

LITERACY PROFILE:

Automotive Heavy Engineer (Road Transport)

This literacy profile identifies the literacy tasks and skills used by automotive heavy engineers. These tasks and skills involve reading, writing, speaking and listening, numeracy, critical thinking and the use of information and communications technology.

Reading tasks

“Read” implies that the person reads and understands.

Read signs and short texts

- Certificate of fitness (CoF) stickers
- Service stickers
- Part numbers
- Part descriptions
- Specialised tool numbers
- Symbols on fuse box covers
- Safety signs

Read charts, graphs and tables

- Tables on whiteboards of jobs in progress
- Tables and charts of specifications included in vehicle manuals
- Wiring diagrams
- Exploded parts diagrams
- Supplier information sheets
- Maps (if doing call out work)

Read forms on job

- Job sheets (include instructions about fault or work required on vehicle)
- Repair order forms
- Service check sheet and schedule
- Preventive maintenance schedules
- Time sheets

Read notices and memos

- Notices on notice board (e.g. staff meeting, social activity)
- Company rules or behaviour standards
- Supplier updates

Read instructions

- Part installation / use instructions
- Service instructions
- Battery charging instructions
- Diagnostic instructions (e.g. fault code)
- Vehicle repair manuals
These complex documents include indexes, written descriptions, specifications, wiring diagrams, exploded parts diagrams and process instructions. They may be in book form or stored electronically.

Read training materials

- Apprenticeship training materials (paper and computer based)
- MITO Record of Achievement Book
- MITO Training Manual
- Supplier or Land Transport NZ briefing handouts
- Power point displays

Read employment related material

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



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.

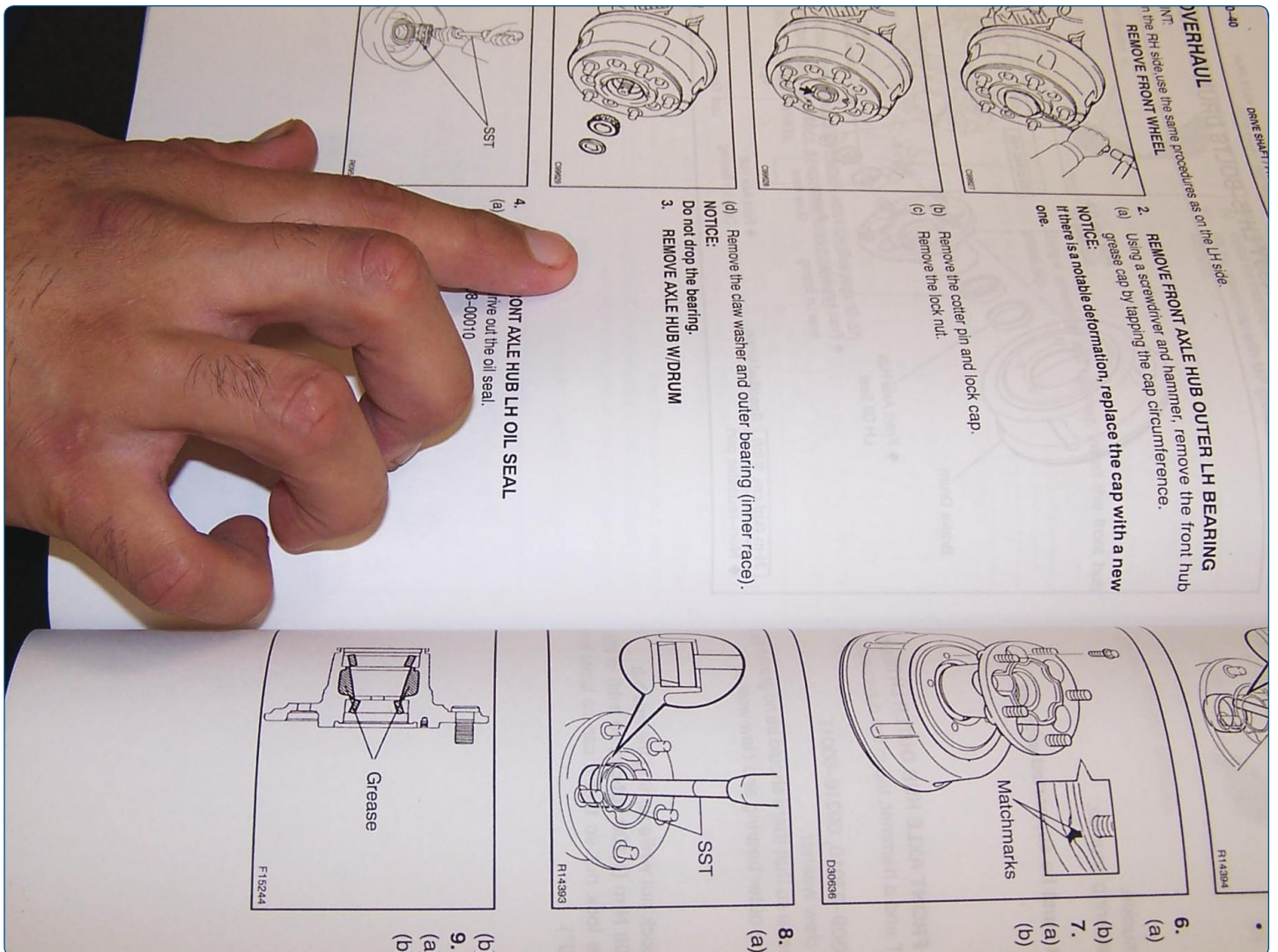
Make inferences based on what written material does not say.

