ESSENTIAL SKILLS
WORK READY YOUTH PROGRAM

THINKING SKILLS WORKBOOK!

Skills Compétences Canada

Acknowledgement

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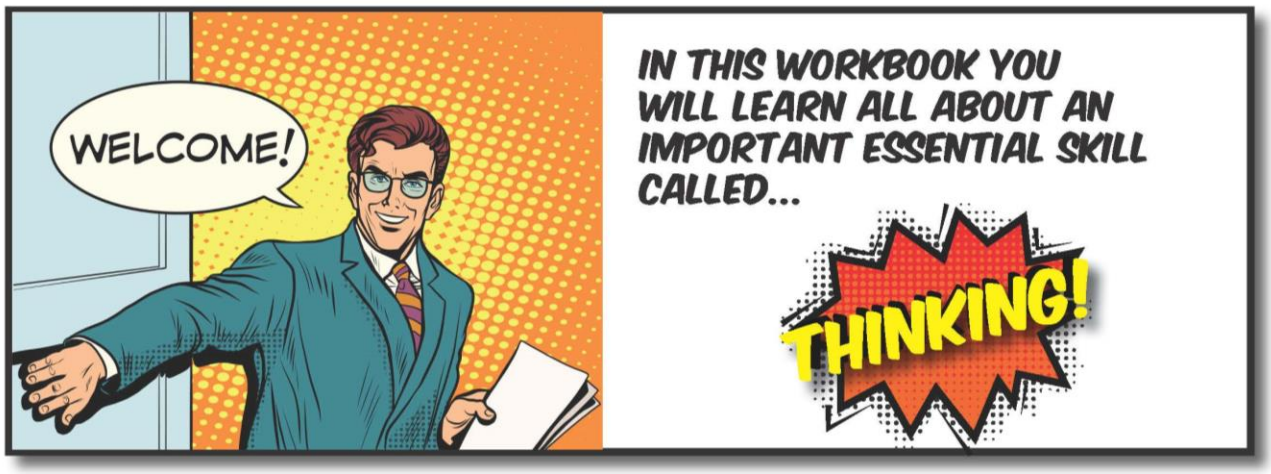
THINKING SKILLS

Use the table of contents to navigate through this workbook. Track your progress by putting a checkmark beside each topic you complete.

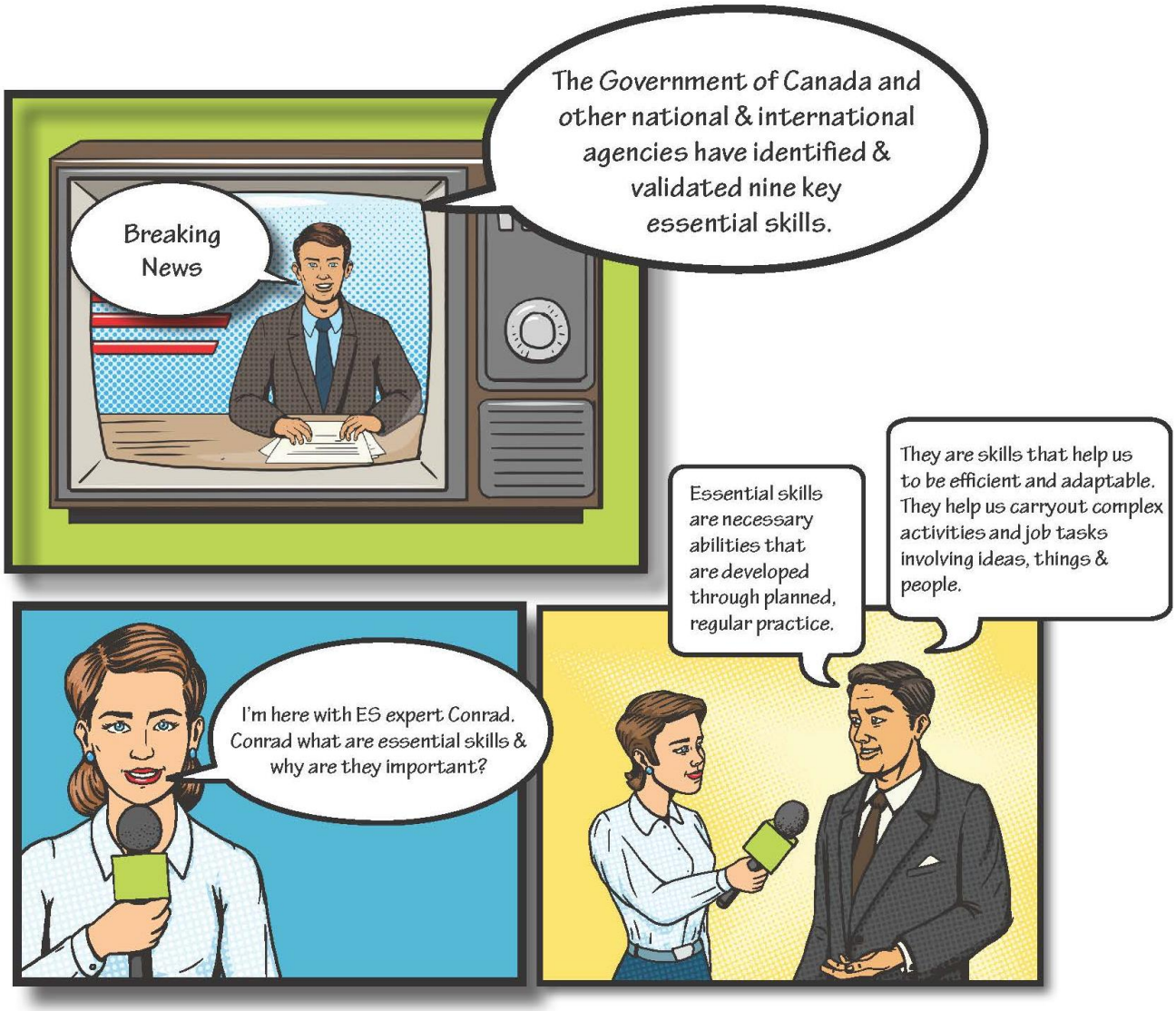
WELCOME TO THE ESSENTIAL SKILLS WORK READY YOUTH PROGRAM



Q: HOW DO I USE THIS WORKBOOK?

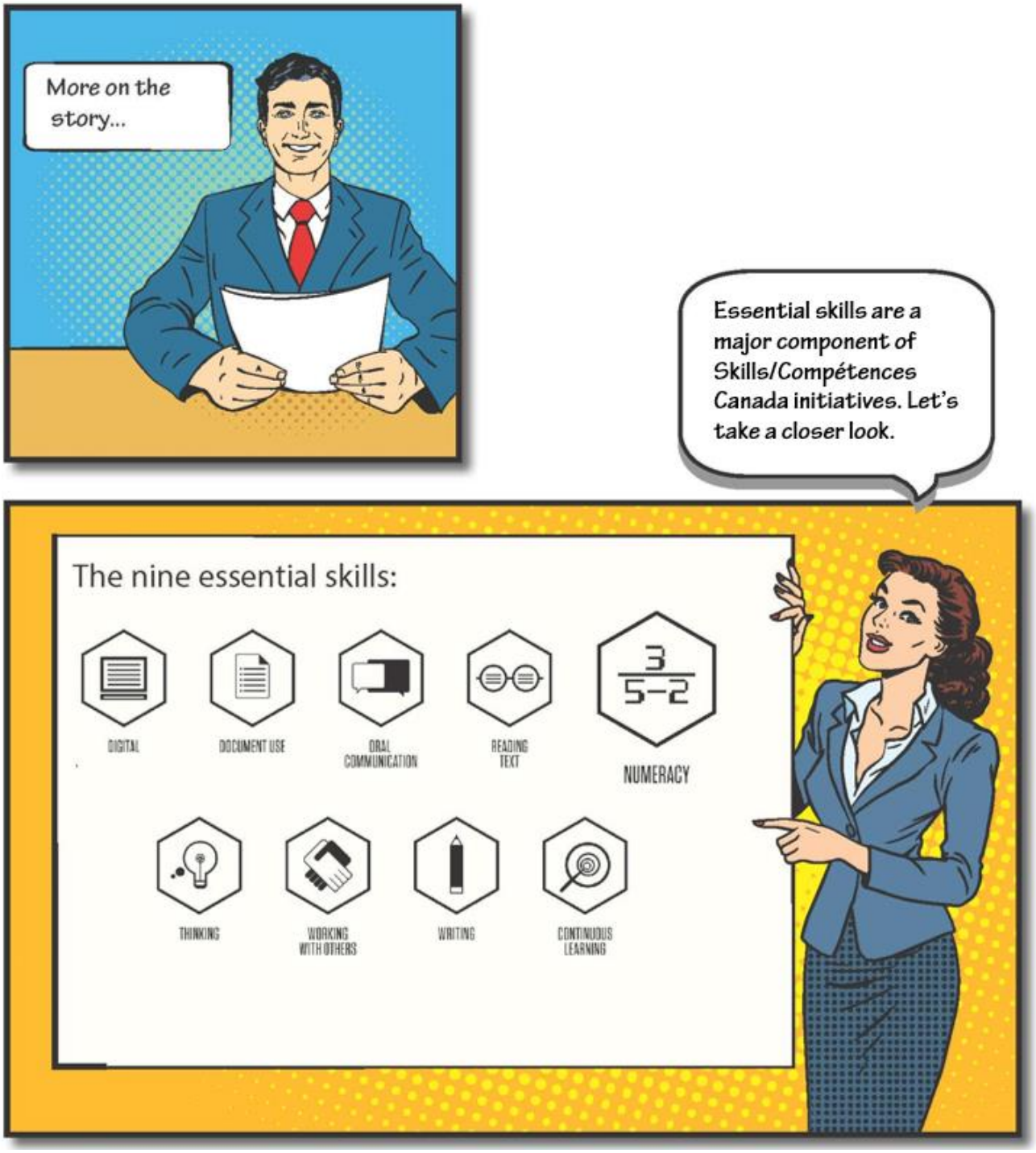
1. START BY REVIEWING THE INFORMATION AND FUN FACTS ABOUT THINKING AND ESSENTIAL SKILLS LOCATED AT THE BEGINNING OF THIS WORKBOOK
2. PRACTICE USING YOUR THINKING SKILLS IN THE "ES WORKOUT" SECTION OF THE WORKBOOK
3. BUILD YOUR THINKING SKILLS IN THE "ES BOOSTER" SECTION OF THE WORKBOOK.
4. REVIEW THE ANSWERS IN THE ANSWER KEY SECTION OF THE WORKBOOK TO CHECK YOUR WORK FROM THE ES WORKOUT SECTION.
5. TRY THE ASSESSMENT QUESTIONS AT THE END OF THE WORKBOOK TO GET AN IDEA OF HOW STRONG YOUR THINKING SKILLS ARE.

INTRODUCING THE ESSENTIAL SKILLS



ESSENTIAL SKILLS ARE "ESSENTIAL" BECAUSE THEY ARE THE SKILLS THAT ALL PEOPLE NEED FOR WORK, LEARNING AND LIFE. THEY ARE ALSO THE FOUNDATION FOR LEARNING OTHER SKILLS.

THE NINE ESSENTIAL SKILLS



MEASURING ESSENTIAL SKILLS (ES)

Essential skills are measured on a 5 level scale (see below). The scale describes:

1. The complexity (difficulty) of an essential skills task, question, or problem.
2. The proficiency (ability) of a person in completing an essential skills task, question, or problem.

THE ES MEASUREMENT SCALE

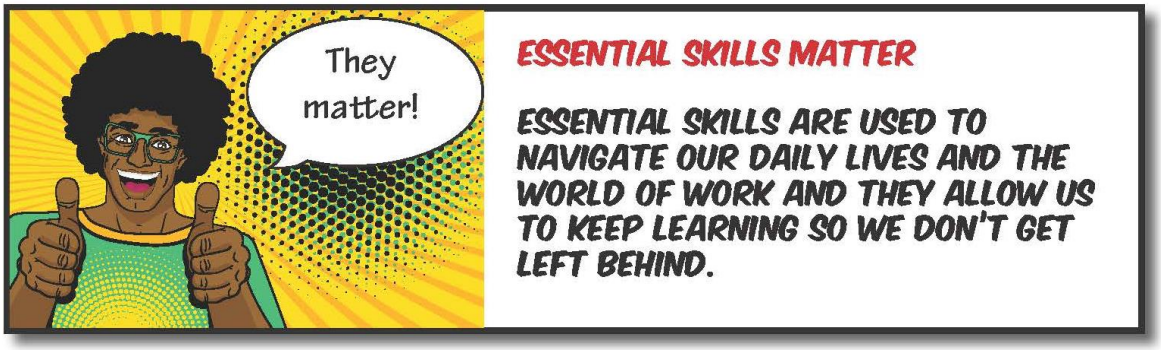
skills need work — skills are adequate — skills are strong

Level 1	Level 2	Level 3	Level 4	Level 5

tasks are basic — tasks are complex

WHAT DO THE LEVELS MEAN?

- Tasks, questions, and problems at Levels 1 and 2 are less difficult than those at Levels 3, 4 and 5.
- People with essential skills at Levels 1 and 2 need to practice, in order to make their skills stronger. When we have skills at, or above, Level 3 we have skills that are strong enough to enable us to cope with new situations and to efficiently learn academic, technical or job-specific skills.
- Employers prefer to have workers who are efficient, capable, learners because they can accurately solve problems, complete their work, learn new processes and adapt to changes on the job.
- The skills are just as important in daily life. We all need to read information, fill out documents, make decisions about how much we can spend on things we want to buy, work and communicate effectively with friends, family, teachers and employers, and use computers and other digital technologies.



GIVE ESSENTIAL SKILLS A TRY! MATCHING TASKS AND SKILLS

Look at the list below. What skills do you think you would need, to complete each task? Write the abbreviation for any of the skills you think would be used to complete the task. One is started for you as an example. *(HINT: they all require more than one skill.)*

TASK	SKILL(S) USED
Find information to complete the set-up of a new iPhone	
Apply for a learners' license	
Book concert tickets	
Shop for new clothes	
Plan a weekend ski / snowboard trip	
Ask if you can use the car to go skiing	
Text your coach to say you will be late for practice, why, and how you will catch up	
Arrive at work early to learn the new customer payment system	TS6,
Use a transit schedule to get to your new job on time	

Essential Skills	
RT	Reading Text
DU	Using Documents
N	Numeracy
W	Writing
OC	Oral Communication
TS	Thinking Skills…
WWO	Working With Others
DS	Digital Skills
CL	Continuous Learning

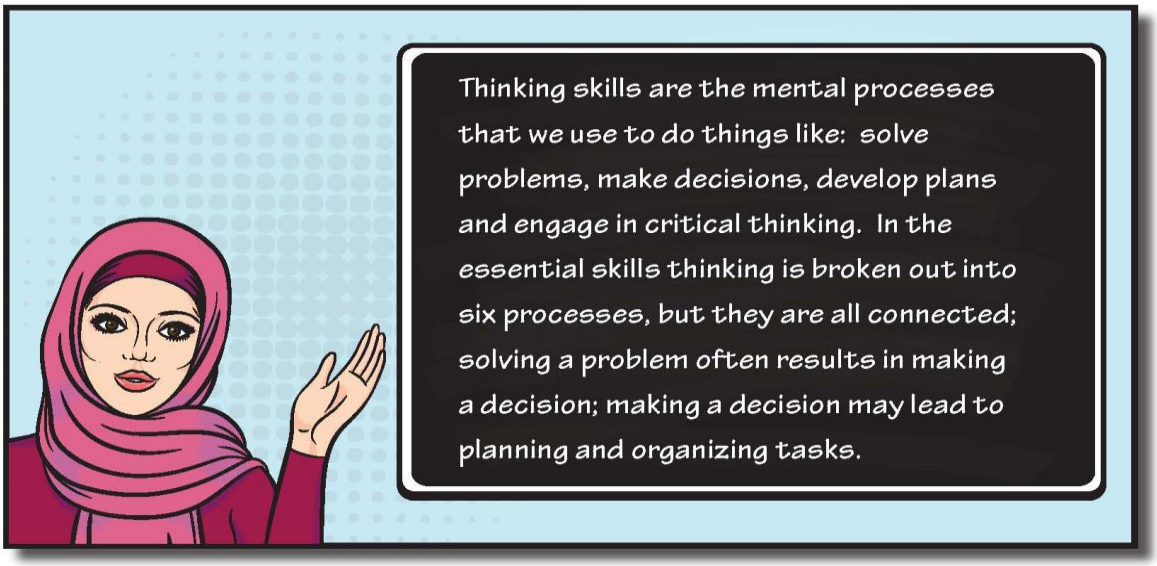
1. Problem Solving
2. Decision Making
3. Critical Thinking
4. Planning & Organizing Tasks
5. Find Information
6. Use Memory

NOW GIVE THE THINKING SKILLS A TRY!

Think about how you use your Thinking Skills every day – whether at a job or in your daily life. Complete the following table with an example of how you use each of the skills either at work or in daily life: be as specific as you can. We've filled in examples from Landscaper's work, to help you get started.

LEARNING CONTEXT	LANDSCAPER	YOU
Problem Solving	*Figures out how to remove unexpected obstacles at landscaping jobs, such as large rocks or debris*	
Decision Making	*Decides on the best fertilizers, herbicides and other chemicals to use, taking into account environmental concerns and customer needs*	
Critical Thinking	*Assesses the health of trees and shrubs*	
Job Task Planning and Organizing	*Revises landscaping schedules, when bad weather makes it impossible to complete work*	

GETTING STARTED WITH THINKING



THINKING SKILLS INCLUDE...

- ✓ Problem Solving
- ✓ Decision making
- ✓ Critical Thinking
- ✓ Job Task Planning and Organizing

Focus of this workbook

- ✓ Significant Use of Memory
- ✓ Finding Information

Additional important skills.
See Thinking Skills in Action for added examples of how the skills are used.

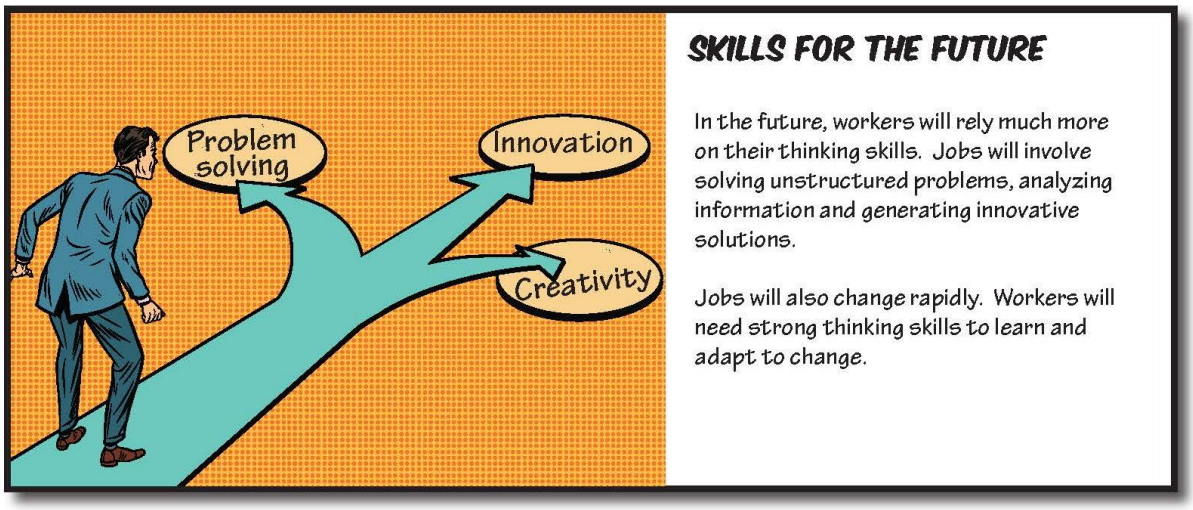
MORE ABOUT THINKING SKILLS

This workbook focuses mainly on the skills of problem solving, decision making, critical thinking, and job task planning and organizing. However, *significant use of memory* and *finding Information*, are also important thinking skills.

