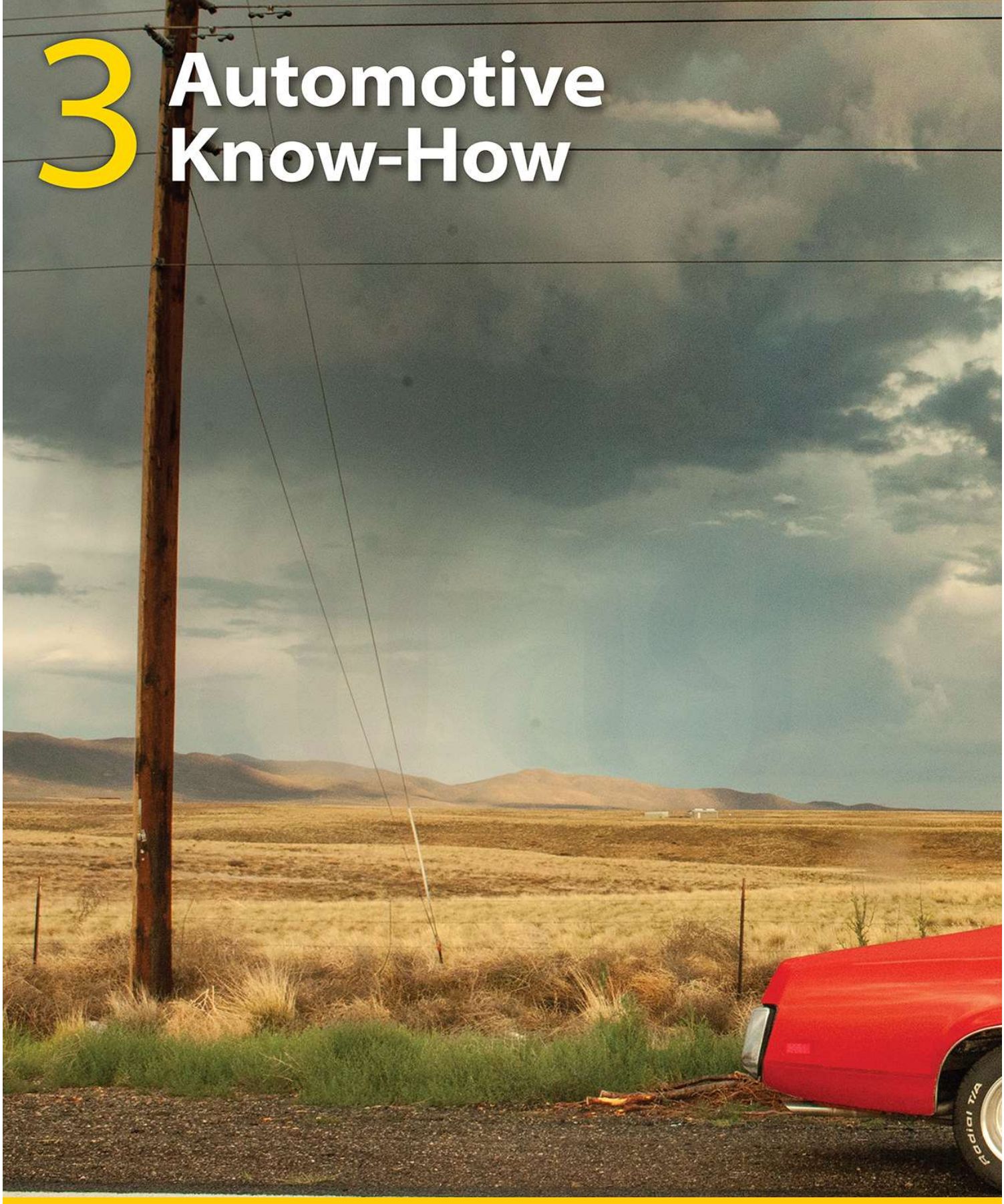
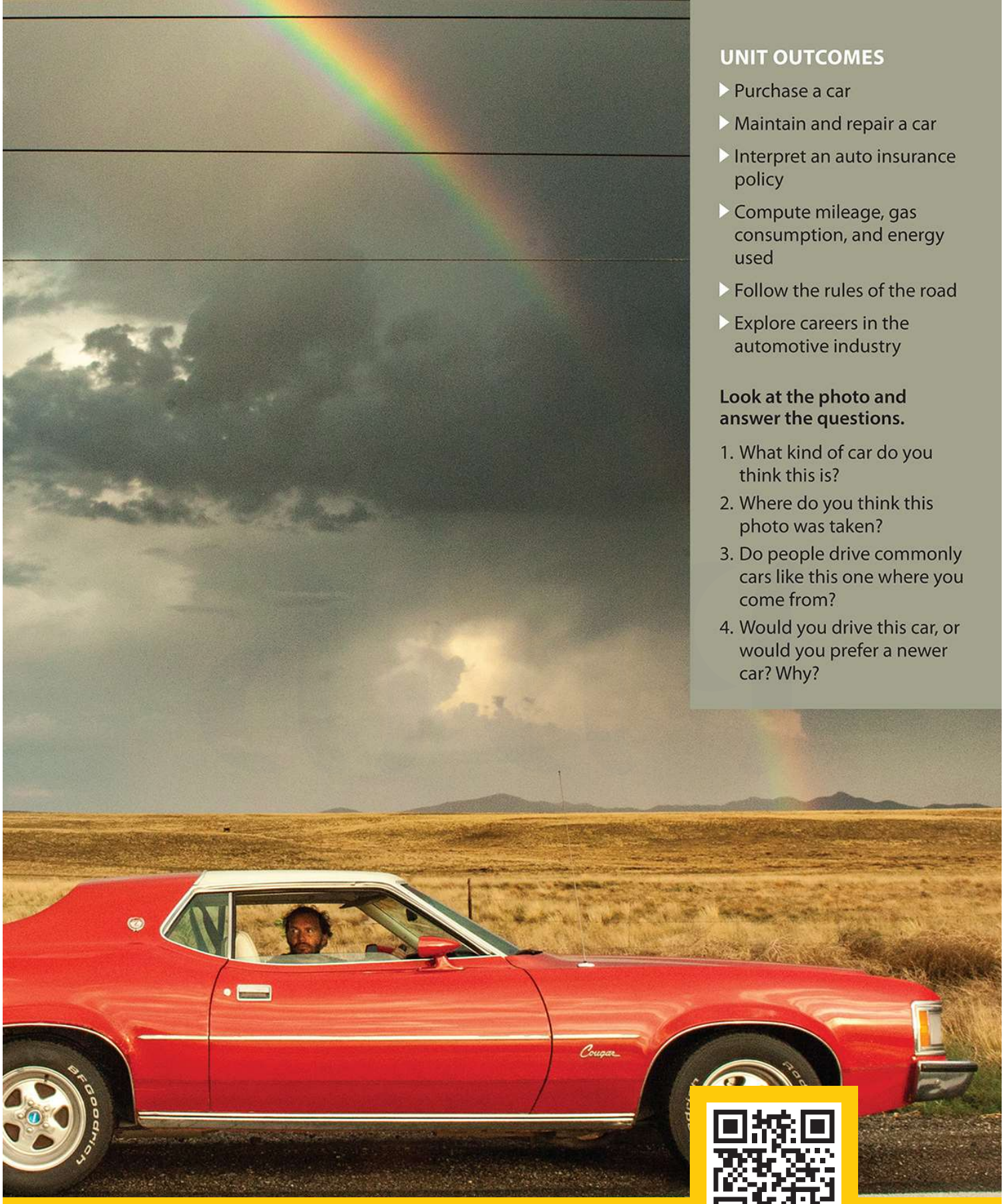
3 Automotive Know-How





