

CAR CARE

LEARNING OUTCOMES

By the conclusion of this badge members will:

- be able to identify key components of a vehicle;
- know how to refill critical air and liquid components;
- demonstrate how to effectively wash a car;
- demonstrate how to change a tyre.
- **14+** Research details for driving, insuring and buying a car.

BADGE REQUIREMENTS

1. Identify key components of a vehicle.
2. Demonstrate how to check and top up air and liquids in a vehicle.
3. Effectively clean a car's interior and exterior.
4. Demonstrate how to safely change a car tyre.
5. For **14+**

Explain the process of obtaining a driver's license.

Describe the legal requirements for reporting an accident.

Describe insurance options and registration requirements.

Compare the condition of several second-hand cars.

**GUARDS
RANGERS**


car care

CATEGORY
Skills

TIME FRAME
Minimum
four weeks

AIM
To instruct
members in basic
car maintenance.

14+ the legal
requirements to
use a car and to
insure a car.





Teaching ideas

A qualified person will be required to teach this badge.



1. Identify Key components of a vehicle.

Options

- use a real vehicle to show the components to members; or
- have members create PowerPoint slides from photos of the components; or
- use a vehicle owners handbook; or
- use **Handout 1** and **2**.

The key components are:

- Oil cap
- Oil dipstick
- Radiator
- Windscreen washer reservoir
- Power steering fluid reservoir
- Spark plugs and leads
- Transmission dipstick
- Brake master cylinder
- Battery
- Fan belt
- Coolant reservoir

Use items or pictures from the above list to play Kim's game



2. Demonstrate how to check and top up air and liquid in a vehicle.

Invite a mechanic to instruct members how to check and top up the following items:

- tyre tread wear and pressure levels;
- windscreen washer fluid and blades;
- oil levels;
- battery;
- fuel;
- coolant.

Use **Handout 3** to sign off on each member's competency.

Leader's Resource 1 has specific information to guide you.



3. Effectively clean a car's interior and exterior.

Members may work in groups to complete this badge requirement.

Keeping in mind any water restrictions enacted at the time, members are required to hand wash and clean a car.

Instruct members how to hand wash a car noting:

- appropriate car wash detergent;
- removing insects effectively;
- importance of removing bird dropping immediately;
- types of cloths and sponges;
- tyre blacking;
- removal of bonnet and light protectors;
- removal of debris from vents;
- washing and rinsing in sections;
- where and when to wash a vehicle (i.e. on grass in shade).

There is no requirement to polish a car but you may include this if you choose.

Teaching ideas

Cleaning a car's interior should include:

- removal of rubbish;
- lifting of car mats;
- vacuuming carpets;
- cleaning interior glass and mirrors;
- use of appropriate products (for example, Amorall) to clean and protect surfaces.



4. Demonstrate how to safely change a car tyre.

Instruct members, or ask a mechanic, to change a tyre. Include all safety aspects such as selecting a safe place to work when a tyre requires changing on a journey. Flat tyres seldom happen near flat solid ground. Information may be used from **Leader's Resource 2** or this can be used for a revision game. Copy the resource, then cut it up and have each team compete in a relay to place the steps in order.



5. For 14+

A member of the police force may be able to assist with some sections of the badge and may be able to speak on driver safety to young drivers.

Explain the process of obtaining a drivers licence.

- Find out the procedure of obtaining a driver's licence including a learner's permit. This should include any forms that need to be filled out, age/speed restrictions, road rules, the costs involved and lessons and/or tests that are applicable in your state (information is readily available from the state traffic authority).

Describe the legal requirements in your state for reporting an accident.

In the event of an accident there are basic procedures to follow. Reporting to the police will vary according to the specific State and amount of damage to the vehicle. A general procedure is:

- Ring the police; get the other driver's details – name, address, phone number, licence number, owner of the vehicle and insurance details.
- Get the names and contact details of any witnesses.
- Take a note of the scene, recording street names, road conditions and weather.
- Contact the insurance company and arrange assessing and repairs.

Describe insurance options and registration requirements.

