



# Getting the Job Done:

## Preparing to Write the Certificate of Qualification Examination in Ontario

### Tools and Tips for

# Automotive Service Technicians



**SUPPORTING  
APPRENTICESHIP  
COMPLETIONS**

**EMPLOYMENT  
ONTARIO**

This *Employment Ontario* project is  
funded by the Ontario Government.



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Guiding partners to workforce solutions.



## Acknowledgements

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The Mid North Network for the Coordination and Development of Adult Learning acknowledges and thanks the following organizations who provided trade-specific expertise, content, and feedback on the materials in the workbooks:

- Canadore College of Applied Arts and Technology
- Collège Boréal
- Conestoga College Institute of Technology and Applied Learning
- Niagara College

We would also like to thank the following journeypersons from industry who reviewed the materials and provided valuable insight on the workbooks' content and the potential to positively impact successful completion of the C of Q examination:

- James Anderson, Sudbury, Ontario
- Clint Faught, Sudbury, Ontario
- Shannon Fillion, Sudbury, Ontario
- Rae Gardner, Port Sandfield, Ontario
- Gavin Knight, Scarborough, Ontario

The Mid North Network is grateful to the organizations listed below who provided members for the project Advisory Committee and/or contributors for the field review:

- Algoma District School Board
- Cambrian College of Applied Arts and Technology
- Collège Boréal
- Literacy Nipissing
- Ontario Ministry of Training, Colleges and Universities
- Sault College

The Labour Market Group – Nipissing/Parry Sound provided valuable guidance and support in the management and marketing of the project. Special recognition goes to Samantha Dirksen, Marketing Coordinator at the Labour Market Group, for the project logo and cover design.

Finally, we express our sincere appreciation to Yvette Legault for her thoughtful translation, as well as Lynne Wallace (Project Manager) and Barb Glass (Project Researcher) for their time, energy, and effort in the development of the materials for the “*Supporting Apprenticeship Completions*” workbooks.



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## Introduction

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### To the Certificate of Qualification Test-taker:

Congratulations on completing your in-school and on-the-job training needed to write the Certificate of Qualification or C of Q exam. This is a major accomplishment. There is just one final step to joining the ranks of Ontario's journeypersons: writing and passing the C of Q exam.

This booklet will give you some advice about how to study, how to handle test jitters, and how to tackle a long (and important!) multiple choice exam. There is also a brief math refresher which includes problems and solutions related to your trade.

### Downloading and Printing

This series of "Getting the Job Done" workbooks for C of Q preparation have been developed for five trades:

- Automotive Service Technician
- Construction and Maintenance Electrician
- General Carpenter
- Industrial Mechanic (Millwright)
- Plumber

They are available to download, free of charge, at [www.northernliteracy.ca](http://www.northernliteracy.ca)

Note that these booklets are designed to be printed double-sided. If you print single-sided, you may notice some blank pages.

### To the Instructor

This booklet can be used for either self-study or in a group setting. For Literacy and Basic Skills (LBS) practitioners who may use this in their programs, it should be noted that the content links primarily to the following OALCF competencies and task groups:

Competency	Task Group	Indicator
Find and Use Information	Read Continuous Text	A1.3
Understand and Use Numbers	Use Measures	C3.3
	Manage Data	C4.3
Manage Learning	n/a	E3

It should also be noted that the applied mathematics refresher section may go beyond OALCF 3 and may include competencies not covered directly in the OALCF.

## Overview

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In preparing to write the C of Q, understanding the theory of your trade and having the on-the-job skills are essential but not enough. You also need to think about how you're going to study and what it will be like to write a multiple choice exam with at least 100 questions.

In many cities, C of Q preparation courses are offered for various trades. Frequently, these preparation courses are added as an additional week to the final in-school training session. If you have access to a C of Q prep course, it is a really good idea to register for it, especially if you finished your in-school training some time ago. Contact your local apprenticeship office, trade union, or community college to find out about prep courses in your area.

Using this booklet, combined with a C of Q prep course, is a great way to prepare for your exam. If you can't participate in a prep course, this booklet will help you with ideas and strategies for preparing. It doesn't review trade theory or content related to your trade.

The booklet is divided into four sections:

- Studying and Organizing your Study Materials
- Refreshing Your Math Skills
- Test-taking Strategies
- Exam Readiness Checklist and Additional Resources

You probably already know that the C of Q exam is based on material studied in all levels of your apprenticeship training and focuses mostly on practical situations you encounter on the job. The exam is divided into different sections and ranges from 100 to 150 multiple choice questions, depending on the trade.

### Things to Remember

1. Trade theory and work experience are the most important topics covered in the exam.
2. Enroll in a C of Q preparation course if one is available in your community.
3. Read this workbook carefully and practice the suggested activities.
4. The better prepared you are the more confident you will be on exam day.

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# Section 1

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## Studying and Organizing Your Study Materials



## Getting Started

If you talk to your boss, your co-workers, other apprentices or journeypersons, you have probably heard how hard it can be to pass the Certificate of Qualification (C of Q) exam. You might know friends or coworkers who have tried and failed the C of Q more than once. You might wonder how to go about prepping to write *and pass* the exam. That is probably why you are reading this booklet!

This section is a combination of resources, tips, suggestions, and practice problems in math. One excellent resource that you'll want to check out is the "**Trade Examinations in Ontario Exam Preparation Guide**" available on the Ontario College of Trades (OCoT) website:

[http://www.collegeoftrades.ca/wp-content/uploads/ExamPreparationGuide-March2014\\_EN.pdf](http://www.collegeoftrades.ca/wp-content/uploads/ExamPreparationGuide-March2014_EN.pdf) . The Guide goes into detail about all the information you'll need to schedule and write your exam (where, when, how, etc.). On the other hand, this booklet focuses more on how to study for the exam. Reading both these resources will answer a lot of the questions you might have. See: <http://www.collegeoftrades.ca>.

There are no short cuts to knowing your trade and being thoroughly prepared for the exam. One of the best ways to prepare is to take a C of Q prep course in your trade. To find out more about prep courses that are available in your area, contact your local community college or apprenticeship office. Remember, this booklet can give you information about how to study and how to tackle the actual exam, **but you still need to study all of the material you learned in all of your in-school training**, and that's where the C of Q prep course comes in. If there isn't a prep course in your area, there are also some websites where you can access C of Q practice questions. (See the "Additional Resources" list at the end of this booklet.)

Think about your favourite athletes. How do you think they prepare for a big game? They train, eat properly, rest, and generally prepare physically, mentally and emotionally in the months, weeks, and days leading up to the event. Your C of Q is like their big game. **Preparing for the exam is not going to happen with a few hours of reading the night before you write.**

- You need to plan in advance and follow through on the best ways available to help you to prepare.
- Take a C of Q prep course if you can.
- Use websites designed to help you study. (See Section 4 for resources.)
- Get advice from your co-workers and instructors.
- Take care of yourself.
- Keep a positive attitude.
- Visualize success.

Are you up for the challenge? Read on to find out more about getting ready for the C of Q exam.

## Scheduling Your Exam

As you know, many of the skilled trades in Ontario have a final examination that you must pass in order to become certified in your trade. The Ontario College of Trades (OCoT) is responsible for the content of the exams. The Ministry of Training, Colleges and Universities (MTCU) is responsible for the scheduling of exams at test centres across the province. Passing the exam lets you receive a C of Q in your trade and join the Journeyperson's class of members with OCoT. If your trade is designated as Red Seal, you will be writing the Red Seal examination, which will lead to a C of Q with an Interprovincial Red Seal endorsement.

You are eligible to write the C of Q exam for your trade if:

- You have a Certificate of Apprenticeship for your trade; or
- You have applied for the Journeypersons' Class and your Trade Equivalency Assessment application has been approved.