UNIT OUTCOMES

- Purchase a car
- Maintain and repair a car
- Interpret an auto insurance policy
- Compute mileage, gas consumption, and energy used
- Follow the rules of the road
- Explore careers in the automotive industry

Look at the photo and answer the questions.

1. What kind of car do you think this is?
2. Where do you think this photo was taken?
3. Do people drive commonly cars like this one where you come from?
4. Would you drive this car, or would you prefer a newer car? Why?

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Vocabulary Builder

A **Look at the different types of cars. Use words from B to label them.**

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 

B **How would you describe each car? Write your ideas next to each term.**

1. two-door coupe: _____
2. four-door sedan: _____
3. convertible: _____
4. minivan: _____
5. sport utility vehicle (SUV): _____
6. sports car: _____
7. station wagon: _____
8. pickup truck: _____
9. van: _____
10. electric: _____
11. hybrid: _____
12. gas: _____

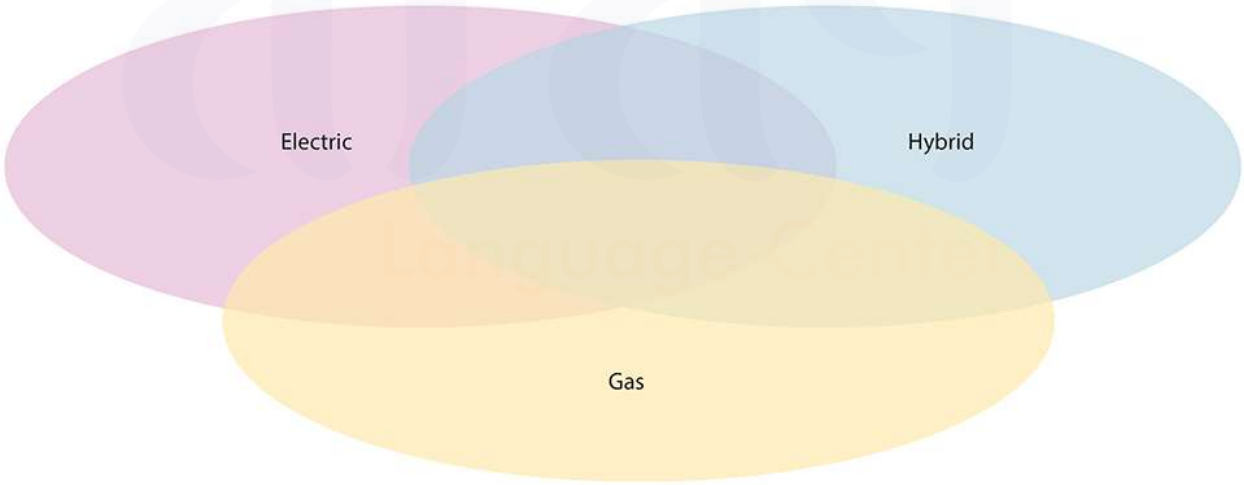
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C **Here are some words and phrases that you will find in this unit. Replace each verb in bold with a synonym from the box. Some words can be used more than once.**

change	choose	commute	do	fill up	find	imagine	look at	replace

1. _____ **Change** your air filter.
2. _____ **Perform** an oil change.
3. _____ **Check** your oil levels.
4. _____ **Pick** your lane and stick with it.
5. _____ **Drive** during off-peak hours.
6. _____ **Pretend** you have a hybrid.
7. _____ **Inspect** your brakes.
8. _____ **Replace** your wipers.
9. _____ **Look for** telecommuting opportunities.
10. _____ **Top off** your washer fluid.

D **How are these types of vehicles different? What do they have in common? Brainstorm with a partner and complete the Venn diagram.**



E **What do the following words have in common? Write the theme.**

Theme: _____

_____ accident	_____ coverage	_____ make	_____ premium
_____ bodily injury	_____ incident	_____ model	_____ uninsured motorist
_____ collision	_____ limits of liability	_____ policy	_____ VIN

F **Mark the terms you know in E. Walk around the classroom and find classmates who can explain the terms you don't know.**

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LESSON 1

Buying a Car

GOAL ▸ Purchase a car

A **In a group, discuss the following questions.**

1. What type of car do you have? (If you don't have a car, think of someone you know who does.)
2. What is the car like? (Ask about color, size, make, model, etc.)
3. How did you get the car?
4. How long have you had the car?