- Have members research appropriate insurance options and registration requirements through the internet.

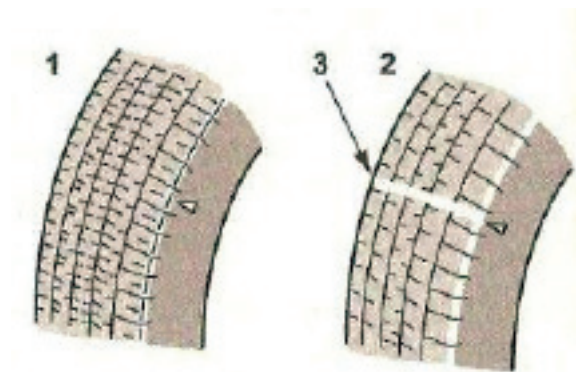
Compare the condition of several second hand cars.

- Know what to look for in a prepurchase inspection of a second hand vehicle.
- A motor mechanic may be available to help teach this part of the badge in conjunction with the other badge requirements.
- Members need to be made aware of the basic need to research their purchases to find out car value, history, features and expected condition for age.



Leader's Resource 1

Tyres



Each tyre incorporates a **tread wear indicator (1)**, which becomes visible when the depth of the tread grooves decrease to 1.6mm (2). A tyre must be replaced when the tread wear indicator appears as a solid band across the tread (3).

Tyre pressures affect the ride comfort, handling safety and tyre wear. The tyre wear pattern will indicate whether the air pressure in the tyre has been correct.



Correct tyre pressure. Road holding is good, steering is responsive, rolling resistance is low, fuel consumption is lower.



Low tyre pressure. Rolling resistance is high so fuel consumption is higher.

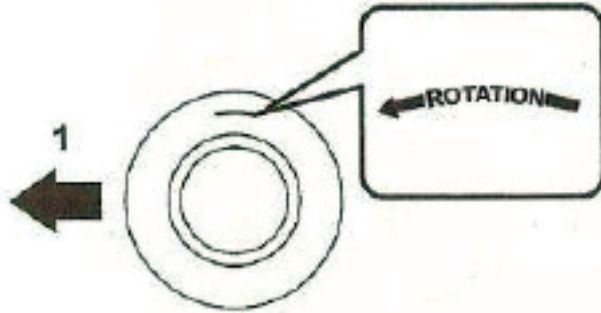


High tyre pressure. Poor handling and safety. Over responsive steering. 'Bouncy' ride.

Leader's Resource 1 (cont.)

Tyres should be rotated to even out the wear of tyres and maximise their life span. Tyres contain oil in the rubber compound and when they heat up when driving the tyre relies on this oil to keep the rubber cool and pliable. The spare tyre in the boot will lose this oil and if needed will not be in a good condition. Rotating all tyres can increase their life span by 20%. In some cases the rotation needs to be done carefully. Some tyres are made to rotate in one direction only. These tyres will always carry a direction arrow so follow this and rotate the tyres accordingly.

Direction of travel - Front of car



Safety Advice

Always check tyre pressures and fluid level when the vehicle is cool. Air, oil and coolant expand when hot and therefore increase pressure.

Oil

- Park the car on a level surface.
- Check your oil when the engine is cold.
- Release the bonnet by pulling the lever inside the car.
- Reach under the bonnet to find the latch, squeeze it and lift the bonnet.
- Find the dipstick. This is a long piece of metal sticking out of the engine with a loop at one end, usually located near the centre of the engine. Many times it will be labelled with the word "Oil" or brightly coloured.
- Pull on the loop and draw the dipstick all the way out.
- Wipe the oil off the dipstick with a paper towel or rag.
- Replace the clean dipstick, making sure to push it all the way in, then pull it back out and hold it horizontally in front of you.
- Look at the pointy end of the dipstick. If the oil on the dipstick is below the line marked "full," add a small amount of oil. Many dipsticks simply have two lines with a cross hatch design in between. The oil level should be halfway between these two lines.
- Add the oil by unscrewing the oil filler cap. It will usually be marked with the words "Engine Oil".
- Check the oil level with the dipstick after adding oil. Add more if necessary.
- Put the oil filler cap back on and secure it tightly.