Once you have determined your eligibility to write the exam, contact the **Ontario College of Trades Client Services** at 1-855-299-0028 (toll-free) to pay your exam fee (\$150 + HST at the time of this publication). Payment can be made by: credit card, cheque or debit. Note that fees are subject to change.

**Make sure to put your receipt in a safe place as you will need to present it along with valid identification in order to write the exam.**

- After you have completed studying for the exam and feel you are prepared to successfully write, contact the nearest Ministry of Training, Colleges and Universities' office to schedule your exam. See <http://services.findhelp.ca/eo/tcu/appoff> for a list of locations in Ontario.

### **Pro Tip #1:**

Did you know that with prior approval you have access to the following supports when writing your exam? If any of them apply to you, be sure to let MTCU know when you are scheduling your exam.

- If English is a second language you can use a translator.
- If you have difficulty reading, you can have a friend or family member read the test to you.
- You can write the exam in a separate room to reduce distractions.
- You can have extra time (if there is a documented reason, like a learning disability).

The translator/interpreter/reader must be a resident of Ontario; they must have a valid Social Insurance card and photo identification such as a driver's license or passport; they must not be in the trade or any trade related to the exam being translated/read. All of the above information and more on the exam scheduling process is available on the OCoT website. See: <http://www.collegeoftrades.ca/membership/resources/exam-process>.

## Preparing

### What can I expect to see on the exam?

The majority of the C of Q exam will test you on the practical skills you've learned on-the-job. The exam questions are in multiple choice format with four options from which to choose. Questions test the skills and knowledge identified in the Apprenticeship Training Standard (ATS) and National Occupational Analysis (NOA) for your trade. Red Seal exams are based more on the NOA, so that is where you may want to focus your studies. See page 14 in this booklet for additional information and web links for the NOA.

### What kind of questions will be asked?

1. Questions testing trade terminology and concepts.
2. Questions asking **when** a specific task should be done. Multiple choice answers could be timeframes such as "every three months" or "after this other task" or "before that task".
3. Questions asking **why** a task is done. Multiple choice answers could be "because this condition exists" or "to get this sort of result".
4. Questions asking **how** tasks are done; multiple choice answers could be skills and techniques or a certain job sequence.
5. Questions asking **what permission** is needed or **what standard** must be followed in doing a job, e.g., which code or blueprint information is used?
6. Questions asking **consequences**, such as "when a certain event happens or a certain task is done, what effect will it have?"

**Pro Tip #2:**

Your exam may have between 90 and 150 questions!  
What does this mean?

- You will have up to four hours to write.
- You need 70% to pass.
- If you have 150 questions, you have 240 minutes or 1.6 minutes per question.
- You need to get 105 correct to pass with 70%.

## Collecting Materials for Studying

There are several ways to check your readiness to successfully write the C of Q, and there are many resources available in Ontario to help you prepare. These resources include preparation courses, study guides like this one, sample exam questions, code books, materials and texts. You can also use your own network of support by speaking to your boss, your previous instructors and your co-workers, especially those who have written the C of Q.

### Textbooks

Using the texts and Code books that you've accumulated is an important part of preparing for the C of Q. Make sure you have them readily available.

### National Occupational Analysis

Another way to figure out if you're ready to write your Red Seal exam is to look closely at the National Occupational Analysis for your trade. The Red Seal National Occupational Analysis (NOA) is a document that lists all the tasks performed in the occupation and describes the knowledge, skills and abilities required to demonstrate competence in the trade.

NOAs for Red Seal trades provide the content on which Red Seal exam questions are based. Exam questions are written to test your knowledge and competency related to the **sub-tasks** in the NOA. The NOA for your trade is the most important resource and a great tool to help you plan what and how to study for the Red Seal exam.

**Important:**

Although the most recent versions of all NOAs are available online at: [www.red-seal.ca/](http://www.red-seal.ca/), your exam might be based on a previous version of the NOA. Be sure to use the correct NOA for your exam.

Go to <http://www.red-seal.ca/images/ATC-index-eng.html> for a thorough guide on how to use the NOA for your trade to prepare for your exam.

## How do I make a plan for studying?

The first thing you need to get started is an action or study plan. A study plan is an organized schedule that outlines study times and learning goals. Creating a study plan can help you concentrate, retain material and effectively manage your time. Schedules will vary for each individual.

You are probably asking yourself, “How much should I study?” There is one way to answer that question. First, gather together all of the resources you have on hand, such as textbooks, in class notes and handouts, Code books and the National Occupational Analysis for your trade. This will give you an idea of how much material you’ll have to review to pass your exam.

Remember, you don’t just need to read these materials, you need **to understand** them – you need to be familiar with the material and be able to recall at least 70% of the information during the exam. You will probably have to review your study materials more than once. Now, considering how much material you have to study, fill in the following check list to help you plan your study activities.

- (a) Estimate how many hours you think it will take you to become familiar with all of the information you want to learn. \_\_\_\_\_
- (b) How many days per week can you study? \_\_\_\_\_
- (c) How many hours at a time can you study? \_\_\_\_\_
- (d) Considering both (b) and (c), how many weeks do you think it will take you to complete your studying activities? \_\_\_\_\_

### Sample Calculation:

- a) I estimate 50 hours of studying (50 hrs x 60 min/hr = 3,000 min)
- b) I can study 5 days per week.
- c) I can study for 120 minutes per day.
- d) I need  $3,000 \text{ min} / 120 \text{ min per day} / 5 \text{ days per week} = 5 \text{ weeks}$

Your answer to (d) will give you an idea of how long it is going to take you to complete your studies. It will also help you to decide how much time each week you must set aside for studying. Keep in mind, your answer to (a) is an estimate, but you need to stick to a study schedule that allows you to be prepared for the test date if you've scheduled it ahead of time.

### Tips for Creating Your Study Schedule

- Assess your current schedule – try to create a healthy balance between your work life, study life, social life and sleep time.
- Establish a regular studying routine.
- Look at your calendar/planner and flag study and non-study days.
- Schedule study sessions in blocks – short blocks can be easier to schedule and more effective. There is a sample planner on the next page.
- List all the subjects you need to study and rank them by deciding which are most important and which you think need the most reviewing.
- Do your most difficult studying when you feel best. Are you a morning person or a night owl?
- Make up a specific schedule and reward yourself when you stick to it, e.g. three nights a week, I will study for one hour after the kids are in bed, and then I can watch my favourite show.

#### **Pro Tip #3**

Effective study begins well before the exam and depends on spreading out your study times. Your ability to remember the material will be greatly improved if you look at your study materials often and re-read them frequently.



## Sample Study Schedule

Use this planner (or one like it) to map out a study schedule that is realistic for your work and family commitments.

Time	Week of _____	Week of _____	Week of _____	Notes
5:00 a.m.				
6:00 a.m.				
7:00 a.m.				
8:00 a.m.,				
9:00 a.m.				
10:00 a.m.				
11:00 a.m.				
12:00 p.m.				
1:00 p.m.				
2:00 p.m.				
3:00 p.m.				
4:00 p.m.				
5:00 p.m.				
6:00 p.m.				
7:00 p.m.				
8:00 p.m.				
9:00 p.m.				
10:00 p.m. -				
11:00 p.m.				
<b>Notes</b>				



# Study Strategies

## Tips to Remember

Approach your exam preparation as you would any complex, on-the-job task:

- Get a good idea of the scope of the job. (How much material do I need to review? How many hours will this take?)
- Develop a plan of attack.
- Assemble your tools (notes, Code book, textbooks).
- Use the NOA to help you break the material you need to study into manageable pieces in a logical order.
- Talk to others who have experience. Your supervisor or foreman may be able to provide you study materials and/or give you on-the-job assignments that will refresh your skills and knowledge.
- Regularly review your progress.
- Take breaks as you complete each section (Reward yourself).
- If you become frustrated, take a break, step back and reconsider your strategy.
- Make sure you understand the specific task or concept. Often, explaining it to others helps you to file it in your memory.
- Draw pictures, talk out loud to yourself or others to reinforce your understanding.
- Show up for studying rested, focused and ready to work.
- Don't be too hard on yourself! Like any complex job it takes time and there may be wrong turns and dead ends along the way. But the job gets done!