B **Listen to an auto salesman who is trying to sell you a car. Take notes on what he says about the different types of cars.**

Vehicle	Best for	Pros	Cons
	most people		
			backseats are hard to access
	active family		
		great in good weather	
			
			
			
			
			

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C You are going to buy a new or used car. Look back at the table in **B**. Which type of car would be best for you? Why?

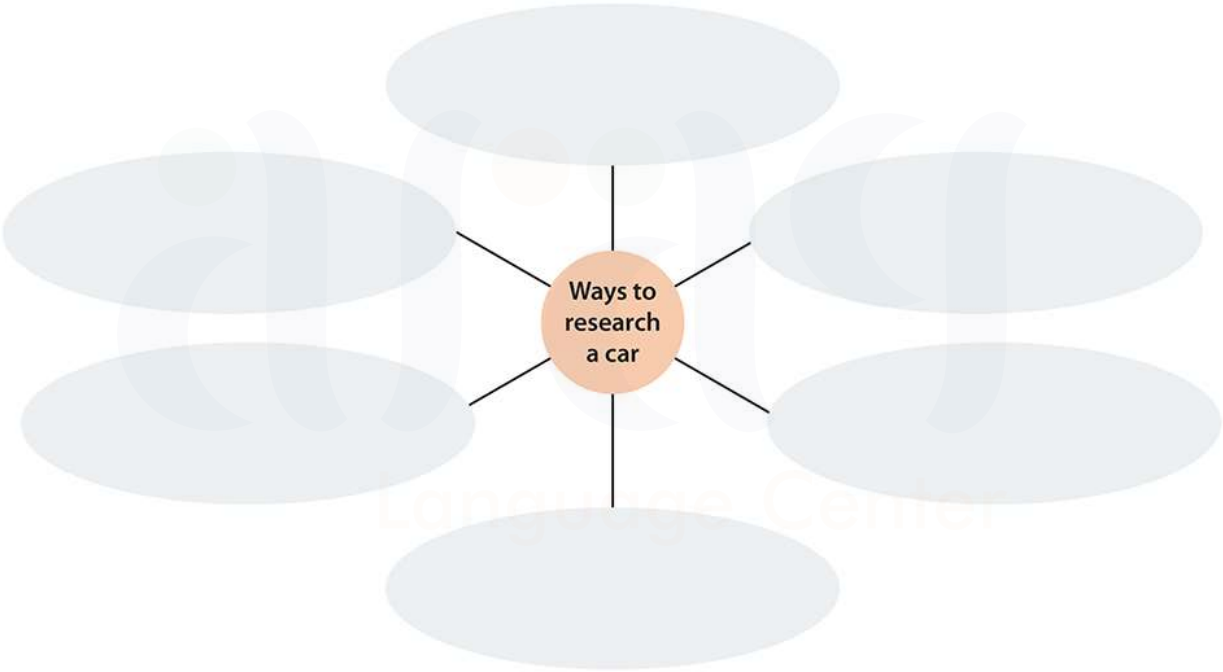
_____

_____

_____

_____

D Now that you have an idea which car is best for you, it is a good idea to do some research on your own. What are the best ways to find out more about the car you want to buy? In a group, brainstorm ways to research different car models.



E Rachel has decided to buy an electric two-door coupe. Listen and write what she did to research buying her car.

1. _____
2. _____
3. _____
4. _____
5. _____

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F To supplement your research, ask different people for their opinions about cars. What are some questions you might ask? With a partner, create a list of questions.

Friends and family

1. _____

2. _____

3. _____

Car dealer

1. _____

2. _____

3. _____

Mechanic

1. _____

2. _____

3. _____

Loan officer

1. _____

2. _____

3. _____

G Make a plan to purchase a car. Write the steps you will take in this plan.

Step 1: _____

_____

Step 2: _____

_____

Step 3: _____

_____

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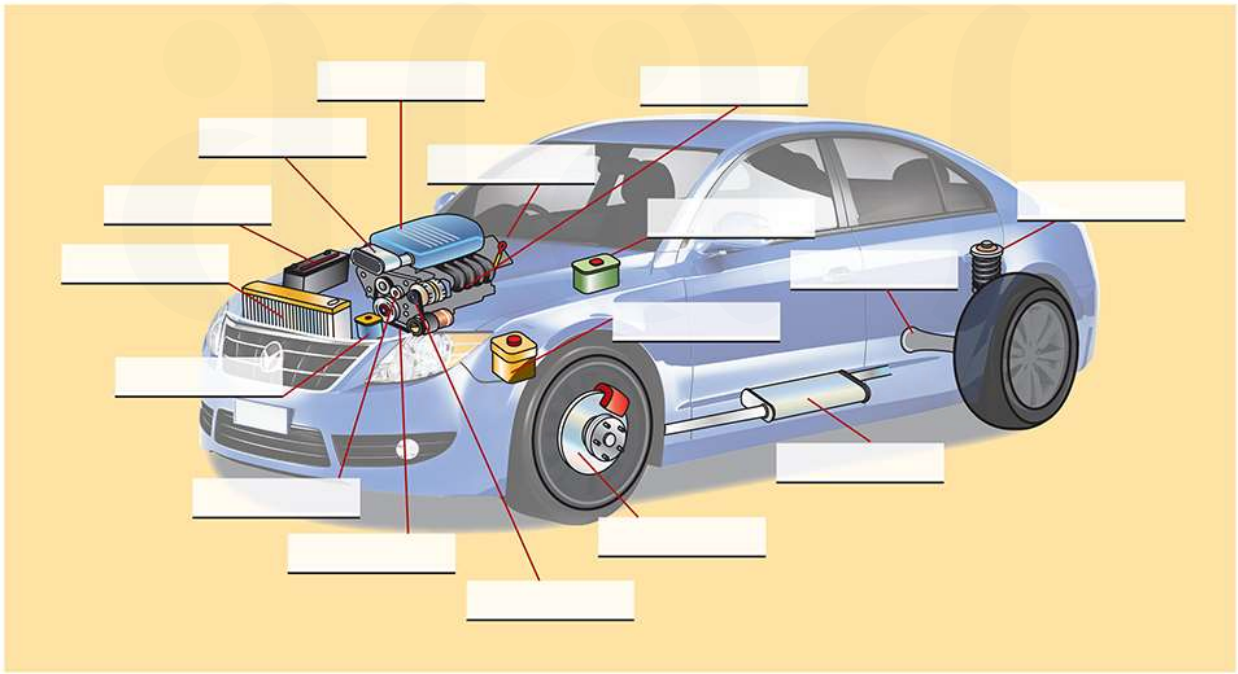
LESSON 2