Leader's Resource 1 (contd)

Radiator coolant level

Check the radiator coolant level in the plastic reservoir. The level should be between the high and low marks. Many reservoirs are of the see-through type so checking the level is easier. If you need to remove a cap wipe around the top before removing to prevent dust and dirt from falling into the reservoir therefore contaminating the coolant. Top up with the correct coolant concentration, as recommended by the vehicle manufacturer (see the owner's manual). If your car is regularly losing coolant, there may be a leak somewhere, which can cause problems. Get your mechanic to take a closer look.

Note: Never check your coolant level when the radiator is hot. Always make sure it's cool to avoid serious injury or burns. Never mix coolants or inhibitors of different brands.

Battery

If your battery has caps, remove them and check that the fluid inside is about 5mm above the plates, or between the levels as indicated on the battery case. If low, top up with distilled water and avoid overfilling. Replace the caps and make sure the electrical cables are tight on the battery terminals. The top of the battery should be clean and dry.

Note: Your battery is potentially dangerous, so don't check it near a naked flame or somebody who's smoking. Batteries produce an explosive gas when they charge, and the fluid inside is corrosive, so avoid any contact with eyes, skin, clothing and painted surfaces.

Windscreen

Washer fluid

Fill your washer bottle with clean water and the right amount of windscreen washer additive. Don't use household detergents as they can damage your paintwork and wiper blades.

Windscreen Wipers

Check the condition of your blades, and replace them if split, perished or not wiping your windscreen properly.

Fuel

Know what is the recommended fuel for the car.

Turn off car engine when at the correct petrol pump.

Locate the petrol release lever within the car and/or open the petrol filler flap.

Unscrew the internal cap and place in a safe spot – (rest in the inside of the petrol flap).

Lift the petrol pump nozzle and insert it into your tank.

Set the preset amount of petrol required and/or squeeze the pump handle to start the petrol.

Listen for the click when the tank is full or you have reached the desired amount.

Remove the pump nozzle and replace in its cradle.

Re-screw the petrol cap in place and close the filler flap.

Note to prevent static build up:

- once outside the car stay outside, do not re-enter the vehicle during refuelling. Built-up static electricity may discharge at the nozzle. Although explosions of this type are rare, it is best to avoid any risks.
- If filling a container make sure the container is a suitable container and place it on the ground before commencing filling.
- Make sure your mobile phone is off.

Always make sure your car is safe and secure making sure the windows are closed, the car is in park and the ignition is off. Children should not be left in the car when paying for petrol.

Leader's Resource 2



1. safety first

Flat tyres always seem to happen in inconvenient places, so make sure you pull over in a safe area, clear of passing traffic, and on a surface that is hard and flat to change it. You should also turn on your car's hazard lights. Ensure the car is in 'park' and apply the handbrake. As an extra safety measure, place a chock (a piece of wood or a brick) on the wheels on the opposite side of the car to the flat tyre.



2. Use the right equipment

You will need a jack and a wheel brace to replace your flat tyre, both of which should be in the car's boot. Once you have located them, get down on your knees and look for small notches or grooves on the underside of your car – this is where you need to place the jack. Remember, the jack needs a hard surface under it. If you have pulled over onto soft ground, place a solid object underneath the jack.

Once the jack is in place, slowly turn the handle until you remove **some** of the car's weight from the flat tyre. The tyre must still be firmly on the ground.



3. Loosen the wheel nuts

This is the point at which technique becomes more important than brute strength. Place the wheel brace on one of the wheel nuts and, with a straight arm and a straight back, 'crack' each of the wheel nuts in turn in an anti-clockwise direction (looking at the wheel). You can use your foot on the wheel brace if the brace is a good fit on the nuts and doesn't slip off.