Significant use of memory refers to when the use of memory is more than something that just happens because of repetition. Workers who make significant use of memory, rely on memory in order to successfully complete their work. *For example*, web designers remember keyboard shortcuts for various software programs.

Finding information is a thinking skill that is used across all of the other skills, as a component of processes. It is often not possible to solve a problem or make a decision without finding information that clarifies a situation or expands our knowledge of an issue. *For example*, Heavy equipment operators scan on-board computer screens to locate the area of a problem.

THINKING SKILLS MAKE A DIFFERENCE



YOU ARE USING YOUR THINKING SKILLS IF YOU...

Identify possible solutions to a challenge

Memorize the lyrics to a new song

Consider if a social media post is reliable or unreliable news

Make a plan for how you will complete a project

Decide which classes to take at school

Search google for information on new restaurants to try

THINKING SKILLS MAKE A DIFFERENCE

AT WORK

When you are working, your thinking skills are an important factor in your success. Employers say that it is critical to productivity and business success to have employees who have the ability to solve problems, think critically, make decisions and plan and manage their own work. Your safety, productivity, and opportunities to advance will all be impacted by your thinking skills.

AT HOME

Our non-working life is impacted by our thinking skills too. Planning our days, and prioritizing things that are important to us, require us to use the skills. We regularly have to solve problems. We find information, think critically and make decisions. Some of this is uncomplicated, because it is common life instances with which we are familiar. In other cases, it is much more complex and the stakes are much higher. Do I get in the car with the friend I know has had a drink? Do I go to the party where there is a good chance there will be fights?

MEASURING THINKING SKILLS

The thinking skills are measured on four levels based on these factors:

- the steps involved in problem solving, from identifying it to finding a solution;
- the type and amount of information available to inform a decision, whether similar decisions have been made before, and the consequences of making a poor decision;
- the criteria, judgements, and possible consequences that will result from critical thinking processes;
    - Critical thinking is a kind of super-powered decision making used when judgement and consequences can really matter.
- the extent to which workers are responsible for organizing their own tasks
- the difficulty of finding, selecting, understanding and processing information

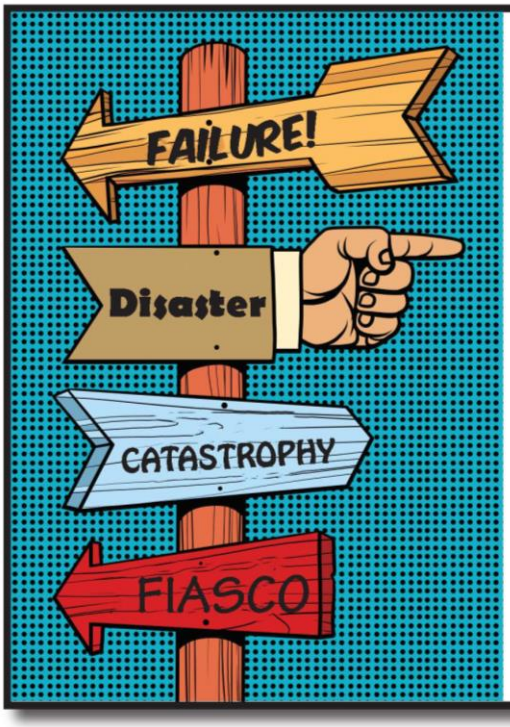
There are no complexity ratings for significant use of memory.

COOL JOBS THAT USE THINKING SKILLS

A THINKING SKILLS LESSON...

IF AT FIRST YOU DON'T SUCCEED...

In 1909, the city of Vancouver got its first ambulance. Everyone was very excited. On its first trip with the city crew it ran over an American tourist at the corner of Pender and Granville. He became the first patient transported in the ambulance.



FAILURE MIGHT BE COMING TO A CITY NEAR YOU!

Believe it or not, there is a Museum of Failure! It is in Helsingborg Sweden and it opened in June 2017. The museum is a collection of interesting innovation failures. As their web explains, the majority of all innovation projects fail and the museum showcases these failures to give visitors a fascinating learning experience. The collection consists of over sixty failed products and services from around the world. Every item provides unique insight into the risky business of innovation.

Some examples of the items on display include Google Glass, Bic for Her Razor, the Kodak Digital Camera, and Harley-Davidson Perfume.

As of September 15, 2017 the museum will close in Helsingborg and looking for a new home. They also hope to take the museum on the road. A world tour is being planned. Watch for it! As they say "Failure might be coming to a city near you!"

THINKING MAKES A DIFFERENCE

THINK THINKING ISN'T A BIG DEAL? THINK AGAIN!

A THINKING SKILLS DISASTER!

Halifax, Nova Scotia was devastated on 6 December 1917 when two ships collided causing a massive explosion and one of the biggest disasters in Canadian history.

Want to know how essential skill fit? Check out the story below to find out how essential skills played a role in this tragedy.

THE FULL STORY

Halifax, Nova Scotia was devastated on 6 December 1917 when two ships collided in the city's harbour, one of them a munitions ship loaded with explosives bound for the battlefields of the First World War. The result was the largest human-made explosion prior to the detonation of the first atomic bombs in 1945. Nearly 2,000 people died, another 9,000 were maimed or blinded, and more than 25,000 were left without adequate shelter.

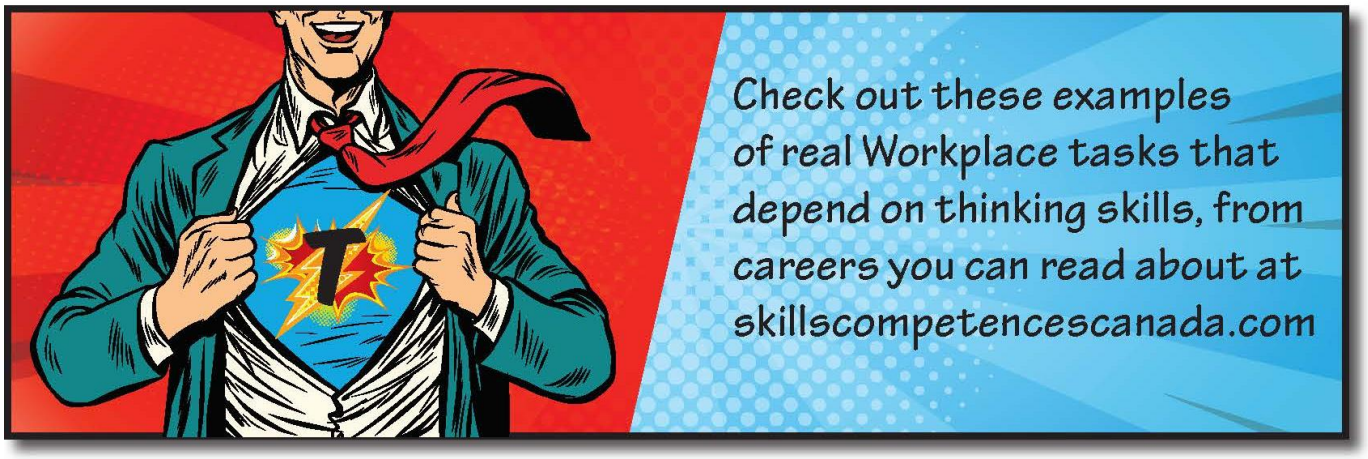
The Halifax explosion would go down as the largest unintentional human-made explosion ever -- and that record still holds.

Where do essential skills fit?

A formal review identified a number of factors that lead to the disaster. Talking "essential skills" they included breakdowns in job task planning, problem solving, decision making, and critical thinking.

For a fascinating close-up look at the Halifax explosion go to the new CBC interactive found here: http://newsinteractives.cbc.ca/halifaxexplosion/

THINKING SKILLS IN ACTION!



1. Aircraft mechanics organize their daily job tasks to accomplish the work assigned to them by supervisors and schedulers. (Job Task Planning and Organizing Level 2)

2. Automotive service technicians evaluate the quality of repairs. They consider the results of test drives and data from equipment, such as gas analyzers and scan tools. (Critical Thinking Level 3)

3. Computer network technicians choose to replace hardware and upgrade software, for example, choose to upgrade security monitoring and containment software when their computers and systems fail to detect viruses during test runs. (Decision Making Level 2)

4. Construction electricians evaluate the quality of their work. They compare measurements and electrical readings to specifications and physically inspect elements, such as wiring, panels and junction boxes. (Critical Thinking Level 3)

5. Gas fitters consult with police officers, fire fighters, repair crews and the company's emergency response team to coordinate and manage the front line response of major gas leaks. (Finding Information Level 3)

THINKING SKILLS IN ACTION!

6. Kitchen helpers and line cooks decide what products may be substituted to fill an order when there is a shortage of the normal food item (Decision Making Level 2)

7. Machinists remember codes and abbreviations associated with materials, tools and CNC programming (Significant Use of Memory)

8. Steamfitters draw upon information collected from Web research, CD-ROMs, operation manuals, other tradespeople, electrical engineers and manufacturers to troubleshoot and repair difficult faults (problem Solving Level 3)

9. Welders locate information about worksite hazards by reading hazard assessment forms and Material Safety Data Sheets (MSDS), inspecting the worksite and by speaking with safety officers, co-workers and supervisors (Finding Information Level 2)

10. Web designers and developers judge the suitability and effectiveness of web site content. They use established criteria such as logical flow, interesting content and good overall design. Failure to think critically about the key topics and links often results in disjointed web sites. (Critical Thinking Level 3)

THINKING SKILLS IN THE NEWS!

NEWS TODAY

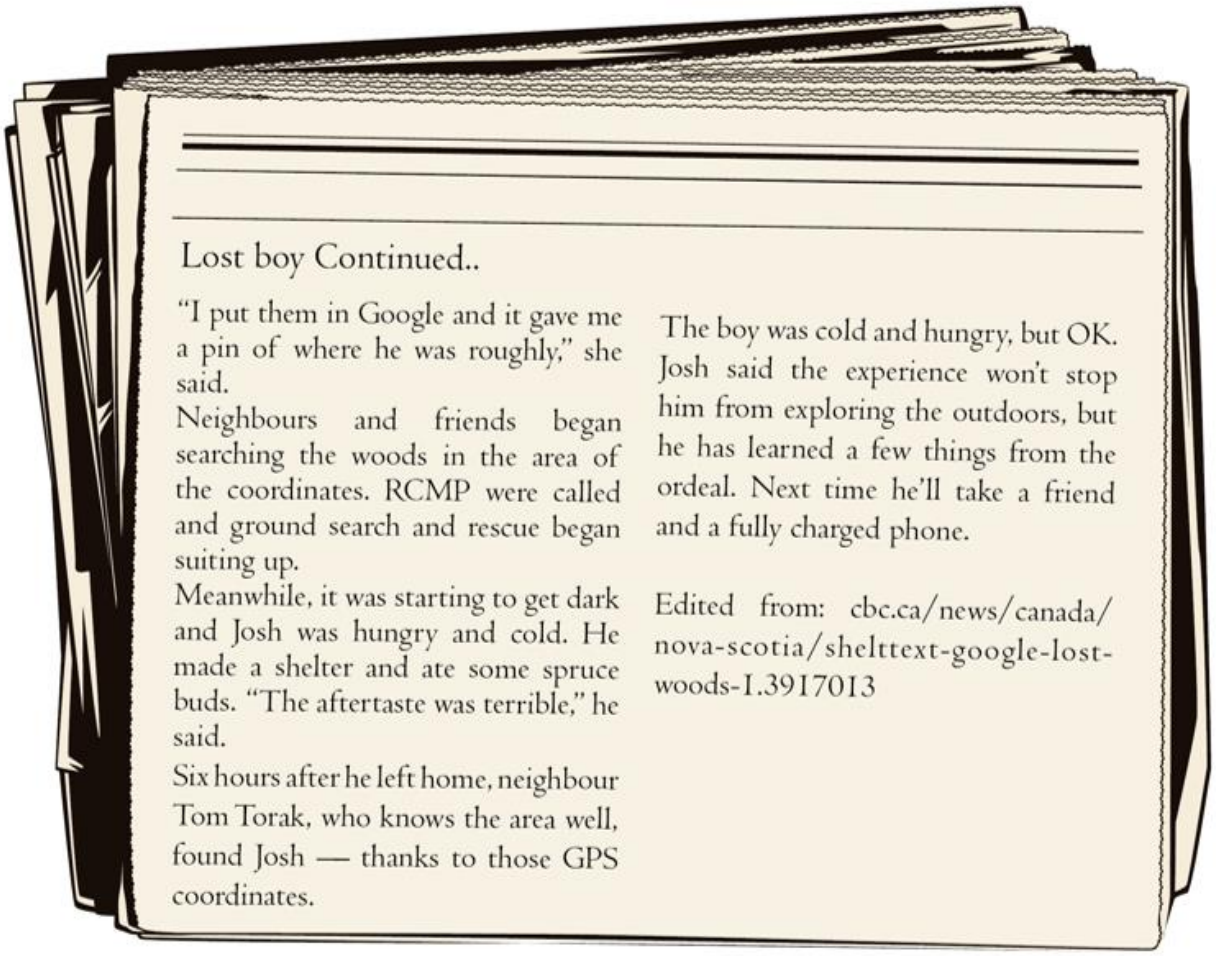
BUSINESS • FINANCE • LIFESTYLE • FASHION • SPORT • TRAVEL • WEATHER

ISSUE # 01.09.2016

Lost 11-year-old turns to Google for help.

Josh Hopkins strolled into the woods near his family's home in Shelburne, N.S., with a pocketknife, phone and his Christmas present, a new BB gun. The 11-year-old boy was eager to try out the gift but an hour into his hike, he realized he was lost. "I started to panic," he said. "I sat down for a minute, calmed down and I moved into this big clearing and sent my mom my coordinates." He had just two per cent battery power left on his phone when he Googled his GPS coordinates and sent them in a text message to his mother. She had no idea what the jumble of numbers meant.

(continued on next page)



Lost boy Continued..

"I put them in Google and it gave me a pin of where he was roughly," she said.

Neighbours and friends began searching the woods in the area of the coordinates. RCMP were called and ground search and rescue began suiting up.

Meanwhile, it was starting to get dark and Josh was hungry and cold. He made a shelter and ate some spruce buds. "The aftertaste was terrible," he said.

Six hours after he left home, neighbour Tom Torak, who knows the area well, found Josh — thanks to those GPS coordinates.

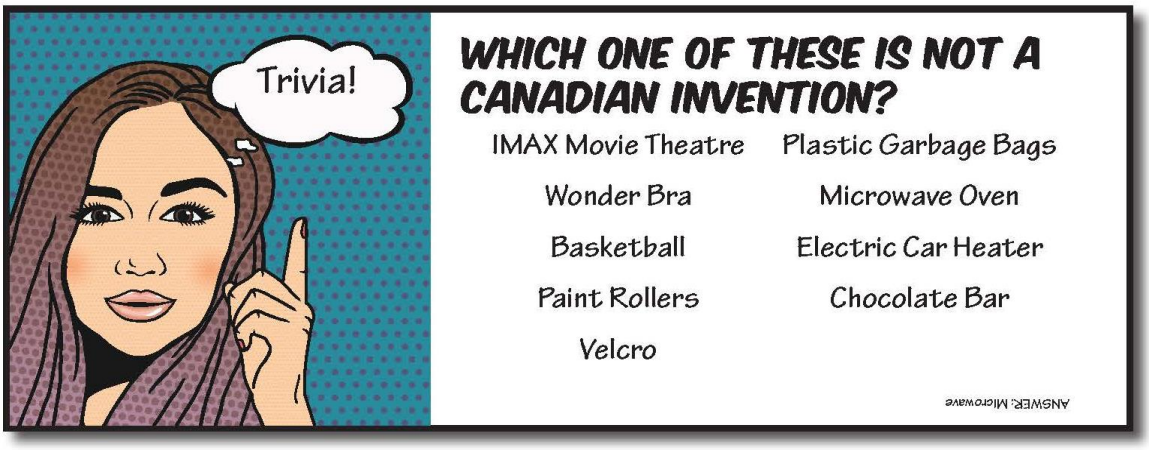
The boy was cold and hungry, but OK. Josh said the experience won't stop him from exploring the outdoors, but he has learned a few things from the ordeal. Next time he'll take a friend and a fully charged phone.

Edited from: cbc.ca/news/canada/nova-scotia/shelttext-google-lost-woods-1.3917013

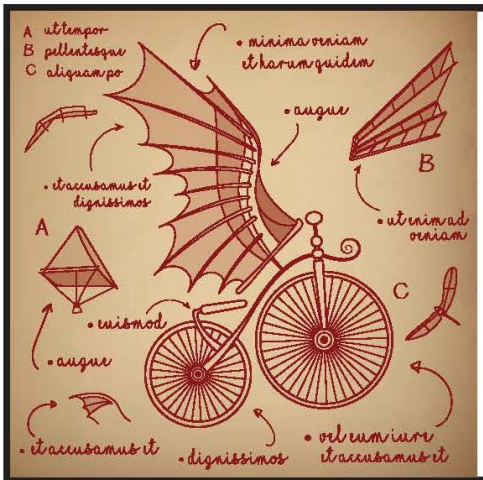
THINKING SKILLS BITS AND BITES

POST-IT NOTES...A FAMOUS FAILURE THAT BECAME A SUCCESS!

In 1968, Spencer Silver was trying unsuccessfully to develop a super-strong adhesive for 3M laboratories. Instead, he invented the opposite: an adhesive that stuck to objects but could be easily lifted off. He tried to promote it for years but no one wanted a glue that wouldn't stick. Then in 1974, a colleague saw a use for it that no one else had: holding his page in his hymnbook, which his bookmarks kept falling out of. It took 6 more years but 3M finally agreed to distribute the Post-it Notes nationwide in 1980. Today they are as iconic to the workplace and the home as staplers and pens.



THINKING SKILLS BITS AND BITES



WORLD FAMOUS DOODLER...AND THINKER!

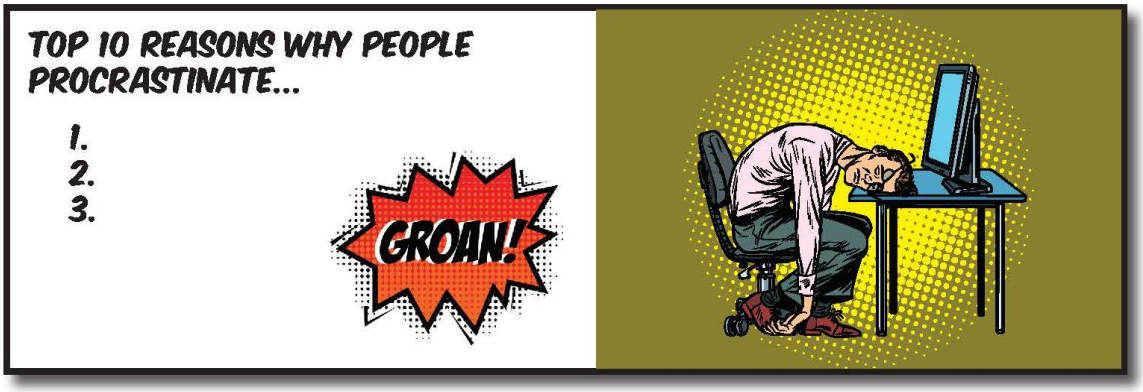
Leonardo da Vinci was a famous Italian "Renaissance Man" who lived from April 1452 – May 1519. He is best known as the artist who created the world renowned Mona Lisa painting.

But did you know Leonardo was also a great thinker? Check out how he used doodles and sketches to imagine and innovate.

