

Storitvene
dejavnosti

Cars



Simona Vincelj



Storitvene dejavnosti

Avtoservisni tehnik

Avtomobili in njihovo delovanje– M1



POVZETEK

Gradivo opisuje avtomobile in njihove lastnosti. Predstavljeni so vrste in modeli avtomobilov, njihovi zunanji in notranji deli, vrste motorjev in njihovo delovanje ter avtomobile prihodnosti. Predstavljeno je strokovno besedišče in nekatere razlike med britansko in ameriško angleščino. V slovnichnem delu so predstavljeni osnovni časi v trpniku ter modalni glagoli za napovedovanje in predvidevanje dogodkov v prihodnosti (may, might, could; will). Gradivo opisuje tudi tehnologijo prihodnosti in dopušča uporabo domišljije.

Ključne besede: car, automobile, car parts, exterior, interior, dashboard, engine, green cars, environment, hybrid, fuel.

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CIP –



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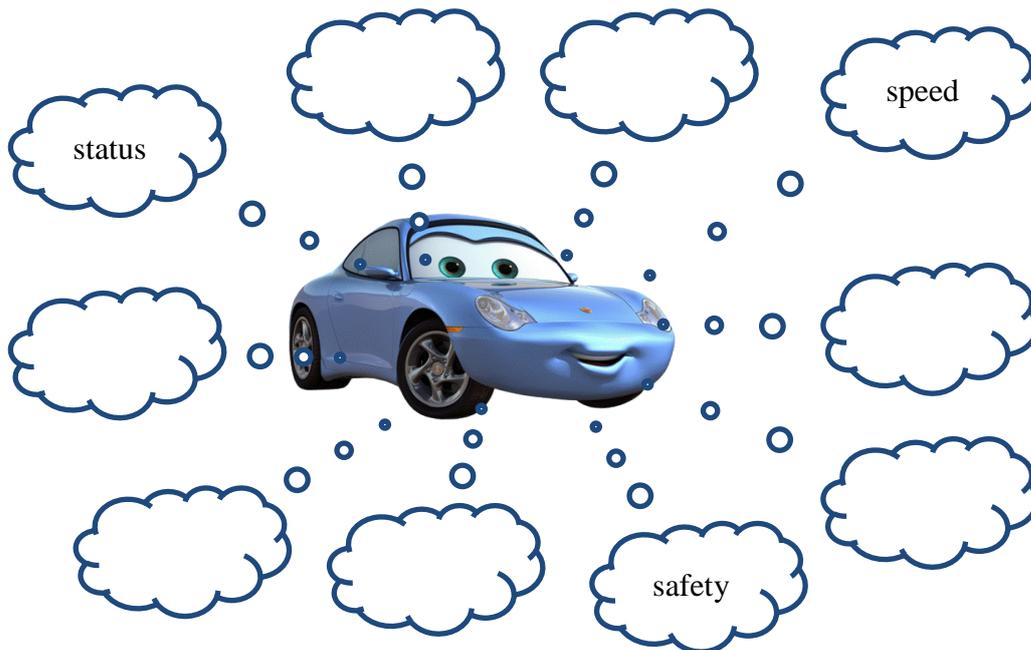
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INTRODUCTION TO THE CAR (Avto - predstavitev)

1. Na kaj pomislite, ko vidite avto? Dopolnite spodnji diagram.
2. Primerjajte svoj diagram s sošolci.



Slika1: Avto. Vir: <http://freedisneyclipartsite.com> (4.7.2012)



Reasons for buying a car (Razlogi za nakup avta)

3. Ljudje imajo različna mnenja o avtomobilih. Preberite izjave štirih oseb (Jill, Michael, Jean, Manuela) in odgovorite na vprašanja.

Which person sees the car as:

- a status symbol? _____
- a lifestyle product? _____
- a functional product? _____
- a danger to the environment? _____

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Jill

For me a car is a part of my personality. It gives a message to the other people about who I am and what I believe in. The colour and the interior features are very important. I put a lot of thought into the car I buy - it has to be me.

Michael

How do I see the car? It's just a piece of metal on four wheels. I just want it to get me from A to B, that's all. Of course, if it's comfortable and safe, that's great, but I really don't care about the brand. I'm only interested in details such as price, fuel consumption, how many seats there are, and how big the boot is.

Jean

The car gives me prestige. I would only buy an expensive car with a powerful engine and all the latest equipment. I have a lot of money and why shouldn't I show it? I have a beautiful house and I need an expensive car in the garage.

Pauline

Well, I have a car because I live in the country and there's no public transport. But I think cars are polluting the world. Just think of all the exhaust gases! And what do you do with a car at the end of its life? You can't recycle all of it.

The Top 12 consumer car buying factors

Research by Carmony.co.uk has revealed that cash strapped Brits are not very environmentally concerned when it comes to buying their next car.



The top 12 car buying factors include:

- | | |
|--------------------------------------|------------------------------------|
| 1. Price (84%) | 7. Cost of running (54%) |
| 2. Current mileage (73%) | 8. Reliability of model (50%) |
| 3. Age (72%) | 9. How the car runs (49%) |
| 4. Reliability of brand (59%) | 10. Colour (48%) |
| 5. Service history (57%) | 11. Previous owners (32%) |
| 6. Mechanical state of the car (55%) | 12. Environmentally friendly (21%) |

Vir: <http://www.fleetnews.co.uk/fleet-management>

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4. Here are some more factors people consider when buying a car. Match the factors (1-7) with the definitions (a-g)

1	price	a	the amount of money you get when you sell your car
2	resale value	b	how much petrol or diesel the car uses
3	size	c	when costumers always buy their cars from the same manufacturer
4	interior features	d	the amount of money you pay when you buy your car
5	fuel consumption	e	the car's capacity to go fast and accelerate quickly
6	performance	f	how big the car is
7	brand loyalty	g	items inside the car

5. Spodnji vprašalnik je del raziskave, ki ugotavlja, kateri dejavniki so ljudem pomembni pri nakupu novega avtomobila. Skupaj s sošolcem izpolnite vprašalnik.