Keep the wheel brace horizontal to the ground and you'll find that your body weight alone is adequate to loosen the wheel nuts. Now, use the jack to lift the car up so that it is somewhat off the ground to accommodate the fully inflated tyre.

Leader's Resource 2 (Contd.)



4. Remove the Wheel

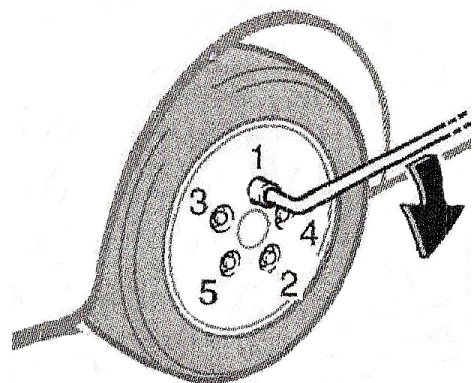
You should now be able to remove the wheel nuts one by one and gently lift the wheel from the car. If the wheel will not come free, it could be that corrosion has caused the wheel to stick. If this happens, put one nut back on the wheel and give the side of the wheel a kick in order to free it.

5. Replace the Wheel

Remove your spare wheel from the boot and place it against the car's wheel assembly. By lining up the wheels' holes first, it will make it easier to lift the wheel straight onto the car. Then tighten all the wheel nuts by hand. If you tighten the bottom nut first, it will hold the wheel in place. Using the wheel brace, give all the wheel nuts a small 'nip' to tighten them. The idea is not to tighten the nuts completely at this point because the car is not completely stable while it is still on the jack.

6. Remove the jack

Unwind the jack slowly until the new wheel takes the weight of the car and then remove it. Remember to keep a straight arm and back, and with the wheel brace horizontal to the ground, use the weight of your body to tighten all of the wheel nuts. Clean the dirt off the jack and stow it and the wheel brace back in their correct storage areas.