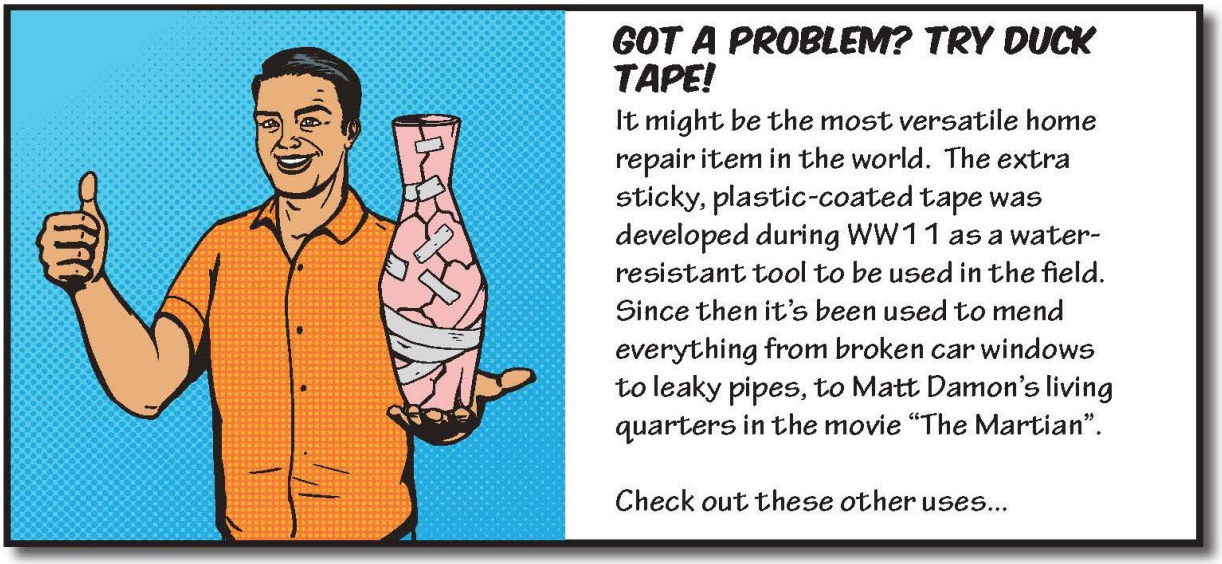
FAMOUS DOODLER

Leonardo da Vinci completed fewer than 20 paintings in his lifetime, spending 16 years on the *Mona Lisa* alone, and not necessarily because the *Mona Lisa* was a particularly difficult painting for him. When he should have been painting, Leonardo often took to doodling in his notebooks instead. In form, his procrastination didn't look much different from yours or mine. His doodles resulted in notebooks filled with inventions such as the helicopter, a metal-rolling mill, and the wheel-lock musket, plus sophisticated designs for bridges, a moveable dyke for Venice, and highly accurate maps that were sometimes centuries ahead of their time. One man's procrastination is another's ground breaking body of work.

Source: http://mentalfloss.com/article/63887/procrastination-through-ages-brief-history-wasting-time



THINKING SKILLS BITS AND BITES



GOT A PROBLEM? TRY DUCK TAPE!

It might be the most versatile home repair item in the world. The extra sticky, plastic-coated tape was developed during WW11 as a water-resistant tool to be used in the field. Since then it's been used to mend everything from broken car windows to leaky pipes, to Matt Damon's living quarters in the movie "The Martian".

Check out these other uses...

CHECK OUT THESE OTHER PROBLEMS SOLVED WITH DUCT TAPE...

1. Remove pet hairs: Make a DIY lint (and pet hair) remover by wrapping duct tape – sticky side out – around a paint roller.
2. Wrap handles: Duct tape wound around hammer handles and other tools gives you better grip.
3. Waterproof shoes: Cover the tops and sides of running shoes to protect them from puddles.
4. Secure cords: Duct tape cords in your home office to the floor to prevent tripping hazards.
5. Fix a leak: Repair garden hose leaks by wrapping the break with duct tape. It won't last forever, but it'll last long enough to water the garden.

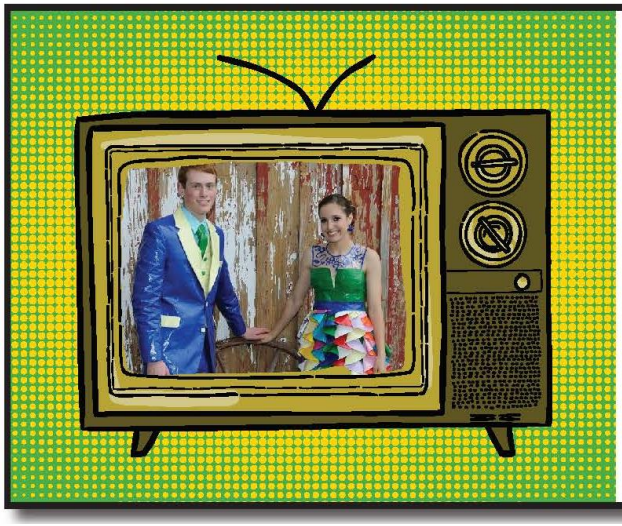
THINKING SKILLS BITS AND BITES

IS IT DUCK TAPE OR DUCT TAPE?

According to the 1st manufacturer, soldiers in WW11 dubbed the original green product "duck tape" because it forced moisture to flee "like water off a duck's back." Later, it was redesigned as the now familiar silver, and used to seal all kinds of things including heating "ducts". So, technically, both are correct. To be safe, try "Duck brand duct tape."

When it comes to finding the perfect one-of-a-kind dress or tuxedo for prom, there is a way to *make* a statement. How? By making your own Duck Tape® formalwear! Begun in 2000, the annual Duck® brand Stuck at Prom® Scholarship Contest continues to reward high school students in the U.S. and Canada for their imagination and creative expression. Students who make their own special-event attire and accessories from Duck Tape® can help offset the ever-increasing costs of college with the opportunity to win the more than $ 50,000 in scholarships made possible by Duck® brand.

Source: http://stuckatprom.com/



PROBLEM SOLVED! GRADUATION ON A BUDGET!

Looking to find the perfect one-of-a-kind graduation dress or tuxedo? We've got the solution. Make your own "Duck Tape graduation attire!

Find out how you can stand out in the crowd...and win a scholarship by creating a duck tape graduation outfit masterpiece.

Image source: www.stuckatprom.com

THINKING SKILLS BITS AND BITES

MINECRAFT...SO MUCH MORE THAN A FUN GAME!

Minecraft is a sandbox game that includes a virtual land where players can create their own worlds and experiences. But the game is much more than a fun adventure - players must also use their thinking skills like problem solving, critical thinking, decision making, and task planning and organizing. Read below to find out how others are using Minecraft to build their thinking skills.

image: Pabkov / Shutterstock.com

In the real life version of Ottawa, Parliament Hill looms over the downtown, the Rideau Canal bisects the city, and the Senators take to the Canadian Tire Centre ice way out in Kanata. In Minecraft Ottawa, none of that's set in stone. The recently-unveiled GeoOttaWow lets Minecraft players explore and refashion Ottawa's streets, houses, train tracks, as well as major buildings like Parliament Hill and City Hall. (FYI: Minecraft is a sandbox game. It's open ended, without a specific goal or constraining guidelines allowing players to create their own experiences. Many users see Minecraft as a great way to teach math, science, problem solving, collaboration and history.)

"I think we're one of the first in Canada to do this, so that's a good thing," said Coun. Rick Chiarelli, chair of the city's information technology sub-committee. "Now you have kids who are experimenting with basic principles of municipal planning. So if they think, for instance, that an outdoor stadium should be somewhere, they can build one — and then they can look at what impact it would have on that area, and what the concerns would be," said Charles Duffett Ottawa's chief information officer.

Other places in the real world have made themselves available on Minecraft, perhaps most notably the entire country of Denmark, which can be torn down and built back up according to players' whims and desires. The United Nations Block by Block program uses Minecraft to engage poor communities in urban design. It's been used in successful architecture projects in places from Haiti to Nairobi.

Edited from: http://www.cbc.ca/news/canada/ottawa/ottawa-minecraft-1.3395885

THINKING SKILLS BITS AND BITES

Thinking skills are an important component of creative thinking and innovation. Check out the story below about how Indigenious artists are challenging conformity and the status quo.

Image Sources: http://boarderx.wag.ca/ (top left artist Roger Crait, top right artist Mark Igloliorte, bottm right artist Mason Mashon, bottom left artist Steven Thomas Davies, middle left artist Jordan Bennett)

Boarder X (pronounced boarder "crossings"), first presented at the Winnipeg Art Gallery, presents contemporary work by artists from Indigenous nations across Canada who surf, skate, and snowboard. The exhibition reveals how these practices are vehicles to challenge conformity and status quo, as well as demonstrate knowledge and performed relationships with the land. Whether reading the urban terrain, making a cement jungle a playground, riding the natural contours of white immovable mountains, or shredding the ever-changing waves, it's not about controlling land and water, but being humbled by their power.
http://boarderx.wag.ca/

PUT YOUR SKILLS TO WORK!

GIVE YOUR SKILLS A WORKOUT IN THIS SECTION OF THE WORKBOOK. SKILLS, LIKE MUSCLES, GET STRONGER THE MORE WE USE THEM. BUILD YOUR ES MUSCLES BY WORKING INDEPENDENTLY TO COMPLETE ALL OF THE WORKOUTS. YOU CAN CHECK YOUR ANSWERS IN THE ANSWER KEY.

THINKING SKILLS

Use the table of contents to navigate through this workbook. Track your progress by putting a checkmark beside each topic you complete.

1. DON'T BRING ME PROBLEMS. BRING ME SOLUTIONS!

NOTE:

This workbook is designed to help with practical problems you might encounter at school, at work, or in the community. These are problems like a bike breaking down or managing more than one deadline.

Sometimes problems are very personal and very complicated. In those cases, you need more than a 5-Step process; you need friends and other people to help you sort things out. For those kinds of problems, asking for help is a logical problem solving strategy.

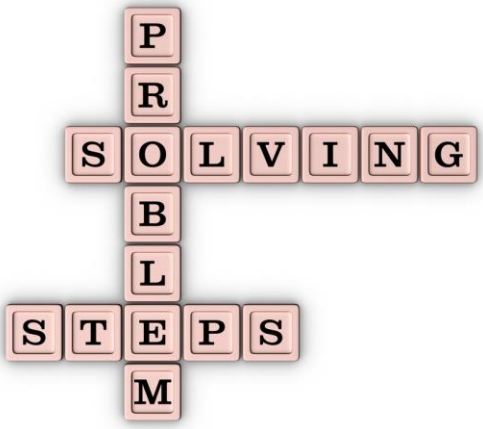
Both the statements below are true.

- Problems require solutions
- Some problems are more difficult to solve than others

What is also true is that employers value employees who bring them solutions to problems, not just problems.

Being an effective problem solver is a skill that can be learned. What helps with that learning is having a process to follow and opportunities to practice. The 5-step problem solving approach used in this workbook is a process you can practice that will help you to build your problem solving skills.

The details of each of the steps listed below can be found on the next page. After you review the details, use the steps to help you solve the problems that follow.



5 Steps to Problem Solving

Step 1: Define the Problem

Step 2: Consider Solutions

Step 3: Choose a Solution

Step 4: Implement the Solution

Step 5: Evaluate the Results

PROBLEM SOLVING STEPS - DETAIL

Step 1: Define the details of the problem

Before you rush to come up with a solution, make sure you are clear about what the problem is.

Use the 5Ws as a guide to gather information, to help you define the problem. Then write a short description of the problem.

1. Who – who is involved or affected?
2. What – briefly, what seems to be the problem?
3. When – when did the problem occur – day/date/time/season etc.?
4. Where – in what location?
5. Why – do you think the problem occurred?

Step 2: Consider solutions

How might the problem be solved?

- Be innovative and creative – anything goes.
- Brainstorm as many solutions as you can and write them down.
- Try not to evaluate the solutions right now.

Step 3: Choose a solution

Now evaluate the solutions you thought of and choose the one you think is most likely to solve the problem. In order to evaluate them, write down the pros and cons of each.

- Pros are the advantages: e.g. the solution would guarantee we could get the work done on time
- Cons are the disadvantages: e.g. the solution would require extra work for everyone on weekends

Step 4: Choose your solution and use it to solve the problem.

Step 5: Evaluate the results.

Did the solution work? Great!

- If not, return to Step 3, and choose a different solution.
- If the second of your solution ideas doesn't work, go back to Step 1 and redefine the problem.

Step 1 in the problem solving process is your chance to describe the problem in detail. It is also a good place to start to build your skills.

WHERE'S JOSH?

Remember the news story about Josh? He was the lost 11 year old who used his problem solving and digital skills to ensure his rescue, when he got lost.

Josh Hopkins strolled into the woods near his family's home in Shelburne, N.S., with a pocketknife, phone and his Christmas present, a new BB gun.
The 11-year-old boy was eager to try out the gift but an hour into his hike, he realized he was lost. "I started to panic," he said. "I sat down for a minute, calmed down and I moved into this big clearing and sent my mom my coordinates."
He had just two per cent battery power left on his phone when he Googled his GPS coordinates and sent them in a text message to his mother. She had no idea what the jumble of numbers meant. "I put them in Google and it gave me a pin of where he was roughly," she said.

Coordinates
51.047984 -114.054675

It started to get dark and Josh was hungry and cold.

Six hours after he left home, neighbour Tom Torak, who knows the area well, found Josh — thanks to those GPS coordinates. The boy was cold and hungry, but OK.
Josh said the experience won't stop him from exploring the outdoors, but he has learned a few things from the ordeal. Next time he'll take a friend and a fully charged phone.

1. Using the information in the story above, complete the tables on the next page, to describe the problem from Josh's point of view and from his mother's point of view, by completing Step 1 of the problem solving process.
(*problem solving level 2*)

Josh

Who
What
When
Where
Why

Josh's problem is

Josh's mother

Who
What
When
Where
Why

Joshs' mother's Problem is

2.

Now choose a practical problem that you are facing, or that you faced in the past.

It might be something related to school work or to a part time job, or it could be a challenge you are facing with one of the extra-curricular things you do. For example, your soccer and hockey practices overlap once every week, or the band you play in isn't interested in trying any of your original music.

Thinking about the problem, use the Step 1 questions to identify the information that is, or was, available to you and then write a brief description.
(*problem solving level 2*)

Who
What
When
Where
Why

The problem I chose is

Learning the Rest of the Steps in the Process

1. After you review the story below, answer the five questions in the table that follows. Then write briefly what you think the problem is.
(*problem solving level 2*)

The Story
Karim, Joseph, and Grant live close to the community basketball courts. They love to go to the courts to shoot hoops as often as they possibly can. The courts are used by a lot of the kids in the neighbourhood and the mesh on the hoops is gone. In some cases it was torn off by kids hanging from it and in other cases it fell apart from being out in the weather all the time. The community can't afford to replace the mesh this year. Not having the mesh really bothers Joseph because he is just learning and he finds it harder to aim the ball without having more than the hoop to shoot at. The guys are planning to spend Saturday morning shooting hoops and Karim and Grant are trying to think of something they can put on the hoops that will be helpful to Joseph.

Step 1- Define the Problem

Who?
What?
When?
Where?
Why?

The problem is

Step 2 – Consider Solutions

2. Write down, in the Solutions column of the table below, all the solutions you can think of to fix the hoops. Don't be afraid to be creative and innovative! Try to think of at least three solutions.
(problem solving level 2)

Solutions	Pros	Cons

Step 3 – Take a Close Look at the Possible Solutions

3. Decide on the pros and cons for each solution you came up with. In the table above, write the pros and cons in the appropriate columns. Next, review your pros and cons and write your choice for the best solution in the space below.
(problem solving level 2)

Best Solution:

Turn to the next page

4. Step 4 – Implement the Solution

In this case, as you can see, a solution has been implemented. Go directly to Step 5 to evaluate the solution.

http://obviousfun.com/logical-examples-of-solving-everyday-problems-13/

5. Step 5 – Evaluate the results

Look at the picture that shows how one group solved the problem of mesh missing from the hoops. Do you think the solution in the picture solves the problem? Is this a solution you thought might work? In the space for evaluation comments, explain how you think the solution does or does not solve the problem you identified at the beginning of this workout.

(*problem solving level 2*)

Evaluation Comments:

Follow the same process as in the previous workout to try to solve one more problem.

1. After you review the story below, answer the five questions in the table that follows. Then write briefly what you think the problem is.
(*problem solving level 2*)

The Story
Marisa and Katrina have just moved into their first apartment. It turns out the oven, stove and microwave are not working. The landlord has said he will fix the problem, but not until the morning. It is too late to go out for something to eat and they are starving! They have four pieces of pizza left from the lunch time and they are trying to figure out how they could possibly heat them up so they don't have to eat them cold. They have various small appliances around that they each brought for the move, but none that are actually meant for any sort of cooking tasks.

Step 1- Define the Problem

Who?
What?
When?
Where?
Why?

The problem is

Step 2 – Consider Solutions

2. Write down, in the Solutions column of the table on the next page, all the solutions you can think of to heat up the pizza. Be creative and innovative! Try to think of at least three solutions.
(problem solving level 2)

Solutions	Pros	Cons

Step 3 - Take a Close Look at the Possible Solutions

3. Decide on the pros and cons for each solution you came up with. In the table above, write the pros and cons in the appropriate columns. Review your pros and cons and write your choice for the best solution in the space below.
(problem solving level 2)

Best Solution:

Turn to the next page

4. Step 4 – Implement the Solution

In this case, as you can see, a solution has been implemented. Go directly to Step 5 to evaluate the solution.

http://thechive.com/2014/04/17/these-problem-solvers-know-what-theyre-doing-34-photos/

5. Step 5 – Evaluate the results

Look at the picture that shows how Marisa and Katrina solved the problem of cold pizza. Do you think the solution in the picture solves the problem? Is this a solution you thought might work? In the space for evaluation comments, explain how you think the solution does or does not solve the problem you identified at the beginning of this workout.
(*problem solving level 2*)

Evaluation Comments:

Your Turn to Try All the Steps

We can all think of problems we come across in our daily lives. For example: you ride your bike to school each day and there is no bike path along the busiest section of your ride or the dog ate your homework or you want to participate in a camping trip with your outdoor education group but you don't have all the equipment you need or you have two assignments due on the same day or you are scheduled to cover a shift at work for your supervisor on the same night that there is a party you would like to attend.

1. Think of a problem that you face and would like to try to solve. It could be the problem you used to practice Step 1 or a different problem from school, work, a sports team you might play on or something you and your friends have discussed as a problem. Use the problem solving process to generate a solution. Begin by answering the five questions and then writing a brief description of the problem.
(*problem solving level 2*)

Step 1- Define the Problem

Who?
What?
When?
Where?
Why?

The problem is

2. Step 2 – Consider Solutions

Write down, in the Solutions column, all the solutions you can think of for your problem. Be creative and innovative! Try to think of at least three solutions.

(problem solving level 2)

Solutions	Pros	Cons

3. Step 3 - Take a Close Look at the Possible Solutions

Decide on the pros and cons for each solution you came up with. In the table above, write the pros and cons in the appropriate columns. Review your pros and cons and write your chosen solution in the space below.

(problem solving level 2)

Best Solution:

I think the best solution to the problem I described is

4. Step 4 – Implement the Solution

If you are able to, implement the solution to the problem you chose. Then go to Step 5 to evaluate your solution.

5. Step 5 – Evaluate the results

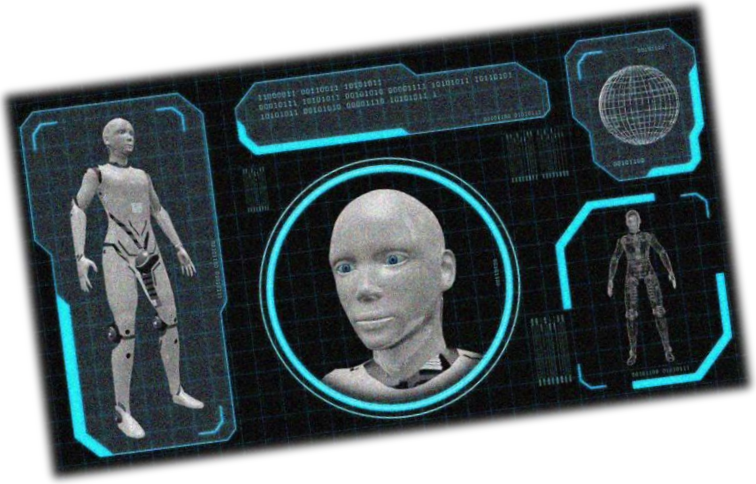
If you were able to implement your chosen solution, evaluate the results by answering the questions.

- Did the solution solve the problem?
- Did the solution work the way you thought it would?
- If you were faced with the same problem again, would you use the same solution or try a different one? Why or why not?

(*problem solving level 2*)

Evaluation Comments:

Problem-solving skills are not only needed when something goes wrong. Sometimes solving problems is a regular and constant part of the job.