Maintenance and Repair

GOAL ▶ Maintain and repair a car

A **With your teacher's help, identify the auto parts in the box. Then label the picture.**

air filter	distributor	rear axle
alternator	exhaust manifold	rear suspension
battery	fuel injection system	timing belt
brake fluid reservoir	muffler	water pump
coolant reservoir	power steering reservoir	
disc brake	radiator	



B **What is the purpose of each auto part in A? Work with a partner and use a dictionary to define each part on a separate sheet of paper. Share your answers with other pairs.**

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C **Now that you are more familiar with auto parts and their importance, read this excerpt from an auto maintenance and repair guide.**

How to Maintain Your Automobile

Change your air filter. A clogged air filter can affect your gas mileage as well as the performance of your engine. Change it on a regular basis.

Check your oil levels. Your engine needs a certain amount of oil to run properly, so it's important to check the oil levels regularly.

Perform an oil change. As your engine uses oil, the oil becomes dirty and should be changed at regular intervals.

Perform a timing belt inspection. A faulty timing belt can result in bent valves and other expensive engine damage. Check it at least every 10,000 miles, and replace it when the manufacturer recommends doing so.

Replace your wipers. Windshield wipers can wear out, and if they aren't working properly, they could impair your vision while on the road. Change them at least twice a year.

Perform a radiator flush. It's important to keep your radiator and cooling system clean.

Check your power steering fluid. Check your power steering fluid regularly to make sure your power steering doesn't fail.

Inspect your brakes. Protect yourself and your passengers by inspecting your brakes twice a year.

Check and fill your coolant. If your car is low on coolant, it will run hot, so make sure to check the coolant level in your radiator.

Check and replace your spark plugs. A faulty spark plug could cause poor gas mileage or a rough running engine and poor acceleration. Make sure to replace the spark plugs as recommended by your car's manual.

Top off your washer fluid. Make sure you have enough washer fluid so you can keep your windshield clean.

Check your wheel bolts. Check the tightness of your wheel bolts on a regular basis to make sure there is no danger of your wheels becoming loose.

D **With a partner, answer these questions on a separate piece of paper.**

1. What fluids need to be regularly checked?
2. Why is it important to replace windshield wipers?
3. Why is it bad to have a clogged air filter?
4. Why should you inspect your timing belt?
5. Why should you check your wheel bolts?
6. What could happen if you don't have enough power steering fluid?

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E **Some people can perform their own maintenance while others need the help of trained professionals. Who will do your car repairs? If you need help, how will you find a reliable mechanic? Read the guide.**

Guide to Getting Repairs Done

1. Ask a friend, relative, or coworker for recommendations when looking for a good auto shop or mechanic. Also, take time to find a local garage that you feel comfortable with.
2. Make a list of services you need performed or the symptoms your vehicle is experiencing so there is no misunderstanding.
3. Get more than one opinion about the repairs that need to be done.
4. Ask for a written estimate before the job is started.
5. Get more than one estimate and compare prices.
6. Ask about the warranty policy.
7. Have the mechanic show you what you need replaced and ask why you need to replace it.
8. Go for a test drive in your car before paying for the repairs. If something is not right with the repairs, make it understood that you are not happy. Do not pay the bill until the vehicle is repaired properly.
9. Pay with a credit card. Many credit cards offer consumer protection for fraud.
10. If you discover something is not fixed after you've paid and driven home, call the garage and explain the situation. Go back to the garage as soon as possible.

F **Write the numbers 1 to 10 on a separate piece of paper. Close your books and see how many suggestions from E you can remember. Write them down.**

G **Make an outline for each of the guides in C and E.**

H **SUMMARIZE** **Using your outlines, write a two-paragraph summary of what you have learned in this lesson. Remember to format your paragraphs correctly.**



A mechanic repairs a car in an auto repair shop.

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LESSON 3

Car Insurance

GOAL ▶ Interpret an auto insurance policy

A **Discuss these questions with your classmates.**

1. Do you drive a car or ride a motorbike?
2. Do you have insurance?
3. Why is it important to have auto insurance?
4. Do you understand your insurance policy?
5. Is it against the law in your state to drive without insurance?

B **Read what each person says about auto insurance policies. Discuss the meanings of the words in bold with a partner.**

"An insurance **policy** is a contract between you and the insurance company that states what the company will pay for in the event of an accident." — **Chalene**
"The insurance **premium** is the amount you pay for auto insurance for a certain period of time." — **Keona**
"**Coverage** is what is included in the insurance—what the company will pay for." — **Binata**

C **Look at Chalene's policy and find each of the items.**

Bright Star Insurance

Name of Insured and Address: Chalene Johnson 24573 Thatch Street Houston, TX 77042		**Policy Number:** 05XX 52 870 1625 Q **Policy Period:** Effective Jan 13, 2023 to Jul 13, 2023
Description of Vehicle(s) **Year and Make:** 2019 Cury **VIN:** QXXPYR18924G23794		**Annual Mileage:** 9,000 **Premium for this Policy Period:** $526.04
Coverage	**Limits of Liability**	**Six-Month Premium**
A. Bodily Injury	Each Person $100,000; Each Accident $300,000	$197.65
B. Collision	Each Accident $50,000	$178.56
C. Comprehensive	Each Incident $25,000	$75.41
D. Uninsured Motor Vehicle Bodily Injury	Each Person $50,000; Each Accident $150,000	$74.42
E. Physical Damage	Deductible $1,000	
		TOTAL $526.04

1. Policy number: _____
2. VIN: _____
3. Policy premium: _____
4. Annual mileage: _____
5. Deductible: _____
6. Make of vehicle: _____