Car buying attitudes How important are the following factors when buying a car?		Rank the factors like this: 1 very important 2 important 3 not important
Factors involved in buying a car	Your ranking	Partner's ranking
Price		
Resale value		
Design		
Colour		
Size		
Interior features		
Engine		
Fuel consumption		
Handling		
Brand name		
Brand loyalty		
Advertising		

6. Compare the results. What are the five most important factors in your class?

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Types of cars (*Vrste avtomobilov*)

1 Označite različne vrste avtomobilov

convertible • coupe • estate(car) • hatchback • pick up •
saloon • sports car • limousine • SUV(sports utility vehicle)



coupe



Slike 2 - 10: Vrste avtomobilov. Vir: <http://www.thesupercars.org> (7.8.2012)

2 Poiščite avtomobile, ki ustrezajo naslednjim opisom:

Which car(s)...

- has / have lots of room for passengers?
- is / are good for driving on bad roads?
- is / are not suitable for large families?

(next page)

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- d. is / are perfect for hot, sunny weather?
- e. has / have low fuel consumption?
- f. is / are ideal for small parking places?
- g. has / have only one passenger seat?
- h. is / are good for transporting things?

3 Katero vrsto avtomobila bi predlagali spodaj opisanim osebam?

Twenty-nine-year-old stock broker Janet Dawson is single, independent, and ambitious. She loves driving and travels a lot for business and pleasure.

Joan Hill is a single mother with three children. She lives in the country far from the town and children's school. She sees the car as a functional object.

Jean Mitchell is a forty-six-year-old business man. He enjoys life in the fast lane. He has plenty of money and loves cars.

Sandra and Toby Reed have two small children and a dog. They like to go skiing, camping, and fishing. Sandra is an engineer and Toby stays at home and looks after the children.

Jack Owens is a twenty-year-old bank clerk. This is his first car and first job. He still lives at home.

Sue and Tom Benton are a young couple. Both have good jobs and no children. They like to be trendsetters.

4 Role-play.

Partner A: You want to buy a car for yourself. Tell the salesperson what your requirements are.

Partner B : You are a salesperson. Help the customer.

RECOMMENDING

I recommend ...

You need a car which...

Have you thought about...

Why don't you buy...

If I were you, I would buy...

A... would be ideal for you.

You should / shouldn't buy a ...





THE EXTERIOR (Zunanost)

1. Za proizvajalce avtomobilov je zelo pomembno, da kupci zlahka prepoznajo znamko avta že na prvi pogled.
Koliko znamk spodnjih avtomobilov lahko prepoznate?



Slike 11 - 22: Vrste avtomobilov. Vir: [https://encrypted-tbn2.google.com/images\(7.8.2012\)](https://encrypted-tbn2.google.com/images(7.8.2012))

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Parts of a car

2. Označite dele avtomobila.



bonnet • front bumper • headlight • indicator • petrol cap • roof • sill •
 tyre • wheel arch • wheel trim • logo • windscreen • wing • wipers •
 door handle • number plate • wing mirror • fog light • side window • door

aerial • exhaust pipe
 • rear bumper • rear
 window • rear light •
 stop light • badge



Sliki 23 in 24 : Audi Q7. Vir: <http://www.bestcartrends.com> (5.8.2012)

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Vocabulary spot: British and American English

Čeprav Britanci in Američani govorijo isti jezik, pri nekaterih izrazih obstajajo razlike.

British English

aerial
bonnet
boot
engine
estate car
indicator
number plate
petrol
petrol cap
saloon
stop light
tyre
windscreen
wing
4x4

American English

antenna
hood
trunk
motor, engine
station wagon
turn signal
license plate
gas
gas tank lid
sedan
break light
tire
windshield
fender
SUV (sport utility vehicle)



VAJE

3. Dopolnite stavke z besedami iz naloge 2.

- You open the _____ to look at the engine.
- The _____ absorbs small impacts in an accident.
- Don't forget to retract the _____ before using the car wash.
- Can you put my suitcases in the _____, please?
- When it starts raining, you need to switch on the _____.
- "What model is that?" - "I don't know, I can't see the _____ from here."
- It is important to inflate the _____ to the correct pressure for better fuel consumption.
- The Mercedes star is a well-known _____.
- I wish all drivers would use their _____ when they want to turn right or left!
- You shouldn't have your _____ switched on when there's no fog.

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4. Povežite besede iz obeh okvirčkov tako, da dobite novo besedo.

a. head _____	▪ wipers
b. rear _____	▪ lights
c. exhaust _____	▪ plate
d. wheel _____	▪ trim
e. front _____	▪ bumper
f. petrol _____	▪ cap
g. windscreen _____	▪ mirror
h. wing _____	▪ handle
i. door _____	▪ lights
j. number _____	▪ pipe

5. Opišite dela avta, kot jih prikazujejo slike



Slike 25 - 33: Deli avta. Vir: <http://www.learnenglishfeelgood.com> (7.8.2012)

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6. Prevedite spodnje besede. V slovarju poiščite pomen besed, ki jih ne razumete.

angleško	slovensko
aerial	
badge	
blinker (inf.)	
bonnet	
break light	
bumper	
convertible	
coupe	
door	
door handle	
estate(car)	
exhaust pipe	
fog light	
front bumper	
hatchback	
headlight	
indicator	
limousine	
logo	
number plate	
petrol cap	
pick up	
rear window	
roof	
saloon	
side window	
sill	
sports car	
SUV	
tyre	
wheel arch	
wheel trim	
windscreen	
wing	
wing mirror	
wipers	

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Reading: Recycling

1. Odgovorite na vprašanja.

- How old is your / your father's car?
- What will happen to it when it gets too old to drive?
- Think of parts and materials from cars. Which ones can be recycled or reused?



Slika 34: Star avto.

Vir: <http://1.bp.blogspot.com> (7.8.2012)

2. Preberite spodnje besedilo, ki opisuje postopek recikliranja avtomobila, in preverite svoje odgovore.

- A: What's the first job?
 B: The airbags. They are activated, so they can't blow up by accident. Then all the fluids are drained out of the car.
 A: Do you throw them away?
 B: No, we recycle them.
 A: What is done next?
 B: After that, the car can be dismantled, piece by piece.
 A: So, everything is taken apart?
 B: Yes, we remove the battery, the wheels, the engine, the windows, and we pull out all the cables ...
 A: What do you do with all the parts?
 B: It depends. Some things are in good working order and we keep them.
 A: And the rest?
 B: All the other parts are sorted for recycling. We have a lot of different containers and we separate all the different materials.
 A: What about the plastic parts?
 B: Most of them can be recycled.
 A: And the glass?
 B: That's more difficult. Car windows are a mixture of glass and plastic and it's expensive to recycle. The material is sold to the construction industry and they use it to build roads.
 A: I see.
 B: Finally, we are left with the car body.
 A: That's made of steel?