Video game designers and graphic illustrators, for example, constantly have to bring animated characters to life. 2D and 3D animators figure out how to add personality, facial expressions, movement, and physical looks to characters, based on the story in which the characters will appear. They also consider the impact of the speed of the animation. In gaming, they have to consider the limitations of the gaming platform.

This type of work requires regularly completing Level 3 problem-solving tasks.

Dane Olds, a video game character designer with Bethesda Games Studios, explains what that means in the article below.

> This job is made for anyone who loves art and video games — but be willing to hustle, Olds says. "This is a highly competitive industry." An extensive knowledge of computers and familiarity with programs like Photoshop, ZBrush (a digital sculpting tool), 3Ds Max (a 3-D modeling program) and Substance Painter (3-D painting software) also helps.
>
> Character artists also must understand the characters — and the worlds — they're designing for. "They immerse themselves in the setting", Olds says, "and their art has to make sense in the world that's being created."
>
> Source: https://www.wshingtonost.com/express/wp/2016/11/15/steal-this-job-video-game-character-designer/?utm_term=27c41bc8dc27

1. Now it's your turn to try out the job of game character designer.

Imagine you are a graphics designer and you have to design two new characters for a game. The only direction you have is that the client wants the characters to be quite different from each other. The client's broad guidelines are as follows:

- Character 1: someone/thing from the ancient past. Think "Lordof the Rings" or "King Arthur"
- Character 2: someone/thing from the future. Think "Star Wars" or "Avatar"

On the next page is a table. The column on the left contains some of the criteria designers must consider when solving the problem of creating a character or characters that will be a fit with a specific game. Complete the table, in order to think through your basic ideas for each of the characters described above.
(*problem solving level 3, digital technology level 3*)

Your 5-Step problem solving process works here too.

Define the Problem:

You need to design two new characters that are based on the client's guidelines and will be a good fit with the overall game.

Consider Solutions:

Prepare to complete the table by brainstorming a list of all the ideas you can think up for how the characters might be when they are developed.

Choose a Solution:

Choose what you believe are the best ideas you came up with.

Implement the Solution:

Complete the table to give you your preliminary design plan.

Evaluate the Results:

After completing the table, use the descriptors in the table to sketch each of your characters.
You may choose to sketch by hand or to use your digital skills by using a design or drawing program.
When the sketches are complete, review by asking yourself the following questions.

1. Am I able to include all the features I included in the table?
2. Are there any features that do not work?
3. Can I alter them to make them work or do I need to find different features?

CHARACTER DESIGN PLANNING

CRITERIA	CHARACTER # 1: Inspired by "Lord of the Rings" or "King Arthur"	CHARACTER #2: Inspired by "Star Wars" or "Avatar"
Human, animal, robot, other?		
Gender?		
Age?		
Body colour?		
Body size?		
Height?		
Hair?		

Language(s) spoken?		
Voice sounds like?		
Name?		
Family history?		
Origin?		
Special skills?		
Main purpose in life?		
Add you own:		

Use the blank pages that follow to complete your sketches, if sketching by hand.

2. DECISIONS DECISIONS

Decision making refers to making a choice among options. People make decisions all the time. They might be easy or familiar decisions, like what to have for lunch, which party to go to on the weekend, whether to go to the party or to stay in and study for finals, or whether or not to spend some of our savings on something we want (like the sunglasses everyone is wearing) or on something we need, (like new winter boots). Familiar decisions are often easy to make, because we have made them before. It's useful to keep in mind that making a decision creates a result which may be positive or negative, and the results of a familiar decision may not be the same every time. Staying in to study instead of going out partying could have a very positive result if you get a passing grade or the mark you need to get into a program you want to take. Going out and not studying could have a negative result, if you do not pass your final.

Less familiar decisions are often more difficult. Some factors that cause decision-making to be difficult are how familiar you are with the issue to be decided, whether you have enough background information to make an informed decision, if there is information you can review related to similar decisions that have been made, whether there is a process or decision tree you can use, whether the decision can be reversed, and what the consequences of the decision might be.

Just as with problem solving, it helps to have a process to follow. The steps in one possible decision making process are listed below.

1. Define the decision that needs to be made.
2. Consider what the options are.
3. Determine the possible results of choosing the various options.
4. Make the decision.
5. Evaluate whether the decision was effective.

What follows are two scenarios you can use to practice making decisions, using the steps in the process on the previous page.

1. You and two other people your age recently started summer jobs as carpenters' helpers on a construction site. You have all been given safety training and the whole crew attends a safety meeting each day before starting work. At the meeting everyone is reminded about the importance of workplace safety. The other helpers don't seem to take the training or meetings seriously. They often do things that are risky for themselves and, potentially, for others on the crew. You have tried reminding them about what you learned in safety training, but they just ignores you. Should you report them to someone?
(*decision making level 2*)

https://www.slideshare.net/gsgindia/working-at-height-and-fall-protection-safety-for-pdf

Define the decision that needs to be made. (A clear and brief description of the problem)

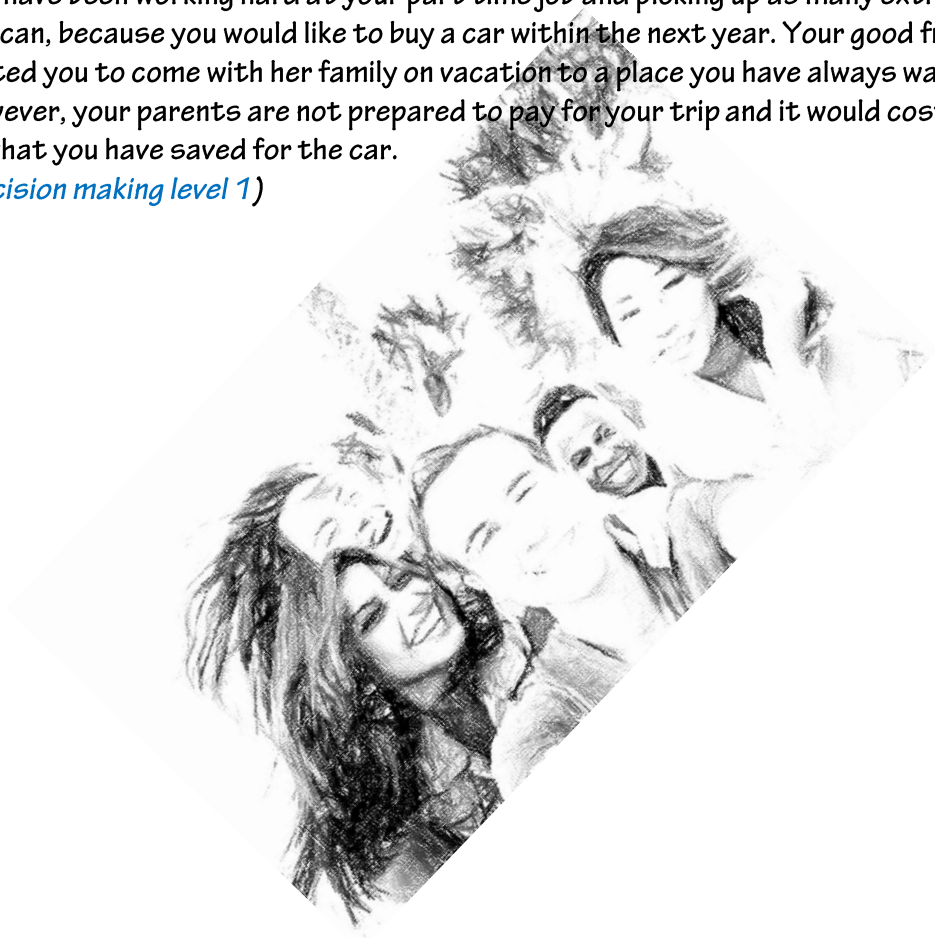
Consider what the options are. (Make a list. Sometimes it is clear there are just two options to choose from. Other times, there may be multiple options to consider.)

Determine the possible results of choosing the various options. (Think through the likely results for each option you identified. A pros and cons list for each can help.)

Make the decision. (Write it here.)

Evaluate whether the decision was effective. (What happened once the decision was made? Was the outcome what you expected? Would you make the same decision again or would you choose a different option?)

2. You have been working hard at your part time job and picking up as many extra shifts as you can, because you would like to buy a car within the next year. Your good friend has invited you to come with her family on vacation to a place you have always wanted to go. However, your parents are not prepared to pay for your trip and it would cost about half of what you have saved for the car.
(decision making level 1)



Define the decision that needs to be made

Consider what the options are

Determine the consequences of choosing the various options

Make the decision. (Write it here.)

Evaluate whether the decision was effective

3. BONUS QUESTION

You decided to go on the trip with your friend. You have estimated that it will cost you $450.00. You make $11.00 per hour, after taxes, at your job. To the nearest hour, how many hours will you need to work to cover the cost of your trip? How many four hour shifts will it take?

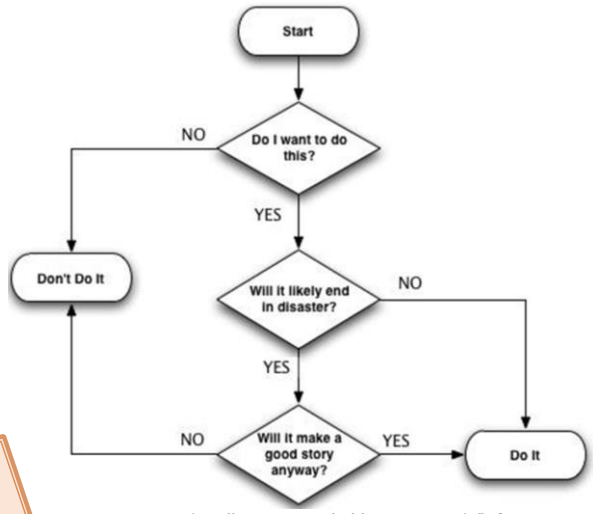
(money math level 2)

1. In the table below are brief descriptions of the lifestyles of three people who are trying to decide on the form of transportation that best fits their needs. The options they have to choose from are car, skateboard or transit. Read each description and decide which mode of transport best suits each person's needs.
(decision making level 2 - 3)

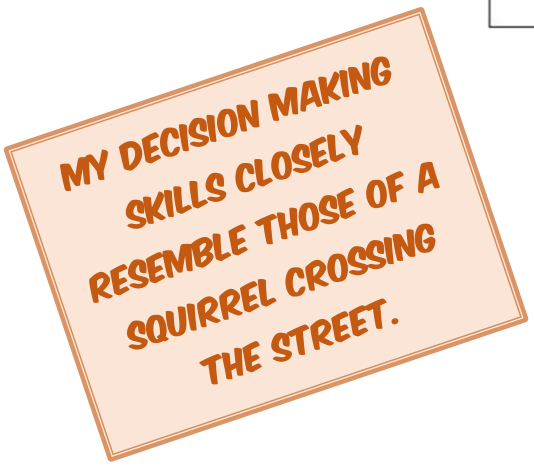
Person	Location	Routine	Finances	Best choice
Anton Single dad to a 2 year old. 	Lives in the city Close to major roadways and bus stops	Works regular hours Monday to Friday Has a child care worker who comes into his home	Not a lot of extra money Trying to save for a down payment on a condo.	
Jen Tech college student Lives with one roommate Roommate has a car	Lives downtown 10 blocks from the campus 	Classes Monday to Saturday at different hours Part time job Tuesday and Thursday evenings in her neighbourhood	Part time job helps a little but tight budget Student loans Doesn't want any more debt than is necessary	
Perry Shift worker in a skateboard manufacturing plant 	Lives outside of the city Bus service is only available in peak hours.	Has permanent employment Shifts vary week to week Takes extra shifts when they are available.	Finances are pretty steady.	

When you need to make a decision, there are tools you can use to help you. Two useful tools are a pros and cons list, with which you are already familiar, and a decision tree.

One common version of a decision tree is a type of flowchart. It is useful because it gives a picture of the options available in the decision to be made and prompts you to ask questions that will help you to make a considered decision. Decision trees may be simple or complex.



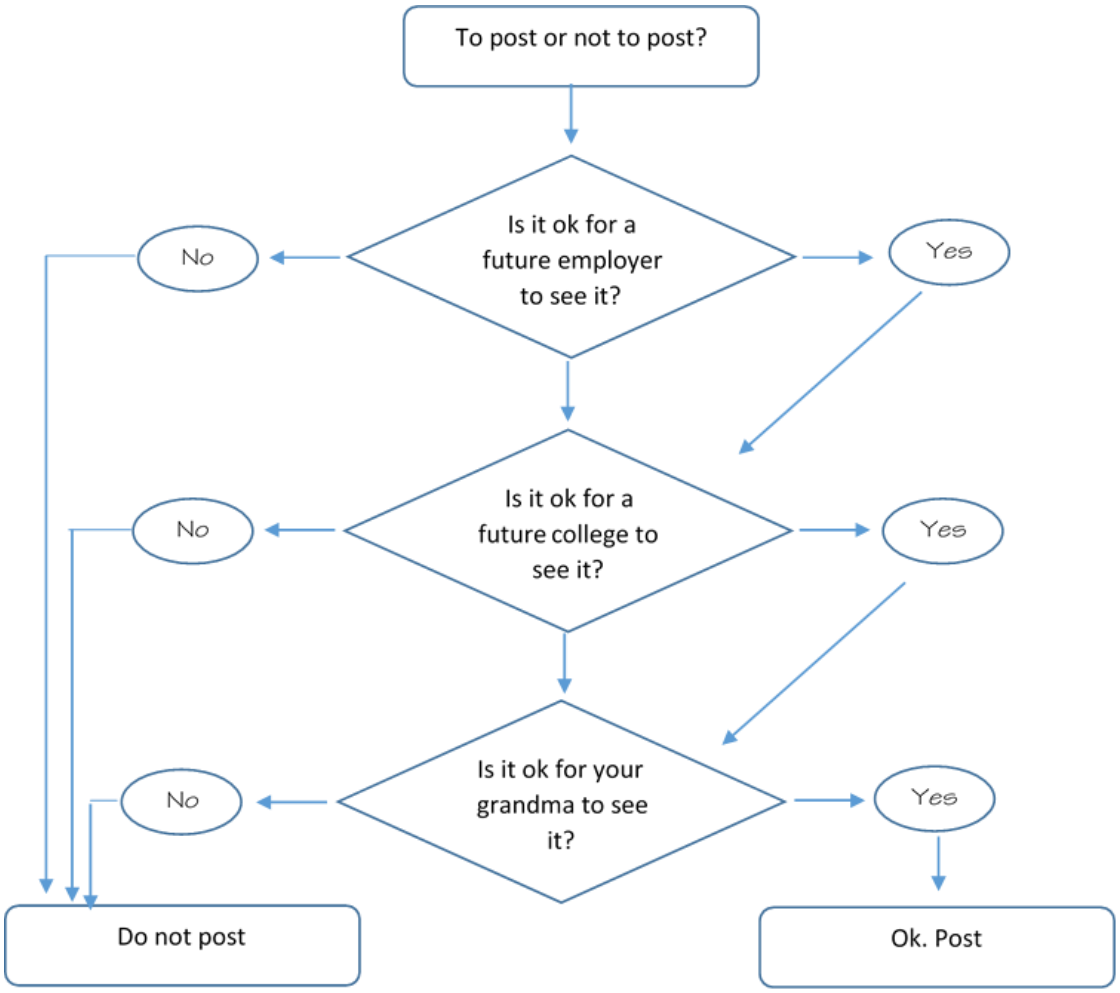
http://www.nerve.com/web/internet-meme-hall-of-fame/internet-meme-hall-of-fame-flowcharts



https://whyevolutionistrue.wordpress.com/2012/10/13/two-animal-lolz/flow-chart/

According to Cal Newport who wrote, *Deep Work: Rules for Focussed Success in a Distracted World*, "if you want to succeed at your job, it's time to unplug and step away from your social media." For many people, that's not as easy as it sounds, but it is important to be sure that you are the one in control of your presence on social media and that you make the decisions about what you post and what you don't post.

Below is a decision tree focussed on making a decision about whether or not to post on social media.



1. Pick one of the social media accounts you use most often. Use the decision tree to review at least four posts you have made recently. Decide whether you should leave the post up or delete it. The post can be a comment, photo or link: anything that clearly came from you. Remember to check not only your original post, but what has happened to it since. What comments or links are now associated with the post? Are you comfortable with them? Have there been pictures added to the comments on the post? Do they meet the criteria in your decision tree? Record your results in the table on the next page.
(decision making level 3)

Post 1

Decision:

Reason:

Post 2

Decision:

Reason:

Post 3

Decision:

Reason:

Post 4

Decision

Reason:

You and your companions have just survived the crash of a small plane. Both the pilot and co-pilot were badly injured in the crash and are not able to advise or help. It is mid-January, and you are in Northern Saskatchewan. The daily temperature is 25 below zero, and the night time temperature is 40 below zero. There is snow on the ground, and the countryside is wooded with several creeks criss-crossing the area. You know the nearest town is 20 kilometres away. You are all dressed in city clothes appropriate for an interview.

Edited from: http://www.crystalspringsfoundation.org/
Original source: http://wilderdom.com/games/descriptions/SurvivalScenarios.html

1. Below and on the next page, is a list of 11 items that you have been able to salvage from the plane. Your task is to rank the items, in order of importance for your survival, by writing the number in the Rank column, where 1 is the most useful and 12 is least useful. Below each item, write a brief description of how it could be used.
(decision making level 4)

Item	Rank
A ball of steel wool Use:	
A small axe Use:	
Can of Crisco shortening Use:	
Newspapers (one per person) Use:	
Cigarette lighter (without fluid) Use:	
Extra shirt and pants for each survivor Use:	

20 x 20 ft. piece of heavy-duty canvas Use:	
A sectional air map made of plastic Use:	
One quart of 100-proof whiskey Use:	
A compass Use:	
Family-size chocolate bars Use:	

3. MAKE A PLAN! GET ORGANIZED!

The essential skill of job task planning and organizing refers to the extent to which workers plan and organize their own tasks. Planning and organizing are skills that can be built. A good place to start, is by getting an idea of how strong your skills are now.

Complete the quiz below to find out.

Instructions: Read each skill description and then give it a rating, based on how well you think you are at that skill. The total your score to see how you are doing overall.

4 = I do this very well. I am consistent and successful at it.
3 = I am good at this. With some practice I can be pretty good.
2 = I am getting better, but still need to work on this some more.
1 = I am not particularly good at this – yet.

Skill Description: I can…	Rating
Accurately estimate time and effort required to complete a task.	
Identify and organize resources needed to complete a task.	
Organize personal time to ensure I carry out responsibilities.	
Identify tasks that are most important.	
Arrange tasks in a logical order.	
Use a "to do" list, task plan, or similar planning devices to keep track of tasks and deadlines.	
Total Score	/24

Much of the time, workers do similar tasks every day. Through this repetition, effective workers get to be efficient at planning and organizing how they will get their work done.

Aircraft mechanics, for example, regularly need to do certain tasks such as analyze instrument readings, exchange information with flight schedulers, document repairs and make corrections. They need to be able to organize their work day to make sure they can complete work tasks that are assigned to them. They also need to be able to reorganize their job task plans, if an aircraft unexpectedly needs to be repaired and inspected.

Planning work tasks before you start helps to improve efficiency and can help to improve safety. Each of the three questions below asks you to order the work activities described, in the order you think would be most efficient. Basically you are creating a to-do list that provides a logical order in which the tasks should be completed.

In each case there is more than one logical way to order the tasks. Briefly explain why you chose the order in your list.

1. Heavy Equipment Technicians maintain, repair, and overhaul heavy vehicles and industrial equipment, such as internal combustion engines and components, ground-engaging equipment including rippers and backhoes, and towed earth-moving equipment, commonly called scrapers. Write the task numbers in the order you would put them on a to-do list. Explain your choices in no more than two sentences.
(*job task planning and organizing level 3*)

1. Test bulldozer
2. Check bulldozers for faults or malfunctions
3. Adjust equipment or repair defective parts
4. Clear bulldozer for use
5. Diagnose fault or malfunction

Order: _____, _____, _____, _____, _____.

