

# **Výukový materiál**

## **zpracovaný v rámci operačního programu**

### **Vzdělávání pro konkurenceschopnost**



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

**Registrační číslo: CZ.1.07/1. 5.00/34.0084**

**Šablona: II/2 Inovace a zkvalitnění výuky cizích jazyků na středních školách**

**Sada: 2 AJ**

**Číslo: VY\_22\_INOVACE\_PRO\_2ROC\_08**

# Technical English



Předmět:	Anglický jazyk
Ročník:	2.OZ
Klíčová slova:	levers, wheels, axle, screw
Jméno autora:	Mgr. Jolana Čechová
Adresa školy:	Střední škola zemědělská, Osmek 47 750 11 Přerov

# Technical English

## Machines

### B. Compound machines

A **compound** (complex machine) is a **machine** made up of at least two simple **machines**. A car, a bicycle, power tools, and even a pencil sharpener are **complex machines**.



# Technical English

## Machines

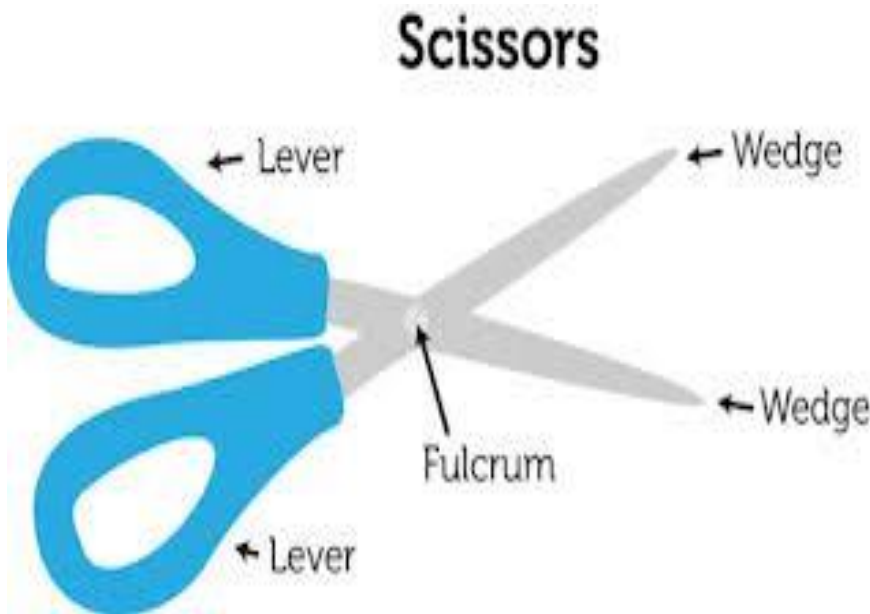
A bike is compound machine. **Screws** are used to hold the pieces together. The wheel of a bicycle is a **wheel and axle**. The pedals are also examples of this simple machine. The pedals are attached to a **lever** that turns a **pulley**. The gear shifts and brake handles are **levers**.



# Technical English

## Machines

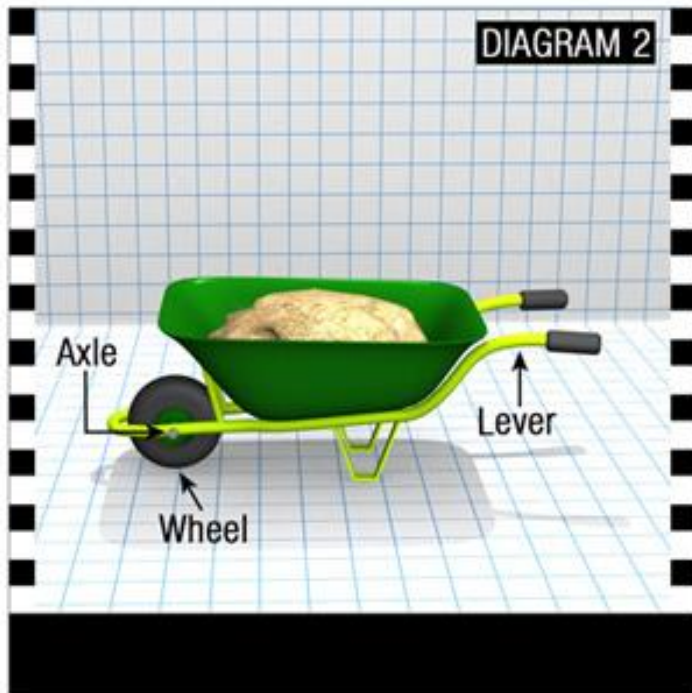
Scissors and pliers are a compound machines because they are a **lever** and a **wedge**.