## How do I learn best?

Do you know your learning style? A learning style is the way in which you best learn new things. You may learn best by seeing, listening, or doing. If you know your learning style, this may help you with your studying as you can use strategies that best suit your particular style. For example, if you learn best by seeing, you may wish to have flash cards with questions and answers about key information that you want to learn.

Here is a short explanation of these three learning styles:

- a) **Visual learners** learn best by seeing pictures, graphs, charts, diagrams, etc. that represent ideas
- b) **Auditory learners** learn best by listening to discussions, lectures, tapes, etc.
- c) **Tactile learners** (sometimes called “hands-on” learners) learn best by doing things like handling equipment, watching other people do things, etc.

Many skilled trades workers are hands-on (tactile) learners, which is why they are so good at their trade!

Check out this website to find out what your learning style is. You will also find some tips on how to best learn new material, according to your particular learning style.

<http://www.educationplanner.org/students/self-assessments/learning-styles-quiz.shtml>

**Pro Tip #4:**

Keep in mind that a lot of people learn in more than one of those three ways: visual, auditory, and tactile.

### How will I remember everything?

Work at **understanding** the material, not just memorizing it. Remember, you have to do two things: you need to *learn* the material, and you also need to *retain* the material. For example, if a math teacher explains to you how to do a certain question, you are probably able to figure it out in that moment and do a question or two on your own.

However, if you were to sit down three days later by yourself, would you be able to complete the same type of questions on your own? That would depend on whether or not you've *retained* the information.

You have to really **understand** your trade in order to successfully pass the C of Q, not just rely on memorization. However, there are a few suggestions you may want to use to help you file critical information in your long-term memory.

- **Don't try to learn too much at once.** Break down topics for study into six or seven items; review and memorize these items. Take a short break to give your memory time to store the new information.

- **Use short study periods with regular breaks.** You will learn faster and remember longer if you study in several short sessions rather than in one long session. Do not attempt to study for an entire weekend. It is wiser to spend some time each day rather than to try to cram your work into a few days.
- **Write down what you are learning.** Get into the habit of writing down key ideas as you read. This will help you to visualize the answers when you are writing the exam. The more senses you use while you study, the more effective the learning will be. For example, you can write down key points and repeat these points out loud to yourself.
- **Don't try to study in a room with music, television or other distractions.** This will make it more difficult for you to commit your materials to memory.
- **Work with a partner or in a small group.** Ask each other questions. If you don't have another apprentice to work with, you can ask a friend or family member to quiz you (verbally) on items like lists, sets of steps, etc.
- **Ask yourself questions.** If you're working alone, ask yourself questions and/or want to repeat information verbally as you read it.
- **Use a stress ball while you study if that's helpful.** You may also find it helpful to chew gum, have a bottle of water with you, or other things to make you comfortable and better able to concentrate.

### How can I make the best use of my texts and reference books?

From the OCoT website, here are some suggestions:

- Find a good glossary of terms (often found in text books).
- Identify important or typical problems in the trade performances.
- Identify exceptions to theories and the conditions where they occur.
- For each concept, find and learn the related definitions or formulas.
- Relate each concept or formula to your work experience.
- Relate the concepts to one another to create a general overview.
- Sequence or organize information according to on-the-job activities so that it makes sense.
- Rehearse sequences and relationships by repeating them out loud.
- Draw diagrams to show structures and relationships.

## Using Memory Aids

You're probably already familiar with some memory aids. On the next few pages are some examples of memory aids that may be helpful.

### a) Acronyms

One way of memorizing material is to create an acronym. An acronym uses the first letters of a series of words to make another word. An acronym that you may be familiar with is WHMIS:

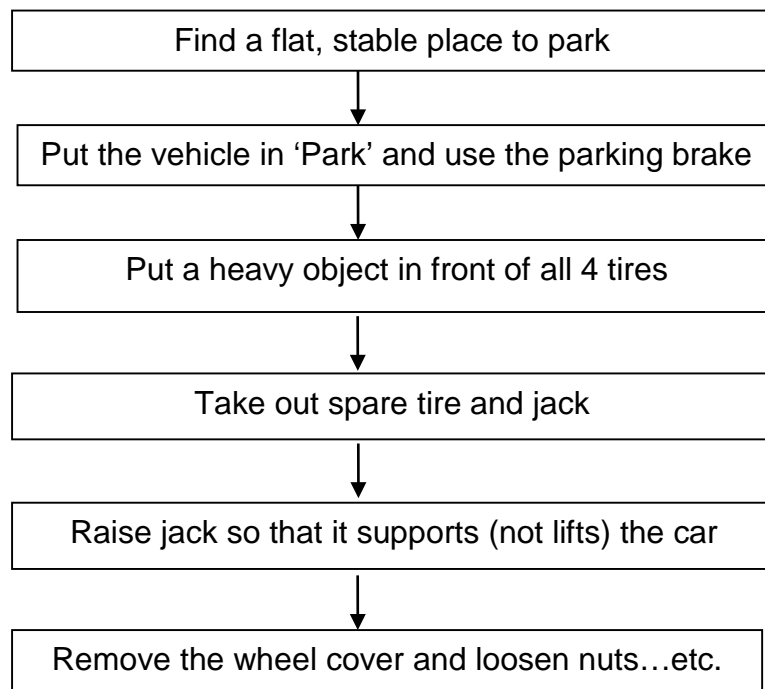
**W**orkplace  
**H**azardous  
**M**aterials  
**I**nformation  
**S**ystem

You can use the first letters of a cluster of words to make an acronym which will help you remember processes or procedures.

### b) Flow Charts

When you have a process or set of steps to memorize, a flow chart can be useful. Check out the simplified example below for the first few steps of changing a flat tire.

#### Changing a Flat Tire



### c) Point-form Notes

Another way to help memorize longer materials from text books or manuals is to make short form or point-form notes. Point-form notes list brief but important details needed for understanding the topic. Use headings to separate topics. Use bullet points with simple words or phrases to note the details.

Look at the passage below from the Government of Canada Red Seal web site.

*The Interprovincial Standards Red Seal Program was established to provide greater mobility for skilled workers across Canada. The Red Seal program allows qualified tradespeople to practice their trade anywhere in Canada where the trade is designated without having to write further examinations. To date, over 50 trades are included in the Red Seal program, accounting for almost 90% of all apprentices and more than 80% of the total trades workforce in Canada. More information about the Red Seal program, including a list of the designated Red Seal trades in Canada, is available at [www.red-seal.ca](http://www.red-seal.ca).*

Now, look at how this paragraph could be written using point-form notes:

