



LITERACY PROFILE:

Automotive Engineer

This literacy profile identifies the reading, writing, speaking and listening, critical thinking, and use of information communication technology in the tasks and skills used by automotive engineers.

Reading tasks

“Read” implies that the person reads and understands.

Read signs and short texts

- Part numbers
- Part descriptions
- Vehicle identification numbers (VIN)
- Safety signs
- Output display on electronic fault scanner including reference codes

Read charts, graphs and tables

- Tables and charts of specifications included in vehicle manuals or service information
- Exploded parts diagrams
- Basic wiring diagrams
- Supplier information sheets
- Parts pricelist
- Parts invoice and packing slip

Read forms on job

- Job sheets (include instructions about fault or work required on vehicle)
- Service checklists
- Maintenance schedules

Read notices and memos

- List of day's work on whiteboard in workshop
- Notices on notice board (e.g. staff meeting, social activity)
- Company rules or behaviour standards
- Supplier updates

Refer to parts catalogues to identify specific part required

Read instructions

- Instructions for part installations
- Vehicle repair manuals and service information
These complex documents include indexes, written descriptions, specifications, exploded parts diagrams and process instructions. They may be in paper form or stored electronically.

Read training materials

- Apprenticeship distance learning materials (paper and computer based)
- MITO Record of Achievement Book
- MITO Training Manual
- Supplier briefing handouts
- Power point displays
- Franchise on-line learning modules

Read motor trade related publications

- Car and truck magazines
- Supplier promotional material
- Websites with news and information about vehicle models, new technology and updates

Read employment related material

- Leave forms
- Code of conduct or company rules
- Employment agreement
- Training agreement
- Staff handbook

Reading skills

Interpret graphic symbols.

- Signs
- Colour coding

Recognise the features of a range of texts.

- Signs
- Codes
- Forms
- Drawings
- Procedures
- Manuals

Recognise number formats.

- Serial numbers
- Part numbers
- Vehicle registration numbers
- Phone numbers

Match numbers or identifiers across different texts.

Understand common and industry vocabulary.

Understand common and industry abbreviations.

Find out the meaning of unfamiliar words or phrases.

Use manuals as a reference source.

Follow written instructions (which may include diagrams).

Predict what will be contained in a text.

Use a guide to document contents.

- Index
- Table of contents
- Key
- Legend

Identify the main points from a page of text.

Scan text or table or label to find specific piece of information.

Skim a text for "gist".

Read text thoroughly.

Make inferences based on what written material does not say.

Understand information in graphic material.

- Tables
- Graphs
- Diagrams
- Charts

Interpret material read.

- Summarise material read in own words
- Take notes from material read
- Report accurately on the information read



Writing tasks

Write short notes

- List of parts required
- Customer name and vehicle registration in job booking diary or on job booking whiteboard

Complete workplace forms

- Warrant of fitness checklist
- Warrant of fitness sticker
- Servicing checklists
- Service record sticker
- Time sheets
- Job sheets, including details of parts used, other materials used (e.g. oil), time taken on the job

Write descriptions of work completed

- Write about the work done on a customer's vehicle so customer understands the story of what has happened

Write for training purposes

- Record notes about new learning in personal notebook
- Complete MITO Record of Achievement Book

- Write answers to assessment questions
- Write answers for test papers
- Write assignments for apprenticeship training



Writing skills

Understand that different writing styles are used for different types of writing.

- Note
- List
- Checklist
- Form
- Assignments (training)
- Assessments (training)

Complete forms using numbers, single words, or short sentences.

- Handwriting must be legible
- Abbreviations can be used
- Spelling must be understandable, but correct spelling is not essential
- Grammar and punctuation must be understandable

Write paragraphs (narrative descriptions of work).

- Handwriting must be legible
- Use recognisable spelling
- Write points in a logical order
- Use descriptive text to outline a sequence of activities
- Use punctuation
- Attempt to use correct tenses, and correct verb and subject agreement

Take notes from material read (training).

Write short answers to assessment questions (training).

- Handwriting must be legible
- Abbreviations can be used
- Spelling must be understandable, but correct spelling is not essential
- Grammar and punctuation must be understandable

Write assignments (training).

