discussion about giving and receiving feedback before delivering this task
 - If the task “**Giving and Receiving Feedback**” was completed, the list should be posted in the classroom
 - Direct students to this list before starting this task
- If a copy of this task is filed at the front or back of the Student Notes, it will be easier to find at the end of each class

Facilitator Tips:

- ✓ Facilitate this task, ensuring that it is a safe and positive experience for all participants

Initial Stage Task 3 – WELDING VIDEOS



Reading Text, Document Use, Writing, Computer Use, Oral Communication

Thinking Skills: Decision Making, Finding Information

Goal:

This task will provide students with the opportunity to use a computer and the internet. It will also provide them with experience accessing online videos.

When delivering this task explain the following:

- ✓ This task offers two options, however both options are recommended if there is time

Facilitator Tips:

- ✓ This is a good task to present to students early in the course so they can work on it whenever they have time
- ✓ You will need access to a computer with high speed internet
- ✓ Bookmark the links listed in this task before delivering the task to students
 - This gives you the opportunity to check that each link is still active
- ✓ If you have time, you may want to search for additional video links to add to this task
 - Ask the arts instructor if they can recommend any video links
- ✓ If you assign this task for students to work on independently, make sure you check-in to confirm that it has been completed
- ✓ If a student is having trouble with this task you may want to offer one-to-one assistance
 - There is a task called “**Using the Internet**” found in the Orientation folder that you may want to use as an introduction to this task

Initial Stage Task 4 – WELDING DEFINITIONS



Reading Text, Document Use, Computer Use, Writing, Oral Communication

Thinking Skills: Decision Making, Finding Information

Goal:

This task will provide students with the opportunity to use a computer, printer and internet. It will also provide students with the opportunity to make an oral presentation.

Facilitator Tips:

- ✓ Bookmark the websites in this task before delivering the task to students
- ✓ Check-in with each student individually to ensure that they have a definition to present
- ✓ If a student is having trouble with this task you may want to offer one-to-one assistance
 - There is a task called “**Using the Internet**” found in the Orientation folder that you may want to use as an introduction to this task
- ✓ You will need to schedule presentation times
 - You will need to schedule a two minute presentation per student
- ✓ You may want to lead by example and present a word and definition yourself

Initial Stage Task 5 - KEEPING A STEADY HAND

Document Use

Goal:

This task will provide students with the opportunity to develop the ability to keep focused on their work and keep their hand steady.

Facilitator Tips:

- ✓ Have washers and pencils available
- ✓ Try this task before presenting it to students
- ✓ This is a good “Warm up” type task

Initial Stage Task 6 - DISCUSSION – WORKING IN A TEAM



Reading Text, Document Use, Oral Communication

Thinking Skills: Critical Thinking

Goal:

This task will provide students with an opportunity to reflect on their past experiences as a member of a team. This discussion is designed to prepare students to work together.

Facilitator Tips:

- ✓ If you feel it would be helpful, you can have a volunteer keep a list of responses when the group is discussing what is important to them when they are working in a team
 - This list can be posted or photocopied and handed out to the group

Answers:

- ✓ Students may state that it is important to them that they all:
 - respect each other's opinions**
 - meet deadlines and commitments**
 - compromise**

Initial Stage Task 7- PRINTING A FILE



Reading Text, Document Use, Oral Communication, Computer Use

Thinking Skills: Finding Information

Goal:

This task will provide students with the opportunity to use a computer, printer and MS Word.

When delivering this task explain the following:

- In Word you will find folders and files
 - A file is a document – text file
 - A folder contains a collection of files, grouped together

Facilitator Tips:

- ✓ You will need to set up this task before delivering it to the group
 - Check the version of Microsoft Office installed on the classroom computer (this may change this task considerably)
 - Confirm access to a printer
 - Check that there is a shortcut to “My Documents” on the Desktop
 - Create a folder called “Welding” in “My Documents”
 - Copy the file called “**Printable Metric Conversion Chart and Table**” to the folder you have created
 - An electronic copy of this file called “**Printable Metric Conversion Chart and Table**” can be found in the “**Initial Stage Tasks**” folder
- ✓ Present this task to the whole group
 - It is assumed that if students need this task they have limited computer skills
- ✓ Sit at the computer and have students read out the steps for you to follow
 - You can also ask for a volunteer to demonstrate this task as you read the steps

Note: This task uses a version of Word that may be different than the one you are using. If it looks different on your screen, spend some time with the software until you are able to print a file at least two different ways.