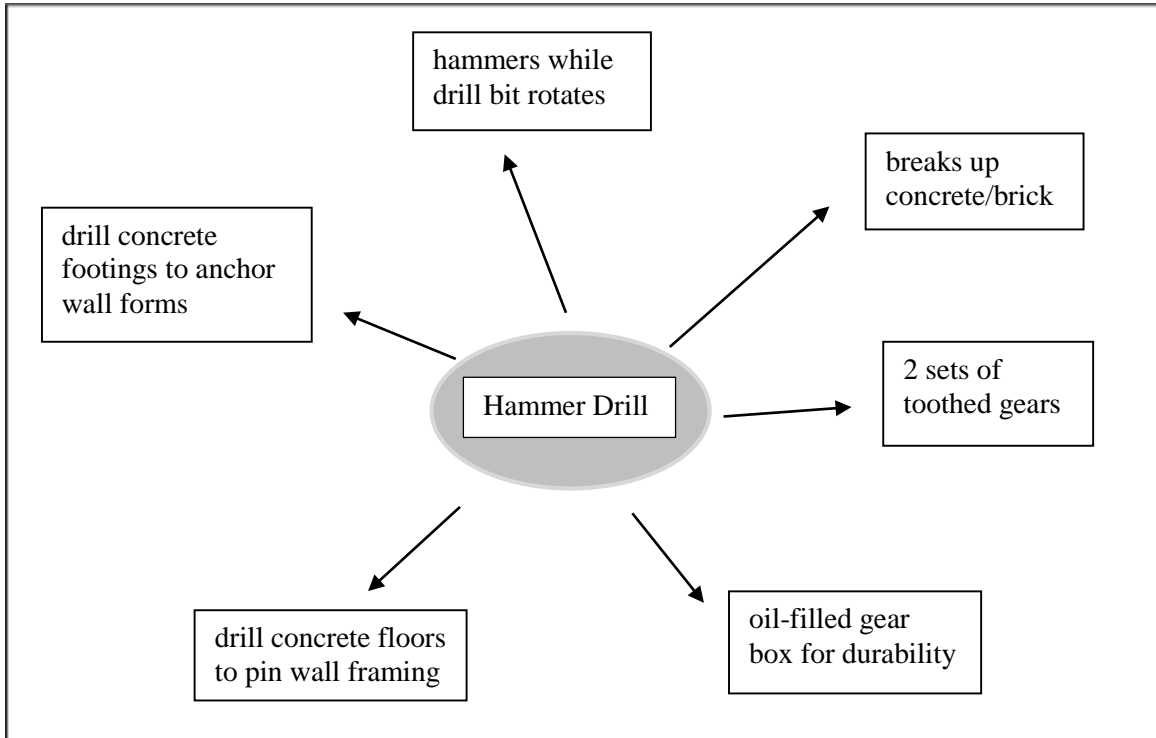
- *Red Seal lets you work anywhere in Canada if qualified*
- *No extra exams needed*
- *50 Red Seal trades*
- *90% of all apprentices*
- *80% of trades workers in Canada*
- *More info at web site*

As well as making point-form notes, here are a few related suggestions:

- Create your own short forms to save time, e.g. “because” might become “b/c”; and “between” might become “btwn”.
- Highlight important sections or points in your materials.
- Make notes in the margins of your books as well to draw your attention to important or difficult concepts.
- Write out your own summary notes to combine all the sources you have reviewed: books, notes, conversations with teachers and coworkers, etc.
- Use colour, diagrams, numbers, and symbols to help you organize the material and make it easier to remember.

**d) Mind Maps**

Another thing you may want to do to assist your memory is to create a mind-map. Mind maps can help with memorizing, learning, and problem solving. Use a blank piece of paper to draw the mind map. Put one word or term in the middle, and draw lines to other words or short facts that are related to that central term. Below is a simplified example related to a hammer drill.



When you're trying to memorize material, use colours, shapes, highlights– whatever will help you remember/visualize the information that you need to remember.

Finally, repetition is important! You will remember more information if you repeat it out loud, in your head, or write it down on paper.



## Additional Study Tips: True or False?

Decide whether the following statements are true or false. Answers are below.

1. T/F \_\_\_ Always study in a very warm room.
2. T/F \_\_\_ Never eat or drink before you begin studying.
3. T/F \_\_\_ Try to predict test questions. For example, review the NOA for your trade and try to anticipate what questions might be asked. Put yourself in the shoes of the exam writer and say, "If I wanted to test someone on this topic, what would I ask?"
4. T/F \_\_\_ Assign yourself study time for a topic based on its importance, i.e. don't spend a large percentage of your study time on things that likely won't be on the exam).
5. T/F \_\_\_ If you have written the exam before, look at your exam letter and identify which areas you were weaker in and focus on those areas.
6. T/F \_\_\_ Do not set an alarm on your phone to remind you when to begin studying, and when to stop!

Answers:	1. F	2. F	3. T	4. T	5. T	6. F
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## **Section 2**

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# **Refreshing Your Math Skills**

# Instructions

This section includes 25 math-related problems that review material in all levels of your in-school training. **This is not the only review you'll need to do**, but it does give you a sample of multiple choice questions that might be similar to what you would see on the C of Q exam.

You will have learned the theory and concepts during your in-school training. This brief review will not teach you the concepts. It will help you apply the theory you have already learned.

## Instructions:

1. Complete the problems, either right on these pages or on separate paper.
2. Check your answers with the **Answer Key** on page 36.
3. Review the **Solutions** (pages 38 to 46), and highlight areas where your solutions differ so that you can go back and re-work the problem.
4. You need to get 18 out of 25 correct to achieve 72%; remember that the pass mark on the C of Q is 70%.

## Problem Set: Automotive Service Technicians

**Note:** Answer Key is on page 35; full solutions are on pages 37 to 45.

- 1) If the ring gear in an axle has 36 teeth and the pinion gear attached to the drive shaft has 8 teeth, what is the rear axle speed if the drive shaft turns at 1000 RPM?
  - a. 222 RPM
  - b. 250 RPM
  - c. 260 RPM
  - d. 800 RPM
  
- 2) Calculate the torque in in-lbs that a wrench would be set to if a bolt requires 7.25 ft-lbs.
  - a. 24 in-lbs
  - b. 67 in-lbs
  - c. 87 in-lbs
  - d. 99 in-lbs
  
- 3) The volume of gas in a cylinder is  $320 \text{ cm}^3$  when the pressure is 20 psi. If the temperature does not change and the volume of the gas decreases to  $80 \text{ cm}^3$ , what is the new pressure?

<b>Pascal's Law</b> $P_1 V_1 = P_2 V_2$
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- a. 2 psi
  - b. 80 psi
  - c. 100 psi
  - d. 500 psi
  
- 4) A tire has a circumference of 60 inches. How many miles does a vehicle travel if the wheel makes 9200 revolutions?
  - a. 8.7 miles
  - b. 9.8 miles
  - c. 20 miles
  - d. 60 miles

- 5) Determine the rocker arm ratio knowing that the valve lift for a vehicle is 0.525 inches and the cam lift is 0.350 inches.

$$\text{Valve lift} = \text{Cam lift} \times \text{Rocker arm ratio}$$

- a. 1 to 1
  - b. 1.5 to 1
  - c. 2 to 1
  - d. 2.5 to 1
- 6) Calculate the swept volume for an engine with a clearance volume of  $10.64 \text{ in}^3$  and a compression ratio of 20 to 1.

$$\text{Compression ratio} = \frac{(\text{Volume}_{\text{swept}} + \text{Volume}_{\text{clearance}})}{\text{Volume}_{\text{clearance}}}$$

- a.  $110.64 \text{ in}^3$
  - b.  $150.16 \text{ in}^3$
  - c.  $202.16 \text{ in}^3$
  - d.  $212.80 \text{ in}^3$
- 7) Calculate the resistance for a lighting system in a truck that draws 6.7 amperes at a 14.2 voltage.

$$\text{Ohm's Law } E = I \times R$$

- a.  $2.1 \Omega$
  - b.  $2.6 \Omega$
  - c.  $5.6 \Omega$
  - d.  $5.9 \Omega$
- 8) Determine the cylinder displacement of a 360 cubic inch engine in litres.
- a. 3.6 L
  - b. 5.5 L
  - c. 5.9 L
  - d. 9.8 L

- 9) In a first order class lever system, the load force is 5 lbs with a distance of 1'6" from the fulcrum. If the distance from the effort force and fulcrum is 2', what is the effort force?

$$F_L D_L = F_E D_E$$

- a. 1.67 lbs  
 b. 3.75 lbs  
 c. 4.43 lbs  
 d. 6.67 lbs
- 10) The 2014 Roadster generates 273 lb-ft of torque at 5400 RPM. Calculate the power in Watts.

