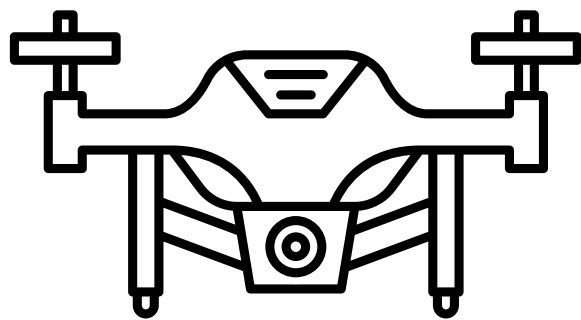
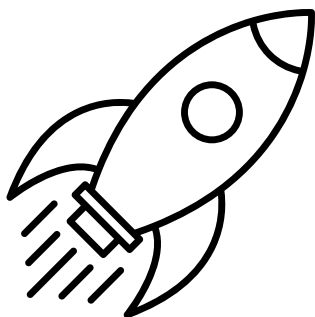
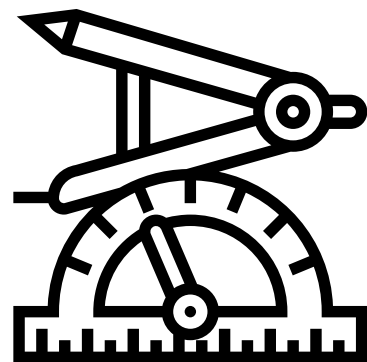
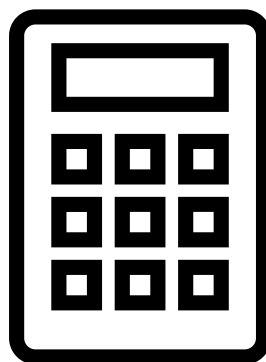
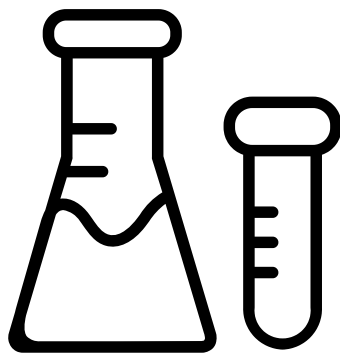


Finding the ME in STEM



Louise's student activity pack

Imagining the Future

Let us take you on an incredible journey into the world of space exploration with the Callistan Cycle.

The Callistan Cycle is a series of five short stories from our Imagining the Future series that explore STEM areas like robotics, AI, climate change and resource management.

You can read, watch or listen to each story, for free.



Far Out! by Lili Wilkinson

As the seconds count down to the launch of humanity's first family into deep space, young stargazer Stella is sure that today is going to be the most exciting day of her life. But she has no idea of just HOW exciting and terrifying and important it will be. And what it will mean for the future of interstellar travel.

Join the Kaufmanns as they go FAR OUT! in a story that explores space and robotics.



SCAN ME



Calculating Apple Pie by Melissa Keil

Kal and her sister Arche are hurtling through space towards Callisto in a ship shaped like a beluga whale that is the size of a city block. Arche does something a bit (very!) reckless to try to help her sister feel a little less homesick.

Calculating Apple Pie explores future food production and coding and how tampering with it can cause serious real-world problems.



SCAN ME



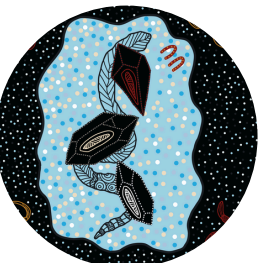
Semper by Rebecca Lim

Shang travelled to Callisto on the Hohmann transfer from Earth, which took almost six years. She sacrificed everything for the chance to explore distant moons for resources and critical minerals, but gets paired with a Drobo called Semper that always wants to play, like a real dog. Shang doesn't have time for games, so why has she been paired with such a useless Drobo?

Semper explores robotics, AI and mineral exploration.



SCAN ME



Proof by Gary Lonesborough

Tanner has been noticing that lots of people in his town on the lunar outpost on Callisto are getting sick. What is causing this mysterious illness plaguing his community? Tanner's sister Rachel thinks she knows what's causing it and takes Tanner on an eye-opening adventure where they discover a lot more than just the cause of the illness.

Proof explores filtration, waste management and environmental science.



SCAN ME



Earthbound by Alison Evans

Pen and their father have arrived on Earth. Pen's comms device isn't working, and when Pen tries to fix it, they hear a strange rhythmic sound coming from it. Determined to figure it out, Pen seeks the help of an android to help decipher the mysterious sound.