Explanation:

2. Millwrights install, maintain, repair and troubleshoot stationary industrial machinery, as well as mechanical equipment in factories, production plants and recreational facilities. Write the task numbers in the order you would put them on a to-do list. Explain your choices. (*job task planning and organizing level 3*)

1. Adjust defects or irregularities
2. Clean, lubricate and perform routine maintenance
3. Inspect lathe for defects
4. Operate lathe

Order: _____, _____, _____, _____.

Explanation:

3. Bakers are responsible for making breads, bagels, pretzels, cakes, muffins, cookies and pastries as well as chocolate and candy, sugar sculptures and icing. They can prepare many different baked goods or specialize in just one. Write the task numbers in the order you would put them on a to-do list. Explain your choices.
(*job task planning and organizing level 1*)

1. Bake mixed batter
2. Adjust frosting colour
3. Prepare batter and frosting for cake
4. Frost baked cake

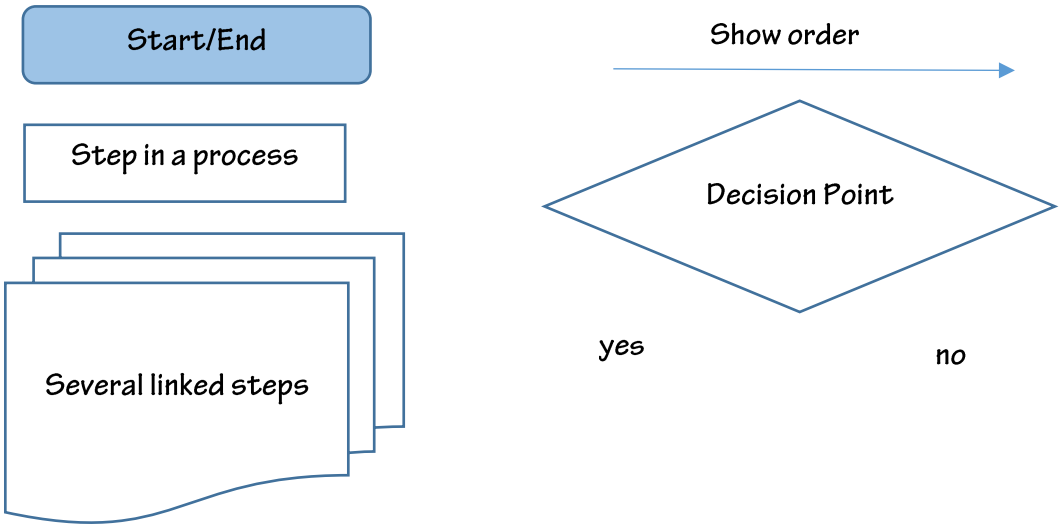
Order: _____, _____, _____, _____.

Explanation:

One great job task planning and organizing tool is a flowchart. A flowchart is a type of diagram that represents a process or workflow, showing the steps as boxes of various kinds, and their order by connecting them with arrows. Flowcharts are designed to be easy to read. They are also intended to show an entire process "at a glance." When you have tasks to accomplish, creating a flowchart can help you to plan the steps and keep you aware of the points where you will need to make decisions, in order to proceed. Only point-form text should be included in a flowchart. The idea is to reduce the amount of information that needs to be read, by using the flowchart to show the plan or process.

Flowchart hints and tips:
Below are the most common shapes used in traditional flowcharts.

- The rounded rectangle means the start or end of a process.
- The single rectangle is a step in a process.
- The multiple rectangles with the curved bottom indicate that there are several things to be done at this part of a process.
- Diamonds are decision points. The decision to be made is written in the diamond and then a yes and no option is written on either side of the diamond, to show what happens in each case.
- Arrows are used to link it all together in the correct order.
- The text in the shapes is very brief; just the main idea is included.
- Some flowcharts also use colour as part of the design.

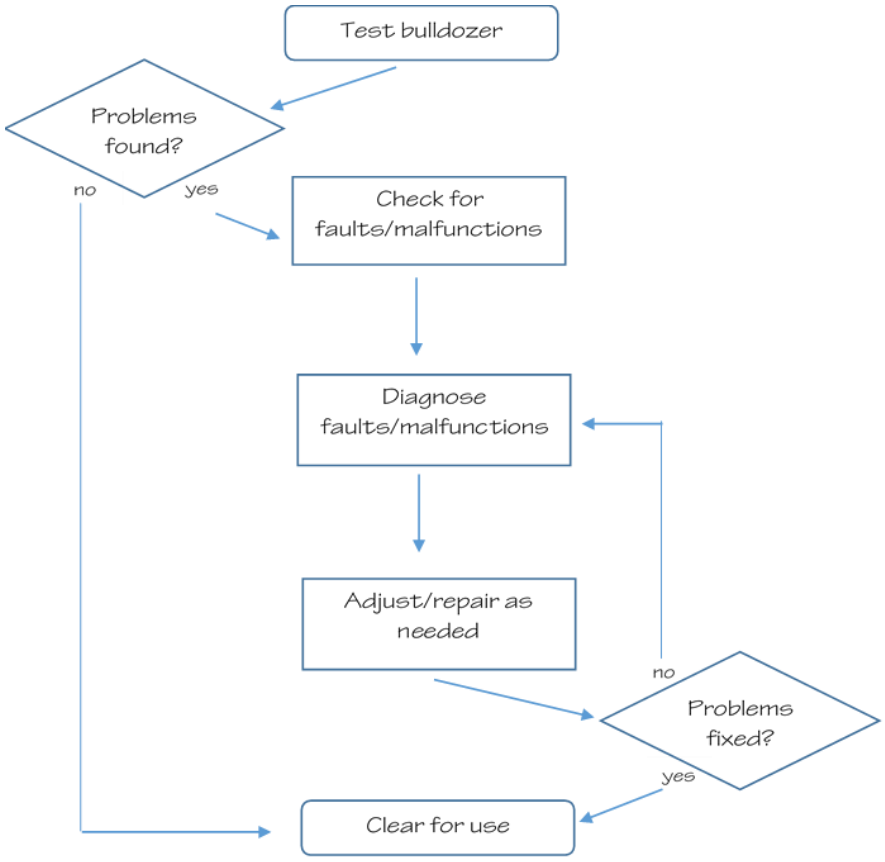


Note that this is the formal way to complete a flowchart that is recognized across most industries. Some workplaces may use a more relaxed format where, for example, the box shapes are all the same.

Earlier in this Workout, you created to-do lists that listed tasks in order of when they should be completed. Now you will turn one of those to-do lists into a flowchart, including the points at which you will need to make decisions.

As an example, one order for the heavy equipment technician's work steps is shown below. It is followed by a flowchart of the steps and the decision point(s).

1. Test bulldozer
2. Check bulldozers for faults or malfunctions
3. Diagnose fault or malfunction
4. Adjust equipment or repair defective parts
5. Clear bulldozer for use



Your turn.

1. Choose either the millwright or the baker and create a flowchart of the steps in the task they completed.
(*job task planning and organizing levels 1-3, decision making level 2*)

Your Flowchart Here

Welding Safety Considerations

Fire and Explosions

The welding arc creates extreme temperatures resulting in fire and explosion hazards, if safe practices are not followed. The real danger is not from the arc; it is from the intense heat near the arc and the heat, sparks and spatter created by the arc. Spatter can reach up to 35 feet away from the welding space.

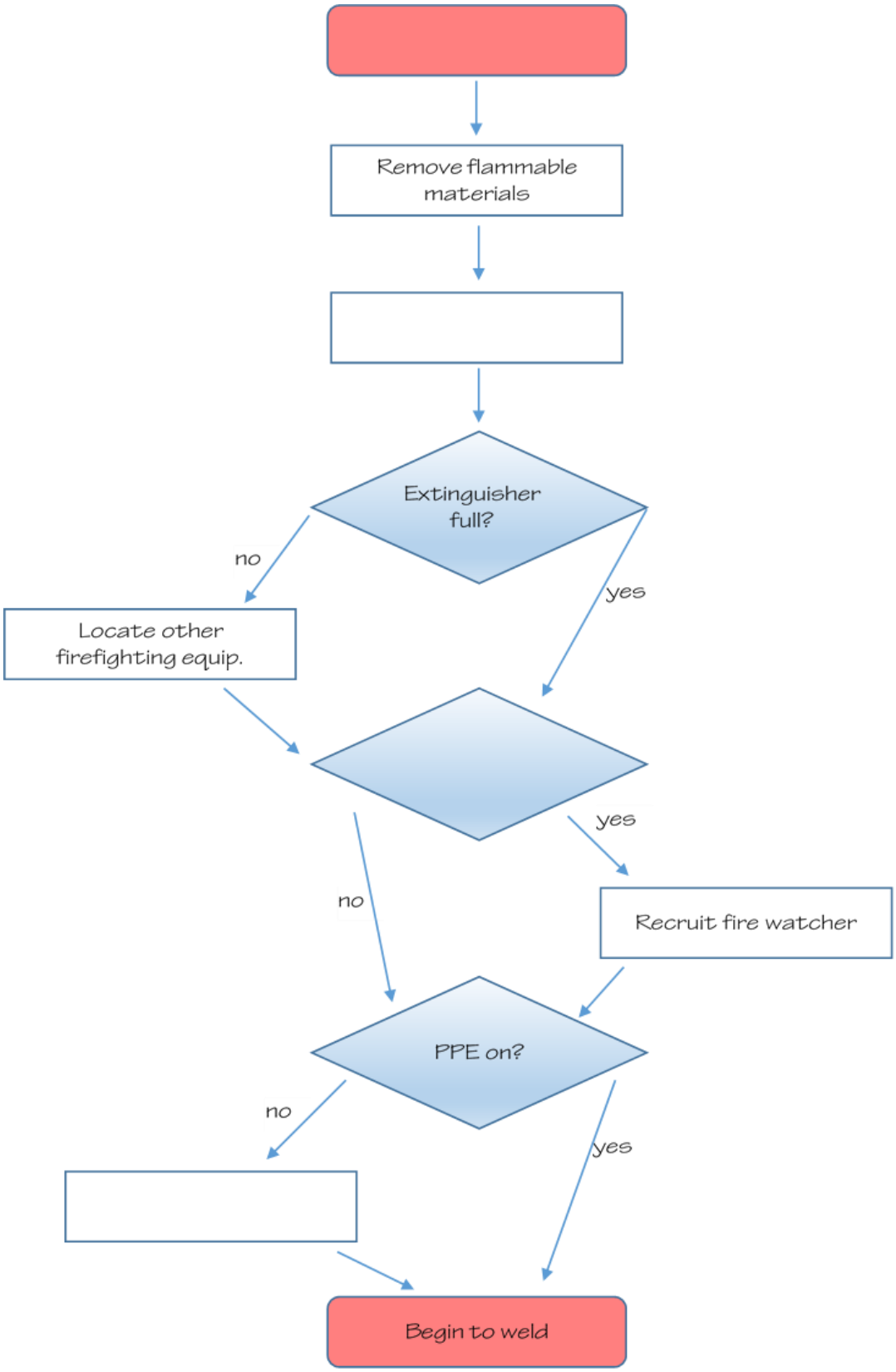
Steps to Safety

To prevent fires, before starting to weld, inspect the work space. Look for any flammable materials and remove them from the area. Flammable materials may be liquid, solid, or gas. Locate the fire alarms and extinguishers and check the extinguisher's gauge to make sure it is full. If an extinguisher is not available or full, be sure to have access to fire hoses, sand buckets or other equipment that douses fire. And, know the location of the nearest fire exit.

If welding within 10.5 m of flammable materials, have a fire watcher nearby to keep track of sparks. Remain in the work area for at least 30 minutes after welding, to be sure there are no smoldering fires. Put a fire resistant material, such as a piece of sheet metal or fire resistant blanket, over any flammable materials within the work area, if you can't remove them.

For personal safety, be sure to wear the right personal protective equipment (PPE). This includes, but is not limited to a welding helmet, flame resistant clothing, boots and gloves.

1. On the next page is a partially completed flowchart showing the planning steps described in the article above that should be taken before beginning to weld. Use the information in the article to help you complete the flowchart
(*job task planning and organizing level 2, reading level 2*)


Remove flammable materials
Extinguisher full?
no
yes
Locate other firefighting equip.
yes
no
Recruit fire watcher
PPE on?
no
yes
Begin to weld

Making A Move

When there are several tasks to be completed, a well-organized to-do list can help you to sort the tasks into an order that will result in a successful outcome.

Moving, whether moving to a new home, a residence at a post-secondary institution, or moving a workplace, is an event that requires lots of planning and organizing. A well planned and organized move is much less disruptive than one that is not.

In the case of moving a workplace, planning is important also to minimizing the amount of revenue lost due to lost worktime during the move. Planning ahead helps keep the move organized and minimizes disruption.

1. On the next page is a list titled *Workplace Move To-Do List*. The list has seven sections and a total of 15 individual tasks that need to be completed. The tasks are not written in the right spaces and/or sections of the list and so they are not in a logical order. Review the list and then number the tasks in the order in which you think they should be completed. One has been done for you as an example.
(*job task planning and organizing, level 2, document use level 3*)

WORKPLACE MOVE TO-DO LIST	
TASK	#
Two Months Before Move Date	
Keep packing.	
Set up mail forwarding at the post office.	
Advertise items to be sold or given away.	
Change insurance and registration on any company owned vehicles.	
One Month Before	
Get packing materials.	
Send out change of address information to customers.	
Choose a moving company.	
Two Weeks Before	
Start packing.	
Rest!	
Stay with movers while they load the truck.	
One Week Before	
Sort what will be moved and what will be sold or disposed of.	
Final packing.	13
Day Before	
Find out where moving truck can park and if need to reserve any space at the new location, for the day of the move.	
Moving Day	
Arrange to transfer utilities.	
End of Moving Day	
Keep packing.	

The Bigger Picture

Every day in workplaces and other large organizations across Canada, problems are solved, decisions made, and job tasks planned and organized. Some of these are small and routine, but others have enormous impact on whether the workplace or organization will struggle, change direction, or become a success. The result of those decisions, solutions and plans becomes the history of the organization and can be demonstrated in a timeline.

Control MFG. is a Canadian company known for building high end, custom skateboards and longboards. It has been in operation for over 25 years and the boards are often described as being Canada's finest. Over the years the company has been in operation there have been many changes made, as the business grew and the owners solved problems, made decisions, and planned and organized the steps necessary to help the company to keep growing.

1. On the next page is a list of eight of the main changes, implemented by the owners. They are not in order. To the right of the list is a list are eight dates. Read the descriptions of the changes and then draw a line from each date to the innovation you think took place on that date.

Hints:

- Look for keywords and phrases like AGAIN, or MOVED TO ANOTHER LEVEL to help you decide.
- Pay attention to the numbers, especially when they are referring to the manufacturing spaces.

(*job task planning and organizing level 2, document use level 2*)

CHANGE	DATE
Control Skateboards MFG and 5-O Skatepark is expanded to 7000 square feet.	1993
A dynamic online sales system is created, to cater to as many new customers as possible, and sales move up to another level.	1995
At 18, Carl Savard spent most of his time looking into ways to build his own skateboards. … With the help of his family, Carl upgrades his machinery and sets up his first wood shop in his family's garage.	1996
Control expands again adding 7000 square feet, making it a 14 000 square foot factory with 15 employees.	1997
In early 1996 when skateboarding was in its full expansion stage, Carl and his family move the woodshop to an industrial area in a large enough space to facilitate the expansion of his company and the first ever indoor skatepark located on the south shore of Quebec City.	2001
The skatepark is closed to concentrate on manufacturing skateboards. The extra space is used to house innovative machinery such as a numerical 5 axes CNC tooling robot that bring the skateboard manufacturing process to the next level.	2004
Control Skateboard Inc. is founded	2006
The woodshop is moved into the most advanced setup to date, in a 6800 square foot location, with top of the line computer controlled router, robotic machinery, high precision molds and 55 presses.	2012

4. CRITICAL THINKING

In national surveys and consultations, Canadian employers consistently identify critical thinking as one of the top skills they are looking for.

You know critical thinking doesn't just mean "being critical" and pointing out what's wrong with everything. But do you know exactly what it does mean?

Critical thinking:

- is about making judgements based on reasoning
- involves evaluating information and ideas based on *criteria*
  - *Criteria* are standards against which it is possible to evaluate. (A single criteria is a criterion)
- might involve problem solving or decision making
- considers related consequences, and includes thinking about what happens after you solve the problem or make the decision

According to the Government of Canada, critical thinking is one of the top three skills needed by hairstylists. Match the component of critical thinking to the correct tasks.

Component	Task
1. Hairstylists use critical thinking to make judgements about…	A. whether the client's hair will be damaged, which could perhaps lose them business.
2. They evaluate…	B. whether particular hairstyles will look good on clients.
3. To decide on hairstyle options, the criteria they consider includes…	C. the condition of a client's hair and scalp and determine whether any treatments are required and, if so, which treatment is appropriate.
4. The consequences they consider include…	D. bone structure, facial shape, hair growth patterns, ear and nose size, skin tone and eye colour.

Answer: 1B, 2C, 3D, 4A

Read the advertisement below and then answer the questions that follow.

The Image Institute

Upon completion of our training, students enter the industry feeling motivated, excited and confident in their knowledge and skills.

The students work with clients from the very first week of the program ensuring that they are relaxed and comfortable with them and are better able to understand their needs.

The Image Institute has been in business for 25 years and during that time our instructors have won more than 45 awards for our training methods and innovative approach to healthy hair design.

Our graduates have a notable competitive edge over graduates from other programs, allowing for an effortless transition to a spa or salon.

Call us to learn more. We look forward to welcoming you to the institute.

1. How does the Image Institute ensure its graduates know how to work with clients to determine the best style or cut?
(*critical thinking level 2, reading level 2*)

2. What does the ad imply the Image Institute does better than other esthetics training schools?
(*critical thinking level 2, reading level 2*)

3. What specific criterion does the ad imply makes the Image Institute the best choice for high quality training?
(critical thinking level 2, reading level 2)

The purpose of advertising is to sell products. There are regulations and guidelines in place to try to keep companies honest in what they promise or claim, about their products. However, as they are still trying to get you to buy something, it is important to think critically about what they are offering. The ability to do that is sometimes referred to as having "media literacy."

4. The Image Institute promises learners several things. You are interested in taking the kind of training the institute offers, but you would like to determine whether the information in their advertisement is accurate. List three ways you could check the accuracy of the information.
(critical thinking level 2, finding information level 2, decision making level 2)

1.

2.

3.

Inspectors, in public and environmental health and occupational health and safety (OH&S), judge the safety of workplaces and the severity of workplace hazards, to determine whether or not they meet occupational health and safety regulations.

For example, occupational health and safety officers conduct planned and unplanned inspections.

1. The Workplace Inspection Report on the next page was completed by an OH&S officer, after a safety inspection of a workplace. There are five items marked with an X, indicating they were unsatisfactory.

On the page following the report, there is a table with three columns:

Item requiring attention	Consequences of not correcting situation	Required action

Each item marked with an X in the Workplace Inspection Report has been written in the *Item requiring attention* column in the table.

Your job is to:

1. Write a brief description of what you think the consequences could be of not correcting the situation.
2. Write, briefly, what action you think is needed to address the problem.

(critical thinking level 3, problem solving level 2, document use level 2)

Workplace Inspection Report

Completed by: *M Horgan* Date completed: *April 27, 2017*

Indicate with an **X** items that require attention.

Walkways free of obstacles		Floor coverings in good condition	
Fire exists unobstructed		Hazardous materials properly labeled	**X**
Fire extinguishers accessible and in working order		Unexpired Material Safety Data Sheets available	**X**
Employees trained in use of extinguishers, in last 12 months	**X**	No slip or trip hazards present	
Fire doors in good mechanical condition		Hazardous materials properly stored	
First aid kit complete and accessible	**X**	Employees aware of emergency procedures	
Tool storage cabinets secured to walls	X	Employees aware of security procedures	

Item requiring attention	Consequences of not correcting situation	Required action
Employees trained in use of extinguishers, in last 12 months		
First aid kit complete and accessible		
Tool storage cabinets secured to walls		
Hazardous materials properly labeled		
Unexpired Material Safety Data Sheets available		

1.