$$\text{Horsepower} = \frac{(RPM \times \text{torque})}{5252}$$

- a. 265.52 W  
 b. 280.69 W  
 c. 209 307.73 W  
 d. 197 993.95 W
- 11) What is the current in amperes for a parallel circuit that has the following three resistances on a 12.3 V alternator: 3 ohms, 9 ohms and 2 ohms?

$$\text{Total resistance} = \frac{1}{\frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3}}$$

- a. 1.06 amperes  
 b. 6.12 amperes  
 c. 11.60 amperes  
 d. 12.30 amperes

- 12) A 4-cylinder Toyota Prius has a bore of 5.41 inches. If the stroke is 8.3 inches, what is the piston displacement?

$$PD = 0.7854D^2 LN$$

- a. 452.22 in<sup>3</sup>
- b. 543.87 in<sup>3</sup>
- c. 763.17 in<sup>3</sup>
- d. 793.88 in<sup>3</sup>

- 13) What is the current for the secondary coil of a step-down transformer where the primary coil has 400 volts at 20 amperes, and the secondary has a force of 150 volts?

$$\text{Ohm's Law } P = I \times E$$

- a. 13 amps
- b. 20 amps
- c. 43 amps
- d. 53 amps

- 14) A transformer has a primary coil with 300 turns and 120 volts applied to it. If the secondary coil has 40 turns, what is the voltage across the secondary?

$$\frac{\text{Turns}_p}{\text{Volts}_p} = \frac{\text{Turns}_s}{\text{Volts}_s}$$

- a. 900 volts
- b. 16 volts
- c. 120 volts
- d. 32 volts

- 15) Two 96 W tail lights are installed on a vehicle. The working voltage of these lights is 12 V. As a result, what size of fuse should be used?

$$\text{Ohm's Law } P = I \times E$$

- a. 16 amps
- b. 20 amps
- c. 24 amps
- d. 32 amps



16) A car starter draws 160 amps from a 12 V battery. What is the power generated?

$$\text{Ohm's Law } P = I \times E$$

- a. 1.09 kW
- b. 1.92 kW
- c. 192 kW
- d. 1920 kW

17) A car's automatic transmission has a piston with a diameter of 2.5". If a pressure of 175 psi is applied to the piston, what will be the resulting force?

$$\text{Area} = \pi r^2$$
$$\text{Pascal's Law } P = \frac{F}{A}$$

- a. 135.64 lbs
- b. 175.50 lbs
- c. 491.25 lbs
- d. 859.25 lbs

18) A transmission has a driving pulley with a radius 50 mm and revolves at 1000 RPM. The driven pulley has a radius of 25 mm. How many revolutions does the driven pulley make per minute?

$$d_1 r_1 = d_2 r_2$$

- a. 100 RPM
- b. 500 RPM
- c. 1000 RPM
- d. 2000 RPM

- 19) On a series circuit, resistances of 2 ohms, 8.5 ohms and 0.5 ohm are in series with a 14.2 V battery. What is the current flow?

$$\text{Ohm's Law } E = I \times R$$

- a. 1.29 amperes
  - b. 7.65 amperes
  - c. 11.01 amperes
  - d. 28.40 amperes
- 20) Calculate the cylinder head volume for a V-6 engine that has a cylinder chamber depth of 100 mm and a diameter of 7.5 cm.

$$\text{Volume} = \pi r^2 h$$

- a. 1002.21 cm<sup>3</sup>
  - b. 2258.69 cm<sup>3</sup>
  - c. 2444.82 cm<sup>3</sup>
  - d. 2650.74 cm<sup>3</sup>
- 21) For a car's brake hydraulic system, the piston of the master cylinder has a 1" diameter. Calculate the system pressure given an input of 120 pounds.

$$\text{Pascal's Law } P = \frac{F}{A}$$

- a. 120 psi
- b. 153 psi
- c. 240 psi
- d. 612 psi

- 22) Determine the master cylinder bore size if the input force is 75 lbs, the pressure developed is 573 psi and the pedal ratio is 6 to 1.

$$P = \frac{F}{A} \times \text{pedal ratio}$$

- a. 0.5"
- b. 0.75"
- c. 1.0"
- d. 2.25"

- 23) The clamping force, the force pressing on each brake pad, is 200 lbs. The braking force acting between the brake pads is 100 lbs. Determine the coefficient of friction.

$$F_b = 2\mu F_c$$

- a. 0.20
- b. 0.25
- c. 0.40
- d. 0.45

- 24) A 2012 Volkswagen Jetta produces 140 hp at 88 ft-lbs. What is the horsepower rpm?

$$\text{Horsepower} = \frac{(RPM \times \text{torque})}{5252}$$

- a. 8055 rpm
- b. 8200 rpm
- c. 8355 rpm
- d. 8500 rpm

- 25) Determine the diameter of a bore cylinder knowing that the engine displacement is 391.1 in<sup>3</sup>, the length of the stroke is 4.5 in and there are 8 cylinders.

$$\text{Displacement} = \frac{\pi}{4} d^2 LN$$

- a. 1.86"
- b. 3.72"
- c. 11.31"
- d. 13.84"



## Answer Key

(For full solutions, see the following pages.)

1. a
2. c
3. b
4. a
5. b
  
6. c
7. a
8. c
9. b
10. c
  
11. c
12. c
13. d
14. b
15. b
  
16. b
17. d
18. d
19. a
20. d
  
21. b
22. c
23. b
24. c
25. b



## Solutions

Keep in mind that sometimes there is more than one way to find the correct answer. These solutions show one possible method.

### 1) Answer (a)

$$\frac{\text{drive shaft speed}}{\text{rear axle speed}} = \frac{\text{teeth on rear axle}}{\text{teeth on drive shaft}}$$

$$\frac{1000 \text{ RPM}}{x \text{ RPM}} = \frac{36 \text{ teeth}}{8 \text{ teeth}}$$

Set up an inverse proportion. To solve, cross multiply and isolate the unknown

$$36x = 8000$$

$$x = \frac{8000}{36}$$

$$x = 222 \text{ RPM}$$

### 2) Answer (c)

$$\frac{1 \text{ ft-lb}}{12 \text{ in-lb}} = \frac{7.25 \text{ ft-lbs}}{x \text{ in-lbs}}$$

Convert foot-pounds to inch-pounds

$$x = 87 \text{ in-lbs}$$

### 3) Answer (b)

$$P_1 V_1 = P_2 V_2$$

$$P_2 = \frac{P_1 V_1}{V_2}$$

Rearrange the equation to isolate for the unknown

$$P_2 = (20 \text{ psi}) (320 \text{ cm}^3) / 80 \text{ cm}^3$$

$$P_2 = 80 \text{ psi}$$

4) **Answer (a)**

$$\frac{60 \text{ inches}}{1 \text{ revolution}} = \frac{x \text{ inches}}{9200 \text{ revolutions}} \longrightarrow \text{Convert revolutions to inches}$$

$$x = 552\,000 \text{ inches}$$

$$\begin{aligned} 552\,000 \text{ inches} \times \frac{1 \text{ foot}}{12 \text{ inches}} \times \frac{1 \text{ mile}}{5280 \text{ feet}} &\longrightarrow \text{Convert inches to miles} \\ = \frac{552\,000}{12 \times 5280} \text{ miles} \\ = 8.7 \text{ miles} \end{aligned}$$