Earthbound explores transportation and telecommunication.

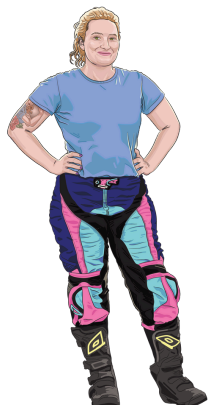


SCAN ME

Comprehension Questions

Student name: _____

To answer these questions, scan this QR code and watch Louise's film.



SCAN ME

Name FOUR things Louise can do.

- 1.
- 2.
- 3.
- 4.

Name TWO things Louise can't do.

- 1.
- 2.

What decision did Louise make about a career sitting at a desk when she was still at school?

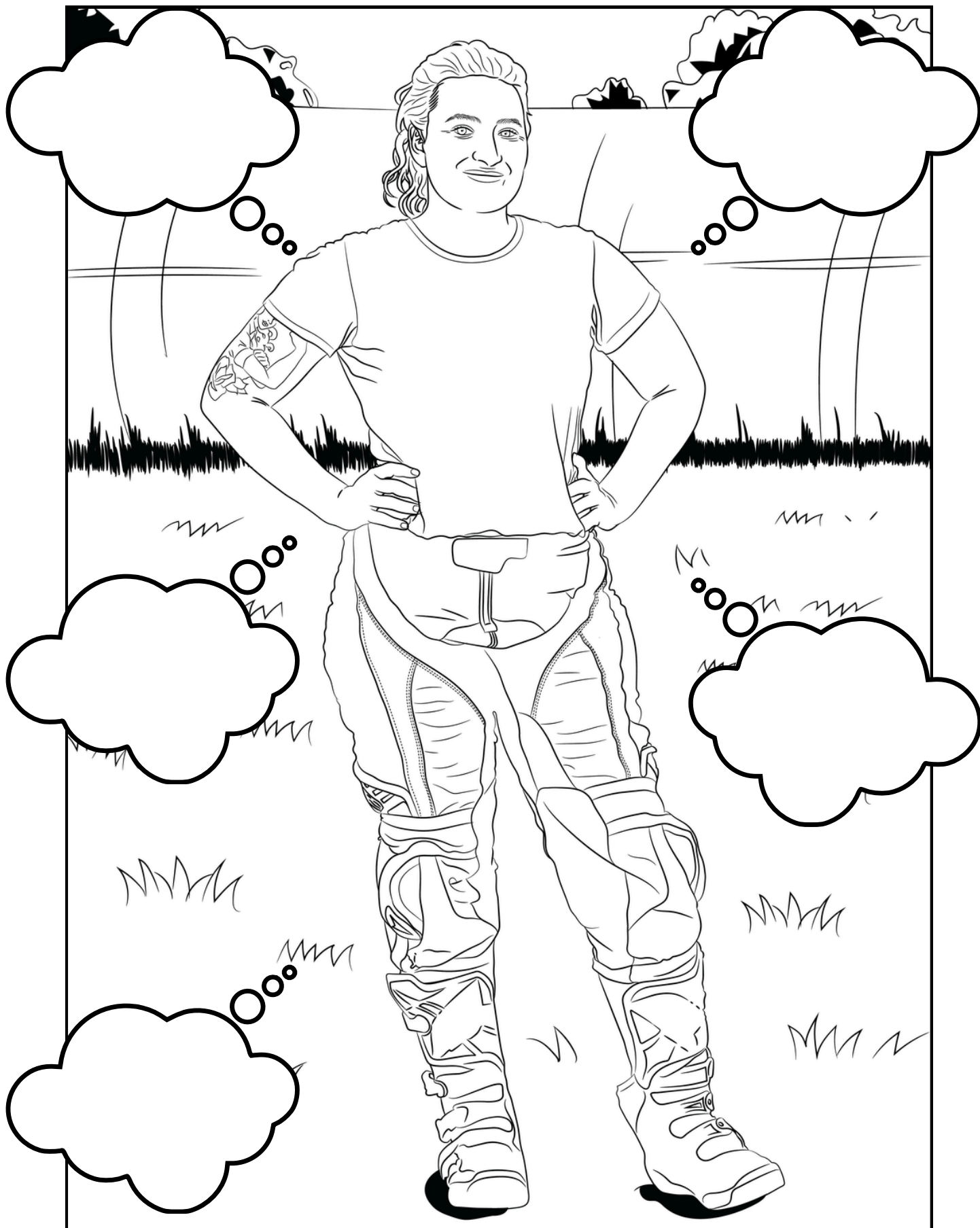
How did Louise feel different from her friends growing up?

