ROAD VEHICLES

1. **Road vehicles** are equipment driven by the power of engines. Their **purpose** is to transport **goods** and people along roads.

   The vehicles are driven by **combustion engines**, electrical engines or a combination of both.

2. **Combustion engines** are categorized as:
   a) **Piston engines**
      - with a **reciprocal piston motion**
      - with a **circular piston motion**

   **Piston engines** most often use crank mechanisms for the transfer of a direct, **reciprocal piston motion** into a rotating **motion** and for mechanical work.

   **Combustion engines burn liquid** or **gaseous** fuel. The **liquids** include petrol and diesel. Among **gaseous** fuels there are mostly CNG (Compressed Natural Gas), propane, butane and ethanol. The most often used fuel is petrol and diesel, and in some countries ethanol. In Europe, about 5% ethanol is mixed into petrol.

3. **Motor vehicles** are made up of these parts:

   I. **Motor** - It is the driving unit. It is used for transferring fuel energy into mechanical work.

   II. **Clutch** - It ensures motor **separation** from the **transmission** while the engine is running. It also ensures the transfer of **torque**.

   III. **Transmission** - It is equipment which transfers the **torque moment** of the motor to the wheels of the vehicle.

   IV. **Distribution system** - It enables rotation **reduction** and increases **torque moment** to the wheels. The **differential gear** helps the **torque moment** to be uniformly distributed to the wheels.

   V. **Body (vehicle frame)** - It is the **load bearing** unit, in which the above mentioned parts are **attached** to the **axle**.

   VI. **Steering control** - It is used to **maintain** the driving direction of the vehicle.

   VII. **Brakes** - They have the job of slowing down or stopping a vehicle. For passenger cars there are **liquid**, parking and mechanical brakes and for **trucks** there are **air** **brakes**.

   VIII. **Wheels** - They transfer the **torque moment** into advance **motion** along roads.
4. Mechanical underbody of a car
In picture 1 you can see the position of some of the above mentioned parts on the underbody of a car (including other parts).

1-motor  2 clutch  3 transmission  4 propeller shaft  5 distribution system  6 frame  7 swinging axle  8 steering control  9 suspension  10 brakes  11 wheels

_Literature used: 1.Stavba a provoz strojů – Adámek, Hofírek_
VOCABULARY

advance motion  posuvný pohyb
attached  uchycený
axle  náprava
brake  brzda
burn  spalovat, hořet
circular  krouživý
clutch  spojka
combustion engine  spalovací motor
differential gear  diferenciální převod
distribution system  rozvodovka
ensure  zajišťovat
frame  rám
gaseous  plynný
goods  zboží
increase  zvýšit
liquid  kapalný, kapalina
load bearing  nosný
maintain  udržet, zachovat
motion  pohyb
piston  píst, pístový
piston engine  pístový motor
propeller shaft  spojovací hřídel
purpose  účel
reciprocal  vratný
reduction  snížení
road vehicle  silniční vozidlo
separation  oddělení
steering control  řízení
suspension  pěrování
swinging axle  výkyvná náprava
torque  krut
torque moment  kroutící moment
transmission  převodovka
truck  nákladní vůz
underbody  podvozek
uniformly  rovnoměrně

COMPREHENSION QUESTIONS
1. What is a road vehicle and what is its purpose?
2. How are piston engines categorized?
3. What fuels do you know? Can you name examples?
4. Can you name the parts of a motor vehicle?
5. What is the main job of brakes?
1. Rearrange letters to make words:
The vehicles are driven by ________________ (smoucpoint) engines. Piston engines can by with a _______________ (rreiccalpo) piston motion. Piston engines most often use crank ______________ (mmsscechain). Combustion engines burn ________________ (qiildu) or ______________ (oussage) fuel. The most often used fuel is _______________ (oterlp) and _______________ (eseild), in some countries ethanol. In Europe, about 5% _______________ (hnaoetl) is mixed into petrol.

2. Can you name any other car parts apart the mentioned in the text above? Add the labels to the individual parts and try to translate.

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- radiator
- air filter
- trunk
- disk brake
- steering wheel
- muffler
- windshield wiper
- distributor
- oil filter
- spare wheel
- line shaft
- windscreen washer
- alternator
- tail light
- transmission
- radiator
- wheel
- window frame
- body side moulding
- battery
- seat
3. Change the form of the words from the text to the following form:

1. battery – pl.
2. gaseous – noun
3. reduction – verb
4. mechanical – adverb
5. piston – adjective
6. maintain – noun
7. uniformly – adjective
8. transmission – verb
9. clutch – pl.
10. motion – verb
EXERCISES – Key for teachers only

1. The vehicles are driven by combustion (smoucboint) engines. Piston engines can by with a reciprocal (rreiccalpo) piston motion. Piston engines most often use crank mechanisms (mmsscehain). Combustion engines burn liquid (qiildu) or gaseous (oussage) fuel. The most often used fuel is petrol (oterlp) and diesel (eseild), in some countries ethanol. In Europe, about 5% ethanol (hnaoetl) is mixed into petrol.

2.

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<td>9</td>
<td>disk brake</td>
<td>kotočová brzda</td>
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<td>volant</td>
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<td>windscreen wiper</td>
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<td>distributor</td>
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<td>windscreen washer</td>
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<td>20</td>
<td>window frame</td>
<td>okenní rám</td>
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<td>body side moulding</td>
<td>boční ochranné lišty</td>
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<td>baterie</td>
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<td>seat</td>
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3.

1. battery – pl. batteries
2. gaseous – noun gas
3. reduction – verb reduce
4. mechanical – adverb mechanically
5. piston – adjective piston
6. maintain – noun maintenance
7. uniformly – adjective uniform
8. transmission – verb transmit
9. clutch – pl. clutches
10. motion – verb move