# Technical English

## Machines

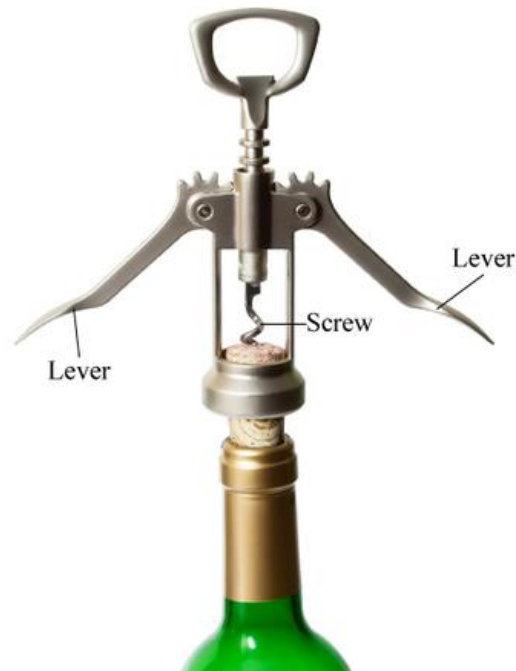
Wheelbarrow is used to carry heavy objects. It consists of two simple machines: a **lever** and a **wheel and axle**.



# Technical English

## Machines

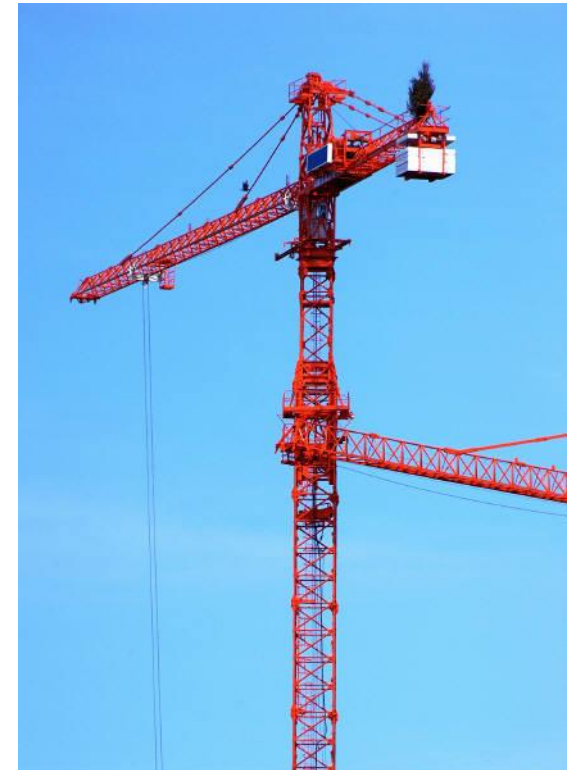
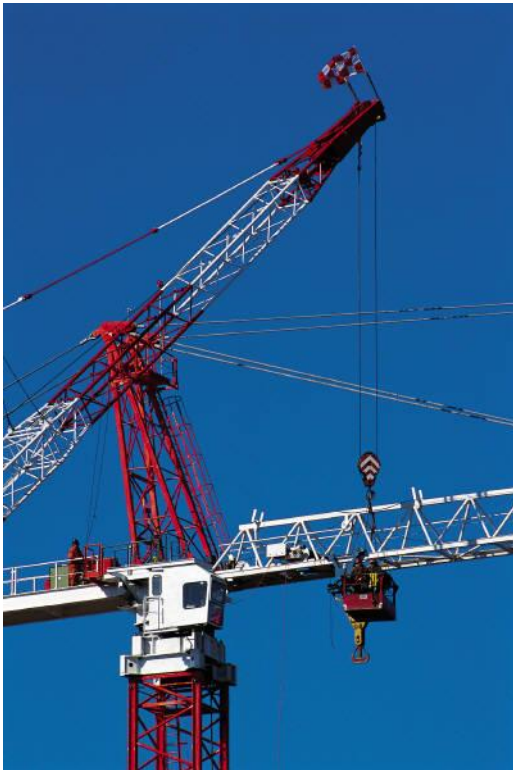
A corkscrew is also a compound machine. It is used to pierce a cork and pull it out of the neck of a bottle. It consists of a **screw** and **two levers**.



# Technical English

## Machines

A crane is a classic example of a compound machine. It uses **leverage** to keep itself from toppling towards the weight that it lifts and **pulleys** to lessen the work load of the lifting mechanism.





# Technical English

## Machines

A Roller Ramp is a common type of compound machine combines the **inclined plane** with the **wheel and axle**, resulting in a slanted series of rolling wheels or bars.



# Technical English

## Machines



### Practice 1

What simple machines the compound machine consists of ? Write 2 examples.



