

- Which of the following is NOT one of things a machine does?
 - Changes the amount of force.
 - Changes the distance over which the force is exerted.
 - Changes the direction of the force.
 - Changes the amount of work done.
- Label each picture with the names of the simple machines shown:



A



B



C



D

Simple Machines Study Guide

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|---|
| <p>A. Bicycle: wheel & axle
 B. Wrench: lever
 C. Ramp: inclined plane
 D. Knife: wedge</p> |
|---|

- The fixed point around which a lever rotates is known as what?

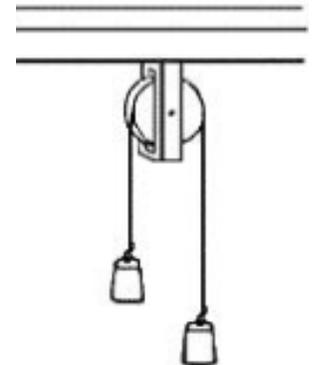
fulcrum

- Which of the following is NOT an example of the simple machine known as a screw?

- lid of a jar
- turning on and off a faucet
- a drill bit
- a screwdriver

- Adam uses a fixed pulley such as the one shown, to lift an object. Adam applies an input force to the pulley as he pulls down to lift the object. As he does this, Adam wonders about how the pulley is helping him. How is the pulley helping Adam lift the object?

A fixed pulley changes the direction of Adam's force but NOT the amount of input force.



- How can simple machines make work easier, with regards to effort force?

Simple machines can decrease the amount of effort (input force) but that effort must be exerted over a longer distance.

- What simple machine would be the *most* efficient for lifting an object 30 m off the ground?

pulley (30 meters is too high for a lever or ramp)

- A doorknob is a simple machine made up of two circular objects of different sizes. When turning a doorknob, what type of simple machine is being used?

wheel and axle

9. Robert is using an inclined plane to move a heavy box into a truck that is two meters off the ground. What feature of the inclined plane should Robert be concerned with so that he uses the least amount of effort moving the box?

`the longer the ramp, the less effort he will have to use

10. Workers push a heavy box up an inclined plane and onto a truck. How does the inclined plane help the workers?

`The inclined plane makes the work easier because it's less effort.



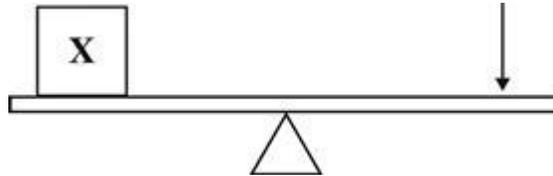
11. What is another name for an inclined plane?

`ramp

12. A group of workers needs to move a piano from the second floor of a building. The piano is too wide to fit through the door, so they will lower the piano to the ground through a window. Which simple machine would be the best to help the workers lower the piano from the window?

`pulley

13. The box labeled X rests on a lever. A force, represented by the arrow, is needed to lift the box. Besides, load, what is another name for the box?



`resistance force (load)

14. Jillian and her classmates want to clean up a park. They used a wheelbarrow to move branches to the side of the road for pick up. The wheelbarrow reduced the effort they needed to make to move the branches. In addition to wheel and axle, what simple machine is in the wheelbarrow that makes the work easier for Jillian and her classmates?

`lever



Wheelbarrow

15. A house uses a roof to carry away large amounts of rain efficiently. A roof composed of two attached inclined planes is what type of simple machine?

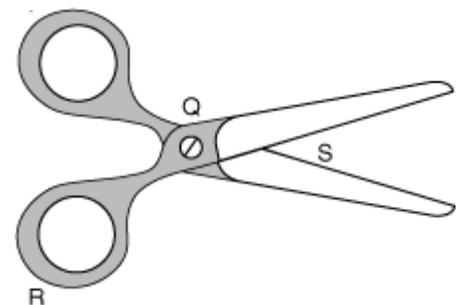
`wedge

16. Scissors are a compound machine composed of two simple machines. Label the two simple machines that make up scissors.

`R: levers, S: wedges

17. Fans, bicycles, and Ferris wheels all work by incorporating the wheel and axle. Work is done on the axle, how does this affect the output force on the wheel?

`the wheel travels a greater distance



18. Simple machines can make work easier by reducing the input effort. However, there is a tradeoff for a decreased input. What is the tradeoff?

`The distance the object must move is increased.