Below is a story about Minha, a job seeker who is a graphic artist. Following Minha's story is a job posting for a position as a graphic artist. Minha is not sure whether she should apply for the job.

1. Review Minha's story and the job posting.
2. In the story, underline Minha's criteria for a job.
3. In the job posting, circle each of the criteria described by the employer.

(critical thinking level 2, reading level 2)

Minha's Story

Minha is interested in finding an entry-level position as a graphic artist. She completed a one year diploma at an arts academy with a specialty in drawing and a two-year program in multi-media design, at a technical college.

She has done some part time work with a couple of small design firms and has received good feedback on her artistic and technical skills and attention to detail. Her customer service skills have been pointed out as something she needs to work on, mainly because she is very shy and has difficulty talking to people she doesn't know well.

Minha would like a job that is full time, pays well enough that she can afford an apartment on her own, and that does not require her to have too much contact with customers or to work overtime. She needs a job soon.

GRAPHIC ARTIST / PREPRESS TECHNICIAN POSITION
Extra Great Graphic Communications – Vancouver, BC

Email: xtraG_HR@xtraG.bc.ca

Expanding, international award winning graphic arts / printing firm has an immediate opening for an experienced individual to join our elite team of quality minded professionals. Position requires applicants to be highly motivated with superior attention to detail.

Send us your resume including experience, wage history, wage requirement and a statement about how you can contribute to our company and why you want this position.

Position Details

Minimum of two years experience in prepress and/or printing; in-depth knowledge of Adobe Creative Cloud; ability to preflight and correct client furnished files; and create outstanding design/art work for high-end, award winning printing projects. Exceptional customer service skills, ability to clearly understand and communicate complex specifications, meet tight deadlines while multi-tasking and possesses excellent written and verbal communication skills.

Job Type: Full-time
Required experience: 2 years on Prepress

2. Make brief notes in response to the critical thinking guiding questions listed below.
(critical thinking level 2, writing level 2)

Guiding Questions

What is the situation?

What is happening?

Why is it important?

3. Now complete the table below and answer the question that follows.
(critical thinking level 2, problem solving level 2, decision making level 2)

Minah is using critical thinking to make a judgement about…	
She is evaluating…	
The criteria she is using includes…	

The consequences of what Minah is considering include…	

What action do you think Minah should take?

5. STORIES OF INVENTION AND INNOVATION!

NEW IDEAS. BETTER SOLUTIONS.

Invent

To think up and design something that has not existed before

Did you know?

- In 1911, Joseph Coyle of B.C. invented the egg carton, solving the messy problem of how to get eggs home from the store.
- In the 1980s, Rachel Zimmerman, a 12 year old in Ontario, invented a software program that made it possible for people who couldn't speak, because of disabilities or injuries, to communicate.

Innovate

To make changes to something that already exists.

Innovation has been described as daring to do things smarter, faster and better, and as what leads to new processes and products.

Did you know?

- In 2013 Meghan Shea developed a new water filter that uses crushed seeds from a tree. The filter is cheap, easy to make and removes 99% of E. coli bacteria from water.
  http://www.popularmechanics.com/technology/g1315/10-innovators-who-changed-the-world-in-2013/?slide=4

Inventors and innovators can be any age and can be inventing and innovating for any reason.

Things they have in common though are that they have really good thinking skills and are usually trying to make something better.

Some inventions are the result of an inventor wanting to solve a really big problem like climate change, or the number of car accidents in a country each year. But the inventor knows that, to make a difference, an invention needs to focus on a smaller, specific problem that will have an impact on the big problem.

1. Compare the information in the articles on the next two pages. Use the table below to help you keep track of the information. In each case, the big problem has been identified for you. You will need to determine the specific problem the inventor is trying to solve. *(problem solving level 3, reading level 2)*

	Story 1	Story 2
Inventor(s) name		
Age(s)		
Location		
Invention name(s)		
Big problem(s) trying to solve	*Reduce energy consumption*	*Improve, and reduce cost of, access to the internet for the developing world*
Specific problem(s) trying to solve		
Awards won		
Age at time of first invention		
Education		

Article 1

Inventor hopes to get flashlight creation into production this year

A 19-year-old inventor from B.C., whose creations include a flashlight that runs off the heat of the human hand and a mug that uses heat from a drink to charge a phone, is among several Canadians named to Forbes magazine's annual 30 under 30 lists. Ann Makosinski, …a second-year student at the University of British Columbia, made the Forbes list in the energy category.

Starting when she was seven years old, Makosinski would make things with a hot-glue gun and stuff she found at home. "I'd take garbage and I'd glue them together and create inventions," she told CBC News. "Of course, they never worked, but the idea of taking the resources around me and piecing them together to make something better or to solve a problem was kind of there from the start."

Makosinski said her e-Drink mug is currently a functioning prototype, and she hopes that once she gets her Hollow Flashlight into production this year that she will have more time to work on the mug with some professional electrical engineers.

Something that catches people by surprise, she said, is that she is studying English literature at university. "I think it is important to have a balance of science and arts to be able to be accessible in either fields," she said. "It's just that has interested me, but I still do all my science and business outside of school."

The young inventor's creations had already earned her accolades, including being named to Time's 30 Under 30 list for 2013, and a win in her age group at the 2013 Google Science Fair. She has also appeared on Jimmy Fallon's late-night television show and has delivered five TEDx talks.

Source: http://www.cbc.ca/news/business/ann-makosinski-forbes-list-1.3922424

Article 2

'Sketchy' high school Wi-Fi inspires teens to design new app

Look out Silicon Valley. Some tech-savvy teenagers from Fall River, N.S., have designed a cellphone app that can help you get essential information from the web — even if you don't have access to wireless internet or a data plan on your phone.

Users of the OffNet app have to have a cellphone that's capable of sending and receiving text messages. Then they simply use the app to text a question to a remote server. The server does the internet search for them and sends a text back with the information they're looking for. The app can only be used to access websites that are primarily text-based, such as weather, directions, news, definitions, Wikipedia or Twitter.

App developer Zack Rooney, 17, said he and his classmate, Cooper Gagnon, were inspired to design the app after getting frustrated with the "very sketchy Wi-Fi" available at Lockview High School in Fall River.

"You're in biology class trying to look up, you know, what mitosis is," Rooney said, and "lo and behold, the website's blocked or the Wi-Fi cut out on you." "It's really annoying," he added. So, the teens decided to create a solution that could "give us the information we want, whenever we want it."

They signed up for a week-long hackathon competition at Saint Mary's University in Halifax and ended up winning with their OffNet design. Rooney was 15 years old at the time. ...

Ultimately, the goal is not to make money from the app, but to make the world a better place, Rooney said. Rooney ... gave the example of an Ecuadorian farmer with a cellphone — but no data or Wi-Fi — who might want to know what the weather will be like tomorrow.

This app would allow him to do that, he said. The plan is to perfect the app and then disseminate it in the developing world. "We want to be that bridge to the next billion users on the internet," Rooney said.

Source: http://www.cbc.ca/beta/news/canada/nova-scotia/offnet-app-developer-cellphones-wi-fi-data-fall-river-teens-text-messages-1.3951894

The e-Drink Mug, Hollow Flashlight and OffNet inventions are all good ideas.

You are an investor with enough money to fund only one of the inventions, for large-scale manufacturing.

- Which invention would you choose?
- How would you make your decision?

One way to decide would be to develop a list of criteria against which you can compare each of the inventions. A common list of criteria helps to ensure the same factors are considered for each invention. As the decision maker, you can create your own list of the criteria you consider to be important.

2. In the table below, one criteria has been entered. Identify at least three more criteria you would use to make your decision and write them in the criteria column in the table below.

Put a ✓ in the column below the name of the invention that you think best meets that criteria.

The invention that receives the most ✓ is the one you would invest in.
(*decision making level 3*)

Criteria ↓	e-Drink Mug	Hollow Flashlight	OffNet
1. Would benefit the most people			
2.			
3.			
4.			
5.			
TOTAL			

THE MUSEUM OF FAILURE

Being able to innovate and invent are useful life skills and also skills that are valued by employers. The Canadian government invests significantly in projects designed to help make businesses and workplaces more innovative.

But for every successful innovation or invention, there are hundreds that don't make it into production or don't last very long if they do.

Museum of Failure https://www.youtube.com/watch?v=PfdBTsyrqaI

There are some common reasons innovations and inventions fail.

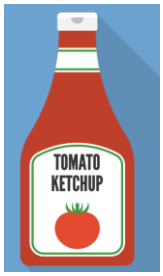
- Product is intended to solve a problem that doesn't really exist
- Invention is only needed by a few people so it is very expensive
- Product is wasteful
- Too many similar products already exist
- Companies don't understand their existing consumers

1. At the Museum of Failure, there are some interesting innovations that didn't make it. Four of them are listed on the next page. For each innovation:

- decide why you think it failed
- suggest one change that you think might have made the product more successful

If you haven't heard of the product, you can do some online research to help you find the answers.

The first one is done for you as an example.
(*decision making level 3, finding information level 2, digital technology level 2*)

Invention	Why it failed	Change that might have helped
Bic for Her 	*The company didn't understand their customers and thought more women would buy pens if they were pink. But, woman don't need special pink pens because men and woman use pens the same way.*	*Just make a better quality, cheaper pen that everyone can use.*
New Coke 		
Harley Davidson Motorcycle Perfume 		
Heinz Purple and Green Ketchup 		

THE INVENTION CHALLENGE

Have you ever thought of a product you would like to invent; something that would help to solve a problem that you think is important? Want to give it a try?

Below is a set of steps you can follow, to help you plan your own unique invention and to describe it to potential partners, investors and users.
(*problem solving level 2, decision making level 3, writing level 2, finding information level 2*)

1. Think of what the big problem is that you would like to solve (for example, *climate change*) and write it down.

2. Think of a problem, related to the big one, but small enough that your invention could have an impact. It might be something within your home, community, school or job. Write down what the problem is. Try to describe it in just one phrase or sentence, to keep it clear and manageable. (For example, *people in my community use a large number of plastic bags each day for their garbage*).

3. Put your thinking skills to work to imagine a product that could help to solve the problem you identified. (For example, *compostable garbage bags*).

4. Name your invention and draw a model of what you think it will look like.

5. Create a list describing the people you think will use your invention. Some questions to consider are:

- How old are they?
- Where do they live?
- What sorts of jobs do they have, if they are of working age?

What other questions might you ask?

Describe your intended users here.

6. Think of at least three questions you will need to find answers to, in order to be able to develop your invention. List the questions and ideas for where you might start your research to find the answers.

Question	Information Source
1.	
2.	
3.	

7. Think about and write down how you will test your product, once it is developed.

8. Write a short description of your product that you can share with the potential users – and that is likely to make them want to try it.

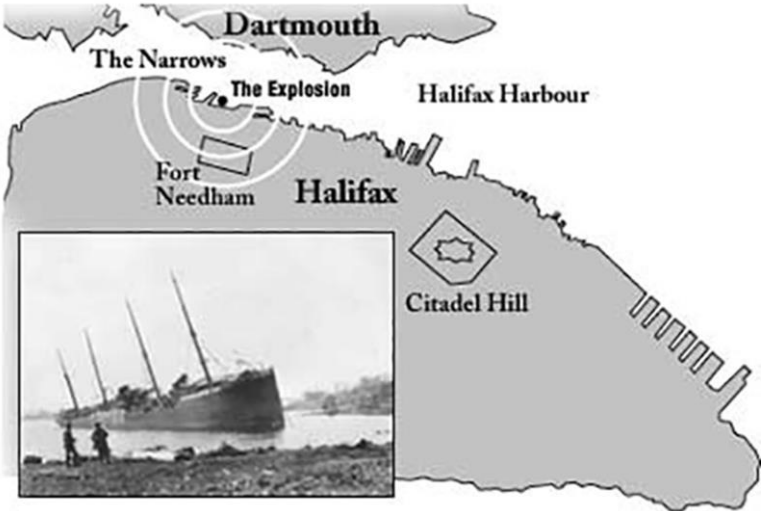
Product Description

6. LARGEST HUMAN-MADE EXPLOSION! WHAT WERE THEY THINKING??

The Story

On December 6, 1917, a Norwegian ship called the SS Imo arrived in Halifax Harbour to pick up relief supplies for war victims in Belgium. After loading the supplies, they could not leave the harbour for two days because, the coal they needed for fuel was late. When they did leave, the SS Imo had to navigate the narrow channel out of the harbour, which was crowded with other ships. In the outgoing lane of the channel, the Imo picked up speed, to pass slower ships.

In the incoming lane was the Mont-Blanc, a ship loaded with explosives, on its way to France. The Mont-Blanc had the right of way, but there was nowhere for the SS Imo to go, because the channel was too narrow. As a last attempt to avoid a collision, the Mont-Blanc made a hard left and the Imo reversed its engines. If only one ship had made a move, things might have worked out alright. Instead, the ships rubbed against one another causing a fire to start.



https://novascotiaisamazing.com/halifax-explosion/

The Mont-Blanc didn't stand a chance. Neither did anyone else in the harbour or surrounding city.

The Halifax explosion would go down as the largest unintentional human-made explosion ever - and that record still holds!

A formal review, completed after the Halifax explosion, identified a number of factors that led to the disaster. Looking at the disaster in terms of factors related to essential skills, it is possible to see breakdowns in the thinking skills of job task planning and organizing, problem solving, decision making, and critical thinking.

1. Using the information in the article, identify at least one error for each of the following skills. Write a brief description of each error, in the table below.
(job task planning level 3, problem solving level 3, decision making level 3, critical thinking level 4, reading level 2)

Job task planning	
Problem solving	
Decision making	
Critical thinking	

BUILD YOUR ESSENTIAL SKILLS!

IN THIS SECTION OF THE WORKBOOK, YOU CAN GIVE YOUR SKILLS A BOOST BY REVIEWING SOME ESSENTIAL SKILLS BASICS.

THINKING SKILLS

Use the table of contents to navigate through this workbook. Track your progress by putting a checkmark beside each topic you complete.

1. THINKING SKILLS GUIDE

A HANDY REFERENCE TO FIVE-STEPS FOR CLEARER THINKING

The Thinking Skills workbook focusses on four skills.

1. Problem Solving
2. Decision Making
3. Critical Thinking
4. Job Task Planning and Organizing

It also focusses on five-step processes for navigating through each of the thinking skills. Practicing processes for using thinking skills will help you to reach conclusions, evaluate results and build your thinking skills proficiency.

On the next page is a handy reference guide you can use as a quick reminder of the steps in the processes and of what tools and actions you undertake at each step.

The skills of Finding Information and Significant Use of Memory, are cross-cutting skills that may be used at any time they are needed, as part of the other thinking skills.

PRACTICE MAKES US "PERFORMANCE READY"!

https://www.tirgan.ca/artist/lisa-odjig-2/

STEP	SKILL				TOOLS
	PROBLEM SOLVING	**DECISION MAKING**	**CRITICAL THINKING**	**JOB TASK PLANNING & ORGANIZING**	
DEFINE • problem • decision • judgement • task	Use the 5Ws as a guide to help you define the problem. Then write a short description of the problem.	Write a brief, clear description of the decision that needs to be made.	Write a brief clear description of the judgement to be made.	Ask yourself, what task or tasks do I need to accomplish?	The 5Ws Written descriptions Lists Information gathering
CONSIDER • solutions • possible options • criteria for evaluation • steps to complete tasks	Brainstorm possible solutions.	Make a list of your options.	Consider what must be evaluated and what criteria should be used for the evaluation, in order to make the judgement.	Consider what steps are involved in completing the task or tasks.	Brainstorming Lists Information gathering
CHOOSE • a solution • an option • a course of action • a plan	Evaluate the potential solutions; choose the one you will use.	Consider the likely results of each of the decisions you could make. Choose the decision.	Determine what you believe would be the consequences of actions that could be taken. Choose the course of action.	Create ordered lists or flow charts of tasks. Choose the one you think will be most efficient.	Pros and Cons lists Flowcharts Information gathering
IMPLEMENT • solution • decision • action • plan	Put the solution into action.	Put the chosen decision into action.	Take action / make the judgement.	Complete the tasks, according to the order you chose.	Courage
EVALUATE	Ask – did the solution work? Would you consider using the same solution again? Why or why not?	Ask – was the outcome of the decision what you expected? Would you make the same decision again? Why or why not?	Ask – were the consequences what you expected? Would you evaluate the situation the same way again? Why or why not?	Ask – the order you chose allow you to complete the work efficiently? Would you choose to do the work in the same order again? Why or why not?	Questions Reflection Feedback surveys

ANSWERS FROM THE ES WORKOUT!

IN THIS SECTION OF THE WORKBOOK, YOU CAN CHECK YOUR ANSWERS FOR THE ESSENTIAL SKILLS WORKOUTS YOU COMPLETED!

THINKING SKILLS

Use the table of contents to navigate through this workbook. Track your progress by putting a checkmark beside each topic you complete.

1. DON'T BRING ME PROBLEMS. BRING ME SOLUTIONS!

USE THE ANSWERS BELOW TO CHECK YOUR WORK.

1. Using the information in the story above, complete the tables on the next page, to describe the problem from Josh's point of view and from his mother's point of view, by completing Step 1 of the problem solving process.
(*problem solving level 2*)

Who?	*Josh*
What?	*Is lost in the woods*
When?	*Evening, "getting dark"*
Where?	*In the woods about an hour from his home in Shelburne*
Why?	*Wasn't paying attention because excited about gifts*

Josh's problem is *he is lost in the woods and his cellphone is out of battery.*

Who	*Josh's mother*
What	*Got a strange text from her son*
When	*About an hour after he left home*
Where	*At her home*
Why	*She doesn't know where he was thinking of going when he left*

Joshs' mother's problem is *Josh is lost in the woods and she only has a vague idea of where he might be found.*

2. Completing Step 1 of the problem solving process to consider a problem of your own. (*problem solving level 2*)

Answers will vary. An example is below.

Who	*Me*
What	*Want to work, but can't work as much as employers want me to.*
When	*Now, while I am trying to find work*

Where	*At places where I would like to work part time*
Why	*Employers want me to work more hours than I think I can*

The problem I chose is *- I really want to work part time this year, but all the places I apply want me to be able to work 12 hours each week and I don't think I can work more than eight hours and do my school work and play sports.*

Learning the Rest of the Steps in the Process

1. The story of Karim, Joseph and Grant.
After you review the story below, answer the five questions in the table that follows. Then write briefly what you think the problem is.
(*problem solving level 2*)

Step 1- Define the Problem

Who? *Karim, Joseph and Grant*
What? *The mesh is missing on the baskets at the court where they shoot hoops*
When? *The mesh has been gone for a while but now that Joseph is trying to learn to play, it is a current problem*
Where? *The neighbourhood basketball court*
Why? *The missing mesh is a problem because it makes it harder to learn to shoot the basketball accurately.*

The problem is *there is no mesh on the basket and Joseph finds it harder to learn to shoot accurately.*

Step 2 – Consider Solutions

2. Write down, in the Solutions column of the table below, all the solutions you can think of to fix the hoops. Don't be afraid to be creative and innovative! Try to think of at least three solutions.
(*problem solving level 2*)

Some possible solutions

See if they can buy some mesh themselves to fix at least one of the hoops

Try to think of something else to use

Practice a lot with Joseph to try to help him to shoot accurately without the mesh

Step 3 – Take a Close Look at the Possible Solutions

3. Decide on the pros and cons for each solution you came up with. In the table above, write the pros and cons in the appropriate columns. Next, review your pros and cons and write your choice for the best solution in the space below.
(*problem solving level 2*)

Your best solution here

Answers will vary

4. Solution was to use old shorts in place of mesh

Step 5 – Evaluate the results

5. Look at the picture that shows how one group solved the problem of mesh missing from the hoops. Do you think the solution in the picture solves the problem? Is this a solution you thought might work? In the space for evaluation comments, explain how you think the solution does or does not solve the problem you identified at the beginning of this workout.
(*problem solving level 2*)

Example Evaluation Comments

The solution solves the problem of defining where the mesh would be but the shorts don't let the shooter see exactly where the ball is going.

The solution sort of solves the problem, but the opening left by the shorts waistband is narrower that the hoop.

Follow the same process as in the previous workout to try to solve one more problem.