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- B: Yes, we crush it so it can be easily transported and taken to the shredder. The metal is cut up into pieces the size of your hand. Then, it is melted down and used again.
- A: Is anything left over?
- B: Just a little mixture of textiles, paint, rust, rubber ... we bury it in the ground. But not the tyres.
- A: Are they too big to bury?
- B: Yes and it isn't economical to recycle them. They are sold to the cement industry.
- A: The cement industry? Why do they need old tyres?
- B: They burn them.
- A: So you don't recycle the tyres, but you recycle the energy?
- B: That's right.



Grammar spot: *Passive (trpnik)*

V angleščini za opisovanje postopka ponavadi uporabimo trpnik ali passive.

The fluids are drained out of the car. (present simple passive)

Trpnik oblikujemo tako, da uporabimo glagol *biti* v ustreznem času in pretekli deležnik.

Form:

to be + past participle

Če želimo spremeniti čas v trpniku, spremenimo čas glagola *biti*:

tense	to be	Example
Present Simple	am, is, are	The fluids are drained out of the car.
Present Continuous	am/is/are being	The fluids are being drained out of the car.
Past Simple	was, were	The fluids were drained out of the car.
Past Continuous	was, were	The fluids were being drained out of the car.
Present Perfect	has/have been	The fluids have been drained out of the car.
Will Future	will be	The fluids will be drained out of the car.

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VAJE

1. Odgovorite na vprašanja.

What is done with...?

- the airbags
- the fluids
- the parts that are in good working order
- the parts for recycling
- the glass
- the car body
- the mixture that's left over

2. Dopolnite stavke s pravilnimi oblikami glagolov v oklepajih.

- The airbags _____ (blow up).
- The fluids _____ (drain out).
- The parts that are in good working order _____ (keep).
- The parts for recycling _____ (sort).
- The glass _____ (sell).
- The car body _____ (crush).
- The mixture that's left over _____ (bury).

3. So spodnji stavki napisani v aktivni ali v pasivni obliki?

- They listen to music.
- She is reading an e-mail.
- These cars are produced in Japan.
- Alan teaches Geography.
- German is spoken in Austria.
- Lots of houses were destroyed by the earthquake.
- Henry Ford invented the assembly line
- The bus driver was hurt.
- You should open your workbooks.
- Houses have been built.



Passive:

to be + past participle

4. Pretvorite stavke iz aktivne v pasivno obliko

- a. John collects money.
Money _____
- b. Anna opened the window. –
The window _____
- c. We have done our homework. –
Our homework _____
- d. I will ask a question. –

- e. He can cut out the picture.

- f. The sheep ate a lot. –

- g. We do not clean our rooms. –

- h. William will not repair the car. –

- i. Did Sue draw this circle? –

- j. Could you feed the dog? –

5. Dopolnite stavke s pravilnimi oblikami glagolov v aktivni ali pasivni obliki. Uporabite Present Simple.

- a) He (sell) _____ cars.
- b) The blue car (sell) _____.
- c) In summer, more ice-cream (eat) _____ than in winter.
- d) She (call) _____ her grandparents every Friday.
- e) The letters (type) _____.
- f) He (take) _____ his medicine every day.
- g) Jane (take / not) _____ to school by her father.
- h) We (go) _____ to school by bus.
- i) She (work / not) _____ for a bank.
- j) Milk (keep) _____ in the refrigerator.

6. Dopolnite stavke s pravilnimi oblikami glagolov v pasivni obliki.

- a) The bridge _____ (blow off) yesterday.
- b) This novel _____ (write) by Hemingway.
- c) Flies _____ (catch) by spiders.
- d) He _____ (offer) a new job last week.
- e) All the trees _____ (cut) down yesterday.
- f) We _____ (tell) to go home now.
- g) Their purse _____ (steal) yesterday night in the disco.
- h) He _____ (throw) out of the bar a week ago.
- i) The old theatre _____ (reopen) last Friday.
- j) Mice _____ (catch) by cats.
- k) Look at that man! I think we _____ (follow)!
- l) Don't leave me! I _____ (lose) without you.

7. Vstavite pravilno obliko glagola

In Paxham yesterday a shop assistant _____ (force) to hand over £ 500 to a man with a knife. The man _____ (wear) a black mask and he _____ (escape) in a car which _____ (steal) earlier that day. The car _____ (find) later in a car park.

The police _____ (arrest) a woman in connection with the robbery but she _____ (not/question) yet. They _____ (hope) that she will _____ (can give) them some information about the man. She _____ (release) tomorrow.



PONOVIMO

The Mini Story

The first Mini was first made in 1959 and since then over five million people have owned one. BMW, a German car manufacturer, now owns the Mini and the newest model is being manufactured at an advanced production system in Oxford, England.

During the 1990s approximately £500 million was spent to change an old Oxford car factory into a state-of-the-art manufacturing plant. The Oxford plant now produces around 100,000 Minis a year.

There are 2,500 employees at the plant and the working environment is good. The car assembly line is designed ergonomically to be easy to use and comfortable for the operators.

For examples, the car is raised, lowered, and turned through 90 degrees so the workers can do their jobs comfortably and easily. Old-fashioned, noisy compressed-air tools have been replaced with quieter and more accurate electric tools.



Slika 35: Mini nekoč in danes. Vir: <http://www.minicarparts.net> (7.8.2012)

V besedilu poiščite besede, ki pomenijo:

1. employees who work machines - _____
2. factory - _____
3. very modern - _____
4. working conditions - _____
5. where the cars are put together - _____

Ponovno preberite besedilo in odgovorite na vprašanja

1. When was the first Mini made? _____
2. Why is Mini factory in Oxford special? _____
3. How many new Minis are made each year? _____
4. How many people work at the Mini factory? _____
5. Why is the new factory better for the workers? _____