FACILITATOR TASK SELECTION CHART

Initial Stage Tasks

These tasks have been identified as good tasks to present early in the course; however, they can be used at any time.

Task	Recommended	Time	Individual / Group / Both	Follow Up Required	Covered in Class	Adaptations	Use
Task 1 Progress Evaluation							
Task 2 Present Your Work Daily	R						
Task 3 Welding Videos							
Task 4 Welding Definitions							
Task 5 Keeping a Steady Hand							
Task 6 Discussion – Working in a Team							
Task 7 Printing a File							

Mid Stage Task 1 - WELDING JOINT - MATCHING



Document Use

Thinking Skills: Decision Making

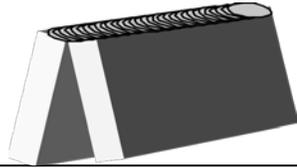
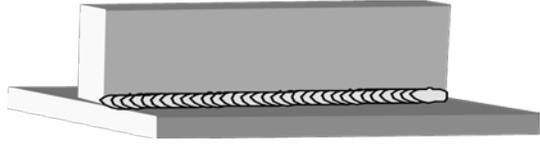
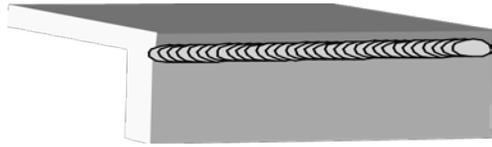
Goal:

This task will provide students with a review of the five basic weld joints.

When delivering this task explain the following:

- ✓ If any of these joints have not been covered in this course, try to match them by looking at the shape of the joint

Answers:

<u>TYPE OF JOINT</u>	<u>JOINT</u>
Edge Joint	
T-Joint	
Lap Joint	
Corner Joint	
Butt Joint	

Mid Stage Task 2 - MATH AND WELDING



Reading Text, Document Use, Oral Communication, Computer Use, Writing

Thinking Skills: Decision Making

Goal:

This task will provide students with information about the importance of math in welding. The task explains that Numeracy is a key Essential Skill for anyone pursuing a welding career.

Facilitator Tips:

- ✓ Bookmark the websites in this task before presenting the task to students
- ✓ Check-in with each student individually to ensure that they have an example to present
- ✓ If a student is having trouble with this task you may want to offer one-to-one assistance
- ✓ There is a task called “**Using the Internet**” found in the Orientation section that you may want to use as an introduction to this task
- ✓ Have each student present what they found

Answer:

As a group, discuss the other ways this website can be used. For example:

- Résumé development
- Career exploration

Mid Stage Task 3 - ROUNDING DECIMALS



Document Use, Numeracy

Goal:

This task will provide students with information about rounding decimals. This will prepare them to complete some of the other math related tasks in this course.

Facilitator Tips:

- ✓ Review the example calculation before delivering this task
 - This will prepare you to answer questions from students
- ✓ Provide time for students to read the introduction to this task or you can read it as a group
- ✓ Facilitate a group discussion around the introduction
- ✓ Be aware that this task may be a review for some students
- ✓ Students with limited math skills may need one-to-one assistance
- ✓ Review the example calculations with students
- ✓ Review the answers with students to ensure that they understand how you arrived at the answer

Answers:

- Round the following numbers to two decimal places:

4.73

22.57

1.88

0.15

Mid Stage Task 4 – IMPERIAL TO METRIC



Reading Text, Document Use, Numeracy, Computer Use

Goal:

This task will provide students with information about both Imperial and SI (Metric) systems of measurement. Formulas will be provided to help students convert from one system to another. Internet conversion tools are also presented.

Facilitator Tips:

- ✓ Review the formula charts, the example calculations, the problems and answers before delivering this task
 - This will prepare you to answer questions from students
- ✓ Bookmark the link to the internet based conversion tool before delivering this task
 - You may want to find an alternative internet based conversion tool
- ✓ Provide time for students to read the introduction to this task or you can read it as a group
- ✓ Facilitate a group discussion around the introduction
- ✓ Be aware that this task may be a review for some students
- ✓ Students with limited math skills may need one-to-one assistance
- ✓ Review the example calculations with students
 - Review the answers with students to ensure that they understand how you arrived at the answer
- ✓ Discuss how moving between centimetres to millimetres involves moving the decimal point over one - because it is a unit of 10
 - Use the “**Imperial and SI (Metric) Reference Chart**” to demonstrate this point
- ✓ Discuss that it will be helpful to know that 1 inch = 2.54 cm or 25.4 mm
- ✓ Remind people to watch for directions such as round your answers to three decimal places

Note: Answers may vary depending on rounding. Answers may also vary depending on the method used. For example if a student uses the “**Imperial and SI (Metric) Reference Chart**” their answer will be $\frac{1}{2}$ but if the student uses the “**Formulas for Converting Between SI and Imperial**” their answer will be .5.