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D **MATCH** **There are different types of coverage listed on insurance policies. Match each type of coverage with what it covers.**

Coverage	What It Covers
_____ 1. bodily injury liability	a. damage caused by another vehicle without insurance
_____ 2. property damage liability	b. damage to your vehicle due to an auto accident
_____ 3. collision	c. loss or damage to your vehicle or the vehicle you are driving for an incident other than collision (theft, fire, etc.)
_____ 4. medical payments	d. other people's bodily injuries or death for which you are responsible
_____ 5. uninsured motorist's property damage	e. bodily injuries to you or your passengers caused by the accident
_____ 6. uninsured motorist's bodily injury	f. bodily injury caused by another vehicle without insurance
_____ 7. comprehensive	g. damage to another vehicle or property

E **With a partner, read each scenario and decide which coverage would apply.**

1. Chalene accidentally ran into a tree and damaged the front end of her car. Which type of coverage would apply? _____

2. Binata was driving home from school when she hit another car. She had run through a red light, so the accident was her fault. There was no real damage to her car, but she hurt her back and had to go to the chiropractor. Also, there was significant damage to the car she hit. Which types of coverage would apply? _____

3. Keona and his friend Chalene were driving to the beach when a car hit them from behind. Then, the driver left without giving them any information. Neither Keona nor Chalene was hurt, but there was damage to Keona's car. Which type of coverage would apply? _____

4. Keona's car got stolen from the parking lot at a movie theater. Which type of coverage would apply? _____

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F **Look at Chalene's policy in C. Write a question for each answer.**

EXAMPLE: Chalene Johnson: *Who is being insured through this policy?*

1. $178.56: _____
2. $1,000: _____
3. 05XX 52 870 1625 Q: _____
4. 2019 Cury: _____
5. $526.04: _____
6. 9,000: _____

G **Look at Keona's insurance policy and choose the correct answers.**

United Automobile Association • Dallas, TX

STATE: TX **POLICY NUMBER:** QQP15 26 49L3798 1 **POLICY PERIOD:** September 5th, 2023 to March 5, 2024 **VEHICLE(S):** 2020 Tallaros, 2022 Rockland	**NAME AND ADDRESS OF INSURED:** Keona Iu 54 Plover Plaza Galveston, TX 50472

Limits of Liability		6-Month Premium
LIABILITY		
Bodily Injury	Each Person $100,000; Each Accident $300,000	$248.52
Property Damage	Each Accident $50,000	$175.26
UNINSURED MOTORISTS		
Bodily Injury	Each Person $100,000; Each Accident $300,000	$110.21
Property Damage	Each Accident $50,000	$98.26
PHYSICAL DAMAGE		
Comprehensive Loss	Deductible $1,000	$125.56
Collision Loss	Deductible $1,000	$165.25
		TOTAL: $923.06

1. How many vehicles are covered by this policy?

   a. 1 b. 2 c. 3 d. 4

2. Where does the insured motorist live?

   a. Dallas b. Lake Tahoe c. Galveston d. Houston

3. How much is United Automobile Association charging for liability?

   a. $248.52 b. $125.56 c. $175.26 d. $423.78

4. What is Keona's deductible for comprehensive loss?

   a. $165.25 b. $125.56 c. $1,000 d. $50,000

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LESSON 4

Going the Distance

GOAL ▶ Compute mileage, gas consumption, and energy used

A **Read and listen to the conversation between Keona and Chalene.**

Keona: I can't believe the price of gasoline! I've been spending almost $100 just to fill up my tank.

Chalene: Same here. I've been trying to figure out how I can use my car less so I save some money on gas.

Keona: Any good ideas?

Chalene: Well, I'm going to start carpooling to school two days a week, which should help. And I'm trying to combine my errands, so I only go out once a week.

Keona: That sounds good. I think I'm going to look into public transportation. I have a long drive to work, so maybe I can figure out how to take the train into town. I'll have to drive to the station and park, but at least I won't be driving all the way to work.

Chalene: That's a great idea! I may look into getting an electric car.

B **Can you think of some other measures Keona and Chalene can take so they won't have to use their cars so much? Write your ideas.**

_____

_____

C **Keona wanted to see his gas mileage, so he checked the display in his car. How do you think Keona might calculate his gas mileage in miles per gallon (mpg)? Create a formula and fill in the *MPG* column in the table.**

Formula: _____

Date	Odometer	Trip	Gallons	MPG
8/7	12,200	245 miles	13	
8/15	12,475	275	14	
8/24	12,760	285	15	
9/1	13,020	260	14.5	

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D **CALCULATE** If gas costs $5.85 per gallon, how much would the gas for each trip in **C** cost?

E In order to improve your gas mileage, you can follow certain maintenance tips. Listen and write the five tips you hear.

1. _____
2. _____
3. _____
4. _____
5. _____

F How will each of the tips in **E** help? Listen again and write the reasons.

1. _____
2. _____
3. _____
4. _____
5. _____

G Keona followed the tips. Look at his log and calculate the mpg and cost per mile. Did his mpg improve?

Date	Odometer	Trip	Gallons	MPG	Cost per Gallon	Cost per Mile
10/5	14,687	275 miles	13		$3.05	
10/17	14,962	295 miles	14		$3.07	
10/30	15,262	300 miles	15		$2.95	
11/9	15,542	280 miles	14.5		$3.10	

H **ANALYZE** Look at the *Cost per Mile* column in **G**. Which week was the cheapest? On a separate piece of paper, write ideas about how Keona can spend less per mile on gas.

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I **Chalene is considering buying an electric car to save money on gas. With a partner define these terms:**

1. kWh: _____
2. battery range (of your vehicle): _____
3. battery capacity: _____

J **CALCULATE** **Complete the table. To calculate how many miles per kWh your car gets, you need to divide the battery range by the battery capacity.**

expected miles per kWh = battery range ÷ battery capacity
For example, if your EV has a range of 200 miles and the battery capacity is 40 kWh, you should be able to go 5 miles per kWh.