- Plan assignment writing (beginning, middle and end)
- Write sentences and paragraphs
- Use diagrams and sketches to help make a point
- Spelling should be correct
- Grammar and punctuation should be mostly correct
- Use editing skills

Speaking and listening tasks

- Listen to oral instructions from workshop supervisor
- Listen to customers' description of fault with vehicle
- Listen and respond to requests for help from co-workers
- Listen to verbal explanations and training

- Listen during team meetings and briefings
- Ask questions to ensure you have understood what another person said
- Report work progress to workshop supervisor

- Report issues or potential hazards to supervisor
- Request parts by asking office staff to order, or by contacting supplier directly
- Ask for assistance when needed
- Make suggestions to help other automotive engineers diagnose a fault
- Communicate with co-workers (teamwork) during day to day work situations
- Communicate with a wide range of customers in appropriate ways - e.g. from working on an older lady's car to working on a couriers' van
- Answer oral questions during unit standard assessments
- Discuss progress of training with MITO field staff



Note: apprentices only rarely speak to customers about the details of a vehicle repair. The foreman or a senior automotive technician carries out this task. Apprentices are most likely to have customer contact when dropping customers off or picking them up.

Speaking and listening skills

Note: Speaking and listening includes non-verbal communication

Speak clearly.

Discuss topics which are appropriate in work context.

Use words, pronunciation, and tone appropriate to situation and audience.

Open and close conversations appropriately.

Give information in a sensible order.

Understand that communication is a two way process.

Use active listening skills.

- Repeat message back to sender
- Summarise instructions in own words
- Use following techniques e.g. say "aha" or "okay" as you follow what someone is saying.

Present and defend a viewpoint.

Read information out loud.

Use hand signals and gestures to communicate in noisy environment.

Use questioning techniques including using open and closed questions to gain information, check understanding and encourage further discussion.

Summarise to check or clarify details.

Use suitable body language.

Read body language of person speaking, or being spoken to, and respond appropriately.

Understand that there are barriers to communication, especially in a cross-cultural situation.