1. The story of Marisa and Katrina

After you review the story below, answer the five questions in the table that follows. Then write briefly what you think the problem is.

(*problem solving level 2*)

Step 1- Define the Problem

Who? *Marisa and Katrina*
What? *They are hungry, all they have to eat is leftover pizza, and they don't have any working appliances*
When? *Late in the evening, after they finished moving into their new apartment*
Where? *Their new apartment*
Why? *They really want their leftover pizza heated up, but because none of their cooking appliances are working they aren't sure how they can get it heated.*

The problem is *that Marisa and Katrina really want to heat up their leftover pizza, but they can't because the oven, stove and microwave in their apartment are not working.*

Step 2 – Consider Solutions

2. Write down, in the Solutions column of the table on the next page, all the solutions you can think of to heat up the pizza. Be creative and innovative! Try to think of at least three solutions.
(*problem solving level 2*)

Some possible solutions

See if there is a neighbour who will let them use their microwave for a minute.
If they have a BBQ set up, they could heat it on there.
If they have an electric frypan they could heat it in that

Step 3 - Take a Close Look at the Possible Solutions

3. Decide on the pros and cons for each solution you came up with. In the table above, write the pros and cons in the appropriate columns. Review your pros and cons and write your choice for the best solution in the space below.
(*problem solving level 2*)

Your best solution here

Answers will vary

4. Solution was to use an iron and a hair dryer to heat the pizza. The iron was supported in a wire mesh basket.

Step 5 – Evaluate the results

5. Look at the picture that shows how Marisa and Katrina solved the problem of cold pizza. Do you think the solution in the picture solves the problem? Is this a solution you thought might work? In the space for evaluation comments, explain how you think the solution does or does not solve the problem you identified at the beginning of this workout.
(*problem solving level 2*)

Example Evaluation Comments

It would probably take a long time, but it might work.

The iron might be ruined if any grease from the pizza leaks into it.

The bottom of the pizza might burn before the top gets warmed by the hair dryer.

1. Think of a problem that you face and would like to try to solve. It could be the problem you used to practice Step 1 or a different problem from school, work, a sports team you might play on or something you and your friends have discussed as a problem. Use the problem solving process to generate a solution. Begin by writing a brief description of your problem and answering the five questions.
(problem solving level 2)

Answers will vary. An example is below.

Step 1- Define the Problem

Who? *me*
What? *Want to work, but can't work as much as employers want me to.*
When? *Now, while I am trying to find work*
Where? *At places near my home, where I would like to work part time*
Why? *Employers want me to work more hours than I think I can*

***The problem is** I really want to work part time this year, but all the places I apply that are near me want me to be able to work 12 hours each week and I don't think I can work more than eight hours and do my school work and play sports.*

2. Step 2 – Consider Solutions
Write down, in the Solutions column, all the solutions you can think of for your problem. Be creative and innovative! Try to think of at least three solutions.
(problem solving level 2)

Solutions	Pros	Cons
I could figure out how to rearrange my life so I can work 12 hours.	I could work at a place nearby. I would make more money.	I might have to give up a sport or miss some practices. My marks might not be as good because of time spent at work.
Give up the idea to work this year and plan my life next year so I can work 12 hours.	I would have more time for sports and school work. My weekends would be free.	I wouldn't have any money unless I can convince my parents to help me out.
See if I can find eight hours work per week with an employer that is farther away.	I would have spending money. I would not need to work 12 hours per week.	I would end up spending extra time travelling to and from work. I would have to spend money on transit or maybe even cabs, if I work late.
I could create my own job.	I would be able to control the hours I work. It would be fun to create my own job.	I would need time to learn how to be my own employer. I might not get any customers.

3. Step 3 - Take a Close Look at the Possible Solutions

Decide on the pros and cons for each solution you came up with. In the table above, write the pros and cons in the appropriate columns. Review your pros and cons and write your chosen solution in the space below.

(*problem solving level 2*)

Best Solution:

I think the best solution to the problem I described is to rearrange my schedule so I can be available to work 12 hours a week, somewhere close to home.

4. Step 4 – Implement the Solution

If you are able to, implement the solution to the problem you chose. Then go to Step 5 to evaluate your solution.

5. Step 5 – Evaluate the results

If you were able to implement your chosen solution, evaluate the results by answering the questions.

- Did the solution solve the problem?
- Did the solution work the way you thought it would?
- If you were faced with the same problem again, would you use the same solution or try a different one? Why or why not?

(*problem solving level 2*)

My solution made it possible for me to get a job near home. I didn't spend a lot of time getting to and from work and working 12 hours per week gave me as much spending money as I needed. The solution worked, but as I expected, I ended up missing some of my sports practices and so I wasn't always on the first line during important games. That was kind of disappointing, but I did keep my marks up so that was good. I think I would make the same decision next time because it mostly worked out the way I thought it would and I didn't have to sacrifice too much.

Remember

Sometimes problems are very personal and very complicated. In those cases, you need more than a 5-Step process; you need friends and other people to help you sort things out.

Don't be afraid to ask for help. Asking for help is a logical problem solving strategy.

1. Now it's your turn to try out the job of game character designer.

Answers will vary

2. DECISIONS DECISIONS

USE THE ANSWERS BELOW TO CHECK YOUR WORK.

1. You and two other people your age recently started summer jobs as carpenters' helpers on a construction site. You have all been given safety training and the whole crew attends a safety meeting each day before starting work. At the meeting everyone is reminded about the importance of workplace safety. The other helpers don't seem to take the training or meetings seriously. They often do things that are risky for themselves and, potentially, for others on the crew. You have tried reminding them about what you learned in safety training, but they just ignores you. Should you report them to someone?
(*decision making level 2*)

Sample Answer

Define the decision that needs to be made. (A clear and brief description of the problem)

Whether or not to report your co-workers for not following safety procedures.

Consider what the options are. (Make a list. Sometimes it is clear there are just two options to choose from. Other times, there may be multiple options to consider.)

1. *Talk to them again myself*
2. *Talk to one of the carpenters and ask for advice*
3. *Talk to the supervisor myself and ask him not to say who reported them*

Determine the possible results of choosing the various options. (Think through the likely results for each option you identified. A pros and cons list for each can help.)

1. *They might listen this time*
2. *The carpenter might have good advice that would help*
3. *The carpenter might think I am not a good team player*

4. *The supervisor might appreciate knowing the problem exists so he can do something about it before there is an accident.*

Make the decision. (Write it here.)

Answers will vary:
I will speak to the supervisor

Evaluate whether the decision was effective. (What happened once the decision was made? Was the outcome what you expected? Would you make the same decision again or would you choose a different option?)

The supervisor spoke to my co-workers and they started taking the safety training much more seriously.
I would make the same decision again because I think it is really important to make sure people don't get hurt at work.

2. You have been working hard at your part time job and picking up as many extra shifts as you can, because you would like to buy a car within the next year. Your good friend has invited you to come with her family on vacation to a place you have always wanted to go. However, your parents are not prepared to pay for your trip and it would cost about half of what you have saved for the car. (*decision making level 1*)

Define the decision that needs to be made

Should I go on holiday with my friend's family?

Consider what the options are

1. *Spend half of my savings to go on holiday*
2. *Stay home and keep saving*
3. *See if my parents will give me a loan to go on holiday, that I can pay back after I get my car*

Determine the possible results of choosing the various options

1. *I will have to wait a lot longer to get my car*
2. *I will get the car sooner, but I will miss seeing a place I would really like to see*
3. *I can go on holiday, but I will still have to keep working extra shifts to pay my parents back even after I get the car*

Make the decision. (Write it here.)

I will not go on holiday.

Evaluate whether the decision was effective

I will get my car when I wanted to and will not be in debt to my parents. I will be sorry not to see the vacation destination, but I can do that another time when I have saved money again.

3. BONUS QUESTION

You decided to go on the trip with your friend. You have estimated that it will cost you $450.00. You make $11.00 per hour, after taxes, at your job. To the nearest hour, how many hours will you need to work to cover the cost of your trip? How many four hour shifts will it take?

(*money math level 2*)

41 hours

Either is acceptable:

10.25 shifts or 11 shifts

1. In the table below are brief descriptions of the lifestyles of three people who are trying to decide on the form of transportation that best fits their needs. The options they have to choose from are car, skateboard or transit. Read each description and decide which mode of transport best suits each person's needs.
(decision making level 2 - 3)

Person	Location	Routine	Finances	Best choice
Anton Single dad to a 2 year old. 	Lives in the city Close to major roadways and bus stops	Works regular hours Monday to Friday Has a child care worker who comes into his home	Not a lot of extra money Trying to save for a down payment on a condo.	*Transit*
Jen Tech college student Lives with one roommate Roommate has a car	Lives downtown 10 blocks from the campus 	Classes Monday to Saturday at different hours Part time job Tuesday and Thursday evenings in her neighbourhood	Part time job helps a little but tight budget Student loans Doesn't want any more debt than is necessary	*Skateboard*
Perry Shift worker in a skateboard manufacturing plant 	Lives outside of the city Bus service is only available in peak hours.	Has permanent employment Shifts vary week to week Takes extra shifts when they are available.	Finances are pretty steady.	*Car*

1. Pick one of the social media accounts you use most often. Use the decision tree to review at least four posts you have made recently. Decide whether you should leave the post up or delete it. The post can be a comment, photo or link: anything that clearly came from you. Remember to check not only your original post, but what has happened to it since. What comments or links are now associated with the post? Are you comfortable with them? Have there been pictures added to the comments on the post? Do they meet the criteria in your decision tree? Record your results in the table on the next page.
(*decision making level 3*)

Responses will vary

You and your companions have just survived the crash of a small plane. Both the pilot and co-pilot were badly injured in the crash and are not able to advise or help. It is mid-January, and you are in Northern Saskatchewan. The daily temperature is 25 below zero, and the night time temperature is 40 below zero. There is snow on the ground, and the countryside is wooded with several creeks criss-crossing the area. You know the nearest town is 20 kilometres away. You are all dressed in city clothes appropriate for an interview.

Edited from: http://www.crystalspringsfoundation.org/
Original source: http://wilderdom.com/games/descriptions/SurvivalScenarios.html

1. Below and on the next page, is a list of 12 items that you have been able to salvage from the plane. Your task is to rank the items, in order of importance for your survival, by writing the number in the Rank column, where 1 is the most useful and 12 is least useful. Below each item, write a brief description of how it could be used.
(*decision making level 4*)

Answer key
RANKINGS

1. Cigarette lighter (without fluid): The gravest danger facing the group is exposure to cold. The greatest need is for a source of warmth and the second greatest need is for signaling devices. This makes building a fire the first order of business. Without matches, something is needed to produce sparks, and even without fluid, a cigarette lighter can do that.
2. Ball of steel wool: To make a fire, the survivors need a means of catching the sparks made by the cigarette lighter. This is the best substance for catching a spark and supporting a flame, even if the steel wool is a little wet.
3. Extra shirt and pants for each survivor: Besides adding warmth to the body, clothes can also be used for shelter, signaling, bedding, bandages, string (when unraveled), and fuel for the fire.

4. Can of Crisco shortening: This has many uses. A mirror-like signaling device can be made from the lid. After shining the lid with steel wool, it will reflect sunlight and generate 5 to 7 million candlepower. This is bright enough to be seen beyond the horizon. While this could be limited somewhat by the trees, a member of the group could climb a tree and use the mirrored lid to signal search planes. If they had no other means of signaling than this, they would have a better than 80% chance of being rescued within the first day. There are other uses for this item. It can be rubbed on exposed skin for protection against the cold. When melted into an oil, the shortening is helpful as fuel. When soaked into a piece of cloth, melted shortening will act like a candle. The empty can is useful in melting snow for drinking water. It is much safer to drink warmed water than to eat snow, since warm water will help retain body heat. Water is important because dehydration will affect decision making. The can is also useful as a cup.
5. 20 x 20 foot piece of canvas: The cold makes shelter necessary, and canvas would protect against wind and snow (canvas is used in making tents). Spread on a frame made of trees, it could be used as a tent or a wind screen. It might also be used as a ground cover to keep the survivors dry. Its shape, when contrasted with the surrounding terrain, makes it a signaling device.
6. Small axe: Survivors need a constant supply of wood in order to maintain the fire. The axe could be used for this as well as for clearing a sheltered campsite, cutting tree branches for ground insulation, and constructing a frame for the canvas tent.
7. Family size chocolate bars (one per person): Chocolate will provide some food energy. Since it contains mostly carbohydrates, it supplies the energy without making digestive demands on the body.
8. Newspapers (one per person): These are useful in starting a fire. They can also be used as insulation under clothing when rolled up and placed around a person's arms and legs. A newspaper can also be used as a verbal signaling device when rolled up in a megaphone-shape. It could also provide reading material for recreation.
9. Loaded .45-caliber pistol: The pistol provides a sound-signaling device. (The international distress signal is 3 shots fired in rapid succession). There have been numerous cases of survivors going undetected because they were too weak to make a loud enough noise to attract attention. The butt of the pistol could be used as a hammer, and the powder from the shells will assist in fire building. By placing a small bit of cloth in a cartridge emptied of its bullet, one can start a fire by firing the gun at dry wood on the ground. The pistol also has some serious disadvantages. Anger, frustration, impatience, irritability, and lapses of rationality may increase as the group awaits rescue. The availability of a lethal weapon is a danger to the group under these conditions. Although a pistol could be used in hunting, it would take an expert marksman to kill an animal with it. Then the animal would have to be transported to the crash site, which could prove difficult to impossible depending on its size.
10. Quart of 100 proof whiskey: The only uses of whiskey are as an aid in fire building and as a fuel for a torch (made by soaking a piece of clothing in the whiskey

and attaching it to a tree branch). The empty bottle could be used for storing water. Can also be used as an antiseptic for a wound. The danger of whiskey is that someone might drink it, thinking it would bring warmth. Alcohol takes on the temperature it is exposed to, and a drink of minus 30 degrees Fahrenheit whiskey would freeze a person's esophagus and stomach. Alcohol also dilates the blood vessels in the skin, resulting in chilled blood belong carried back to the heart, resulting in a rapid loss of body heat. Thus, a drunk person is more likely to get hypothermia than a sober person is.

11. Compass: Because a compass might encourage someone to try to walk to the nearest town, it is a dangerous item. Its only useful feature is that it could be used as a reflector of sunlight (due to its glass top).
12. Sectional air map made of plastic: This is also among the least desirable of the items because it will encourage individuals to try to walk to the nearest town. Its only useful feature is as a ground cover to keep someone dry.

3. MAKE A PLAN! GET ORGANIZED!

USE THE ANSWERS BELOW TO CHECK YOUR WORK.

1. Heavy Equipment Technicians maintain, repair, and overhaul heavy vehicles and industrial equipment, such as internal combustion engines and components, ground-engaging equipment including rippers and backhoes, and towed earth-moving equipment, commonly called scrapers. Write the task numbers in the order you would put them on a to-do list. Explain your choices in no more than two sentences.
(*job task planning and organizing level 3*)

Answers will vary

Order: 1, 2, 5, 3, 4
OR
Order: 2, 5, 3, 1, 4.

Explanation:
First order assumes bulldozer is tested to determine if anything is wrong; if yes, there is a check for specific issues

Second order assumes bulldozer is checked for faults/malfunctions and then tested before being cleared. Either order would work, but might be improved safety by testing before releasing

2. Millwrights install, maintain, repair and troubleshoot stationary industrial machinery, as well as mechanical equipment in factories, production plants and recreational facilities. Write the task numbers in the order you would put them on a to-do list. Explain your choices.
(*job task planning and organizing level 3*)

Answers will vary

Order: _3, 2, 1, 4

Order: __2, 3, 1, 4

Explanation:
As long as start with clean or inspect, the other steps can be completed in whatever order makes most sense, provided #4 is last.

3. Bakers are responsible for making breads, bagels, pretzels, cakes, muffins, cookies and pastries as well as chocolate and candy, sugar sculptures and icing. They can prepare many different baked goods or specialize in just one. Write the task numbers in the order you would put them on a to-do list. Explain your choices.
(*job task planning and organizing level 3*)

Answers will vary

Order: __3, 1, 2, 4

Order: __3, 2, 1, 4

Explanation:
The first step needs to be to prepare the batter and frosting and the last step is to frost the cake. Frosting colour can be adjusted before or after baking the cake.

1. Choose either the millwright or the baker and create a flowchart of the steps in the task they completed.
(*job task planning and organizing level 1 (Baker)-3 (millwright), decision making level 2*)

Flowcharts will vary, but should:

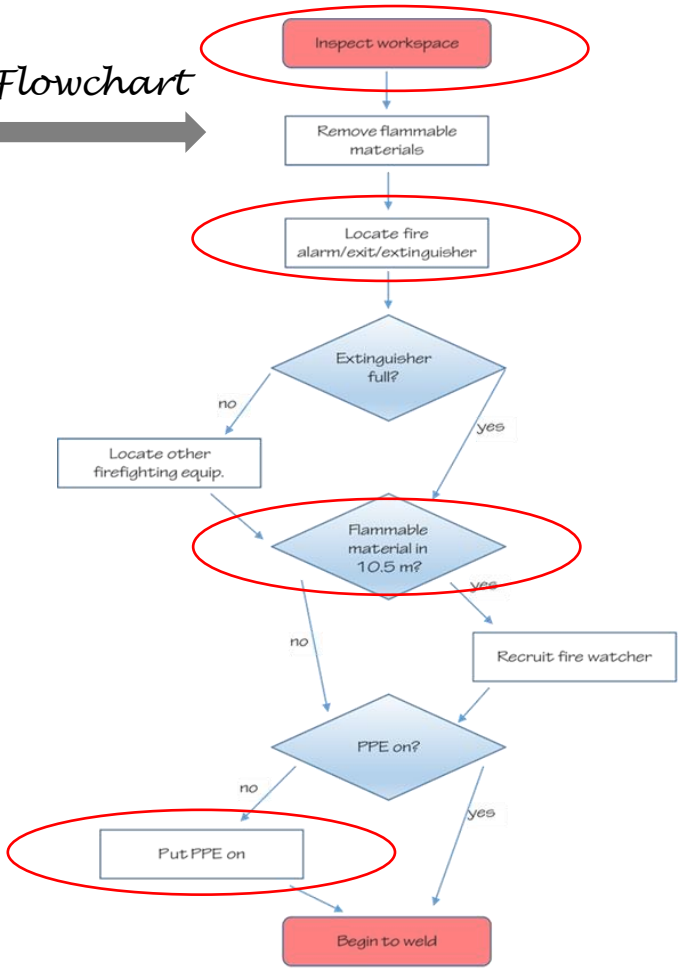
- *start and end with a rounded circle*
- *include decision points that are shown using diamond shapes*

- have a yes and no side to each decision
- use rectangles to show each step
- use arrows to show the direction of the process

How did you do?

1. On the next page is a partially completed flowchart showing the planning steps described in the article above that should be taken before beginning to weld. Use the information in the article to help you complete the flowchart
(*job task planning and organizing level 2*)

Completed Flowchart



1. On the next page is a list titled *Workplace Move To-Do List*. The list has seven sections and a total of 15 individual tasks that need to be completed. The tasks are not written in the right spaces and/or sections of the list and so they are not in a logical order. Review the list and then number the tasks in the order in which you think they should be completed. One has been done for you as an example.

(job task planning and organizing level 2, document use level 3)

ANSWERS WORKPLACE MOVE TO-DO LIST	
TASK	#
Two Months Before Move Date	
Keep packing.	5
Set up mail forwarding at the post office.	10
Advertise items to be sold or given away.	7
Change insurance and registration on any company owned vehicles.	12
One Month Before	
Get packing materials.	3
Send out change of address information to customers.	8
Choose a moving company.	1
Two Weeks Before	
Start packing.	4
Rest!	15
Stay with movers while they load the truck.	14
One Week Before	
Sort what will be moved and what will be sold or disposed of.	2
Final packing.	13
Day Before	
Find out where moving truck can park and if need to reserve any space at the new location, for the day of the move.	6
Moving Day	
Arrange to transfer utilities.	11
End of Moving Day	
Keep packing.	9

1. The Bigger Picture

On the next page is a list of eight of the main changes, implemented by the owners. They are not in order. To the right of the list is a list are eight dates. Read the descriptions of the changes and then draw a line from each date to the innovation you think took place on that date.