Battery Capacity	EV Range	Miles per kWh
40 kWh	200	5
60 kWh	240	
80 kWh	280	
100 kWh	320	

K **In E, you listened to tips for improving gas mileage. What tips would apply to an electric vehicle as well?**

1. _____ 2. _____

L **Listen for eight tips on improving efficiency in an EV. Write them.**

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

M **In a small group, write the pros and cons of owning an electric vehicle.**

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LESSON 5

Traffic Laws

GOAL ▶ Follow the rules of the road

A **What does each of the following signs mean? Work with a partner.**

1. 
2. 
3. 

4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 
13. 

14. 
15. 
16. 

B **Think about the traffic laws you are familiar with. In a small group, write a law for each item.**

1. yellow light: You must slow down at a yellow light.
2. speed limit: _____
3. seat belts: _____
4. red light: _____
5. children: _____
6. pedestrians: _____
7. stop sign: _____
8. police officer: _____
9. school bus: _____

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C **The United States Department of Transportation has an organization called the National Highway Traffic Safety Administration (NHTSA) whose mission is to "save lives, prevent injuries, and reduce vehicle-related crashes." Read the data from a study the NHTSA conducted and answer the questions.**

Seat Belt Use in the United States 2014–2019						
	2014	2015	2016	2017	2018	2019
AL	95.7%	93.3%	92%	92.9%	91.8%	92.3%
AK	88.4%	89.3%	88.5%	90.1%	91.6%	94.1%
CA	97.1%	97.3%	96.5%	96.2%	95.9%	97.2%
GA	97.3%	97.3%	97.2%	97.1%	96.3%	95.9%
FL	80.8%	89.4%	89.6%	90.2%	90.6%	89.8%
IL	94.1%	95.2%	93.0%	93.8%	94.6%	94.3%
MA	76.6%	74.1%	78.2%	73.7%	81.6%	81.6%
NY	90.6%	92.2%	91.8%	93.4%	92.9%	94.2%
TX	90.7%	90.5%	91.6%	91.9%	91.3%	90.9%
WA	94.5%	94.6%	94.7%	94.8%	93.2%	93.1%

1. What percentage of drivers wore seat belts in California in 2017? 96.2%
2. Which state had the highest percentage of seat belt use in 2019? _____
3. What percentage of people in Massachusetts wore seat belts in 2019? _____
4. What is the percentage difference in seat belt use between 2016 and 2017 for drivers in Alaska? _____
5. What percentage of drivers wore seat belts in Florida in 2015? _____

D **With a partner, make statements about the data in the chart in C.**

EXAMPLE: 94.8% of drivers in Washington wore seat belts in 2017.

E **What are the driving laws regarding alcohol in your state? Discuss them with your class and write them.**

_____

_____

_____

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F **Read the facts on alcohol-related accidents. Choose the ones that are the most surprising to you.**

- ☐ Alcohol-related motor vehicle crashes kill someone every 45 minutes.
- ☐ In 2020, 11,654 people were killed in alcohol-impaired driving crashes, accounting for 30% of all traffic-related deaths in the United States.
- ☐ Alcohol-impaired drivers account for 62% of the people who died in alcohol-related crashes in 2020.
- ☐ A study of 4,243 drivers who were seriously injured in crashes, indicated that 54% of those drivers were under the influence of alcohol and / or drugs other than alcohol (e.g., marijuana, sedatives, and opioids) from September 2019 to July 2021.
- ☐ In 2020, 229 children ages 14 and younger died in alcohol-impaired driving crashes. This is 21% of traffic-related deaths among children in that age group.

G **With a partner, rewrite the facts in F in your own words on a separate piece of paper.**

EXAMPLE: *Someone is killed every forty-five minutes due to a car accident involving alcohol.*

H **In a small group, make a list of five driving rules that you all think are the most important. Present your list to the class.**

1. _____
2. _____
3. _____
4. _____
5. _____

Life ONLINE

Distracted driving is another risk factor for both drivers and pedestrians. Texting, using a navigation system, and talking on the phone while driving are some examples of distracted driving. Many states have laws that make it illegal to use—or even hold—a phone while driving. To avoid putting yourself and others at risk, keep your full attention on the road when you are at the wheel. Do not multitask while driving. If you need to make a call, text someone, or send an email, do it before your trip, when you find a safe place to stop, or when you get to your destination.

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LESSON 6

Explore the Workforce

GOAL ▶ Explore careers in the automotive industry

A **These are 15 common careers in the automotive industry. Choose each one that you have heard of. Then talk to a partner about what each person does.**

- ☐ Auto body repair technician
- ☐ Auto designer
- ☐ Auto electrician
- ☐ Auto engineer
- ☐ Auto instructor
- ☐ Auto mechanic
- ☐ Auto sales manager
- ☐ Car detailer
- ☐ Car rental agent
- ☐ Car salesperson
- ☐ Process engineer
- ☐ Quality testing engineer
- ☐ Tire technician
- ☐ Tow truck driver
- ☐ Vehicle inspector

B **Write a definition for each word.**

Manufacturing: _____

Sales: _____

Service: _____

C **CATEGORIZE** **Write each job title from A under its correct category. Some jobs may fit in more than one category.**

Manufacturing	Sales	Service

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D **Can you think of any other jobs in the automotive industry? Write them in the correct column in C.**

E **One of the most common jobs is auto mechanic. Complete the text with the words in the box. Pay attention to the missing parts of speech (noun, verb, adjective, etc.) to help you.**

auto body shops	mathematics	software
dealership	mechanics	specialize in
heavy machinery	minimum requirement	technical education
inspecting	repair records	transportation vehicles
maintenance	responsibilities	troubleshooting

What is an auto mechanic?

An auto mechanic works with a variety of (1) _____, such as automobiles, buses, and trucks. Auto mechanics do general repairs and (2) _____ on vehicles. Some mechanics (3) _____ engines, brakes, tires, or automobile technology or computers.