Points to remember

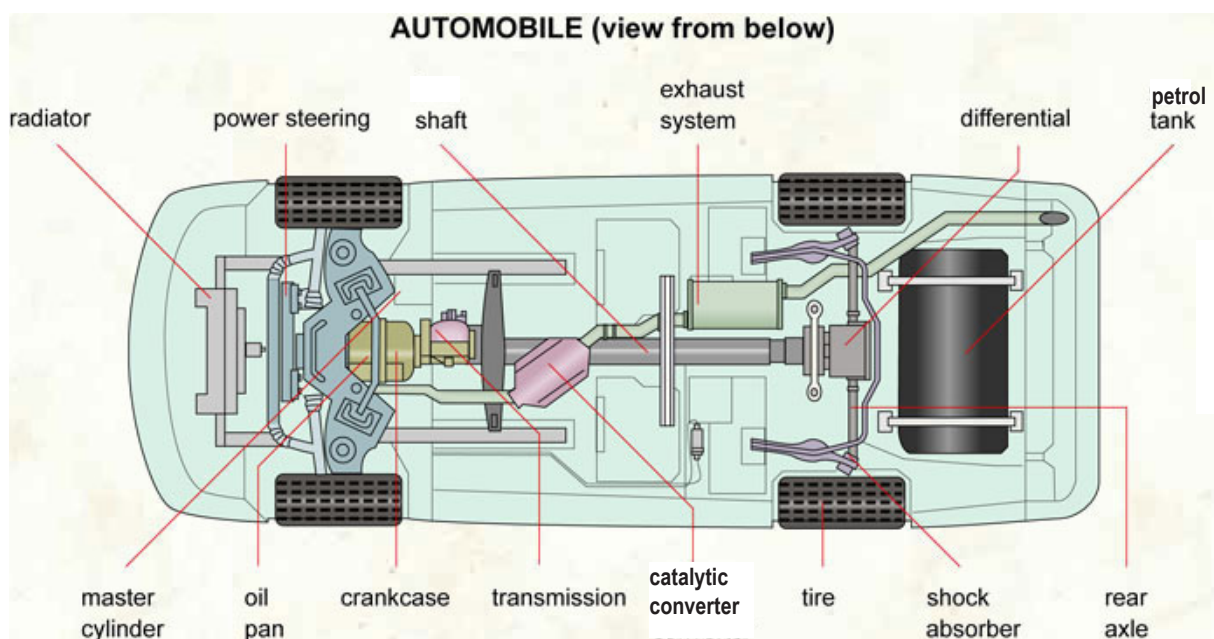
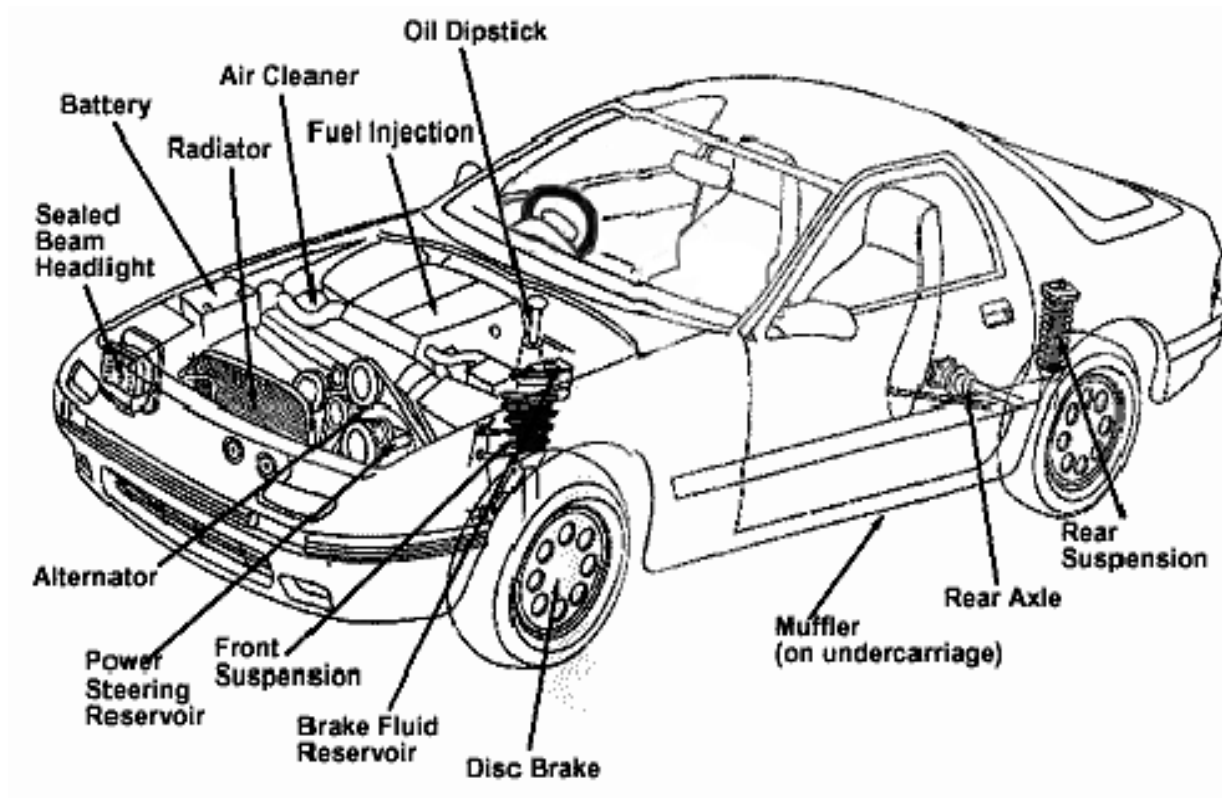
You don't need to be a front-row forward to change a tyre successfully. Use your body weight rather than the strength of your arms to loosen and tighten the wheel nuts.

When you place your flat tyre in the boot, remember to secure it to the car. Leaving an unrestrained tyre to slide around can be dangerous.

The flat tyre should be repaired as soon as possible after changing.