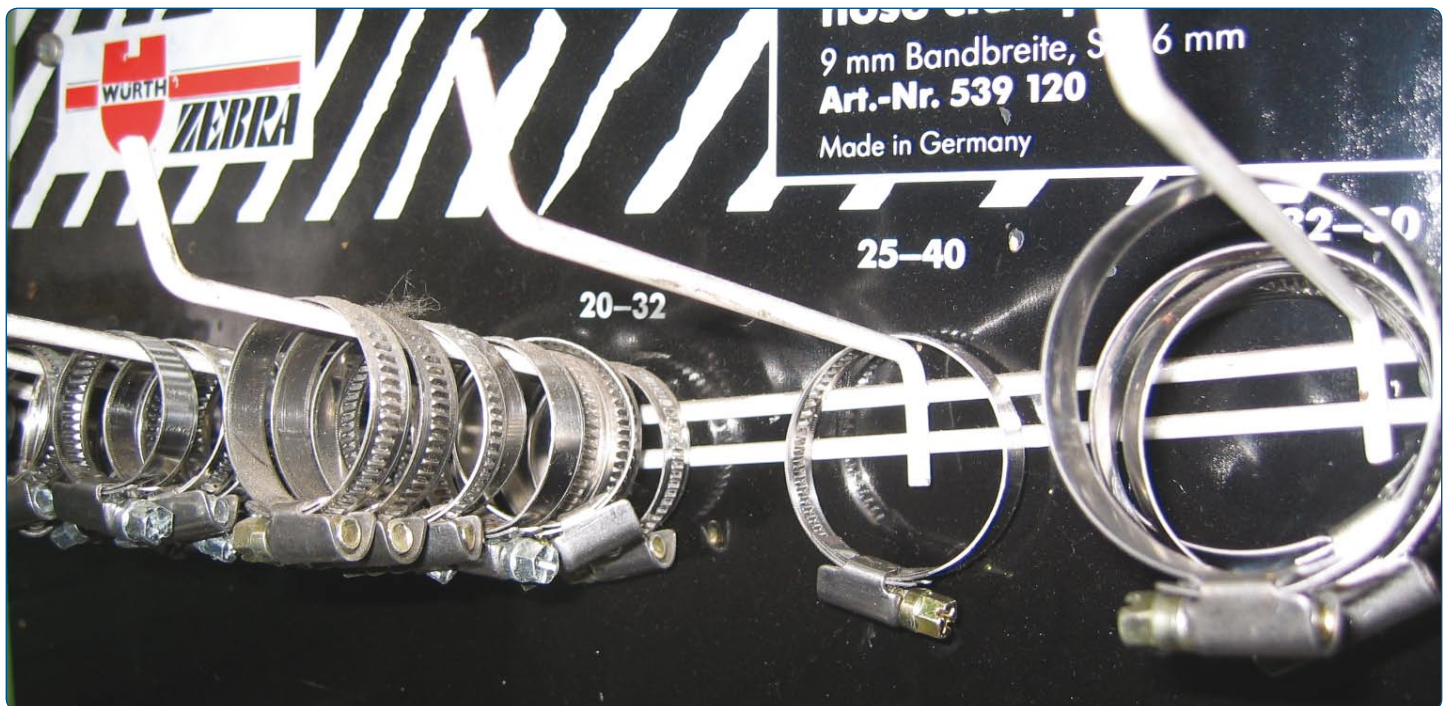
Numeracy tasks

- Identify parts by alpha numeric codes
- Interpret alpha numeric codes displayed by electronic vehicle scanner
- Count and tally numbers of parts
- Use parts, fastenings and tools that are the correct size for the job
- Convert imperial measurements to metric measurements and vice versa

- Measure and record tyre pressure, oil pressure, water temperature, odometer, depth of tyre tread, thickness of brake linings and RPM
- Use measuring devices that have analog or digital displays
- Use a torque wrench to tighten bolts to correct torque setting
- Measure amount of oil and other fluids used e.g. brake fluid, coolant ratio

- Use vernier callipers and micrometers to measure sizes
- Accurately record the time taken to complete a job (may involve fractions of an hour)

Apprentices need to learn to estimate a price for the job. They also need to learn to total up the price for a job and take payment. However in most workplaces, senior staff do the estimating, and office staff create accounts and handle payments.



Numeracy skills

Recognise numbers as part of a code.

Use numbers.

- Whole numbers
- Decimals
- Fractions
- Percentages
- Ratios
- Negative numbers

Do number problems (convert from imperial to decimal or back).

- Addition
- Subtraction
- Multiplication
- Division

Understand place value.

Estimate quantities.

- Length
- Time
- Number

Measure accurately.

- Length
- Time
- Number
- Temperature
- Pressure
- Volume
- Capacity
- Money

Understand difference between imperial and metric measurements.

Use 12 or 24hr clock.

Interpret numerical information represented in different ways.

- Graph
- Table
- Scale
- Dial

Critical thinking tasks

- Generate a list of possible reasons for a vehicle fault
- Identify possible solutions
- Select and implement a solution
- Check that the solution is acceptable to the customer
- Check that the solution has worked
- Recall similar issues or problems from past experience to help with fault diagnosis and repair
- Use significant knowledge of how vehicle systems operate to help with fault diagnosis and repair

- Compare parts from different suppliers and select correct substitute part
- Deal with contingencies e.g.
 - oil spill in workshop
 - injury
- Identify any other things that need to be repaired that are not on the job sheet
- Get workshop supervisor's approval before completing work not listed on the job sheet
- Ask for help when needed

Apprentice automotive engineers may work alone on straightforward servicing and minor repair jobs. They will refer to experienced mechanics regularly and may work alongside more senior engineers on complex jobs.

As an apprentice automotive engineer gets more experience he or she may carry out work that requires more diagnostic exploration.

Critical thinking skills

Use problem solving methodology e.g.

- identify issue
- identify possible solutions
- determine best outcome
- decide on plan of action
- carry out plan.

Develop a schema of common and unusual faults and the solutions used to correct these.