(*job task planning and organizing level 2*)

CHANGE	DATE
Control Skateboards MFG and 5-O Skatepark is expanded to 7000 square feet.	1993
A dynamic online sales system is created, to cater to as many new customers as possible, and sales move up to another level.	1995
At 18, Carl Savard spent most of his time looking into ways to build his own skateboards. … With the help of his family, Carl upgrades his machinery and sets up his first wood shop in his family's garage.	1996
Control expands again adding 7000 square feet, making it a 14 000 square foot factory with 15 employees.	1997
In early 1996 when skateboarding was in its full expansion stage, Carl and his family move the woodshop to an industrial area in a large enough space to facilitate the expansion of his company and the first ever indoor skatepark located on the south shore of Quebec City.	2001
The skatepark is closed to concentrate on manufacturing skateboards. The extra space is used to house innovative machinery such as a numerical 5 axes CNC tooling robot that bring the skateboard manufacturing process to the next level.	2004
Control Skateboard Inc. is founded	2006
The woodshop is moved into the most advanced setup to date, in a 6800 square foot location, with top of the line computer controlled router, robotic machinery, high precision molds and 55 presses.	2012

1993	At 18, Carl Savard spent most of his time looking into ways to build his own skateboards. Using wood working tools, homemade molds and sheets of maple veneer he was able to accomplish his desires. With the help of his family Carl upgrades his machinery and sets up his first wood shop in his family's garage.
1995	Control Skateboard Inc is founded
1996	In early 1996 when skateboarding was in its full expansion stage, Carl and his family move the woodshop to an industrial area in a large enough space to facilitate the expansion of his company and the first ever indoor skatepark located on the south shore of Quebec City.
1997	Control Skatebaords MFG and 5-O Skatepark expand to 7000 sqaure feet.
2001	Skatepark closes to concentrate on manufacturing skateboards and to use the extra space to add innovative machinery such as a numerical 5 axes CNC tooling robot and brings the skateboard manufacturing process to the next level.
2004	Woodshop moved into the most advanced setup to date in a 6 800 square feet location, with top of the line computer controlled router, robotic machinery, high precision molds and 55 presses.
2006	Sales move to another level by creating a dynamic online sales system to cater to as many new customers as possible.
2012	Expands again adding 7000 square feet, now making it a 14 000 square feet factory and 15 employees.

4. CRITICAL THINKING

USE THE ANSWERS BELOW TO CHECK YOUR WORK.

1. How does the Image Institute ensure its graduates know how to work with clients to determine the best style or cut?
(*critical thinking level 2, reading level 2*)

Gets them working with clients right away so they get lots of experience.

2. What does the ad imply the Image Institute does better than other esthetics training schools?
(*critical thinking level 2, reading level 2*)

Trains learners better than other training schools.

3. What specific criterion does the ad imply makes the Image Institute the best choice for high quality training?
(*critical thinking level 2, reading level 2*)

Receive training from award winning instructors

4. The Image Institute promises learners several things. You are interested in taking the kind of training the institute offers, but you would like to determine whether the information in their advertisement is accurate. List three ways you could check the accuracy of the information.
(*critical thinking level 2, finding information level 2, decision making level 2*)

Answers will vary. Four sample answers follow.

1. *Create a chart to compare what the Institute offers to what two or three other similar schools offer, using the same criteria for each.*
2. *Research the Institute's online profile; look for names of award winning instructors*
3. *Check online for reviews of the Institute and of instructors, by former students and clients*
4. *Search for articles about the Institute generally*

The Workplace Inspection Report was completed by an OH&S officer, after a site visit. There are five items marked with an X, indicating they were unsatisfactory at the time of the inspection.

On the next page there is a table with three columns: Item requiring attention; Consequences of not correcting the item; Required action.

1. Copy each item marked with an X in the Workplace Inspection Report to the Item requiring attention column in the table.

2. Write a brief description of what you think the consequences could be of not correcting the item.

3. Write, briefly, what action you think is needed to address the problem.

(*critical thinking level 3, problem solving level 2, document use level 2*)

Item requiring attention	Consequences of not correcting situation	Required action (and by who)
Employees trained in use of extinguishers in last 12 months	*If there is a fire there could be even more extensive damage because no one knows how to use the fire extinguishers. This could mean company downtime, layoffs, and injuries or even death.*	*Organize training for employees (manager, supervisor, or Human Resources)*
First aid kit complete and accessible	*If there is an accident needed first aid could be delayed meaning injury could be more*	*Check kit contents, replenish mossing stock, and communicate to all*

	serious and recovery time could be longer.	employees where the kit is (safety officer)
Tool storage cabinets secured to walls	Cabinet could fall over causing damage to the tools or to any person in the area resulting in downtime and possible injury.	Arrange to have cabinet emptied, secured to wall, and restocked (maintenance department)
Hazardous materials properly labeled	The materials could be used for the wrong purpose or combined with other materials resulting in explosion or dangerous fumes.	Check and label all materials. If unsure of contents, dispose of the materials following all safety requirements. (safety officer)
Unexpired Material Safety Data Sheets are available	Composition of materials, or the instructions for safe handling may have changed. Following expired data sheets may lead to improper results or accidents.	Destroy expired MSDS. Locate current MSDS and post bringing the replacements to the attention of all affected employees (safety officers)

1. Below is a story about Minha, a job seeker who is a graphic artist. Following Minha's story is a job posting for a position as a graphic artist. Minha is not sure whether she should apply for the job.

1. Review Minha's story and the job posting.
2. In the story, underline Minha's criteria for a job.
3. In the job posting, circle each of the criteria described by the employer.

(*critical thinking level 2, reading level 2*)

Minha's Story

Minha is interested in finding an entry-level position as a graphic artist. She completed a one year diploma at an arts academy with a specialty in drawing and a two-year program in multi-media design, at a technical college.

She has done some part time work with a couple of small design firms and has received good feedback on her artistic and technical skills and attention to detail. Her customer service skills have been pointed out as something she needs to work on, mainly because she is very shy and has difficulty talking to people she doesn't know well.

Minha would like a job that is full time, pays well enough that she can afford an apartment on her own, and that does not require her to have too much contact with customers or to work overtime. She needs a job soon.

GRAPHIC ARTIST / PREPRESS TECHNICIAN POSITION

Extra Great Graphic Communications – Vancouver, BC

Email: xtraG_HR@xtraG.bc.ca

Expanding, international award winning graphic arts / printing firm has an immediate opening for an experienced individual to join our elite team of quality minded professionals. Position requires applicants to be highly motivated with superior attention to detail.

Send us your resume including experience, wage history, wage requirement and a statement about how you can contribute to our company and why you want this position.

Position Details

Minimum of two years experience in prepress and/or printing; in-depth knowledge of Adobe Creative Cloud; ability to preflight and correct client furnished files; and create outstanding design/artwork for high-end, award winning printing projects. Exceptional customer service skills, ability to clearly understand and communicate complex specifications, meet tight deadlines while multi-tasking and possesses excellent written and verbal communication skills.

Job Type: Full-time
Required experience: 2 years on Prepress

2. Make brief notes in response to the critical thinking guiding questions listed below.
(critical thinking level 2, writing level 2)

Guiding Questions

What is the situation?

Minha needs a job and she has found a posting for a job similar to what she thinks she wants. She needs to think through whether the job is a good fit for her.

What is happening?

Minha is comparing the criteria in the job posting against her own criteria for a job.

Why is it important?

Thinking through whether the job is a good fit for what she wants before she applies will help ensure that, if Minha gets the job, she will be satisfied at her work.

3. Now complete the table below and answer the question that follows.
(*critical thinking level 2, problem solving level 2, decision making level 2*)

Minah is using critical thinking to make a judgement about…	*Whether or not to apply for a job that is similar to what she would like, but not exactly what she had in mind.*
She is evaluating…	*Her likely fit with the job*
The criteria she is using includes…	*Her own needs and wants related to a job versus the need and wants of the company hiring.*

The consequences of what Minah is considering include…	• Not getting a job, if she determines that she cannot adjust her criteria to better fit with those of the company; e.g. being willing to work well with customers • Ending up with a job that she does not like • Ending up working at a company that determines she is not a good fit for them

What action do you think Minah should take?

5. STORIES OF INVENTION AND INNOVATION!

NEW IDEAS. BETTER SOLUTIONS.

USE THE ANSWERS BELOW TO CHECK YOUR WORK.

1. Compare the information in the articles on the next two pages. Use the table below to help you keep track of the information. In each case, the big problem has been identified for you. You will need to determine the specific problem the inventor is trying to solve. *(problem solving level 3, reading level 2)*

	Story 1	Story 2
Inventor(s) name	Ann Makosinki	Zack Rooney and Cooper Gagnon
Age(s)	19	17 (Cooper is assumed to be the same age as Zack)
Location	BC (Victoria then UBC)	Fall River, NS
Invention name(s)	e-Drink mug Hollow Flashlight	OffNet
Big problem(s) trying to solve	Reduce energy consumption	Improve, and reduce cost of, access to the internet for the developing world
Specific problem(s) trying to solve	Keep phone charged Keep flashlight working	Ability to connect to web without wifi or data plan
Awards won	Forbes 30 under 30	St Mary's University Hackathon competition

	Times 30 under 30 for 2013 *Google Science Fair 2013*	
First invention	*7*	*15*
Education	*Studying English literature*	*High school*

2. In the table below, one criteria has been entered. Identify at least three more criteria you would use to make your decision and write them in the criteria column in the table below.

Put a ✓ in the column below the name of the invention that you think best meets that criteria.

The invention that receives the most ✓ is the one you would invest in.
(*decision making level 3*)

Sample answers

Criteria ↓	e-Drink Mug	Hollow Flashlight	OffNet
1. Would benefit the most people			
2. Importance of the problem to the country or world			
3. Uniqueness of the idea			
4. Best for the environment			
TOTAL			

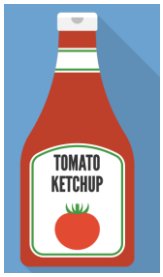
1. At the Museum Failure, there are some interesting innovations that didn't make it. Four of them are listed on the next page. For each innovation:

- decide why you think it failed
- suggest one change that you think might have made the product more successful

If you haven't heard of the product, you can do some online research to help you find the answers.

The first one is done for you as an example.
(*decision making level 3, finding information level 2, digital technology level 2*)

Invention	Why it failed	Change that might have helped
Bic for Her 	*The company didn't understand their customers and thought more women would buy pens if they were pink. But, woman don't need special pink pens because men and woman use pens the same way.*	*Just make a better quality, cheaper pen that everyone can use.*
New Coke 	*Because it suggested there was something wrong with the existing Coke; even though it was the best-selling cola drink at the time. Angered loyal Coke drinkers who were afraid the product they loved would disappear.*	*Should never have done it. Respect the old saying, "if it ain't broke, don't fix it." If they wanted to increase existing sales, they could have tried marketing to a group that didn't drink much cola (seniors, for example) instead of upsetting people who were already customers.*

Harley Davidson Motorcycle Perfume 	*The company didn't understand their customer base and also under-estimated the appeal of the Harley brand. They mistakenly thought Harley drivers would buy anything that had the Harley name and logo attached. No real connection between Harley and perfume.*	*Conduct focus groups with female Harley riders before the product launch to get their input.*
Heinz Purple and Green Ketchup 	*Because it didn't make more people buy ketchup; it just split the existing market. Designed to appeal to children but parents do the grocery shopping and either thought it was gross, or they weren't looking to get their kids to eat more ketchup. Heinz created a solution to a problem that didn't exist. And when parents did buy it, kids got bored quickly leaving several half-finished bottles of different-coloured ketchup in the fridge.*	*Might have done better if they'd introduced only one new colour and focussed on that. (FYI: in total they created green, purple, orange, teal, blue and pink. Way too many choices.*

1. THE INVENTION CHALLENGE

Have you ever thought of a product you would like to invent; something that would help to solve a problem that you think is important? Want to give it a try?

Below is a set of steps you can follow, to help you plan your own unique invention and to describe it to potential partners, investors and users.
(*problem solving level 2, decision making level 3, writing level 2, finding information level 2*)

Answers will vary

6. LARGEST HUMAN-MADE EXPLOSION! WHAT WERE THEY THINKING??

USE THE ANSWERS BELOW TO CHECK YOUR WORK.

1. Using the information in the article, identify at least one error for each of the following skills. Write a brief description of each error, in the table below.
(*job task planning level 3, problem solving level 3, decision making level 3, critical thinking level 4, reading level 2*)

Job task planning	*Coal needed by SS Imo for fuel was late arriving*
Problem solving	*Method chosen to get out of the harbour when it was jammed with ships did not demonstrate good problem solving*
Decision making	*Both ships made poor decisions. The SS Imo reversed its engines and the Mont Blanc made a hard left resulting in the collision. Initially either of the ships could have been patient and waited for a clearer channel.*
Critical thinking	*The Imo decided to try to pass slower ships in the channel, causing her to be closer to the Mont Blanc. Her increased speed would also make it harder to slow or avoid a collision. The Mont Blanc decision to turn combined with the Imo engine reversal decision resulted in the collision.*

ESSENTIAL SKILLS!
WORK READY YOUTH
PROGRAM

ES ASSESSMENT!

THINKING SKILLS

Use the table of contents to navigate through this workbook. Track your progress by putting a checkmark beside each topic you complete.

1. THINKING SKILLS
SKILL TESTING QUESTIONS

TRY THE 11 QUESTIONS BELOW THEN CHECK THE ANSWER KEY TO SEE HOW WELL YOU DID.

1. You and eight people are going to a bowling party. Some people have special food requests. Zack wants the meal package and two extra slices of pizza. Christy wants three hot dogs and no pizza. How many packages do you order?

BOWLING BIRTHDAY PACKAGE

We have great fun and food packages!

Your party package includes:

- 90 minutes of **Cosmic Bowling** (based on availability)
- 2 slices of a large cheese pizza
- 1 large hotdog
- 1 medium soft drink

All you have to do is bring the cake and candles!

*Our Bowling Birthday Package is just **$17.50**/ person*
(Tax Included; Gratuity not included; minimum of 6 children/teens)

a) Order 8 birthday packages and extra pizza and hot dogs.
b) Order 9 birthday packages and two extra hot dogs.
c) Order 9 birthday packages and three extra hot dogs.

2. In what direction will the tool handle be rotated?

Rotate the tool handle counter clockwise 270°
until it is lined up with the centreline
of the rear cylinder.

a) 

b) 

c) 

3. You are the team leader for today's robotics competition. Alex is sick and can't go to the competition. Who would you choose as the driver?

Team Member	Team Role
You	Leader, decides on group strategy, robot designer
Alex	Driver, operates the robot, robot designer
Elena	Mechanic, fixes and maintains the robot
Mike	Scout, makes observations about other team's robots, robot parts builder

a) Mike
b) Elena
c) You

4. Which set of measurements is most important to a designer, when designing jeans?

a) Waist / Hips
b) Bust / Hips
c) Waist / Height

5. Your current weekly workout routine is shown below. You need 240 points to reach your next achievement level. What could you do to reach that next level?

Exercise Coach App	
Exercise	Points per week
Running 30 min x 3 days	90
Pull Ups 10 reps x 3 sets	30
Push Ups 15 reps x 4 sets	60

a) Run 20 mins, 1 set pull ups, 1 set push ups
b) Run 30 mins, 2 extra sets push ups
c) Run 40 mins, 1 set of 10 pull ups

Internet service provider technicians visit customers' homes and businesses to fix technical issues. They track the problems and solutions in their reports using codes. A customer's issue was quickly solved with a few adjustments.

6. Which code will the technician use in the report?

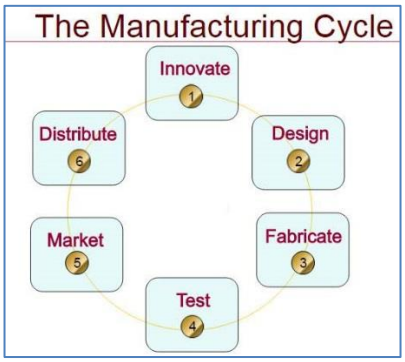
a) 121 faulty hookup and/or customer equipment
b) 122 fine tuning only
c) 123 test ok

7. Students who are building the set for a school play are being interviewed by a local TV reporter. What is the suggested order for interviews?

Job	Time Available
Set decorator	1:30 to 2:45
Carpenter 1	1:00 to 3:00
Carpenter 2	2:15 onward
Painter	1:30 to 2:00

a) Carpenter 1, painter, set decorator, carpenter 2
b) Painter, carpenter 2, set decorator, carpenter 1
c) Set decorator, painter, carpenter 1, carpenter 2

8. At which step in the manufacturing process are potential buyers made aware of the product?



a) Test
b) Market
c) Distribute

9. You are writing a blog about censorship and how the right to express opinions about one's beliefs can affect how people judge others by race, religion or values. What do you need to be aware of when writing this blog?

a) Writing about people your audience knows
b) Tone of voice, choice of words
c) Formal or informal vocabulary

10. What does this ad imply the Esthetics Institute does better than other esthetics training schools?

The Esthetics Institute's Edge

Upon completion of our training, students enter the industry feeling motivated, excited and confident in their knowledge and skills. They will have a notable competitive edge over graduates from other programs, allowing for an effortless transition to a spa or salon.

a) Guarantees success
b) Provides better training than other programs
c) Graduates will get a job

A client consultation is a fact-finding mission and the first part of the service hairstylists give their clients. Ensuring mutual understanding is very important.

11. A client has trouble explaining the type of colour or style she would like. What is the best way for a stylist to ensure he understands what she wants?

a) Describe to her what he thinks she wants
b) Describe to another stylist what he thinks the client wants
c) Show the client pictures of what he thinks she is describing

2. THINKING SKILLS

SKILL TESTING QUESTIONS

ANSWER KEY

HOW DID YOU DO ON THE 11 QUESTIONS?

1. You and eight people are going to a bowling party. Some people have special food requests. Zack wants the meal package and two extra slices of pizza. Christy wants three hot dogs and no pizza. How many packages do you order?

b) Order 9 birthday packages and two extra hot dogs.

Thinking skills: Problem solving – Level 1

2. In what direction will the tool handle be rotated?

c) 

Thinking skills: Problem solving – Level 1

3. You are the team leader for today's robotics competition. Alex is sick and can't go to the competition. Who would you choose as the driver?

b) Elena

Thinking skills: Problem solving – Level 1

4. Which set of measurements is most important to a designer, when designing jeans?

a) Waist / hips

Thinking skills: Decision making – Level 2

5. Your current weekly workout routine is shown below. You need 240 points to reach your next achievement level. What could you do to reach that next level?

b) Run 30 mins, 2 extra sets push ups

Thinking skills: Problem solving – Level 2

6. Which code will the technician use in the report?

b) 122 fine tune only

Thinking skills: Decision making – Level 2

7. Students who are building the set for a school play are being interviewed by a local TV reporter. What is the suggested order for interviews?

a) Carpenter 1, painter, set decorator, carpenter

Thinking skills: Job Task Planning and Organizing – Level 2

8. At which step in the manufacturing process are potential buyers made aware of the product?

b) Market

Thinking skills: Decision making – Level 1

9. You are writing a blog about censorship and how the right to express opinions about one's beliefs can affect how people judge others by race, religion or values. What do you need to be aware of when writing this blog?

b) Tone of voice, choice of words

Thinking skills: Decision making – Level 3

10. What does this ad imply the Esthetics Institute does better than other esthetics training schools?

b) Provides better training than other programs

Thinking skills: Critical Thinking – Level 2

11. A client has trouble explaining the type of colour or style she would like. What is the best way for a stylist to ensure he understands what she wants?

c) Show the client pictures of what he thinks she is describing

Thinking skills: Problem solving – Level 2

How did you do? Enter the number of answers, in each level, that you got correct.

THINKING SKILLS		
Level 1 /4	Level 2 /6	Level 3 /1

80 – 100% correct – skills may be in upper Level 2 and might be quite quickly improved to Level 3, with practice.

60 – 80% correct – skills may be in low to mid-level 2. They need to be improved, but some of the basics are in place and so it might be possible to improve reasonably quickly.

<60% - skills could definitely use some practice.