5) **Answer (b)**

$$\text{Valve lift} = \text{Cam lift} \times \text{Rocker arm ratio}$$

$$\text{Rocker arm ratio} = \frac{\text{valve lift}}{\text{cam lift}} \longrightarrow \text{Rearrange the formula to isolate the unknown rocker arm ratio}$$

$$\text{Rocker arm ratio} = \frac{0.525 \text{ inches}}{0.350 \text{ inches}}$$

$$\text{Rocker arm ratio} = 1.5 \text{ to } 1$$

6) **Answer (c)**

$$\text{Compression ratio} = \frac{(\text{Volume}_{\text{swept}} + \text{Volume}_{\text{clearance}})}{\text{Volume}_{\text{clearance}}}$$

$$\text{Volume}_{\text{swept}} = (\text{Compression ratio}) (\text{Volume}_{\text{clearance}}) - \text{Volume}_{\text{clearance}}$$

$$\text{Volume}_{\text{swept}} = (20) (10.64 \text{ in}^3) - 10.64 \text{ in}^3$$

$$\text{Volume}_{\text{swept}} = 202.16 \text{ in}^3$$



7) Answer (a)

$$E = I \times R$$

$$R = \frac{E}{I}$$



Rearrange the formula to isolate the unknown resistance

$$R = \frac{14.2V}{6.7\text{amperes}}$$

$$R = 2.1 \Omega$$

8) Answer (c)

$$360 \text{ in}^3 \times \frac{16.387 \text{ cm}^3}{1 \text{ in}^3} \times \frac{1 \text{ L}}{1000 \text{ cm}^3}$$

$$= \frac{360 \times 16.387}{1000} \text{ L}$$

$$= 5.9 \text{ L}$$



Convert cubic inches to litres

9) Answer (b)

$$F_L D_L = F_E D_E$$

$$F_E = F_L D_L / D_E$$



Rearrange the equation to solve for the unknown

$$F_E = \frac{F_L D_L}{D_E}$$

$$F_E = 3.75 \text{ lbs}$$

10) Answer (c)

$$\text{Horsepower} = \frac{(RPM \times \text{torque})}{5252}$$

$$\text{Horsepower} = \frac{(5400RPM \times 273\text{lb} - \text{ft})}{5252}$$

(continued on the next page)

Horsepower = 280.69 hp

$$\frac{745.69 \text{ W}}{1 \text{ hp}} = \frac{x \text{ W}}{280.69 \text{ hp}}$$

Convert horsepower to Watts

$$x = 209\,307.73 \text{ W}$$

### 11) Answer (c)

$$\text{Total resistance} = \frac{1}{\frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3}}$$

$$\text{Total resistance} = \frac{1}{\frac{1}{3} + \frac{1}{9} + \frac{1}{2}}$$

When adding fractions, a common denominator is needed

$$\text{Total resistance} = \frac{1}{\frac{6}{18} + \frac{2}{18} + \frac{9}{18}}$$

$$\text{Total resistance} = \frac{1}{\frac{17}{18}}$$

$$\text{Total resistance} = 1 \times \frac{18}{17}$$

When dividing fractions, multiply by the reciprocal of the second fraction

$$\text{Total resistance} = 1 \frac{1}{17} \Omega = 1.06 \Omega$$

$$E = I \times R$$

$$I = \frac{E}{R}$$

$$I = \frac{12.3\text{V}}{1.06\Omega}$$

$$I = 11.60 \text{ amperes}$$

## 12) Answer (c)

$$PD = 0.7854D^2 LN$$

$$PD = 0.7854 (5.41 \text{ in})^2 (8.3 \text{ in}) (4)$$

$$PD = 763.17 \text{ in}^3$$

## 13) Answer (d)

$$P = I \times E$$

$$P = (20 \text{ amps}) (400 \text{ V})$$

$$P = 8000 \text{ Watts}$$

$$P = I \times E$$

$$I = \frac{P}{E}$$

$$I = \frac{8000W}{150V}$$

$$I = 53 \text{ amps}$$



Rearrange the equation to solve for the unknown current

## 14) Answer (b)

$$\frac{\text{Turns}_p}{\text{Volts}_p} = \frac{\text{Turns}_s}{\text{Volts}_s}$$

$$\text{Volts}_s = \frac{\text{Volts}_p \times \text{Turns}_s}{\text{Turns}_p}$$

$$\text{Volts}_s = \frac{120V \times 40}{300}$$

$$\text{Volts}_s = 16 \text{ V}$$



Rearrange the equation to solve for the unknown voltage

## 15) Answer (b)

Because there are two tail lights, 96 W must be multiplied by 2.

$$P = I \times E$$

$$I = \frac{P}{E}$$

$$I = \frac{192W}{12V}$$



Rearrange the equation to solve for the unknown current

(continued on the next page)

$$I = 16 \text{ amps}$$

Note that 16 amps represents 80% fuse rating.

$$\frac{16}{x} = \frac{80}{100}$$



Determine what number 16 is 80% of

$$80x = 1600$$

$$x = 20 \text{ amps}$$

16) **Answer (b)**

$$P = I \times E$$

$$P = (160 \text{ amps}) (12 \text{ V})$$

$$P = 1920 \text{ W}$$

$$\frac{1000 \text{ W}}{1 \text{ kW}} = \frac{1920 \text{ W}}{x \text{ kW}}$$



Convert Watts to kilowatts

$$1000x = 1920$$

$$x = 1.92 \text{ kW}$$

17) **Answer (d)**

$$\text{Area} = \pi r^2$$

$$\text{Area} = \pi (1.25'')^2$$

$$\text{Area} = 4.91 \text{''}^2$$



The area of the piston needs to be determined, and as a result, the diameter needs to be divided by 2

$$P = \frac{F}{A}$$

$$F = P \times A$$

$$F = (175 \text{ psi}) (4.91 \text{''}^2)$$

$$F = 859.25 \text{ lbs}$$



Rearrange the equation to solve for the unknown force

18) **Answer (d)**

$$d_1 r_1 = d_2 r_2$$

$$r_2 = \frac{d_1 r_1}{d_2}$$

$$r_2 = \frac{(100\text{mm})(1000\text{RPM})}{50\text{mm}}$$

$$r_2 = 2000 \text{ RPM}$$

## 19) Answer (a)

$$\text{Total resistance} = 2 \Omega + 8.5 \Omega + 0.5 \Omega = 11 \Omega$$

$$E = I \times R$$

$$I = \frac{E}{R}$$

$$I = \frac{14.2V}{11\Omega}$$

$$I = 1.29 \text{ amperes}$$

## 20) Answer (d)

$$\frac{1 \text{ cm}}{10 \text{ mm}} = \frac{x \text{ cm}}{100 \text{ mm}}$$



Convert millimetres to centimetres

$$10x = 100$$

$$x = 10 \text{ cm}$$

$$\text{Volume} = \pi r^2 h$$

$$\text{Volume} = \pi (3.75 \text{ cm})^2 (10 \text{ cm})$$

$$\text{Volume} = 441.79 \text{ cm}^3$$

Because there are 6 cylinders,

$$\text{the total head volume} = 6 \times 441.79 \text{ cm}^3 = 2650.74 \text{ cm}^3$$

## 21) Answer (b)

$$P = \frac{F}{A}$$

$$P = \frac{F}{\pi r^2}$$

$$P = \frac{120 \text{ lbs}}{\pi (0.5")^2}$$

$$P = \frac{120 \text{ lbs}}{0.785"}$$

$$P = 153 \text{ psi}$$



The area of the piston must be determined using  $\pi r^2$



The diameter needs to be divided by 2 to determine the radius

## 22) Answer (c)

$$P = \frac{F}{A} \times \text{pedal ratio}$$

$$P = \frac{F}{\pi r^2} \times \text{pedal ratio}$$



The area of the cylinder must be determined using  $\pi r^2$

$$r = \sqrt{\frac{F \times \text{pedal ratio}}{\pi P}}$$



Rearrange the equation to solve for the unknown diameter

$$r = \sqrt{\frac{75\text{lbs} \times 6}{\pi(573\text{psi})}}$$

$$r = 0.50''$$

Therefore, the diameter of the master cylinder is 1".