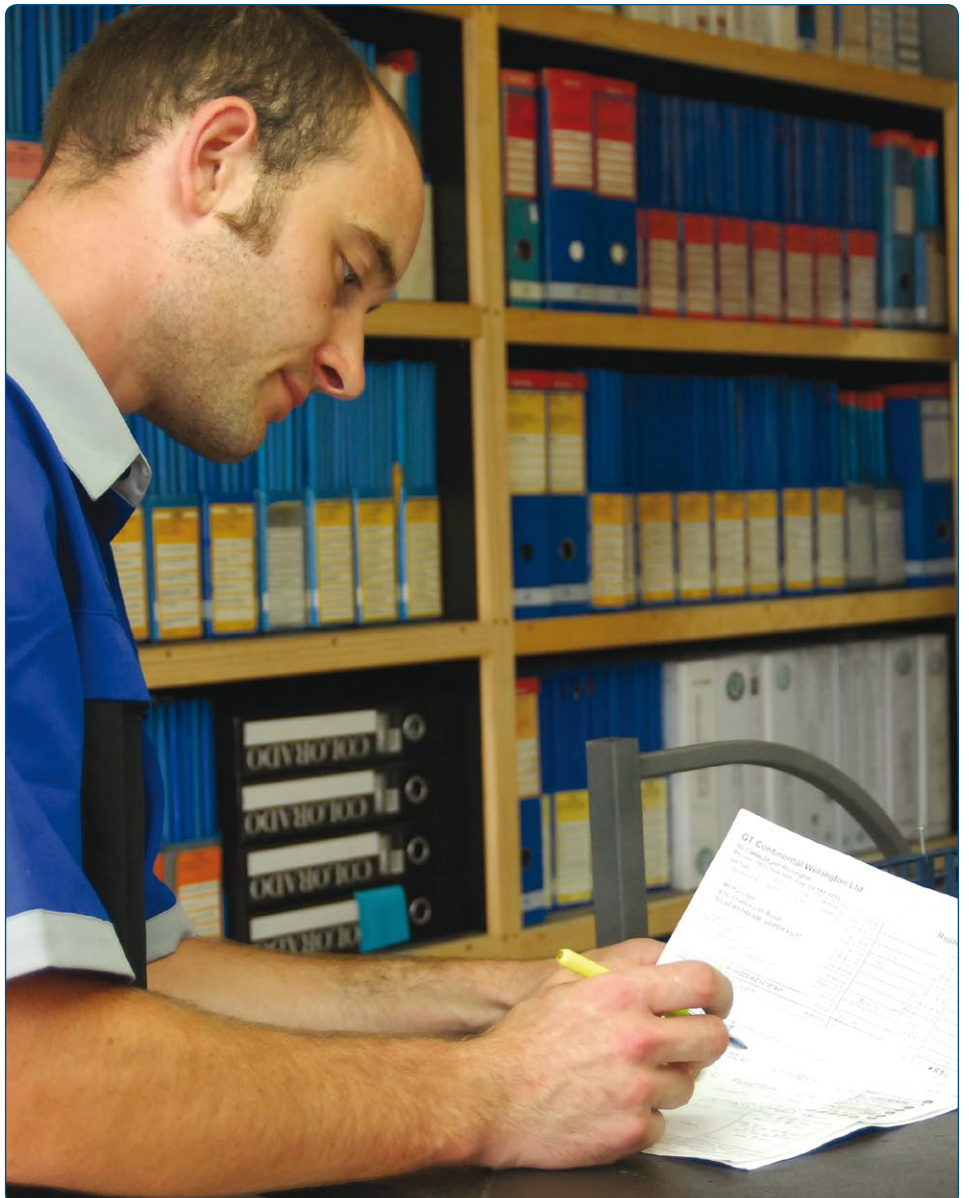
Apply knowledge of professional trade practice to work carried out.

Apply knowledge of safety requirements / principles to work practice.

Identify if you have enough knowledge and skill to take action on own.

Identify when you need assistance from others.

Recall and follow specified procedures to deal with contingencies.



Information and Communication Technology Tasks

Many automotive engineers

- Use electronic vehicle scanning tools
- Use computer-based diagnostic programs
- Consult electronic vehicle manuals (CD ROM based or web based)
- Use the Land Transport NZ web based system to record warrant of fitness results

Some automotive engineers

- Record and update customer details on company computer system
- Look up parts information on supplier websites
- Place orders via supplier websites
- Access and use computer based training modules



Information and Communication Technology Skills

Operate a computer or ICT based device

- start the computer or device
- log-in if needed
- start appropriate application
- exit appropriate application
- turn off computer or device.

Identify elements of computer applications and the function of the element (e.g. menus and menu options, command buttons, icons, toolbars).

Identify appropriate computer application for task (e.g. spreadsheet, word processor, e-mail, web browser, drawing, company systems).

Operate computer application(s).

Enter or update data using a computer (using keyboard, mouse or other input devices).

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