Answers:

Step One: (First set of Task Steps)

- Conversion Problems (rounding to one decimal place)
 1. **11.9 inches x 14.8 inches (x.39)**
 2. **0.6 centimeters (x 2.54)**
 3. **1.0 millimeters (x 25.4)**
 4. **190.5 centimetres (x 30.48 and x 2.54)**

Step Three:

- The internet is usually easier but you won't always have access to a computer
- If your answers are different it may be because of rounding

Step One: (Second Set of Task Steps)

- Find the Missing Measurement
- Encourage students to use the chart to find the “Imperial and SI/Metric Reference Chart” to find the Imperial measurements.

Inches (Imperial)	Centimetres (Metric/SI)	Millimetres (Metric/SI)
8/16 inch	1.27 cm	12.7 mm
¼ inch	0.635 cm	6.35 mm
1 inch	2.540 cm	25.4 mm
2/4 = ½ inch	1.27 cm	12.7 mm
¾ inch	1.905 cm	19.05 mm
1/16 inch	0.157 cm	1.575 mm
1 ½ inch	3.81 cm	38.1 mm
136.5 inches (137.795 by computer)	350 cm	3500 mm

Step One: (Third set of Task Steps)

- You buy 3.5 meters of electrode wire, how much is that in millimeters, centimeters and inches?

3500 mm

350 cm

137.795 inches (computer)

Or 3.5 meters x 3.3 = 11.55 ft

11.55 ft x 12 = 138.6 inches

- Your electrode wire stickout is 3/8 inch. How long is that in millimeters and centimeters?

9.525 mm

.9525 cm

Mid Stage Task 5 – READING A RULER



Reading Text, Document Use, Oral Communication, Numeracy

Goal:

This task will provide students with the opportunity to use a ruler and/or a tape measure. It will introduce students to the differences between Imperial and SI (Metric) measurements. It also provides students with the opportunity to identify largest imperial units.

Facilitator Tips:

- ✓ Review the charts, the problems and answers before delivering this task
 - This will prepare you to answer questions from students
- ✓ Be aware that this task may be a review for some students
- ✓ Students with limited math skills may need one-to-one assistance
- ✓ Provide time for students to read the introduction to this task or read it as a group
- ✓ Facilitate a group discussion around the introduction
- ✓ If you are supplying tape measures or rulers, try to find one dedicated to Imperial and one dedicated to SI (Metric)

Answers:

Largest Imperial Unit:

Imperial Measurement	Largest Imperial Unit
4/16 inches	¼ inch
8/16 inch	½ inch
2/4 inches	½ inch
12/16	¾ inch
14 inches	1' 2"

Mid Stage Task 6 – ORDERING DECIMALS

Reading Text, Document Use, Numeracy, Oral Communication

Goal:

This task will provide students with the opportunity to learn about decimals. They will gain experience in ordering decimals from largest to smallest. They will also identify which decimal is the largest.

Facilitator Tips:

- ✓ Review the example calculations, the problems and answers before delivering this task
 - This will prepare you to answer questions from students
- ✓ Be aware that this task may be a review for some students
- ✓ Students with limited math skills may need one-to-one assistance
- ✓ Provide time for students to read the introduction to this task or read it as a group
- ✓ Facilitate a group discussion around the introduction

Answers:*Step One: Decimal Ordering*

Whole #	Decimal Point	Tenths	Hundredths	Thousandths
	.	0	4	5
	.	0	4	0
	.	0	3	5
	.	0	3	0
	.	0	2	4

Step Two:

	Greater than > Less than < Equal to =	
2.4mm	Equal to	2.40mm
3.2mm	Greater than	2.7mm
.0240 inch	Less than	.035 inch
.045 inch	Equal to	.0450 inch
2.4 mm	Greater than	2.00 mm

Step Three:

When would you use decimals in welding?

- ✓ **Measurements in SI (Metric) decimals**
- ✓ **Reading blueprints**
- ✓ **Buying materials**

Step Three:

- ✓ **electrode size .8mm**

Mid Stage Task 7 - FRACTIONS TO DECIMALS



Reading Text, Document Use, Numeracy, Oral Communication

Goal:

This task will provide students with the opportunity to develop the ability to convert fractions and decimals. They will also have the opportunity to convert between Imperial and SI Measurements.