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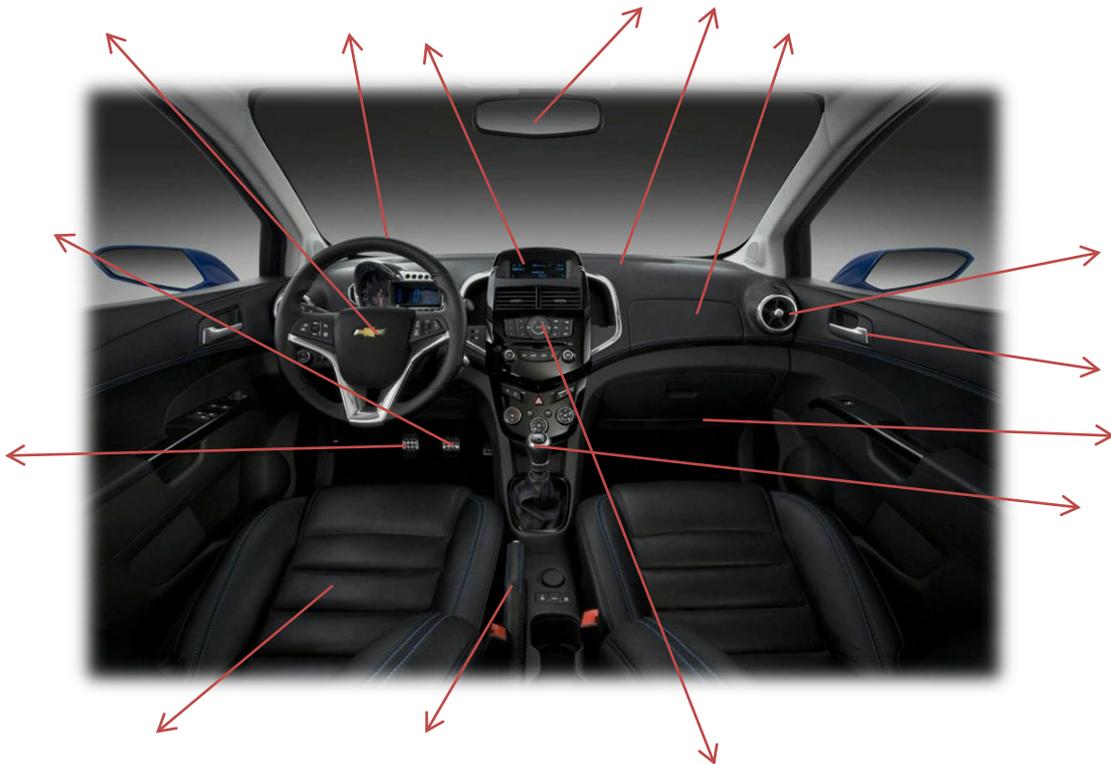


THE INTERIOR (Notranjost)

1. V razredu poiščite nekoga, ki:

- has a car with GPS navigation system
- likes to have lots of switches and gadgets in a car
- would always buy a car with air-conditioning
- has soft toys and cushions in he car
- needs plenty of legroom
- likes a sporty steering wheel
- doesn't allow smoking in his/her car

2. Označite dele v notranjosti avtomobila.



accelerator • air vent • airbag • brake pedal • car seat • dashboard • door handle
• gearstick • glove compartment • handbrake • horn • rear-view mirror
• steering wheel • navigation • radio

Slika 36: Notranjost avta. Vir: <http://www.lincah.com> (7.8.2012)

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Dashboard (Armaturna plošča)

A dashboard (also called dash, instrument panel, or fascia) is a control panel placed in front of the driver of an automobile, housing instrumentation and controls for operation of the vehicle. The word originally applied to a barrier of wood or leather fixed at the front of a horse-drawn carriage or sleigh to protect the driver from mud or other debris "dashed" (thrown) up by the wheels and horses' hooves.

Dashboard items

Items located on the dashboard at first included the steering wheel and the instrument cluster. The instrument cluster pictured to the right contains gauges such as a speedometer, tachometer, odometer and fuel gauge, and indicators such as gearshift position, seat belt warning light, parking-brake-engagement warning light and an engine-malfunction light. There may also be indicators for low fuel, low oil pressure, low tire pressure and faults in the airbag (SRS) system. Heating and ventilation controls and vents, lighting controls, audio equipment and automotive navigation systems are also mounted on the dashboard.



The top of a dashboard may contain vents for the heating and air conditioning system and speakers for an audio system. A glove compartment is commonly located on the passenger's side. There may also be an ashtray and a cigarette lighter which can provide a power outlet for other low-voltage appliances. In the early and mid 1990s, airbags became a standard feature of steering wheels and dashboards.

Fashion in instrumentation

With the coming of the LED in consumer electronics, some manufacturers used instruments with digital readouts to make their cars appear more up to date, but this has faded from practice. Some cars use a head-up display to project the speed of the car onto the windscreen in imitation of fighter aircraft, but in a far less complex display.

Manufacturers such as BMW and Mercedes-Benz have included fuel-economy gauges in some instrument clusters, showing fuel mileage in real time. Many vehicles have warning lights instead of voltmeters or oil pressure gauges in their dashboard instrument clusters.



Sliki 37 in 38: Prikaz na armaturni plošči. Vir: <http://en.wikipedia.org/wiki/Dashboard>. (7.8.2012)

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Vocabulary spot

British English

accelerator
gearstick
gearbox

American English

gas pedal
gear shift / stick shift
transmission

3. Spodnje besede vstavite v stavke.

•steering wheel •glove compartment •spare tire •licence plate •turn signal •jumper cables •luggage rack •rearview mirror •windshield wipers •rear windshield

1. I heard a blaring siren. I looked in my _____ and saw an ambulance fast approaching the intersection behind me. I immediately pulled over and stopped the car.
2. In some countries the _____ is on the right-hand side of the car while in others it's on the left.
3. During the storm my neighbor's tree fell down on my car and broke the . It shattered _____ into a million pieces!
4. When my front wheel hit a pothole, the tire got deflated. I didn't have a _____ and had to wait for someone to come and help me.
5. The security guard asked for my _____ number to give me a permission to park the car near the hotel overnight.
6. A _____ indicates driver's intention to change lanes or make a turn.
7. A heavy rain started as Susan was driving home and she turned on the _____ on the fastest setting so that she could see better.
8. Tim always carries _____ in his trunk in case his car won't start.
9. Greg has bought a _____ to carry bulky items like skis, folding chairs, Christmas tree or even his boat. It's attached to the car roof.
10. I keep a set of maps, road atlas, flashlight and car manual in my _____.

Učno gradivo je nastalo v okviru projekta Munus 2. Njegovo izdajo je omogočilo sofinanciranje Evropskega socialnega sklada Evropske unije in Ministrstva za šolstvo in šport.