Handout 1

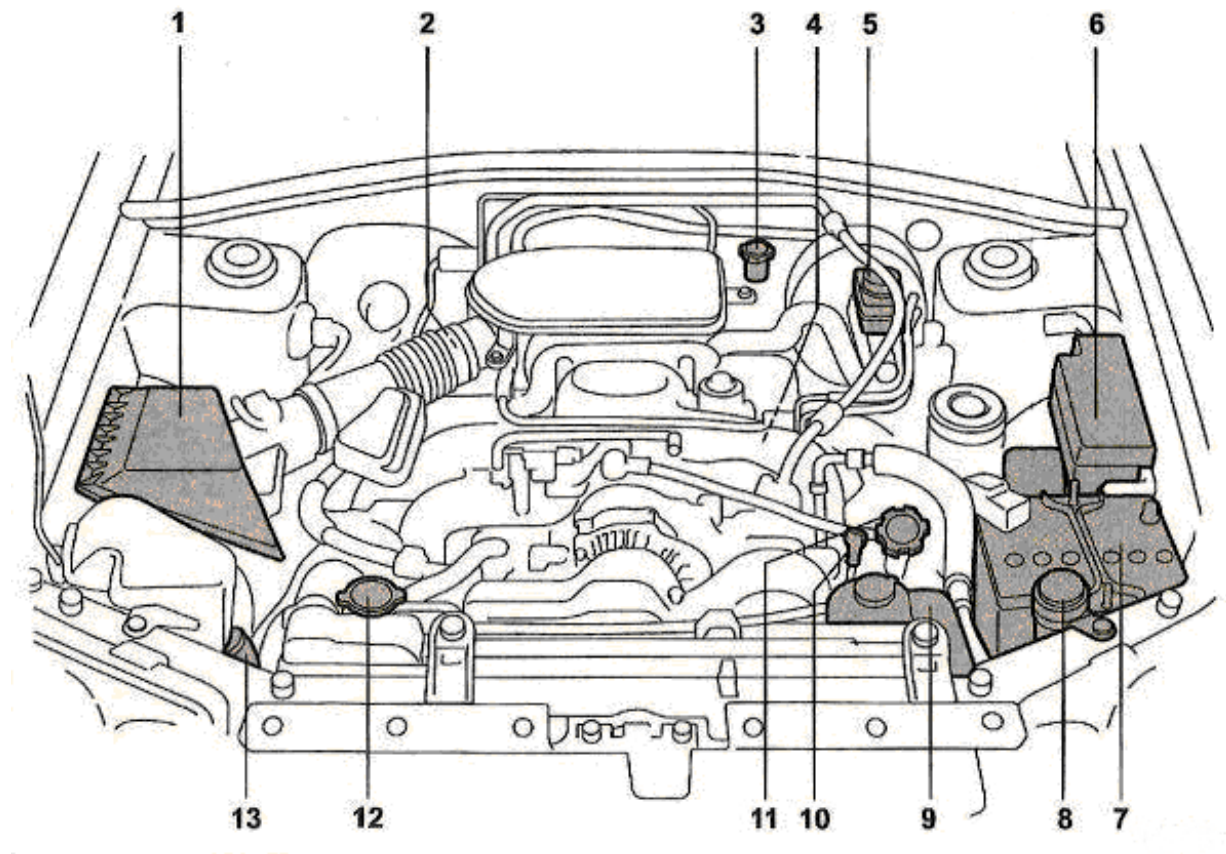
Guards/Rangers



Handout 1 (contd.)