Facilitator Tips:

- ✓ Review the examples, the problems and answers before presenting this task
 - If your answers are different check that you rounded to one decimal place
- ✓ Be aware that this task may be a review for some students
- ✓ Students with limited math skills may need one-to-one assistance
- ✓ Provide time for students to read the information presented in this task or you can read it as a group
- ✓ Facilitate a group discussion around the information presented (the first few pages)
- ✓ If you find that students answers are wrong it may be because of rounding
- ✓ If a student is having trouble with this task you may want to offer one-to-one assistance
 - There is a task called “**Rounding**” that you may want to use as an introduction to this task

Answers:*Step One:*

- ✓ Convert $\frac{3}{16}$ inch to a decimal:

.2 inch

Optional:

- ✓ Convert this decimal to millimeters:

5.1 millimeters

- ✓ Convert $\frac{1}{4}$ inch to a decimal:

.3 inch

- ✓ Convert $\frac{3}{8}$ inch to a decimal:

.4 inch

Optional:

Use a stickout between 7.6 or 6.4 millimeters depending on method used in calculation) and 10.2 millimeters

- ✓ Convert $\frac{3}{8}$ inch to a decimal:

.4 inch

Optional

- ✓ Create a weld with equal leg dimensions of **10.2 millimeters**

- ✓ Convert $\frac{5}{16}$ to a decimal:

.3 inch

Optional

Create a weld face that is 7.6 millimeters wide

✓ Convert 1/16 to a decimal:

.1 inch

Optional

Use an electrode with a diameter of 2.5 millimeters wide

Step Two:

When would you need to convert fractions to decimals in welding?

When measuring

Measurements in imperial and you need decimals

Reading blueprints with Imperial measurements

Buying materials with Imperial measurements

TASK 8 – GEOMETRY

Reading Text, Document Use, Numeracy

Goal:

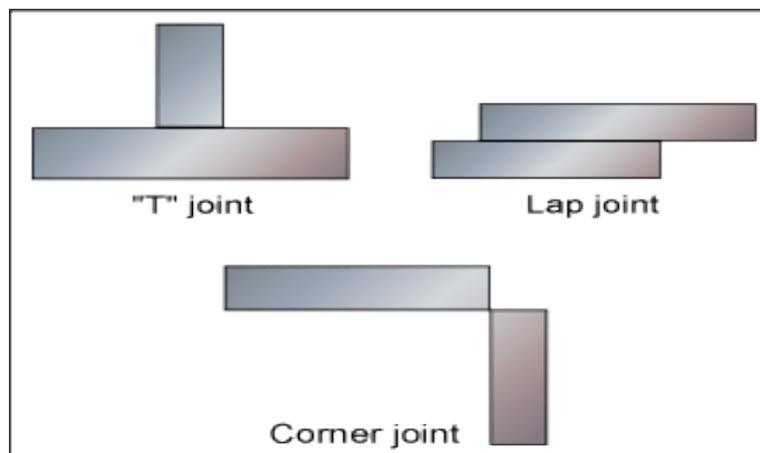
This task will provide students with the opportunity to develop skills in recognizing angles, creating right angles, right triangles and using the Pythagorean Theorem.

Facilitator Tips:

- ✓ Review the examples, the problems and answers before presenting this task
- ✓ Be aware that this task may be a review for some students
- ✓ Students with limited math skills may need one-to-one assistance
- ✓ Provide time for students to read the information presented in this task or you can read it as a group
- ✓ Facilitate a group discussion around the information presented

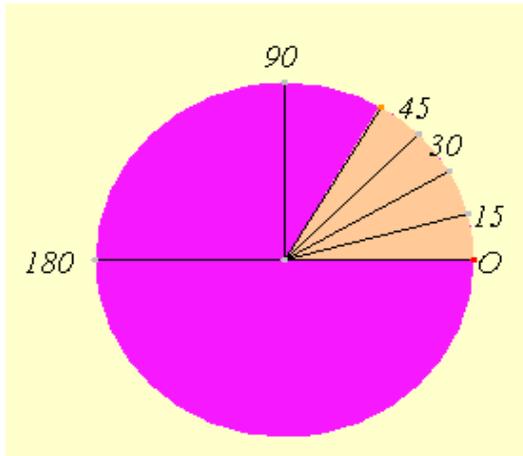
Answers:**Creating Angles:**

Step One:



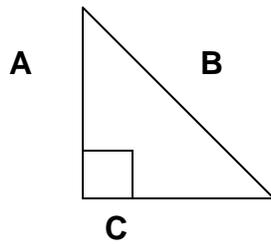
Step Two:

- Draw a 30° angle.
- Draw a 45° angle.
- Draw a 20° angle
- Draw a 10° angle.