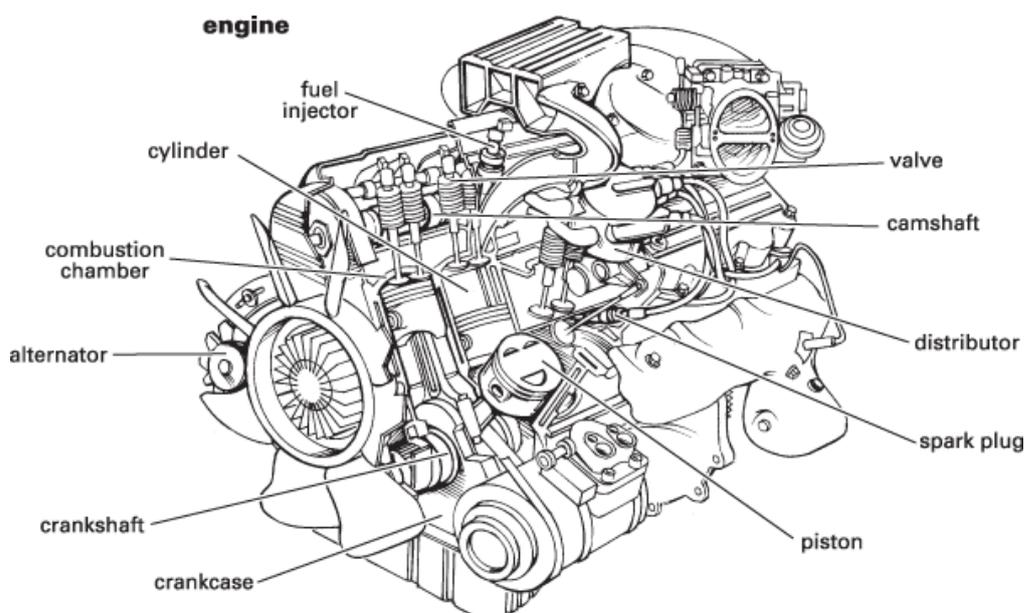


UNDER THE BONNET (Pod pokrovom motorja)



The Engine (Motor)

The main part of the engine is the cylinder. Smaller motorcycle engines need only one, but cars usually have four or more. Inside the cylinder is a piston, which is free to move up and down the cylinder. It is connected to a crankshaft by a connecting rod. At the top of the cylinder there are an air-intake valve, a fuel-injection valve, an exhaust valve, and a spark plug, which ignites the mixture of fuel and air. The resulting explosion pushes the piston down the cylinder and the burnt gases leave the cylinder through the exhaust valve.



Slika 39: Motor. Vir: http://www.learnersdictionary.com/art/ld/engine_rev.gif (7.8.2012)

1. Izpišite vse besede, ki označujejo dele motorja in jih prevedite v slovenščino.

angleško	slovensko	angleško	slovensko

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How car engines work (*Kako delujejo avtomobilski motorji*)

The Basics

The purpose of a petrol (gasoline in American English) car engine is to convert petrol into motion so that your car can move. Currently the easiest way to create motion from petrol is to burn it inside an engine. Therefore, a car engine is an internal combustion engine - combustion takes place internally. Two things to note:

- There are different kinds of internal combustion engines. Diesel engines are one and gas turbine engines are another. Each has its own advantages and disadvantages.
- There is also an external combustion engine. Steam engines in old-fashioned trains and steam boats is the best example of an external combustion engine.

Almost all cars today use a reciprocating internal combustion engine because this engine is:

- Relatively efficient (compared to an external combustion engine).
- Relatively inexpensive (compared to a gas turbine).
- Relatively easy to refuel (compared to an electric car).

These advantages beat any other existing technology for moving a car around.

The Strokes

Almost all cars currently use what is called a four-stroke combustion cycle to convert petrol into motion. The four-stroke approach is also known as the Otto cycle in honour of Nikolaus Otto, who invented it in 1867.

The four strokes are:

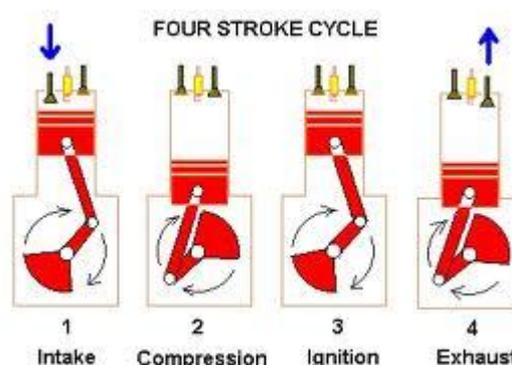
- intake stroke;
- compression stroke;
- combustion stroke;
- exhaust stroke.

The strokes take place as follows:

1. The piston starts at the top, the intake valve opens, and the piston moves down to let the engine take in a cylinder-full of air and petrol. This is the intake stroke.

Only the tiniest drop of petrol needs to be mixed into the air for this to work.

2. Then the piston moves back up to compress this fuel/air mixture. Compression makes an explosion more powerful.



Slika 40: Štiristaktni motor. Vir: <https://encrypted> (7.8.2012)

Učno gradivo je nastalo v okviru projekta Munus 2. Njegovo izdajo je omogočilo sofinanciranje Evropskega socialnega sklada Evropske unije in Ministrstva za šolstvo in šport.

3. When the piston reaches the top of its stroke, the spark plug emits a spark to ignite the petrol.
4. Once the piston hits the bottom of its stroke, the exhaust valve opens and the exhaust leaves the cylinder to go out of the tail pipe.

Now the engine is ready for the next cycle, so it takes in another charge of air and petrol.



Slika 41: Avtomobilski motor (Chevrolet v8).

Vir: <https://encrypted-tbn3.google.com/images> (7.8.2012)



VAJE

2. Spodnje besede vstavite v stavke.

- cams •connecting rod •cylinder •piston •timing chain •flywheel •oil sump
- cylinder head gasket •cylinder head

- a. The _____ is a cylinder piece of metal which moves up and down the cylinder.
- b. The piston moves up and down the _____.
- c. The _____ is bolted to the engine block with the _____ forming a seal between them.
- d. The _____ transfers the power of the piston to the crankshaft, which then turns and converts the linear motion into rotational motion.
- e. The _____ is connected to the crankshaft and drives the camshaft.
- f. The _____ on the camshaft open the inlet valves and exhaust valves of a four-stroke engine every second turn of the crankshaft.
- g. As it gains momentum the _____ turns the crankshaft between power strokes.
- h. The _____ contains the oil which lubricates the engine.

3. Ugotovite, kateri del motorja je opisan.

- a. It opens at the proper time to let in air and fuel.
- b. It opens at the proper time to let out exhaust.
- c. It supplies the spark that ignites the air/fuel mixture so that combustion can occur.
- d. It connects the piston to the crankshaft.
- e. It surrounds the crankshaft and contains some amount of oil.