Guards/Rangers

Engine Bay



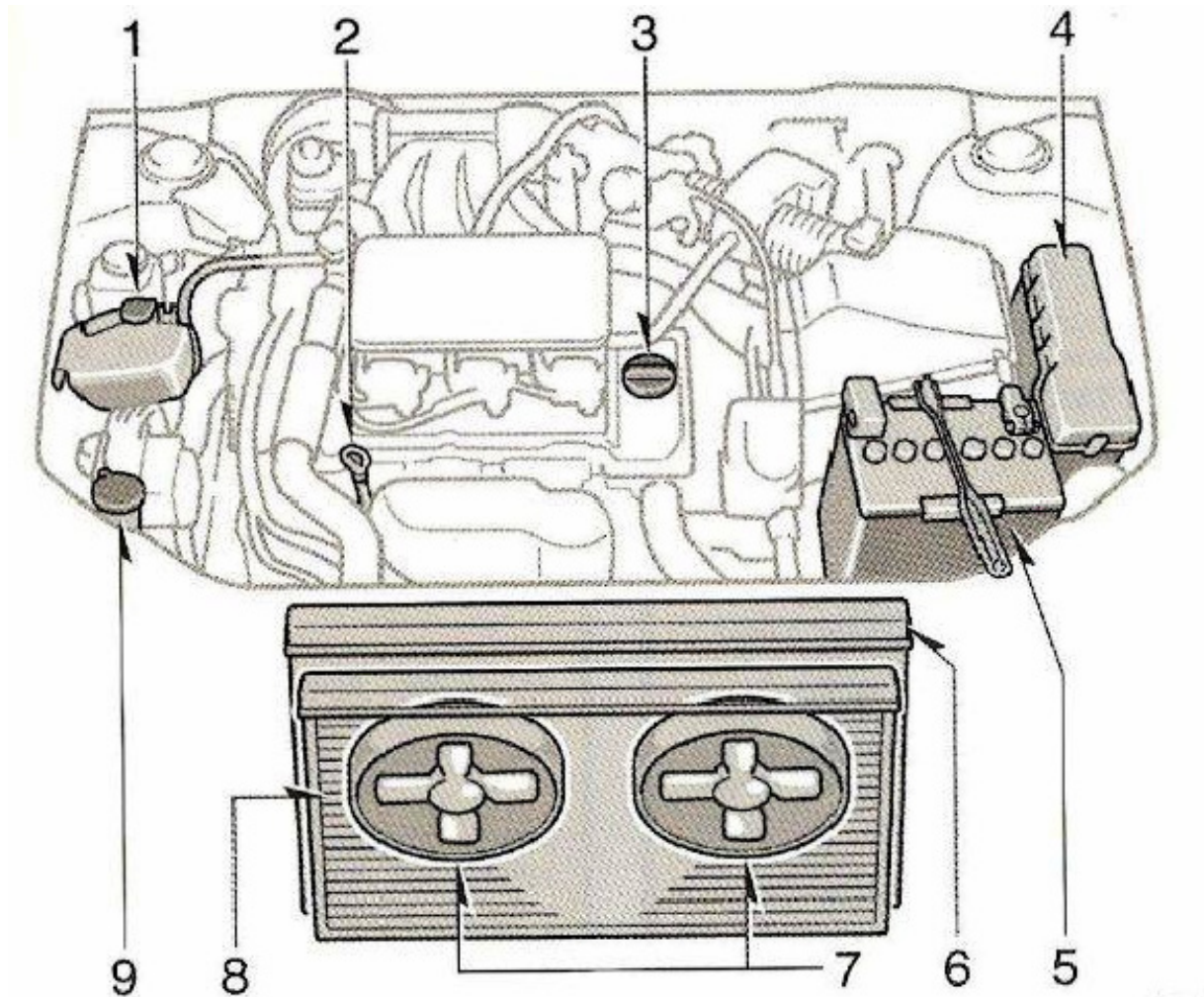
1. Air Cleaner
2. Transmission oil gauge
3. Clutch fluid reservoir
4. Transmission fluid gauge
5. Brake fluid reservoir
6. Fuses
7. Battery
8. Windshield washer tank
9. Engine coolant reservoir
10. Engine oil gauge
11. Engine oil filler cap
12. Radiator cap
13. Power steering fluid

Handout 2

Guards/Rangers

Parts of an engine

Label the correct parts of the engine



- Radiator _____
- Electric cooling fans _____
- Condenser _____
- Battery _____
- Engine cooling reservoir _____
- Windshield washer fluid _____
- Engine oil filler cap _____
- Fuse block _____
- Engine oil level dipstick _____