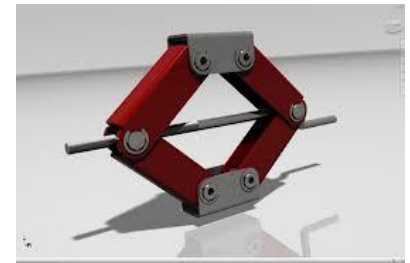
lawn mower



crane



drill



car jack



can opener



conveyor belt



stapler



bulldozer

# Technical English

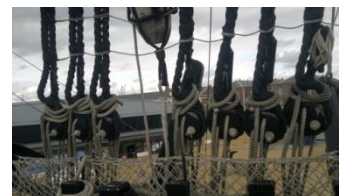
## Machines



### Practice 2

Write examples of compound machines that use:

- Axle and wheel + levers
- Inclined plane + axle and wheel
- Wedge + lever
- Pulley + wheel and axle
- Screw + lever
- All simple machines
- Lever + wedge



# Technical English

## Machines

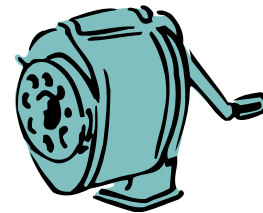
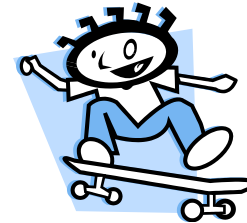


### Practice 3

Multiple choice:

1) Which doesn't use a wheel and axle?

- a. A skateboard
- b. A pencil sharpener
- c. A saw



2) Sharp teeth are:

- a. Pulleys
- b. Levers
- c. Wedges



3) ice-hockey stick, baseball bat or hammer is:

- a. A lever
- b. An inclined plane
- c. A wedge



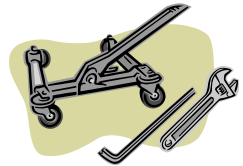
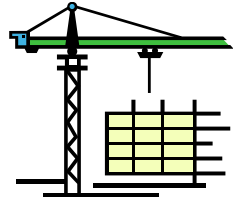
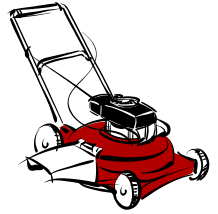
# Technical English

## Machines

### Check your answers:

#### Practice 1

- Lawn mower = a wheel and axle, levers,
- Crane = levers, a pulley
- Drill = a wheel, a screw, a wedge
- Car jack = screw, a wheel and axle
- Can opener = a wheel and axle, a wedge, levers
- Conveyor belt = inclined plane, wheels and axles
- Stapler = levers, a wedge
- Bulldozer = all simple machines



# Technical English

## Machines

**Check your answers:**

Practice 2

exp.: wheelbarrow, escalator, pliers, lift, drill, axe

Practice 3

c, c, a.



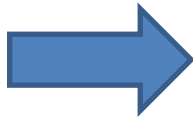
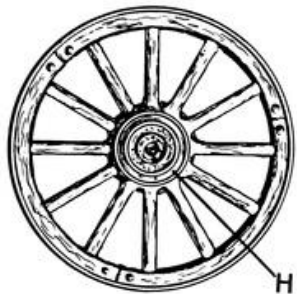


# Technical English

## Machines

### Summary

- A compound machine is a machine that consists of more than one simple machine.
- Compound machines such as a wheelbarrow or corkscrew consist of just two simple machines.
- Big compound machines such as cars consist of hundreds or thousands of simple machines.
- Compared with simple machines, compound machines generally have lower efficiency but greater mechanical advantage.



# Machines

## Simple

## Compound

Made with  
few or no  
moving parts

Examples:

wagon wheel  
(wheel)  
seesaw  
(lever)  
(saw)  
wedge

Machines

Make work  
easier

Use a force  
to cause  
motion

Made of 2 or  
more simple  
machines

Examples:

scissors  
(lever + wedge)  
wheelbarrow  
(wheel + lever)  
drill  
(wheel, screw, wedge)



# Použité zdroje



- Veškeré použité obrázky (kliparty) pocházejí ze sady Microsoft Office 2010 nebo z [www. photobucket.com](http://www.photobucket.com) (10.3.2013)
- Všechny fotografie pochází z archivu autora nebo z [www. photobucket.com](http://www.photobucket.com) (10.3.2013)
- <http://library.thinkquest.org/CR0210120/Compound%20machine> (9.3.2013)
- <http://www.ck12.org/concept/Compound-machine> (9.3.2013)

*Autorem materiálu a všech jeho částí, není-li uvedeno jinak, je Mgr. Jolana Čechová  
Financováno z ESF a státního rozpočtu ČR.*