## 23) Answer (b)

$$F_b = 2\mu F_c$$

Where:  $\mu$  = coefficient of friction,  $F_b$  = braking force acting between brake pads, and  $F_c$  = clamping force on each brake pad.

$$\mu = \frac{F_b}{2F_c}$$

$$\mu = \frac{100\text{lbs}}{2(200\text{lbs})}$$

$$\mu = 0.25$$

## 24) Answer (c)

$$\text{Horsepower} = \frac{(\text{RPM} \times \text{torque})}{5252}$$



Rearrange the equation to solve for the unknown rpm

$$\text{RPM} = \frac{(\text{horsepower} \times 5252)}{\text{torque}}$$

$$\text{RPM} = \frac{(140\text{hp} \times 5252)}{88\text{ft} - \text{lbs}}$$

$$\text{RPM} = 8355$$

## 25) Answer (b)

$$\text{Displacement} = \frac{\pi}{4} d^2 LN$$

where: L = length of stroke and

N = number of cylinders

$$d = \sqrt{\frac{4D}{\pi LN}}$$



Rearrange the equation to solve for the unknown diameter

$$d = \sqrt{\frac{4(391.2 \text{ in}^3)}{\pi(4.5 \text{ in})(8)}}$$

$$d = 3.72 \text{ in}$$





## **Section 3**

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# **Test-taking Strategies**



## Test-taking Tips

(In this booklet, “test” also refers to “exam”.)

As you prepare to write the C of Q exam, you should consider some test-taking ideas or strategies to help you to be more successful. Read over the points below to see which ones might work for you.

1. **On the day of the exam, remain as calm as possible!** When you’re nervous or tense, your ability to read carefully declines. Take a deep breath and relax. When you sit down to write the exam, take some time to survey it and read all directions carefully. Read very slowly, running a finger under the words as you read to avoid mistakes.
2. **As you begin reading over the questions**, apply these three guidelines:
  - use your time wisely,
  - read directions carefully,
  - use good reasoning.
3. **If you don’t understand a question**, try to break it down into parts, or try and put it in your own words (but be careful not to change the meaning).
4. **Relate each possible answer to the question.** Consider how well each option answers the question. Is it a logical, correct response? Use the process of elimination to rule out wrong answers.
5. **If you are not sure of the correct response**, eliminate the “definitely not” option(s); judge the remaining options against each other (how are they the same/different); then choose the best remaining answer.
6. **Use information from other questions to help you:** Look for similar questions, or questions on the same topic; do the responses overlap? Is there any extra information you could use, e.g., a definition or similar work situation? Be on the lookout for questions that may answer other questions.
7. **Remember that you are being tested on the safe and correct way to do things.** Always answer using the “safe” method to complete a task on-the-job!
8. **Before the end of the exam**, make sure that you’ve answered every question. You won’t lose marks for wrong answers. **It’s better to guess at an answer than to leave it blank.** Eliminate any choices that are clearly wrong and then select your answer from the choices remaining. If you reduce your choices to two, you have a 50% chance of being right.

## Writing a Multiple Choice Test

### Using the Best Approach

Answering multiple choice questions is a skill all on its own. Often test takers expect that a multiple choice exam will be easy – just a matter of recognizing true statements. However, on the C of Q you will be asked to do more than just recognize textbook material. Multiple choice questions require you to choose between correct and **nearly-correct** statements. So, you must read the questions very carefully.

Below are eight strategies for successfully tackling multiple choice questions.

#### 1. Choose the answer which the test maker intended

- Try not to read into question interpretations not intended by the test maker, i.e. don't second guess the test maker's intentions. The questions are intended to demonstrate how much you know, not how the test maker can trick you.
- Keep in mind that the exam measures how well you know the material *and* how well you have been taught.

#### 2. Anticipate the answer, and then look for it

- Read the question and anticipate what facts/aspects you think the answer will contain.
- Look for these among the possible answers.
- If the answer you anticipated is found among the options, it is probably correct.

#### 3. Consider all the alternatives

- Read and consider all the options, even if you find your anticipated answer among the options.
- Remember that you must find the most correct answer.

#### 4. Relate the options to the question

- When the answer you anticipated is not among the options, discard it and focus on the answers that are there. Consider how well each option answers the question.
- Although an answer provided may be a true statement, it must still be the correct answer to the specific question.
- Even though the answer may be an incorrect statement, it could be the correct answer in relation to the question, e.g. if the questions asks, "Which statement is **not** correct?"

### 5. Balance options against each other

- When several options look good, or even if none look good, compare them with each other. If two options are highly similar, study them to find out what makes them different. One of these is likely the correct answer.
- Look for which answer is more likely in comparison not just with your own anticipated answer but with the other choices given.

### 6. Use logical reasoning

- Eliminate those options which you know to be incorrect as well as those which do not fit the requirements of the question.
- If you recognize more than one of the options as correct, choose one of the remaining options which combines both of these choices.

### 7. Look for key words

- True statements often contain terms such as “sometimes” or “usually”.
- A statement which includes the words “always” or “never” must be true **100%** of the time.
- For the statement to be true, each part of the situation described in the statement must be true.
- Always read all the choices given. There may be an important alternative such as “all of the above” at the end.

### 8. Specific, detailed answers tend to be correct

- Although there will always be exceptions, options that are more detailed than others tend to be correct
- Pay special attention to options that are extra-long or highly specific.

## Test Anxiety

### What is Test Anxiety?

In simple terms, test anxiety is worrying a whole lot about how you’ll do on tests. You probably already know if you experience some (or maybe even severe) test anxiety. Read below and decide if you think the descriptions apply to you:

Mental anxiety: you have thoughts and worries about tests and how you will perform, you believe how little or how poorly you studied.

Physical anxiety: you experience physical sensations and tensions such as light-headedness, nausea, pain and stiffness in the shoulders and back.

Everybody has anxiety before a test or exam! You are not alone. While a little anxiety improves concentration and alertness, excessive worry or anxiety, might lower your test score.

It is possible for test anxiety to interfere with clear thinking. The brain is like a computer, in that it contains a great deal of information, but the information is useless if you're not able to access it when you need it. Having test anxiety is like not having the password to your computer. The information is there, but you can't get to it.

### How can I reduce my anxiety before the exam?

To reduce test anxiety before the exam, study enough to feel confident that you know the material. Then try to replace the worry and negative thinking with thoughts that are positive and relaxing. Think – “I'm going to ace this exam!”...not...“ I don't have a chance of passing!”

Start studying early (weeks, not hours ahead!). Then, on the night before the exam, review the material but get a good night's sleep. Cramming increases test anxiety. If possible, try some sample multiple choice test questions if you have access to them through a prep course, text book, or web site.

### On the Day of the Exam

- **Give yourself plenty of time to get to the exam.** Being lost, or late, will only add to your stress. If you are not familiar with the area, consider doing a “dry run” so that you will know where you are going and how long it takes to get there. Make sure you factor in where you will park and where the exam room is located.
- **Don't talk to other test-takers before the exam** as their anxiety will probably increase your anxiety. Refuse to participate in the last minute cramming that often goes on outside the exam room. This only leads to making you more nervous and might confuse you.
- **Walk into the test with your head up and your shoulders back.** How you act can affect how you feel, and if you act confident, you just might find that you feel more confident.

**Pro Tip #5:**

Visualize success...athletes do it all the time! Mentally practice *successfully* going through the exam experience.