Auto mechanics have a variety of (4) _____. These include:

- Examining the vehicle and diagnosing a variety of issues
- Using power tools and (5) _____
- (6) _____ different vehicle systems
- Working with vehicle computers and (7) _____
- Performing routine maintenance
- (8) _____ and testing vehicles
- Updating maintenance and (9) _____

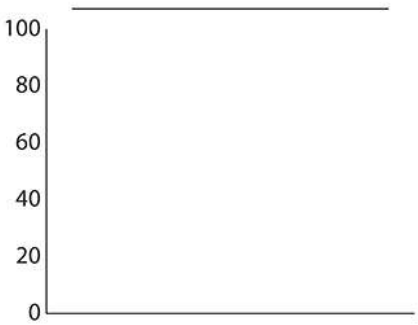
Auto mechanics work in various settings, such as (10) _____, garages, or car dealerships. Their responsibilities may differ based on where they work. For example, some (11) _____ may perform specialized tasks at a (12) _____, whereas mechanics who work in smaller repair shops may complete many different tasks.

A high school diploma or GED is the (13) _____ to become an auto mechanic. It's important for someone who wants to be a mechanic to have basic knowledge of (14) _____, reading, and writing. Some high schools also offer (15) _____ courses that students can take as electives.

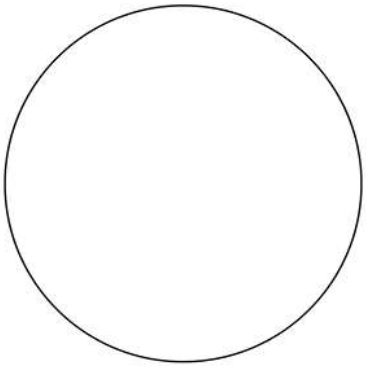
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F Listen and check your answers in **E.**

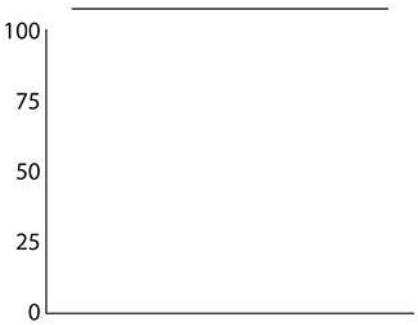
G Read the demographic information for mechanics. For each data set, create a graph using the visual given. Label each data point and give each graph a title.



96% male
4% female



White: 65.6%
Hispanic or Latino: 17.2%
Black or African American: 9.9%
Asian: 4.6%
Unknown: 2.0%
American Indian and Alaska Native: 0.7%



40+ years: 50%
30–40 years: 25%
20–30 years: 25%

H Write a short paragraph describing the demographics of mechanics in the United States.

I **REFLECT** Do you think a job as a mechanic would be a good choice for you? Why or why not?

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Review

A **List four different types of cars.**

1. _____ 2. _____

3. _____ 4. _____

Which type of car is best for you? _____

B **Recall the auto maintenance tips you learned in Lesson 2. Write the correct verb from the box to complete each tip. You will need to use some of the verbs more than once.**

change	check	fill	inspect	perform	replace	top off

1. _____ a radiator flush.
2. _____ your air filter.
3. _____ an oil change.
4. _____ your brakes.
5. _____ your wipers.
6. _____ and _____ your coolant.
7. _____ your oil levels.
8. _____ a timing belt inspection.
9. _____ your washer fluid.
10. _____ your wheel bolts.
11. _____ your power steering fluid.

C **Calculate Gary's gas mileage and how much he is spending on gas. With a partner, discuss five ways Gary can improve his gas mileage.**

Date	Odometer	Trip	Gallons	MPG	Cost per Gallon	Cost per Mile
2/7	46,269	310 miles	15		$3.02	
2/17	46,579	325 miles	16		$2.90	
2/28	46,904	320 miles	15.5		$2.95	
3/5	47,224	280 miles	17		$3.01	

Learner Log

I can purchase a car. ☐ Yes ☐ No ☐ Maybe

I can maintain and repair a car. ☐ Yes ☐ No ☐ Maybe

I can compute mileage and gas consumption. ☐ Yes ☐ No ☐ Maybe

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D **Read the insurance policy and answer the questions on a separate piece of paper.**



DriveRite Automotive Insurance Co., Inc.

Dung Nguyen 79563 Eastern Way Ambrose, GA 31512	**Policy Number:** QPX2 80 56 45F5542 6 **Policy Period:** 2/10/22-8/10/23	**Vehicle:** 2019 Folks Passerine **VIN:** ZXYI493807T984XXX **Annual Mileage:** 12,500

Type of Coverage	Cost of Coverage	Limits of Liability
A. Medical	$182.50	Each person $100,000 Each accident $300,000
B. Liability	$175.00	Each person $100,000 Each accident $300,000
C. Collision	$98.26	Each person $50,000 Each accident $50,000
D. Uninsured motorist	$135.00	Each accident $150,000
E. Comprehensive	$76.45	Each incident $25,000

Premium: $667.21

1. Who is being insured through this insurance policy?
2. Where does the insured live?
3. How long is this policy in effect?
4. What is the total premium for the insured's policy?
5. How many miles does the insured drive per year?
6. The insured got in an accident last week, broke his leg, and damaged his car. Which types of coverage will pay for this?
7. How much is the insurance company charging for comprehensive coverage?
8. If the insured's car gets stolen, how much will the insurance company pay to replace the car?
9. What is the most the insurance company will pay for the property damage in an accident?
10. How much will the insurance company pay for each person who is hurt in an accident caused by someone without insurance?