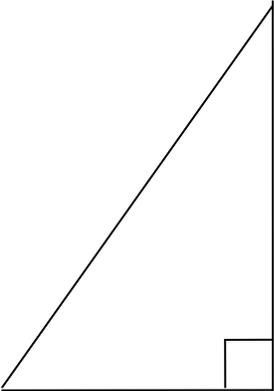
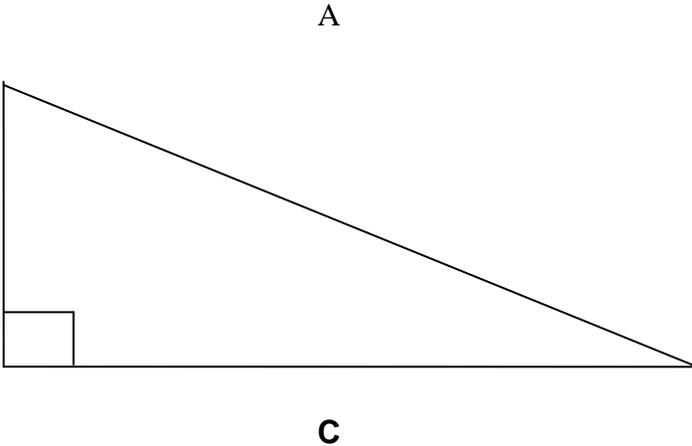


Creating Right Triangles:

Step One and Step Two:



Step Three:

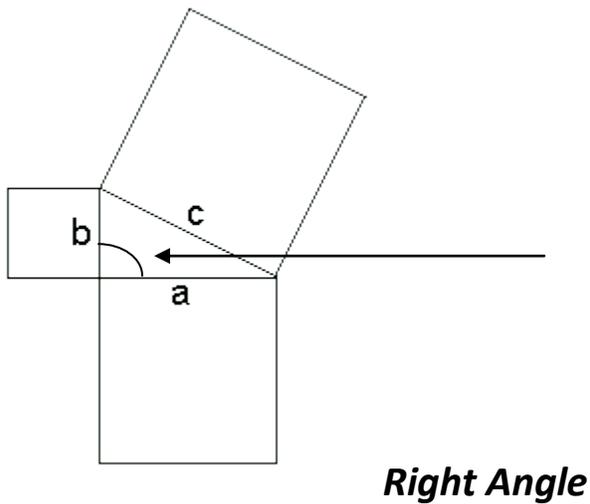


Finding Missing Information*Step One:*

- Mark right angle
- Circle the letter that represents the hypotenuse – “c”

Step Two:

- Identify the type of triangle this is
 - Right Triangle
- Record the formula you would use to find the length of the hypotenuse (“c”) if you know that $a=3$ and $b=4$
 - $a^2 + b^2 = c^2$
 - $3^2 + 4^2 = c^2$



Step Three:

- Calculate the length of the hypotenuse if you know that one of the legs of a right triangle is 6 inches long and the other is 8 inches long.

$$a^2 + b^2 = c^2$$

$$6^2 + 8^2 = c^2$$

$$36 + 64 = 100^2$$

$$c = \mathbf{10 \text{ inches}}$$
 (the square root of 100)

- Calculate the length of the leg of a right triangle if one leg is 10 inches long and the hypotenuse is 26 inches long?

$$a^2 + b^2 = c^2$$

$$10^2 + b^2 = 26^2$$

$$100 + b^2 = 676$$

$$676 - 100 = 576$$

$$b^2 = 576$$

$$b = \mathbf{24 \text{ inches}}$$

Step Four:

- Draw a line from the toe to toe to create a triangle
- Mark the right angle with the symbol
- Mark the legs “a” and “b” and mark the hypotenuse “c” on the diagram
- Calculate the length of the face of the weld “c” if both legs are 0.38 inch