## During the Exam

1. **Take a few minutes** to look over the exam, before you begin.
2. **Some people find it helpful to do an “information dump”** when they receive their test by writing important formulas, facts, etc. on the scrap paper or back of the test paper, while the information is fresh in their mind. As soon as you turn over your test paper, jot down quickly the formulae, memory cues, terms, names, etc. which you think you are most likely to forget. Not only will this begin the process of memory recall, it will reduce your test anxiety by ensuring that you have at least some of the information readily available.
3. **Answer the questions you know first.** This builds confidence and earns you some “insurance” marks. Normally, you don’t answer right on the question paper but on a separate answer sheet where you shade or circle the correct letter corresponding to the answer. **Check after every 10 questions to make sure that you are entering your answer on the correct line of your answer sheet.**
4. **Do not rush through the test.** Wear a watch or look at the clock on the wall. (You won’t be allowed to have your cell phone with you.) Be aware of approximately how much time you can devote to each question. For example, if you have 120 questions and you have 240 minutes, you have about two minutes to answer each question.
5. **If you are stuck on a question**, mark it with a “?” in both the question booklet and on the answer sheet, and come back to it later. (Make sure you don’t put a mark on the answer sheet where it will be scanned!) Don’t waste valuable time on material you don’t know at all when you could be earning marks for material you do know. Remain calm and know that there will be other questions that you can answer. Also, remember that you only have to correctly answer 70% of the questions!
6. **Be aware of your body.** Reduce tension by taking slow, deep breaths. Oxygen relaxes the body. Consciously relax your shoulders, jaw, neck and any other sites of tension.
7. **Do not reflect on past mistakes or failures.** Counter negative thoughts with statements like, “I don’t have to be perfect... I will do the best I can!” Use positive self-talk and positive self-statements. Avoid “all or nothing” thinking. Remind yourself that a test is only a test, and there can be opportunities to rewrite.
8. **Reward yourself after the exam** (movie, dinner out). Take a moment while you are writing the exam to think about this reward.

**Pro Tip #6:**

Try some relaxation techniques (deep breathing, tensing and relaxing different parts of your body, staying in the present tense and blocking out your worries) to help keep you calm.

## Additional Test-taking Hints: True or False?

Look at the hints below and decide whether they are true or false. Answers are below.

1. T/F \_\_\_ Multiple choice exams test your capacity to think and reason with the information you have. Do not expect to see the answer immediately. You have to work out the answer carefully.
2. T/F \_\_\_ Most of the time, changing your multiple choice answer at the end of the exam is not a good idea unless you can clearly see that you made a calculation or reading error.
3. T/F \_\_\_ Never look for key words or numbers.
4. T/F \_\_\_ Do not look for familiar phrases.
5. T/F \_\_\_ It is always useful to look for a pattern in the order that correct answers are given.

Answers:	1. T	2. T	3. F	4. F	5. F
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## **Section 4**

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# **Exam Readiness Checklist and Additional Resources**



## Exam Readiness Checklist

### How can you tell if you're ready to write the C of Q exam?

Here is a checklist you can use to see if you've done all that you can to prepare. If you can check off most of these, you are well on your way to being prepared to write the C of Q!

#### Paperwork

- Pay your exam fee to OCoT.
- Schedule your exam with MTCU.
- Ask for any necessary accommodations. (See Pro Tip 1 – page 11)
- Book time off work.

#### Preparation

- Arrange your transportation for the day of the exam, and complete a “dry run” to the exam location, especially if you haven't been there before.
- If you've taken the C of Q before, review the letter sent to you about your exam scores to determine your areas of strength and weakness.
- Talk with others who have written the C of Q in your trade.
- Review the “Trades Examinations in Ontario Exam Preparation Guide”.

#### Study, Study, Study!

- Create a study action plan.
- Look up your learning style, and adjust your studying methods accordingly.
- Review your textbooks.
- Look over the Apprenticeship Training Standard for your trade.
- Thoroughly review the National Occupational Analysis for your trade.
- Review the section in this booklet about test anxiety, and think about strategies that might work for you.
- Review the section in this booklet about test-taking, and think about which strategies might work for you.
- Study until you feel confident that you can recall at least 70% of the material in an exam situation.

#### The Day Before the Exam

- Have a healthy meal the night before the exam.
- Get a good night's sleep the night before the exam.
- Drink lots of water the day before the exam, and ensure you are hydrated on the day of the exam.

#### The Day of the Exam

- On the day of the exam, bring photo ID (not your health card).
- On the day of the exam, bring proof of having paid the exam fee.
- Visualize success!



## The Day of the Exam

When the day of your examination arrives, try to stay calm. After all, you've prepared yourself for this exam, and you are ready for it, so at this point, your overall feeling should just be "Get 'ER Done!!!"

When you arrive at the examination centre, MTCU will ask you to provide proof of your identity, so bring photo ID with you. (Please note that the Ministry cannot accept health cards as proof of identification.) You must also bring with you your receipt for your examination fee, which is issued by OCoT when you pay the fee.

Everything you need to write the exam will be provided to you. You are not to bring any supplies to the exam. When you sit down to write you will be provided with the following:

- The examination book, which you must not write in
- The answer sheet (place your answers on the answer sheet)
- Scrap paper
- A pencil and eraser
- A code book and/or calculator (if one is allowed for your exam)
- French & English dictionaries

Once the exam has started, you cannot leave the room until you've completed the exam, except in an emergency or to use the washroom.

### After the Exam

What happens after you write the exam? Celebrate all the hard work and time and effort you've put into preparing for the exam. Congratulations!

But what happens after that? Within three weeks you should have your exam results mailed to you by OCoT. Keep in mind, MTCU cannot give you your exam results, nor can you get your results from OCoT by phone or in person. All you can do is wait patiently and keep checking the mail!

Now here's a topic that nobody wants to think about... what if you don't get 70%? The main thing is, **don't give up!** You aren't alone in not passing; it is not unusual for apprentices to write the exam more than once.

You will be allowed to schedule another examination fifteen days after your previous examination date. OCoT will provide you with a breakdown of your marks according to the topics on which you were tested. This information will help you prepare for your next attempt, as you will be able to identify your areas of weakness and strength.

## Additional Resources

Most of the items in this list are also found in the previous pages. You may find some or all of them useful as you prepare for your C of Q exam.

### Centennial College Press: Technical Trades

- C of Q Preparation books available for purchase for various trades

<http://centennialcollegepress.com/product-category/technical-trades/>

### Effective Habits for Effective Study

- An online quiz about your study habits.

<http://www.studyqs.net/attmot4.htm>

### Trade and Apprenticeship Exam Bank

- Fee-based service web site that provides practice C of Q questions

<http://trades.exambank.com>

### Interprovincial Red Seal Examination Preparation Information Guide

- Describes how to use the NOA to prepare for your exam.

<http://www.red-seal.ca/images/ATC-index-eng.html>

### National Occupation Analysis (NOA)

- Describes the skills and knowledge required to perform the duties of the trade. Consult your trade's NOA:

[http://www.red-seal.ca/resources/n.4.1\\_l.3st@-eng.jsp](http://www.red-seal.ca/resources/n.4.1_l.3st@-eng.jsp)

### Red Seal Exam Counseling Sheets

- List of topics by trade for Red Seal examinations

[http://www.red-seal.ca/resources/.2x.1ms\\_c.4.5ns.2ll.3ng@-eng.jsp](http://www.red-seal.ca/resources/.2x.1ms_c.4.5ns.2ll.3ng@-eng.jsp)

### Red Seal Exam Readiness Checklist

- Steps to see if you are you ready for your Red Seal examination.

<http://www.red-seal.ca/resources/pr.2p-ch.2ckl.3st@-eng.jsp>

### Strategy for Writing Tests

- A four step test-taking strategy for attacking tests.

<http://www.wem.mb.ca/uploads/Strategy%20for%20Writing%20Tests.pdf>

### Trade Examinations in Ontario Exam Preparation Guide

- From the Ontario College of Trades web site

[http://www.collegeoftrades.ca/wp-content/uploads/ExamPreparationGuide-March2014\\_EN.pdf](http://www.collegeoftrades.ca/wp-content/uploads/ExamPreparationGuide-March2014_EN.pdf)

### What's My Learning Style?

- An online quiz to help determine your learning style.

<http://www.educationplanner.org/students/self-assessments/learning-styles-quiz.shtml>





# SUPPORTING APPRENTICESHIP COMPLETIONS



**The Labour Market Group**  
Guiding partners to workforce solutions.



This *Employment Ontario* project is  
funded by the Ontario Government.

*The views expressed in this document do not necessarily reflect those of Employment Ontario.*