What led Louise into the mechanical field?

What is Louise's first level of satisfaction?

What is Louise's second level of satisfaction?

Meet Louise. She's a heavy vehicle mechanic. Fill in the bubbles with 5 STEM (Science, Technology, Engineering and Mathematics) skills she uses in her job. Which of these skills do you think is most important? Which do you think would be the hardest to develop? When you've thought of the skills, colour in the rest of the image.



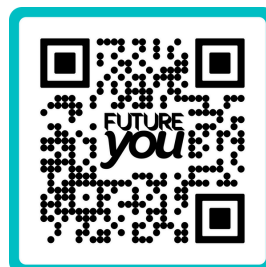
Pathfinder Workwords

Heavy Vehicle Mechanic

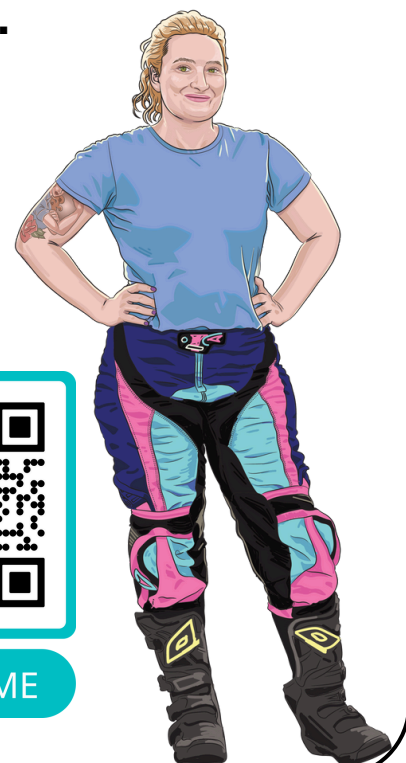
V S G U Y F S Z S M S G M W M F B W O I H X E
O D N Q P G K G R L E E B Q A N Q N P N Y W G
C P I B W W K E O P L A N U W M I M E T D K N
N Q T B H U C O N V E R S I O N S S D E R Q I
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K B O G N I R E E N I G N E R N L O J P U S R
U P H M L I I G M L P Y G D G E N H E R L C E
S S S P P I S A N W Y N S A F I M X M E I I S
L E E G C U T I U I I I I N T V T E I T C T B
P I L T M H T M L N T D T O A L H G N A S A O
F O B C S L V E E A U A R G N I T S E T O M A
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J Y O K H H S N H S N S C L X P T H O O U H E
X S R W S I E T P G W Z I I A A B K S N X C H
A S T P L S I V Y S P U C V N V C C Y Y X S Q
O L W C F M M A N U A L I Z N D E V I C A A A

Find 20 words Louise needs to her do her job.

- | | |
|--------------------|-------------------|
| 1. VEHICLES | 11. DIAGNOSE |
| 2. TROUBLESHOOTING | 12. MANUAL |
| 3. TOOLS | 13. COMPUTERS |
| 4. CONVERSIONS | 14. HYDRAULICS |
| 5. MEASUREMENTS | 15. MONITORING |
| 6. INTERPRETATION | 16. TESTING |
| 7. MATHS | 17. EVALUATING |
| 8. ENGINEERING | 18. OBSERVING |
| 9. VISUALISING | 19. COMMUNICATING |
| 10. SCHEMATICS | 20. LISTENING |

