Simple Machines Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the primary purpose of a simple machine?

undefined. To create energy

undefined. To make work easier by changing the force or direction of the force ✓

undefined. To increase the speed of an object

undefined. To reduce the weight of an object

The primary purpose of a simple machine is to make work easier by changing the force or direction of the force.

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The primary purpose of a simple machine is to make work easier by changing the force or direction of the force.

Which of the following are types of simple machines? (Select all that apply)

undefined. Lever ✓

undefined. Engine

undefined. Pulley ✓

undefined. Screw ✓

Types of simple machines include lever, pulley, and screw.

Which of the following are types of simple machines? (Select all that apply)

undefined. Lever ✓

undefined. Engine

undefined. Pulley ✓

undefined. Screw ✓

The types of simple machines include lever, pulley, inclined plane, wheel and axle, screw, and wedge.

Which of the following are types of simple machines? (Select all that apply)

undefined. Lever ✓

undefined. Engine

undefined. Pulley ✓

undefined. Screw ✓

The types of simple machines include lever, pulley, inclined plane, wheel and axle, screw, and wedge.

Describe what a lever is and provide an example of its use in everyday life.

A lever is a simple machine that consists of a rigid bar that pivots around a fulcum. An example is a seesaw.

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Part 2: Understanding and Interpretation

Which simple machine is used to lift a flag on a flagpole?

undefined. Lever
undefined. Pulley ✓
undefined. Inclined Plane
undefined. Wheel and Axile

A pulley is used to lift a flag on a flagpole.

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Which simple machine is used to lift a flag on a flagpole?

undefined. Lever
undefined. Pulley ✓
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A pulley is used to lift a flag on a flagpole.

How does an inclined plane make work easier? (Select all that apply)

undefined. By reducing the amount of force needed ✓

undefined. By increasing the speed of an object

undefined. By increasing the distance over which the force acts ✓

undefined. By changing the direction of the force

An inclined plane makes work easier by reducing the amount of force needed and increasing the distance over which the force acts.

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undefined. By changing the direction of the force

An inclined plane makes work easier by reducing the amount of force needed and increasing the distance over which the force acts.

Explain how a screw is similar to an inclined plane.

A screw is similar to an inclined plane because it wraps around a cylinder, allowing it to convert rotational force into linear motion, similar to how an inclined plane allows for easier lifting.

Explain how a screw is similar to an inclined plane.

A screw is similar to an inclined plane because it wraps around a central core, allowing it to convert rotational force into linear motion.

Explain how a screw is similar to an inclined plane.

A screw is similar to an inclined plane because it wraps around a central core, allowing it to convert rotational force into linear motion.

Part 3: Application and Analysis

Which simple machine would be most effective for splitting wood?

undefined. Lever
undefined. Wedge ✓
undefined. Pulley
undefined. Wheel and Axile

A wedge is the most effective simple machine for splitting wood.

Which simple machine would be most effective for splitting wood?

undefined. Lever
undefined. Wedge ✓
undefined. Pulley
undefined. Wheel and Axile

A wedge is the most effective simple machine for splitting wood.

Which simple machine would be most effective for splitting wood?

undefined. Lever
undefined. Wedge ✓
undefined. Pulley
undefined. Wheel and Axile

A wedge is the most effective simple machine for splitting wood.

In which scenarios would you use a wheel and axle? (Select all that apply)

undefined. To open a door with a doorknob ✓
undefined. To lift a heavy box straight up ✓
undefined. To move a cart across a room ✓
undefined. To cut through a log

A wheel and axle can be used to open a door with a doorknob, move a cart across a room, and lift a heavy box straight up.

In which scenarios would you use a wheel and axle? (Select all that apply)

undefined. To open a door with a doorknob ✓

undefined. To lift a heavy box straight up ✓

undefined. To move a cart across a room ✓

undefined. To cut through a log

You would use a wheel and axle to open a door with a doorknob, to move a cart across a room, and to lift a heavy box straight up.

In which scenarios would you use a wheel and axle? (Select all that apply)

undefined. To open a door with a doorknob ✓

undefined. To lift a heavy box straight up ✓

undefined. To move a cart across a room ✓

undefined. To cut through a log

You would use a wheel and axle to open a door with a doorknob, move a cart across a room, and lift a heavy box straight up.

Describe a situation where using a pulley system would be advantageous.

Using a pulley system is advantageous when lifting heavy objects vertically, as it reduces the amount of force needed.

Describe a situation where using a pulley system would be advantageous.

Using a pulley system is advantageous when lifting heavy objects vertically, as it reduces the effort needed.

Describe a situation where using a pulley system would be advantageous.