Učno gradivo je nastalo v okviru projekta Munus 2. Njegovo izdajo je omogočilo sofinanciranje Evropskega socialnega sklada Evropske unije in Ministrstva za šolstvo in šport.



Reading: GDI Engines

When developing a new motor-vehicle engine, engineers are faced with the dilemma of more power or less fuel. The goal is to combine high power output and low fuel consumption. Increasing fuel efficiency helps motorists to save money and also reduce CO₂ emissions. Gasoline Direct Injection (GDI) engines can reduce fuel consumption by up to 20% thereby producing 20% lower emissions.



Slika 42: GDI motor. Vir: [http://www.hybridcars.com\(7.8.2012\)](http://www.hybridcars.com(7.8.2012))

How does it work?

GDI engines use a new combustion control method that injects gasoline directly into the cylinders, where it mixes with oxygen from air drawn in from the outside. Conventional spark-ignition engines mix air and gasoline in the intake manifold before injecting the mixture into the cylinder.

The GDI engine produces a finer mist of gasoline in the cylinder which leads to cleaner burning and more power. It also has a shaped piston crown to swirl the finely atomized gasoline into a tight cloud near the tip of the spark. This stratified charge of fuel and fresh air near the source of ignition is the process behind GDI's low fuel consumption.

Some car makers have developed other key components, for example a high-pressure common-rail injection pump. This pump supplies the exact amount of fuel needed to maintain the required pressure in the system.

GDI engines will become more important in the future because of the need to reduce fuel consumption and because of growing environmental concerns.

4. Odgovorite na vprašanja.

- Can you explain in your own words how GDI engines work?
- How important do you think GDI engines will be in the future?
- Do you know of any other current engine innovations?



GREEN CARS (Zeleni avtomobili)

Green Cars Myths

21st century is the age of revolution. Automobile industry is among those industries that progress enormously after technological advancement. Car manufacturers must have



recognized the fact behind the rapid growth of countless vehicles running on the road is adding huge pollution to our environmental pollution. That's why most of automobile companies are introducing environmental friendly cars e.g. electric, cell-powered, hybrid and solar cars. Check out some myths about these environmentally friendly cars.

Slika 43: Eko avto. Vir: <http://www.autoscraze.com> /7.8.2012)

1. Myth-Green Cars are costly

If you are among those who believe that eco-cars are expensive, you are absolutely wrong. Check out these cars; Toyota Prius, 2008 Honda civic Hybrid, 2008 Mint Cooper, 2008 smart for two. These are less expensive cars. Well, if we talk about hybrid cars, these are bit expensive because hybrid cars give an option of alternative fuel source. It adds some cost to the price.

2. Myth-Green cars are small and uncomfortable

It is wrong to think that green cars are small & uncomfortable. Most of the eco-friendly cars are spacious. Let's take the example of Toyota Highlander Hybrid, Ford escape hybrid; these cars are equally spacious and comfortable than any other car.

3. Myth-Green cars are most environmental friendly

Although green cars reduce pollution, but these cars still pollute to environment to some extent. Hybrid cars use lots of gas as well and do pollute the air.

4. Myth-Green cars needs low maintenance

Green cars less pollute the environment but it does not mean these car do not need maintenance, in fact green cars are bit costly as compare to other cars from maintenance perspective e.g. electric cars operates on rechargeable batteries and replacement of battery is an additional cost.

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5. *Myth-Green cars are “Hot selling”*

Apparently it seems to be green cars are very popular and most of the people in developed countries use preferentially. But reality is, only 3 % of people in UK & USA are currently using environment friendly green cars.

6. *Myth-Green cars can not run at high speed.*

If you are planning to buy a green car and someone has told you that you can not speed up a green car, do not listen to that person. As a matter of fact green cars can be used at any desirable speed like other cars.



Slika 43: Eko avto. Vir: <http://www.autoscraze.com> /7.8.2012)

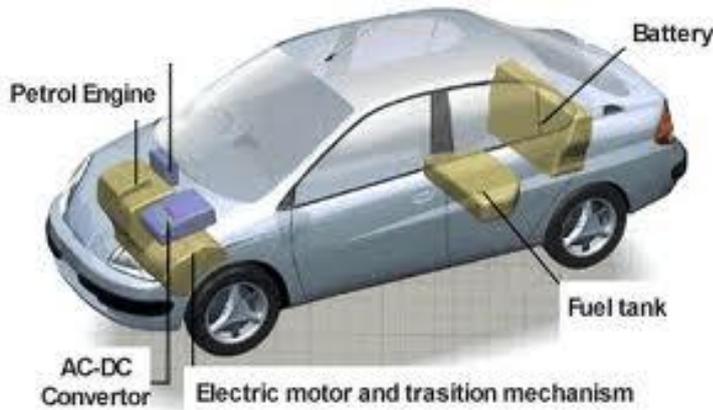
However, these are facts, which everyone would like to know about the eco-friendly cars, we would also like to suggest some interesting tips for buying an eco-friendly cars. In case if these cool facts have changed your mind to switch over these hot and sexy green cars from your old car, just have a look to these tips to go green:

Tips to buy an Eco-Friendly Green Car

- List down all the green cars that are available in the market.
- Determine your price range.
- If you select one of them, ask for EPA’s green vehicle guide and look for vehicle emission scores.
- See the certificate of conformity and, look for the air pollution score indicated on it. The vehicles that emit less pollution, gets a high score.
- Look for “manufacturer”, who uses “eco-friendly” paint to reduce pollution.
- Prefer the vehicle that employs oxygen sensors.
- Prefer the vehicle, whose plastic parts are suitable for recycling.
- Prefer the vehicle, which has no-ozone damaging products.

Going green is a good move towards great life. We should think about the causes and solutions for global warming, being a human being, it is our primary responsibility to protect our planet from pollution. All of us should adopt a social responsible attitude, and protect our environment from hazardous pollution. In this way we can make this world a better place to live.

Hybrid cars



Slika 44: Toyota Prius. Vir: <https://encrypted-tbn2.google.com> (8.8.2012)

A Hybrid-electric vehicle (HEV) has both a petrol engine and an electric motor. The petrol engine is the main power source. It is smaller and lighter than the engines of conventional cars. The electric motor provides extra power when needed. In some HEVs, it is connected to the wheels by the same transmission. In addition to a fuel tank, the HEV carries a pack of advanced batteries. There is also a processor which decides when to use the motor and engine.