Handout 3

Guards/Rangers

Item	Completed
Know the position of:	
Oil cap	
Battery	
Windscreen washer reservoir	
Power steering fluid reservoir	
Spark plugs	
Transmission dipstick	
Coolant reservoir	
Radiator	
Fan belt	
Brake master cylinder	
Check and Refill:	
Windscreen washer fluid	
Windscreen wiper blades	
Oil	
Coolant	
Fuel	
Tyre Pressure	
Battery Water	
Radiator Water	

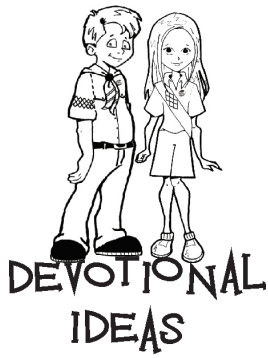
Handout 4

Guards/Rangers

AUTO KNOW HOW WORDSEARCH

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

MAINTENANCE, COMPONENT, RADIATOR, COOLANT, POWER STEERING, REFUEL, BATTERY, AUTOMATIC, MECHANIC, ROAD RULE, FLAT TYRE, WINDSCREEN, HAZARD LIGHT, POLISH, EXTERIOR, TRAILER, OIL, CAR, MANUAL, PETROL, SUMP, JACK, ABS, HORN, TOOLS, NUT, AIRBAG, ENGINE, GEARS.



Devotional ideas



1. Title:

Work Machines

Bible:

1 Corinthians 12:12, 24b - 25, 27

Thought:

Many things are made up of parts and work co-operatively

Supplies:

Bible

Game: members are in patrols or small groups of about four. When the name of a machine is called members have to model it using all members of the patrol, for example, a washing machine – three members hold hands forming a circle around the fourth member who turns and bobs up and down where the three rotate around the centre. Other machines could include a car, CD player, crane, toaster, train, ship or anything else you can think of that is made up of parts. Let imaginations work!

Discuss: all these machines are made up of parts that work together to achieve a result. Have a member read the Bible verses. We need to work together in order for the 'job' to get done. Ask the members to think about their position as part of a wider scheme of things. Ask them how they can change the outcome by their actions.

Ask members to make a positive input to their work and family during the week, and then report back. Have their actions influenced others? Can they see how they fit into the wider world?

You may wish to give out verse cards (1 Corinthians 12:27) with little cogs or nuts attached to remind members how they are part of a larger 'whole'.

Devotional ideas



2. Title:

Soaking up love

Bible:

1 John 4: 19 - 21

Thought:

Like sponges we can soak up God's love and pass it on to others

Supplies:

Bible, car wash sponge

Ask members if they have washed a car. Display sponge and ask if they have used one. Ask for an explanation of what a sponge does. Members should volunteer that a sponge soaks up the water and transfers it to the car.

Ask members to think how wonderful it would be if we could be like a sponge and instead of soaking up water, soak up God's love and then like the sponge transfer the love to anything we touch.

Read 1 John 4:19 - 21. How can we show others the love God gives to us? We can do this by being the someone who says that kind word, reaching out to others when they need a friend, even a smile will show people we care.

Have a few members pray asking that we may be shown God's love each day, that we may have the opportunity to pass it on, that we may be open to transferring His love and that we may recognise the need of others.



3. Title:

Clean

Bible:

Hebrews 10:22; Philippians 4:8

Thought:

Clean

Supplies:

Bibles

Use this devotion following **Badge Requirement 3**

Explain why it is important to keep a car clean. It is not only for appearances – to keep looking good – but regular washing and polishing removes elements and contaminants that can cause rust and other damage. Ensuring interior surfaces are cleaned and treated with products like 'Amorall' helps to protect them from cracking; similarly regular vacuuming keeps carpets looking good and lasting longer by removing the dirt that can damage carpet fibres.

Our lives are kept clean and attractive when we take care of them. Instruct members to read Hebrews 10:22 and Philippians 4:8 and create a list of ways we keep our lives clean. It is God's will for us to live clean lives and the Bible provides practical instructions to help us

