Name _____ Date _____ Class _____

Simple Machines

This section describes the six kinds of simple machines. It also explains how to calculate the advantage of using simple machines.

Use Target Reading Skills

Before you read the section, preview Figure 17. Record two questions about the diagram in the graphic organizer. As you read the section, look for the answers to your questions in the text and the figure captions. Record the answers to your questions in the graphic organizer.

Three Classes of Levers

Q.
A.
Q.
A.

1. What are the six basic kinds of simple machines?

   a._____ **b.**_____

   c._____ **d.**_____

   e._____ **f.**_____

Simple Machines *(continued)*

Inclined Plane

2. What is an inclined plane?

_____

_____

3. What formula do you use to determine the mechanical advantage of an inclined plane?

_____

4. Circle the letter of each sentence that is true about inclined planes.

a. The necessary input force is less than the output force.
b. A ramp is an example of an inclined plane.
c. The necessary input force is more than the output force.
d. An inclined plane allows you to exert your force over a longer distance.

5. The larger the incline, the less_____ you need to push or pull an object on an inclined plane.

Wedge

6. What is a wedge?

_____

_____

_____

7. Is the following sentence true or false? In a wedge, the inclined plane itself moves. _____

8. Is the following sentence true or false? The longer and thinner a wedge is, the greater its mechanical advantage. _____

Screws

9. What is a screw?

_____

_____

10. A spiral inclined plane forms the _____ of a screw.

11. When twisting a screw into a piece of wood, where is the input force applied and where is the output force exerted?

_____

_____

_____

Levers

12. What is a lever?

_____

_____

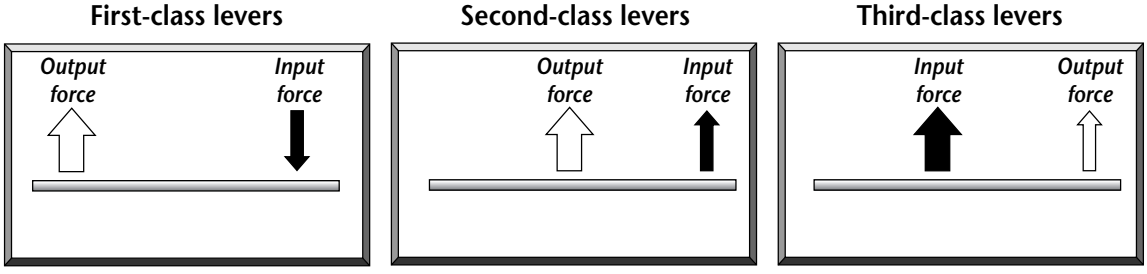
_____

13. The fixed point that a lever pivots around is called the _____.

14. Circle the letter of each sentence that is true about levers.

a. A lever increases the effect of your input force.
b. There are three different types of levers.
c. A lever changes the direction of your input force.
d. The fulcrum is always located at the same place on a lever.

15. On each diagram below, draw a triangle below the lever to show where the fulcrum is located on each class of lever.



16. Complete the following table about levers.

Levers	
Class of Lever	**Examples**
	Door, wheel barrow, bottle opener
	Seesaw, scissors, pliers
	Baseball bat, shovel, fishing pole

17. What formula do you use to calculate the ideal mechanical advantage of a lever?

_____

_____

Simple Machines *(continued)*

Wheel and Axle

18. What is a wheel and axle?

_____

_____

_____

19. What formula do you use to calculate the ideal mechanical advantage of a wheel and axle?

_____

_____

Pulley

20. What is a pulley?

_____

_____

_____

21. What kind of pulley changes the direction of the input force but does not change the amount of force you apply? _____

22. What kind of pulley has an ideal mechanical advantage of 2?

_____

Simple Machines in the Body

23. What do most of the levers in your body consist of?

_____

_____

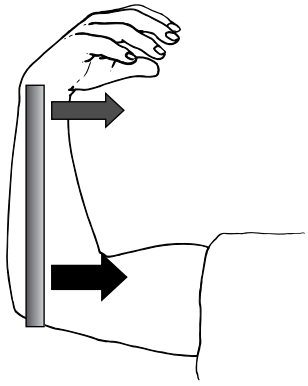
24. Your muscles are attached to your bones by tough connective tissue called _____.

25. In a living lever in your body, what acts as the lever's fulcrum?

_____

_____

26. On the illustration of a living lever, label each arrow to show where the input force and the output force are located. Also show where the fulcrum is located.



27. What simple machines do your incisors resemble?

_____

28. Explain how your front teeth are like an ax.

_____

_____

_____

_____

Compound Machines

29. What is a compound machine?

_____

_____

_____

_____

30. What do you need to know to calculate the mechanical advantage of a compound machine?

_____

_____

_____

_____