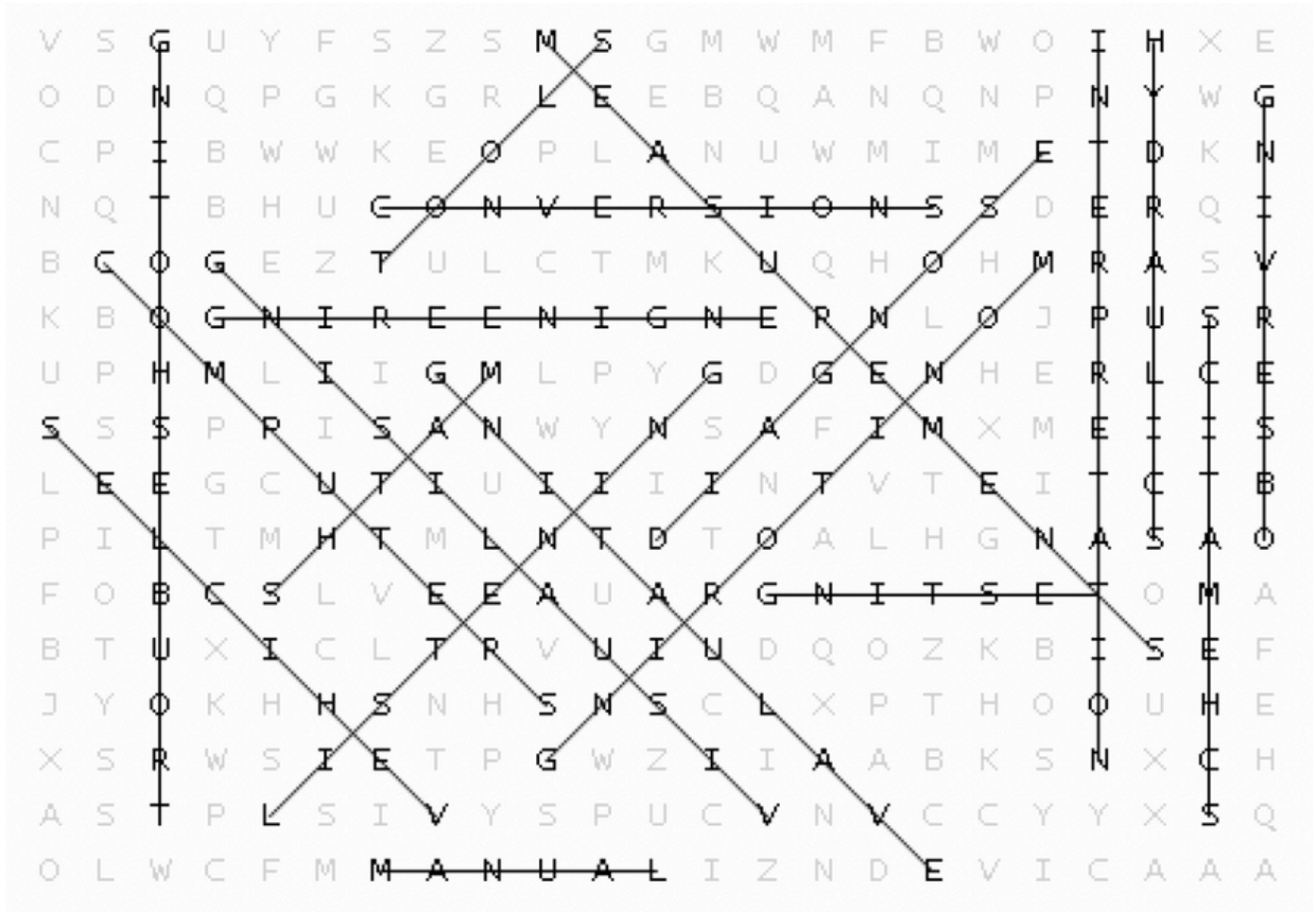


 **SCAN ME**



Pathfinder Workwords

Answers



Let's reflect

Were any of these words new to you? Look them up and find out what they mean.

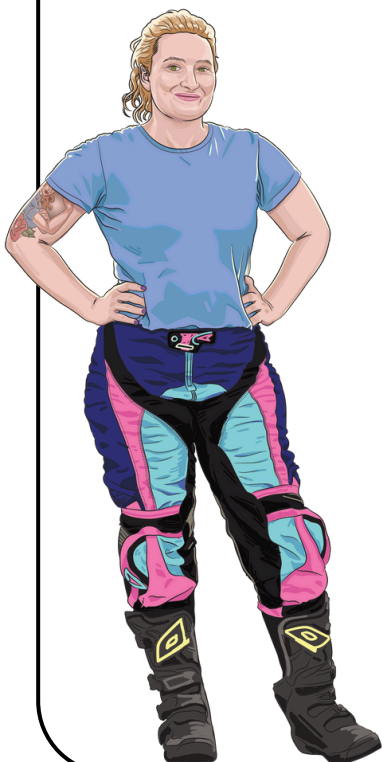
Which of these skills do you think you are best at, or would like to get better at?

1. _____

2. _____

3. _____

Can you think of anything else Louise might need to do her job?



An example of a day in the life of a heavy vehicle mechanic

This is what a typical day could look like if you became a heavy vehicle mechanic.

