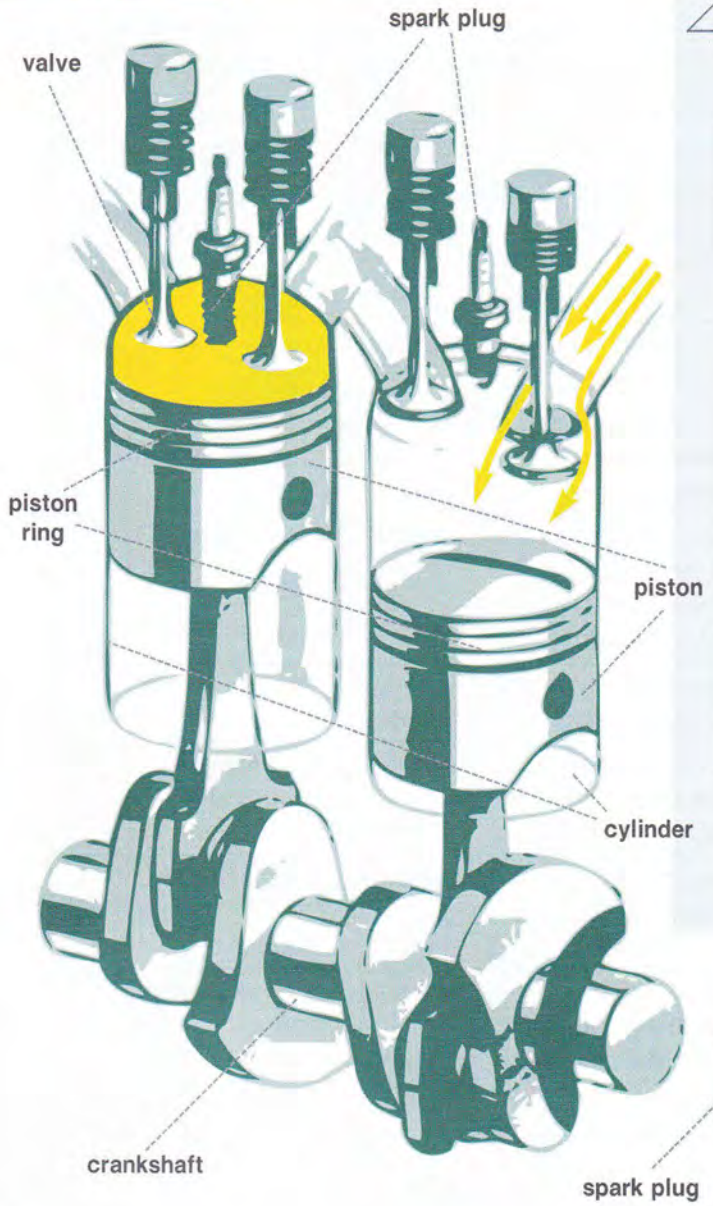
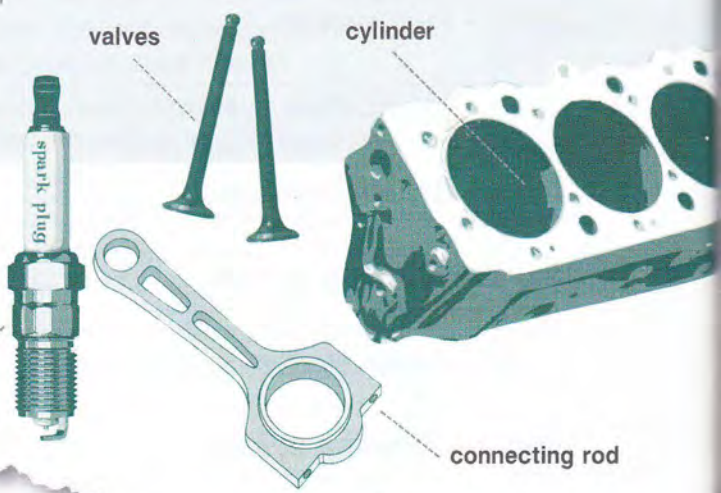
1 Internal combustion engine