When the car is running at a constant speed, cruising, the petrol engine provides all the power required. For overtaking, hill climbing, and accelerating from stop, the electric motor provides extra power. In some cars, the motor also provides power for low-speed cruising as petrol engines are least efficient in these conditions.

HEVs use regenerative braking. When the driver breaks, the resistance of the motor helps to slow down the car. At the same time, the energy from the wheels turns the motor which then functions as a generator, producing electricity to recharge the batteries. When the batteries are low, the petrol engine also drives the generator.

HEVs have automatic start / shutoff. The petrol engine shuts off when the car comes to a stop. When the driver presses the accelerator, the motor instantly starts the engine again. No energy is wasted from idling when the car is stopped.

HEVs are more efficient and pollute less than cars with only petrol engines. They do not require special fuel like hydrogen cars and, unlike electric cars, they do not need to be plugged in overnight to recharge the batteries. However, they are heavy because of the weight of the batteries.

5. Odgovorite na vprašanja.

- What two things are combined to make a hybrid car?
- When is the petrol engine used alone?
- When is the electric motor used alone?
- When are both motors used?
- What advantages does this car have over an electric car?
- How is the battery charged?

Hydrogen vehicles

A hydrogen vehicle is a vehicle that uses hydrogen as its onboard fuel for motive power. Hydrogen vehicles include hydrogen fueled space rockets, as well as automobiles and other transportation vehicles. The power plants of such vehicles convert the chemical energy of hydrogen to mechanical energy either by burning hydrogen in an internal combustion engine, or by reacting hydrogen with oxygen in a fuel cell to run electric motors.



Slika 45: Honda FCX Clarity. Vir: <http://en.wikipedia.org>

(8.8.2012)

Widespread use of hydrogen for fueling transportation is a key element of a proposed hydrogen economy.

Hydrogen fuel does not occur naturally on Earth and thus is not an energy source, but is an energy carrier. Currently it is most frequently made from methane or other fossil fuels. However, it can be produced from a wide range of sources (such as wind, solar, or nuclear) that are intermittent, too diffuse or too cumbersome to directly propel vehicles. Integrated wind-to-hydrogen plants, using electrolysis of water, are exploring technologies to deliver costs low enough, and quantities great enough, to compete with traditional energy sources.

Many companies are working to develop technologies that might efficiently exploit the potential of hydrogen energy for mobile uses. The attraction of using hydrogen as an energy currency is that, if hydrogen is prepared without using fossil fuel inputs, vehicle propulsion would not contribute to carbon dioxide emissions. The drawbacks of hydrogen use are low energy content per unit volume, high tankage weights, very high storage vessel pressures, the storage, transportation and filling of gaseous or liquid hydrogen in vehicles, the large investment in infrastructure that would be required to fuel vehicles, and the inefficiency of production processes.

Automobiles

Many automobile companies are currently researching the feasibility of commercially producing hydrogen cars, and some have introduced demonstration models in limited numbers. At the 2012 World Hydrogen Energy Conference, Daimler AG, Honda, Hyundai and Toyota all confirmed plans to produce hydrogen fuel cell vehicles for sale by 2015, with some types planned to enter the showroom in 2013.



FUTURE TRENDS (Trendi prihodnosti)

1 Izpolnite spodnji vprašalnik in odgovore primerjajte s sošolci.

HOW FUTURE-ORIENTED ARE YOU?

1 The car will be able to make more intelligent driving decisions than a human can.

- a) This is true and the result will be fewer accidents
- b) Surely there are times when people are more intelligent than machines.
- c) Driving will be no fun if I can't think for myself.

2 There will be no switches, only voice control.

- a) Great! You don't need to look at the dashboard any more.
- b) Some voice control is OK, but I still want some switches.
- c) I prefer switches.

3 The car will be made of self-cleaning materials.

- a) No more wasting time at the car wash! This is also good for recycling.
- b) Aren't we going to become very lazy?
- c) But I want to clean my car! I really enjoy it.

4 Joystick will replace wheels.

- a) This is something new and sounds like fun.
- b) This could be OK, but it will take me a long time to get used to it.
- c) You only need one hand for a joystick. I like having both hands on the steering wheel.

5 Sensors in the car will prevent accidents.

- a) This means I can really depend on my car.
- b) I would like to turn the sensors on and off when I want.
- c) What happens if the sensors don't work?

6 Most of the tasks you do in your office you'll be able to do in your car.

- a) This means I won't waste any time on business trips.
- b) I'm not sure if I want to think about work all the time.
- c) My car is for fun and relaxing, not for work!

ANSWERS:

Mostly a) : Congratulations! You are ready for the future. You are not afraid of change, and you see new technology as a challenge and something positive.

Mostly b) : You're not quite ready for the future. You are still asking yourself why changes are necessary instead of accepting that changes are going to happen.

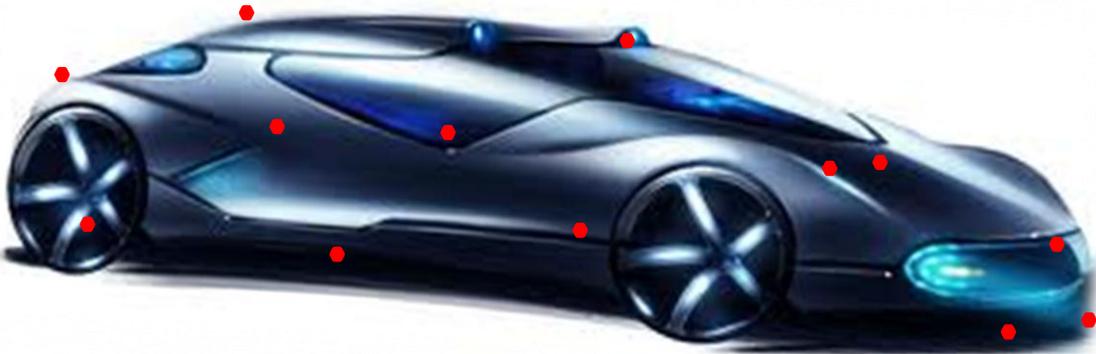
Mostly c) . You are fighting against change and new technology. You seem to be afraid of what the future will bring.

Učno gradivo je nastalo v okviru projekta Munus 2. Njegovo izdajo je omogočilo sofinanciranje Evropskega socialnega sklada Evropske unije in Ministrstva za šolstvo in šport.



The car of the future

1 Oglejte si sliko in odgovorite na vprašanja.



Slika 46: Avto prihodnosti.