Understand information in graphic material.

- Tables
- Graphs
- Diagrams
- Charts
- Maps

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
- Details of job on cards or sheets

Complete workplace forms

- Time sheets
- Job sheets

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 to test papers
- Write assignments



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

Draw sketches that represent job requirements.

- Parts of circuit are represented clearly
- Correct abbreviations are used

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 and respond to requests for help from co-workers
- Listen to verbal explanations and training
- Listen during team meetings and briefings
- Listen to customers' description of fault with vehicle
- Ask questions to ensure you have understood what another person said
- Report where work is up to
- Report issues or potential hazards to supervisor
- Request parts from company parts ordering person
- Ask for assistance when needed
- Make suggestions to help co-workers diagnose a fault
- Communicate with co-workers (teamwork) during day to day work situations
- Communicate with customers in appropriate ways

- Communicate with customers or other trades people when fixing vehicles on site (call-out)
- Explain to a customer what work you have done on their vehicle

- Answer oral questions during unit standard assessments
- Discuss progress of training with MITO field staff



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 and tools by alpha numeric codes
- Use components that are the correct rating and size for the job
- Measure liquids (oils and fluids)
- Interpret numerical outputs of specialised measuring equipment (digital and analog displays) e.g.
 - Multimeter readings
 - Hydraulic pressures
 - Air suspension torque settings
 - Fuel flows
 - Brake testing gauges
- Use a torque wrench to tighten bolts to correct torque settings
- Work out how much electrical wire or cable will be needed for a job (preparing new trucks to meet NZ standards)
- Measure length of cable
- Use micrometer (or similar tool) to measure sizes and wear of components
- Accurately record the time taken to complete a job
- Calculate total hours of labour
- Record mileage, job numbers, vehicle identification codes, hub readings, model numbers of vehicles



Numeracy skills

Recognise numbers as part of a code.

Use numbers.

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

Do number problems (including using formula, conversions).

- Addition
- Subtraction
- Multiplication
- Division

Understand place value.

Estimate quantities.

- Length
- Time
- Number

Measure accurately.

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

Understand difference between imperial and metric measurements.

Use 12 or 24hr clock.

Interpret numerical information represented in different ways.

- Graph
- Table
- Scale
- Dial

Recognise and use geometric concepts.

- Straight
- Square
- Parallel

Critical thinking tasks

Apprentice automotive heavy engineers usually work on more straightforward jobs, and will refer to experienced automotive heavy engineers regularly.

More experienced automotive heavy engineers use detailed knowledge of vehicle mechanical and electrical systems to diagnose and repair faults.

- Locate faults in vehicle mechanical and electrical system
- Generate a list of possible reasons for the fault
- Identify possible solutions
- Select and implement a solution
- 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 mechanical and electrical systems operate to help with fault diagnosis and repair
- Find correct specialist tool for job
- Judge weight when using gantry or jack

- 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



Critical thinking skills

Apply fault finding methodologies e.g.

- identify appropriate starting point
- work methodically through, testing each circuit
- isolate area where problem occurs.

Use problem solving methodology e.g.

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

Develop a personal reference "library" 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 heavy engineers

- Use electronic vehicle diagnostic tools
- Consult electronic vehicle manuals (CD ROM based or web based)
- Look up parts information on supplier websites
- Access and use computer based training materials



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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