Internal Combustion Engine

An internal combustion engine operates in a cycle that compresses and ignites fuel and air to generate energy. The starting point is the **cylinder**. The cylinder runs through the **head** and down into the **engine block**. A **piston** within the cylinder moves up and down. At the start of the cycle, it pulls a mixture of fuel and air through **valves** and into the cylinder. It then moves upward compressing the fuel mixture. A **piston ring** forms a tight seal between the piston and the cylinder wall. This ensures that the fuel mixture cannot escape. It also keeps oil from the **sump** from entering the combustion chamber. Next, a **spark plug** fires and ignites the fuel mixture. The resulting explosion pushes the piston downward. This in turn moves a **connecting rod** attached to the piston. The connecting rod transfers the mechanical energy from the piston to a **crankshaft** contained within a **crankcase**.



Get ready!

1 Before you read the passage, talk about these questions.

1 Where are pistons located in a car's engine?
2 What are the main parts of a car's engine?

Reading

2 Read the encyclopedia entry. Then, mark the following statements as true (T) or false (F).

1 __ Air enters the cylinder through the valves.
2 __ Fuel is compressed by the piston.
3 __ The crankshaft connects to the sparkplug.

Vocabulary

3 Match the words (1-6) with the definitions (A-F).

1 __ engine block
2 __ connecting rod
3 __ crankcase
4 __ piston ring
5 __ spark plug
6 __ head

A body of engine
B holds large shaft in engine
C creates tight seal
D top part of engine
E transfers power from piston
F causes explosion

4 Fill in the blanks with the correct words from the word bank.

WORD BANK

piston cylinder sump crankshaft valve

1 A _____ controls the flow of air into an engine.
2 The _____ holds the engine's supply of oil.
3 The spark plug fires in the _____.
4 The _____ moves up and down in a cycle.
5 The connecting rod powers the _____.

5 Listen and read the encyclopedia entry again. How does an internal combustion engine supply energy to the rest of a vehicle?

Listening

6 Listen to a conversation between an experienced mechanic and a new mechanic working on an engine. Check (✓) the causes of the engine failure.

1 ❑ bad spark plugs
2 ❑ oil leak
3 ❑ cracked sump
4 ❑ worn piston rings
5 ❑ broken piston

7 Listen again and complete the conversation.

Mechanic 1: I'm still **1** _____ _____ what caused the engine to fail.
Mechanic 2: I'm pretty certain that it was an **2** _____ _____.
Mechanic 1: Really? I was thinking **3** _____ _____ _____.
Mechanic 2: It couldn't be that. The spark plugs are old, but they aren't **4** _____.
Mechanic 1: So the sump is cracked?
Mechanic 2: The sump **5** _____ _____ _____.
Mechanic 1: It isn't? But then **6** _____ _____ _____ _____ an oil leak?
Mechanic 2: Look inside the cylinder and tell me what you see.
Mechanic 1: The walls are discolored and damaged. It looks really dirty too.
Mechanic 2: Exactly. Do you have any idea what caused that?
Mechanic 1: My guess is that oil got in there. Ah, so it was the piston rings.
Mechanic 2: Exactly. They wore out and oil leaked into the chamber.

Speaking

8 With a partner, act out the roles below based on Task 7. Then switch roles.

USE LANGUAGE SUCH AS:

Nothing is wrong with the ...
The ... is not the problem.
It has to be the ...

Student A: You are a new mechanic. Talk to Student B about:

- what you think caused the engine to fail
- what parts you checked
- why you think one is the cause

Student B: You are an experienced mechanic. Talk to Student A about why each part is not the problem and which one is.

Writing

9 Use the conversation from Task 8 to fill out the engine problem diagnosis form.

Frank's Garage

Engine Failure Diagnosis

Parts checked: _____

_____

_____

Cause determined: Y / N

Describe what you suspect caused the problem: _____

_____

_____

_____