Vir: <https://encrypted-tbn0.google.com> (8.8.2012)

- | | |
|---|---------------------------------------|
| ● FIRE DETECTION SENSOR | ● PEDESTRIAN SENSOR |
| ● DRIVER CONDITION DETECTION SENSOR | ● NAVROAD SURFACE SENSOR |
| ● NAVIGATION SYSTEM | ● SENSOR TO DETECT OBSTACLES IN FRONT |
| ● COLLISION DETECTION SENSOR | ● AUTOMATIC CONTROL |
| ● DRIVER RECORDER | ● PNEUMATIC SENSOR |
| ● DEVICE TO RELEASE INSIDE DOOR LOCKS | ● CAMERA TO MONITOR AREA TO REAR |
| ● SENSOR TO DETECT OBSTACLES BEHIND VEHICLE | |

- 1 How is this car different from a typical car today?
- 2 What do the red spots mean?
- 3 This car has many sensors. What are they for?
- 4 What are the aims of the designers of this car?
- 5 What further improvements could you make to this car?
- 6 What do you think ASV means?

2 Read the text on next page and check your answers.

Učno gradivo je nastalo v okviru projekta Munus 2. Njegovo izdajo je omogočilo sofinanciranje Evropskega socialnega sklada Evropske unije in Ministrstva za šolstvo in šport.

ASVs

Road traffic is increasing worldwide. This increase brings problems: road accidents, congestion, and pollution. However, engineers are working on Advanced safety vehicles (ASVs) which will be much safer for drivers, other road users such as cyclists, and for pedestrians.

ASVs will be equipped with electronic sensors to prevent accidents and to make it safer to people when accidents do happen. One sensor will stop the driver falling asleep. Others will warn drivers when they are too close to other vehicles.

The car of the future might be electric. Electric motors are very efficient and produce no pollution, but they need heavy batteries and their range is limited with current technology. Hybrid cars have both a petrol engine and an electric motor. They save about 15% of fuel. They need batteries but they don't have to be charged overnight as the motor acts as a generator when car brakes. Liquefied petroleum gas (LPG) is already used as a fuel. Cars can be converted easily but LPG only cuts down pollution a little. Hydrogen fuel cells may be the long-term answer. They provide clean power but each cell is very expensive.

3 Ponovno preberite zadnji odstavek in dopolnite spodnjo razpredelnico.

	Advantages	Disadvantages
electric		
hybrid		
LPG		
hydrogen fuel cells		



Grammar spot: Future prediction and future possibility

Will

It is used to express a future fact or prediction;

- *ASV will be equipped with electronic sensors.*



Will

May/might/could

May / might / could

May, might and could are modal verbs. They all express a future possibility.

- *The car of the future might be electric.*
- *Hydrogen fuel cells may be the long-term answer.*

I	may might could	see you later.
---	-----------------------	----------------

I	may not might not	get the job.
---	----------------------	--------------

Questions about future possibility are often asked with *Do you think.....will.....?*

- Do you think you'll get the job?



VAJE

1 Kaj mislite, da se bo zgodilo?

V skupinah postavljajte vprašanja z *Do you think...will...?* Odgovarjajte z *may, might, could* ali *will*.

- the earth / continue to get warmer?

Do you think the earth will continue to get warmer?

Yes, it will, definitely.

I'm not sure.
It might.

I don't think it will.

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- 2 all the ice / melt at the poles?
- 3 new sources of energy / found?
- 4 more people / travel by train?
- 5 people / live longer?
- 6 extra-terrestrial beings / discovered?
- 7 people / talk to animals?

2 Dopolnite stavke z *will, may / might* ali z njihovimi nikalnimi oblikami. Pomagajte si z izrazi v oklepajih.

1. We _____ use petrol engines in the future. There are better alternatives. (I'm certain).
2. Hydrogen fuel cells _____ get cheaper as technology improves. (I'm certain).
3. A hybrid car _____ be the best choice. It doesn't produce much pollution. (It's possible).
4. Solar-powered vehicles _____ be the answer to inefficient. (It's very unlikely)
5. Cars _____ become much safer with the addition of many sensors. (I'm certain).
6. By 2015 more people in Europe _____ travel to work by train than by car. (It's possible).
7. As world's oil supplies dry up, petrol _____ get more and more expensive. (I'm certain).
8. Because hydrogen-fuelled cars are silent, they _____ be more dangerous than cars with petrol engines. (It's possible).

3 Napišite svoja predvidevanja o prihodnosti čez deset let. Uporabite naslednje teme:

- the number of cars in your country
- the price of oil
- the most popular way to travel to work
- the use of electric cars
- the size of passenger aircraft

4 Tvorite stavke.

Primer: We haven't decided what we're doing this summer. (may – go to Italy / Spain).

We may go to Italy, or we may go to Spain.

1 Let's go and see that new film. (could – be good / be rubbish)

2 Kate doesn't know what she wants to do when she grows up.
(might – be a doctor / vet)

3 I can't decide which car I want. (may – buy a Ford / Toyota).

4 There are two things I'd like to see on TV tonight.
(could – watch a film / the football)

5 Dopolnite stavke z *might not* ali *could not*.

- 1 I _____ have time to come out tonight. I've got one little job to do.
- 2 I _____ be a taxi driver. I can't drive.
- 3 We're going to need lots of plates. We _____ have enough, you know.
- 4 Bruce _____ be in the office tomorrow. He thinks he's getting a cold.
- 5 There _____ be a drama festival this year. We don't know if anyone will be willing to organize it.

6 Dopolnite stavke z *might* in enim od spodnjih glagolov.

bite break need ~~rain~~ slip wake

- 1 Take an umbrella with you when you go out. It _____ might rain _____ later.
- 2 Don't make too much noise. You _____ the baby.
- 3 Be careful of that dog. It _____ you.
- 4 I don't think we should throw that letter away. We _____ it later.
- 5 Be careful. The footpath is very icy. You _____.
- 6 I don't want the children to play in this room. They _____ something.



MEDPREDMETNO POVEZOVANJE

Povezava s slovenščino:

- izdelava dvojezičnega slovarja strokovnih izrazov
- prevajanje
-

Povezava s praktičnim poukom:

- primere iz prakse znajo povedati v angleščini
- poznajo strokovne izraze v angleščini

Povezava s strokovnimi predmeti (Karoserijska oprema in elektronika, Prenosni sistemi motornih vozil, Diagnostika na motorjih)



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