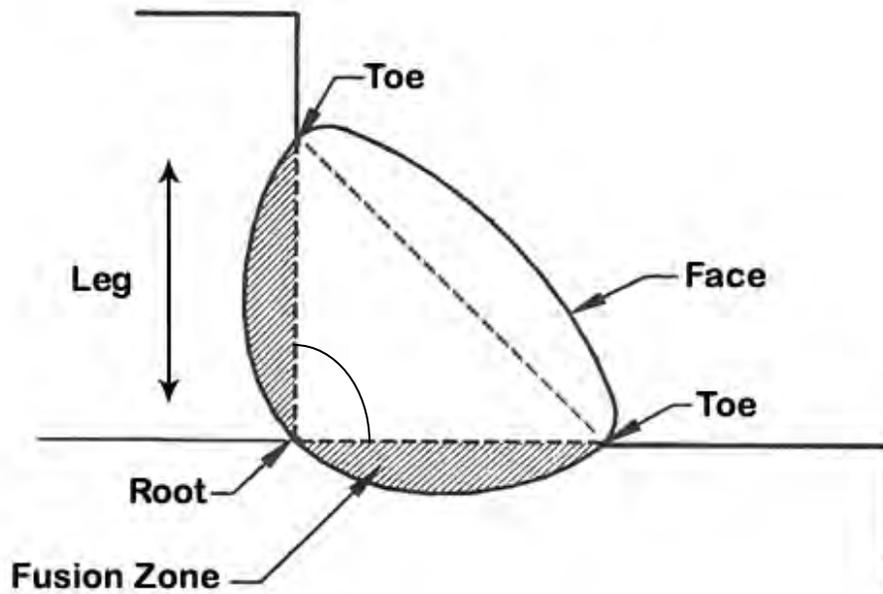
$$a^2 + b^2 = c^2$$

$$.38^2 + .38^2 = c^2$$

$$.14 + .14 = .28^2$$

$$c = .53 \text{ inches}$$

Parts of a Fillet Weld



Step Five:

- When would you use geometry in welding?
 - laying out material to cut and weld**
 - ensuring parts are square**
 - calculating weld angles**

Mid Stage Task 9 - CALCULATING AREA



Reading Text, Document Use, Numeracy, Oral Communication

Goal:

This task will provide students with practice calculating the area of a square, rectangle and circle.

Facilitation Tips:

- ✓ Review the examples, the problems and answers before presenting this task
- ✓ Be aware that this task may be a review for some students
- ✓ Students with limited math skills may need one-to-one assistance
- ✓ Provide time for students to read the definitions in this task or read them as a group
- ✓ Facilitate a group discussion around the definitions

Answers

Step One:

$$10 \times 10 = 100 \text{ square centimeters}$$

$$15 \times 10 = 150 \text{ square millimeters}$$

Step Two:

- $3.14 \times (9 \times 9)$

$$3.14 \times 81 = 254.34 \text{ square centimeters}$$

- $R = 12/2 = 6$

- $3.14 \times (6 \times 6)$

$$3.14 \times 36 = 113.04 \text{ square inches}$$

Mid Stage Task 10 - WELD TYPES



Document Use, Numeracy

Note: A chart for moving from Imperial to SI measurements is provided, however students may need assistance if they have not completed the task called “**Imperial to Metric**”

Goal:

This task will provide students with the opportunity to identify the parts of a groove weld and fillet weld. They will also be asked to move from Imperial to SI measurements.

Facilitation Tips:

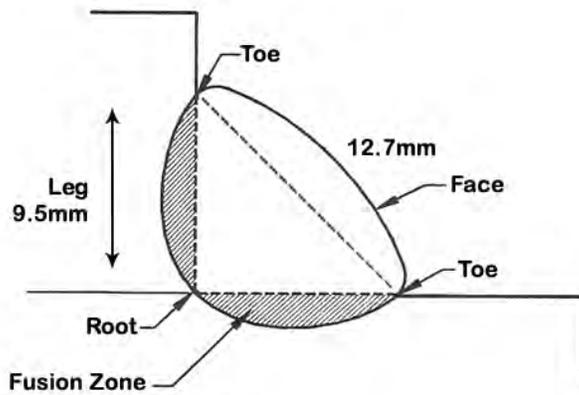
- ✓ Review the examples, the problems and answers before delivering this task
- ✓ Be aware that this task may be a review for some students
- ✓ Students with limited math skills may need one-to-one assistance

Answers:

Step One: Fillet Weld

- If the face measures $\frac{1}{2}$ inch, record the length in millimeters beside the face, on the image: $.5 \times 25.4 = 12.7 \text{ mm}$ (they can also use the chart)
- If the leg measures $\frac{3}{8}$ of an inch, record the length in millimeters on the image: $.375 \times 25.4 = 9.525 \text{ mm}$ (they can also use the chart)
- What does the shaded area represent? **Fusion Zone**