E **On a separate piece of paper, write a summary of one of these topics.**

- Purchasing a car
- Maintaining a car
- Saving money on gas
- Keeping track of gas mileage
- The benefits of driving an electric vehicle
- Rules of the road

Learner Log

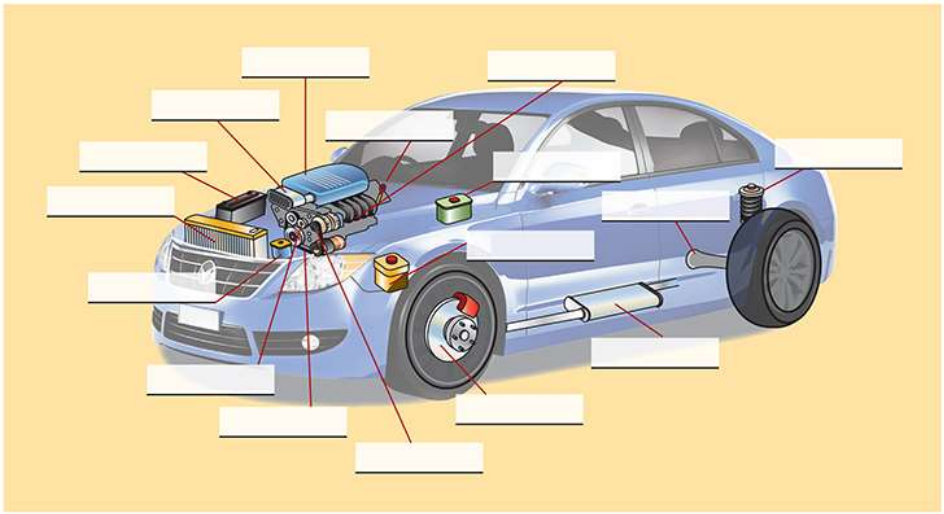
I can interpret an auto insurance policy. ☐ Yes ☐ No ☐ Maybe

I can follow the rules of the road. ☐ Yes ☐ No ☐ Maybe

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Vocabulary Review

A **Write the name of each car part. What does each part do? With a partner, take turns describing each part and its function.**



B **Write a definition for each of the words. Use full sentences.**

1. coverage: *Coverage is what the insurance company will pay for.*
2. premium: _____
3. collision: _____
4. mpg: _____
5. carpool: _____
6. kWh: _____

C **Read each phrase and match it with a vocabulary word or phrase from the unit.**

1. restrains driver and / or passengers in an accident: *seat belt*
2. identifies your vehicle: _____
3. covers damage to another vehicle: _____
4. can get clogged and affect your gas mileage: _____
5. tells you how fast you can drive on any given road: _____
6. the different things an insurance company will pay for: _____
7. tells you how many miles you have driven: _____

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Create an Auto Safety Handbook

SOFT SKILL ▶ Collaboration

With your class, you will compile an auto safety handbook.

1. Form a team of four or five students. Choose positions for each member of your team.

Position	Job Description	Student Name
Student 1: Project Leader	Check that everyone speaks English. Check that everyone participates.	
Student 2: Secretary	Take notes on team's ideas.	
Student 3: Designer	Design layout of handbook section.	
Student 4: Spokesperson	Prepare team for presentation.	
Student 5: Assistant	Help secretary and designer with their work.	

2. As a class, brainstorm a list of topics to include in your auto safety handbook. You might include safety maintenance tips, insurance minimums, and rules of the road. Count the number of teams and narrow your list of topics down to that number. Each team must choose a single topic to work on.
3. As a team, gather all the information for your group's section of the handbook.
4. Decide how you would like to present your information. You can choose pictures, lists of facts, and graphs. Be creative!
5. Create your section of the handbook.
6. Present your section of the handbook to the class.
7. Compile all the sections into one handbook.

COLLABORATION:
Negotiation

As you collaborate, practice negotiating by making polite suggestions:

I think it would be a great idea if we include…

Why don't we add…?

I think it would be better if…

I'm not sure that's such a good idea. Wouldn't it be better if…?

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Reading Challenge

A **PREDICT** **Look at the title and read the quote. What job do you think Yu-Guo Guo has?**

B **Batteries allow us to use things without having to plug them in. Make a list of things that use batteries.**

1. _____ 2. _____

3. _____ 4. _____

5. _____ 6. _____

7. _____ 8. _____

C **Discuss the following questions in a small group.**

1. Do you drive a car? Why?

2. Do you think cars are bad for the environment? Why?

D **Yu-Guo Guo is a chemist who has been working with nanotechnology to change the way cars are made. Read the interview.**

E **Based on the interview, match each vocabulary expression to its correct meaning.**

_____ 1. sustainable	a. rechargeable power source
_____ 2. lithium-ion battery	b. microscopic particle of matter
_____ 3. deterioration	c. not wanted or wished for
_____ 4. nanoparticle	d. fuel formed from the remains of living organisms
_____ 5. fossil fuels	e. able to be maintained at a certain rate or level
_____ 6. undesirable	f. process of becoming progressively worse

F **INFER** **Underline any words or phrases in the article that you don't understand and try to infer the meanings.**

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Fully Charged

Q: Why is there a need for electric vehicles (EVs)?

Yu-Guo Guo: There is a serious need for sustainable energy sources to power electrical devices, cars being one of them. Traditional sources, such as fossil fuels, cannot satisfy the growing demand, and the carbon emissions that cars give off raise great environmental concerns.

Q: If that is the case, why don't more people drive EVs?

Yu-Guo Guo: EVs are expensive because of the battery pack—the most important part of any EV. Batteries that are powerful enough to make cars go long distances are big and heavy, which makes an EV too costly for most consumers. On the other hand, using a smaller battery pack means the car couldn't go as far, making them undesirable for most drivers.

Q: So, is there a feasible solution?

Yu-Guo Guo: The key to improving performance and lowering the battery cost is using nanoparticles that can quickly absorb and hold many lithium ions. This will improve the performance without causing deterioration in the electrode. In plain terms, this means that cars won't drain the energy storage capacity quickly. Compared with traditional lithium-ion batteries, this new high-power technology means batteries can be fully charged in just a few minutes, as quickly and easily as you fill your car with gas. These advanced batteries recover more energy when cars stop, deliver more power when cars start, and enable vehicles to run longer.

Q: Why hasn't this been done before?

Yu-Guo Guo: I invented the technology, so it hasn't been possible before. I found a unique way to make an important part of this technology—lithium iron phosphate—less expensive and easier for manufacturers to work with.

Q: How soon will we start to see EVs with the better, smaller battery packs?

Yu-Guo Guo: Production of smaller, lighter battery packs will begin in 2023.



"There is a serious need for sustainable energy sources to power electrical devices."
—Yu-Guo Guo

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