Using a pulley system is advantageous when lifting heavy objects to a height, such as raising a flag or moving materials to a higher floor.

Which component of a lever determines the mechanical advantage?

undefined. The weight of the load

undefined. The length of the lever arm ✓

undefined. The material of the lever

undefined. The speed of movement

The length of the lever arm determines the mechanical advantage of a lever.

Analyze the following scenario: A person uses a crowbar to lift a heavy rock. Which factors affect the effectiveness of the crowbar? (Select all that apply)

undefined. The length of the crowbar ✓

undefined. The weight of the rock ✓

undefined. The position of the fulcum ✓

undefined. The color of the crowbar

The effectiveness of the crowbar is affected by the length of the crowbar, the weight of the rock, and the position of the fulcum.

Compare and contrast a wedge and an inclined plane in terms of their functions and uses.

A wedge is used to separate objects, while an inclined plane is used to raise objects. Both reduce the effort needed to perform work.

Part 4: Evaluation and Creation

Which component of a lever determines the mechanical advantage?

undefined. The weight of the load

undefined. The length of the lever arm ✓

undefined. The material of the lever

undefined. The speed of movement

The length of the lever arm determines the mechanical advantage of a lever.

Which component of a lever determines the mechanical advantage?

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undefined. The length of the lever arm ✓

undefined. The material of the lever

undefined. The speed of movement

The length of the lever arm determines the mechanical advantage of a lever.

Analyze the following scenario: A person uses a crowbar to lift a heavy rock. Which factors affect the effectiveness of the crowbar? (Select all that apply)

undefined. The length of the crowbar ✓

undefined. The weight of the rock ✓

undefined. The position of the fulcum ✓

undefined. The color of the crowbar

Factors affecting the effectiveness of a crowbar include the length of the crowbar, the weight of the rock, and the position of the fulcum.

Analyze the following scenario: A person uses a crowbar to lift a heavy rock. Which factors affect the effectiveness of the crowbar? (Select all that apply)

undefined. The length of the crowbar ✓

undefined. The weight of the rock ✓

undefined. The position of the fulcum ✓

undefined. The color of the crowbar

The effectiveness of the crowbar is affected by the length of the crowbar, the weight of the rock, and the position of the fulcum.

Compare and contrast a wedge and an inclined plane in terms of their functions and uses.

A wedge is used to split objects apart, while an inclined plane is used to raise objects over a distance.

Compare and contrast a wedge and an inclined plane in terms of their functions and uses.

A wedge is used to split or cut objects, while an inclined plane helps in lifting objects by reducing the force needed. Both serve to make work easier but in different ways.

Which simple machine would you recommend for lifting a piano onto a stage, and why?

undefined. Lever

undefined. Pulley ✓

undefined. Inclined Plane

undefined. Wheel and Axile

A pulley would be recommended for lifting a piano onto a stage due to its ability to lift heavy objects with less effort.

Which simple machine would you recommend for lifting a piano onto a stage, and why?

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A pulley would be recommended for lifting a piano onto a stage due to its ability to lift heavy objects with less effort.

Which simple machine would you recommend for lifting a piano onto a stage, and why?

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undefined. Wheel and Axile

A pulley would be recommended for lifting a piano onto a stage due to its ability to reduce the effort needed.

Evaluate the effectiveness of using a lever versus a pulley for lifting a heavy object. Which factors should be considered? (Select all that apply)

undefined. The distance the object needs to be moved ✓

undefined. The available space for equipment ✓

undefined. The weight of the object ✓

undefined. The speed at which the object needs to be moved ✓

Factors to consider include the distance the object needs to be moved, the available space for equipment, the weight of the object, and the speed at which the object needs to be moved.

Evaluate the effectiveness of using a lever versus a pulley for lifting a heavy object. Which factors should be considered? (Select all that apply)

undefined. The distance the object needs to be moved ✓

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Factors to consider include the distance the object needs to be moved, the available space for equipment, the weight of the object, and the speed at which the object needs to be moved.

Design a simple machine system that could be used to move a large, heavy object across a flat surface. Describe the components and how they work together.

A simple machine system could include a combination of wheels and axles to reduce friction and make it easier to move the object.

Design a simple machine system that could be used to move a large, heavy object across a flat surface. Describe the components and how they work together.

A simple machine system could include a wheel and axle to move the object, combined with a lever to lift it slightly for easier movement. The wheels reduce friction, while the lever provides mechanical advantage.

Design a simple machine system that could be used to move a large, heavy object across a flat surface. Describe the components and how they work together.

A simple machine system could include a combination of wheels and axles to reduce friction and make it easier to move the object.