- 6.00am** I get up early so I can take my dogs for a walk, squeeze in a quick ride on my motorbike and prepare a cooler of snacks and lunch before work. I love doing something for me every day before starting work. It helps me start the day with a positive mindset.
- 7.30am** I race out the door with a breakfast sandwich in one hand and a coffee in the other. Nothing better than a warm brekky in my belly before a full day on the tools.
- 8.00am** I start my workday on the workroom floor and make sure I have all the tools and parts I need at my workstation to take on my jobs for the day. I scan my work queue – this is a document our team uses to track the vehicles we're working on, so we know what's coming up and know what parts we need. I notice that later this week I am working on a tractor that will need some new belts and hydraulic pumps. We don't have any in the workshop at the moment, so I place an order to ensure we're prepared.
- 9.00am** Our team uses a whiteboard in the workshop to track the vehicles we're working on. This is really handy because we also include estimates of time, which means my boss can see who has capacity to take on new work orders as they roll in (or, sometimes, sputter in). I update my part of the board because I was in the middle of a job yesterday when I came across an unexpected issue involving some cracked pistons. This means the job will take longer, but it's great that we found them because now they won't cause major issues down the track. My boss is satisfied with the extra time I have allocated, and the client is also happy, because these machines are NOT cheap and it's important to keep them in tiptop shape.
- 9.30am** It's time to deal with the cracked pistons. This is not a small task. Before I start fixing them, I need to work out WHY they cracked. This can be caused by quite a few things, and I need to do some investigation to find the cause. Then I will be able to let the client know so they can hopefully not do it again. Investigating the cause requires me to strip the engine and remove the pistons for closer inspection. I love this part! Finding out the WHY is always so exciting.
- Midday** Lunchtime and I am starving! I smash through my cooler of food and chat to some of my colleagues. We always end up talking shop, which is great because it means we can chat about the issues we are dealing with and sometimes a fresh set of eyes (or ears, in this case) can see a solution that has not yet been considered. I love my crew. We always share ideas and a laugh. It makes work really enjoyable when you know your team has your back.
- 1.00pm** I have to start another job, which means it's time to consult my checklist and do an inspection. My checklist helps me to identify the issue with a machine by stepping me through a list of frequent engine malfunctions. The customer's reported symptoms, the use of diagnostic equipment, including scan tools, and the results of a test-drive all prove helpful in finding the source of the issue. In this case, it's a bus and it turns out to be a rather simple fix. The customer reported that the bus was taking a few goes to turn on, was stalling, and seemed to be a bit lethargic. Turns out the fuel filter was clogged. A pretty simple fix. I start by lifting the bus with the hydraulic lift in the workshop and locating the fuel filter. Once I locate it, I put a container underneath to catch all the fuel when I release it to clean it. Once it's clean, I reinstall the filter and test the vehicle. The bus is good as new again!
- 3.00pm** Back to those cracked pistons. I found the cause: it was an incorrectly sized timing belt. So I will replace the timing belt with the correct-sized timing belt, and then I will repair the piston. A cracked piston is not repaired or changed alone – it requires changing gasket, rubber sealings, valves and engine oil, which takes time and requires a lot of attention to detail. I get stuck in.
- 5.00pm** Knock-off time! Phew. I am shattered, but it was a great day and I managed to get a lot done. I say goodbye to the crew and head home to shower.
- 7.00pm** I drive over to a friend's house for dinner. About six of us get together every week and do Taco Tuesdays and play board games. It's the best way to unwind after a long day.
- 10.00pm** I get home, hop into bed and set my alarm, ready to do it all again tomorrow.

Heavy Vehicle Mechanic

Louise is a heavy vehicle mechanic. She started her apprenticeship at 15 and repairs and maintains heavy vehicles like trucks, semi-trailers and buses. She also trains and mentors other tradespeople in heavy vehicle and plant mechanics. Find out more:

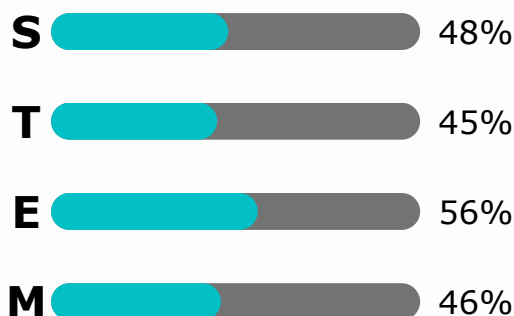
futureyouaustralia.com.au/pathfinders/louise



'The idea of going to university didn't appeal to me at all. I wanted to work with my hands.'

STEM Meter

How much Science, Technology, Engineering and Mathematics (STEM) does this job use?



Source: jobsandskills.gov.au

5 reasons why you should do this job

- 1** Help keep food in our homes
- 2** Make our roads safer
- 3** Ensure our heavy vehicles last longer
- 4** Make sure important deliveries arrive
- 5** Contribute to technological advances

3 STEM skills required for this job

Arithmetic: Fractions & conversions

Troubleshooting

Problem-solving

Subjects to develop these skills

Mathematics, Science

Science, Mathematics, Digital Technology

Design and Technologies, Digital Technology