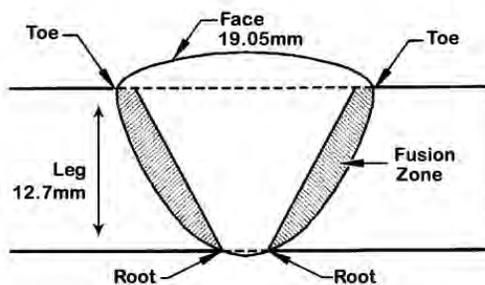
Parts of a Fillet Weld



Step Two: Groove Weld

- If the face measures $\frac{3}{4}$ inch, record the length in millimeters on the face in image below: $.75 \times 25.4 = 19.05 \text{ mm}$ (they can also use the chart)
- If the leg measures $\frac{4}{8}$ of an inch, record the length in millimeters on the image below: $.5 \times 25.4 = 12.7 \text{ mm}$ (they can also use the chart)
- What does the shaded area represent? **Fusion Zone**

Parts of a Groove Weld



FACILITATOR TASK SELECTION CHART

Mid-Stage Tasks

Some of the tasks in this section will build on things taught in the welding portion of the course and from information presented in the Student Notes; therefore these tasks are best delivered once students have had some experience in the class.

Task	Recommended	Time	Individual / Group / Both	Follow Up Required	Covered in Class	Adaptations	Use
Task 1 Welding Joint Matching							
Task 2 Math and Welding							
Task 3 Rounding Decimals							
Task 4 Imperial to Metric							
Task 5 Reading a Ruler							
Task 6 Ordering Decimals							
Task 7 Fractions to Decimals							
Task 8 Geometry							
Task 9 Calculating Area							
Task 10 Welding Types							

Final Stage Task 1 – PRICING ITEMS



Reading Text, Document Use, Oral Communication, Computer Use

Thinking Skills: Decision Making, Critical Thinking, Finding Information

Note: You may need the assistance of the welding instructor to present this task. The instructor will be able to provide you with pricing information and a list of websites or local stores selling MIG welders.

Goal:

This task will provide students with the opportunity to research prices. This task will also give them the information they will need if they decide to buy their own MIG welder.

Facilitator Tips:

- ✓ Work as a group on this task

Final Stage Task 2 – TECHNICAL SKILLS – Recommended



Reading Text, Document Use, Oral Communication, Numeracy, Writing

Thinking Skills: Critical Thinking

Note: You may want to introduce this task during the Orientation or on the first day of classes so that students rate their skills before they start the course. They would then need to set this task aside until the final stage of this course when they will revisit the task.

Goal:

This task will provide students with the opportunity to reflect on the course and identify the technical skills they have developed. They will also have the opportunity to evaluate their skill improvement.

Facilitator Tips:

- ✓ Ask students if they can expand on the list of skills already on the chart

Final Stage Task 3 – ESSENTIAL SKILLS IDENTIFICATION

**Document Use, Oral Communication, Writing****Thinking Skills: Decision Making, Critical Thinking, Significant Use of Memory**

Goal:

This task will provide students with the opportunity to reflect back on the course and identify the Essential Skills they developed.

When delivering this task explain the following:

- It is best if this task is completed without looking back in the Student Notes or the Essential Skills checklist

Facilitator Tips:

- ✓ Work through this task before presenting it so that you will be able to make suggestions to the groups
- ✓ Divide the class into two groups and assign a page to each group
- ✓ Move between the two groups and offer help

Final Stage Task 4 – TOP THREE ESSENTIAL SKILLS

**Document Use, Oral Communication****Thinking Skills: Decision Making, Critical Thinking**

Goal:

This task will provide students with the opportunity reflect back on the course and assess the Essential Skills they developed.

Facilitator Tips:

- ✓ It may be helpful to have students think back to the Essential Skills Wall Chart and identify the skills the group selected most often
- ✓ The top three skills the students pick do not need to match the profile
- ✓ Discuss the reasons students selected the skills they did

Final Stage Task 5 – CAREER RESEARCH ASSIGNMENT



Reading Text, Document Use, Writing, Oral Communication, Computer Use

Thinking Skills: Decision Making, Critical Thinking, Finding Information

Note: Depending on your course schedule, you may need to present this task to students earlier in the course so that they have time to do their research.

