

Section 1.0

Machines are tools that help humans do work.

Student _____

Class _____

1.1 Simple Machines – Meeting Human Needs

- The first machines depended on these for their source of energy ...
A electricity and coal
B natural gas and wood
C humans and animals
D steam and wood
- Mechanical systems for transporting water were developed by Roman engineers thousands of years ago. These systems supplied water to cities that were many kilometers from the water supply. The systems were known as ...
A sakias
B aqueducts
C mill wheels
D Persian wheels
- Archimedes designed a system for moving water from one place to another. His machine is still used today. It is based on the simple machine - the ...
A lever
B wedge
C screw
D inclined plane
- Scissors are a combination of what two machines?
A lever and wedge
B lever & inclined plane
C wheel and axle
D wedge and inclined plane
- A teeter-totter an example of what class of lever?
A Class 1 lever
B Class 2 lever
C Class 3 lever
D Class 4 lever
- A simple machine that converts rotational motion to linear motion is called ...
A Class 1 lever
B Inclined plane
C Wedge
D Screw
- A diving board is an example of a first class lever. The fulcrum is ...
A between the load and the effort force
B at one end with the effort force in the middle
C at one end with the load in the middle
D at one end with the effort force at the other end

8. A simple machine, similar in shape to the inclined plane, but used to increase the force of moving an object is the ...
- A **Class 1 lever**
 - B **Screw**
 - C **Wheel and axle**
 - D **Wedge**
9. In most simple machines, you don't get something for nothing. When you gain a force advantage, you usually lose ...
- A **effort**
 - B **speed**
 - C **distance**
 - D **resistance**
10. Simple machines can be used for 4 different purposes. The purpose of a screwdriver is to ...
- A **Transfer the force**
 - B **Multiply the force**
 - C **Increase or decrease the speed**
 - D **Change the direction of a force**

1.2 The Complex Machine – A Mechanical Team

11. The penny farthing was an early bicycle design that used only these types of simple machines ...
- A **Levers and pulleys**
 - B **Incline plane & Screw**
 - C **Levers & wheel and axle**
 - D **Pulleys & wheel and axle**
12. Devices that help that are made up of several simple machines are called complex machines. Because all the simple machines work together in these devices, they are considered to be a ...
- A **system**
 - B **subsystem**
 - C **new technology**
 - D **complicated device**
13. Within the bicycle, there are many different parts that have very different functions. Each of these parts performs a specific function so that the bicycle can perform its overall function – to move you around. The many different parts of the bicycle are called ...
- A **subsystems**
 - B **system components**
 - C **technological devices**
 - D **complicated device**
14. Linkages and transmissions are parts of a system that perform a specific function. The function they perform is to ...
- A **increase torque**
 - B **increase speed**
 - C **transfer weight**
 - D **transfer force**

15. In a bicycle, the part that transfers your energy from the pedals back to the wheel is the ...
A axle
B gears
C chain
D sprockets
16. Transmissions are special types of linkages. It is used to transfer energy from the engine to the wheels in a car. A transmission contains a number of these that allow the driver to apply a large force to move objects slowly or a small force to move objects quickly. They are ...
A chains
B fan belts
C gears
D linkages
17. An essential component of most mechanical systems, gears transfer motion and force to other gears and wheels. If the gear wheels are the same size they are called ...
A Equal gears
B Twin gears
C Copy gears
D Parallel gears
18. Gears can also change the direction of motion. In an eggbeater, the crank turns the driving gear, which in turn makes the beaters rotate. The transfer of motion is ...
A vertical to horizontal
B horizontal to vertical
C linear to rotational
D rotational to linear
19. Gears work together in trains of two or more gear wheels. The gear that has the force applied to it is called the ...
A reduction gear
B multiplying gear
C driving gear
D driven gear
20. If a smaller gear is used to drive a larger gear, the gear train is a reducing gear. If a larger gear is used to turn a smaller gear, the gear train is a ...
A parallel gear
B multiplying gear
C linear gear
D rotational gear
21. On a bicycle, gears are made up of flat, toothed disks called ...
A linkages
B sprockets
C pinions
D torques