Goal:

This task will provide students with the opportunity to develop their skills in researching career options, including apprenticeships.

Facilitator Tips:

- ✓ If there is time, invite a guest speaker from an employment counselling organization to talk about career research in detail
- ✓ Bookmark the sites in this task before presenting the tasks to students
- ✓ Spend some time discussing the value of career research
- ✓ Check-in with each student individually to ensure that they have completed their research
- ✓ You may need to assist students with their research
 - If necessary, refer students to the task called “**Using the Internet**” found in the Orientation folder
- ✓ You will need to schedule time for students to present their research
- ✓ Each student will need 2-5 minutes for their presentation

Final Stage Task 6 - FINDING INFORMATION



Reading Text, Document Use, Oral Communication, Writing

Thinking Skills: Decision Making, Finding Information

Goal:

This task will provide students with the opportunity to work as a group to identify some options for next steps if they decide to pursue welding. Students will gain skills in career and training research.

Answers

Step One: Possible Answers

- Yellow pages
- Internet
- Networking
- Information Interviews
- Private Trainers/Community College programs
- Government career exploration sites
- Employment Counselling office

Step Two: Possible Answers

- A course
- On the job training
- Friend/mentor
- Books
- Internet research

Final Stage Task 7 – BUILDING YOUR RÉSUMÉ - Recommended

**Document Use, Oral Communication, Writing****Thinking Skills: Decision Making, Critical Thinking**

Goal:

This task will provide students with the opportunity to reflect back on the course and identify both the technical skills and Essential Skills they developed. They will also have the opportunity to select a skill and write a description of that skill for their résumé.

Facilitator Tips:

- ✓ You may want to invite a guest speaker from an employment counselling organization to talk about résumés in detail
- ✓ You may need to help students see how the skills in the welder profile are related to the skills they developed in this course
- ✓ Discuss transferable skills
 - The skills that were developed in this course can be included on their résumé even if they are applying for jobs that seem unrelated welding art. For example, they could say that they “Followed instructions and completed assignments within deadlines”, a skill important in any job
- ✓ Work individually with each person to help them write out one bullet point to add to their current résumé
 - If they finish one point and still have time, ask that they continue writing as many bullet points as they can
- ✓ Ask students to explain their choice and share what they have written

Answers:

- Some example résumé points (The points will depend on the tasks they completed in this course)
 - Read labels, followed the guidelines and worked safely
 - Researched and compared product prices
 - Participated in team decision making
 - Used tools including ...
 - Welded joints
 - Measured angles

Final Stage Task 8 – GROUP WRAP UP – Recommended

**Document Use, Oral Communication****Thinking Skills: Decision Making, Critical Thinking**

Goal:

This task will provide students with the opportunity to reflect on what they have learned in the course. It will also provide the group with the opportunity to say good-bye. Finally, it gives students a chance to evaluate the course.

Facilitator Tips:

- ✓ Students who completed more than one project can present all of their pieces or select just one to present
- ✓ If you have not delivered the “Building Your Résumé” task lead a discussion about the skills students may want to add to their résumés
- ✓ Facilitate a discussion about the course; what was learned and possible next steps.
- ✓ Encourage each person to share their experience in the group, experience working on their own individual project and next steps
- ✓ Discuss the Essential Skill called Continuous Learning
 - “Workers participating in an ongoing process of acquiring skills and knowledge”
 - “As part of regular work activity”
 - “From co-workers”
 - “Through training offered in the workplace”
 - “Through off-site training”
- ✓ Why is continuous learning important?
 - It is important to be learning and gaining new skills
 - Employers like to see ongoing learning
 - As you learn new skills you become more marketable
- ✓ Have students complete an evaluation of the course
 - You will need a copy of your agencies evaluation form

FACILITATOR TASK SELECTION CHART

Final Stage Tasks

The tasks in this section are designed to help students reflect on and evaluate their experiences throughout this welding course. These tasks will also help students identify the skills they have gained that can be transferred to a work situation.

These tasks can be delivered while students are still working on their welding projects. You can also schedule time the week following the welding portion of the course for students to return to complete these tasks.

Task	Recommended	Time	Individual / Group / Both	Follow Up Required	Covered in Class	Adaptations	Use
Task 1 Pricing Items							
Task 2 Technical Skills	R						
Task 3 Essential Skills Identification							
Task 4 Top Three Essential Skills							
Task 5 Career Research Assignment							
Task 6 Finding Information	R						
Task 7 Building your Résumé	R						
Task 8 Group Wrap-Up							