A simple machine is a device that is made of one or no moveable parts. It is used to make work simpler by changing the direction that a force is applied or multiplies the force added to the system. Compound machines are made up of more than one simple machine.

Most devices that simplify our work are made of one or more simple machines. Can you remember all of the simple machine names? Try naming them below:

1 ______________________________  2 ______________________________
3 ______________________________  4 ______________________________
5 ______________________________  6 ______________________________

The six simple machines can be broken into two classes: I) the inclined plane, wedge, and screw characterized by movement in a line and II) the lever, pulley, wheel and axle characterized by movement around a pivot point.

The idea that a machine can be broken down into simple machines came about from the famous Greek philosopher Archimedes. Archimedes was a mathematician, physicist, engineer, inventor and astronomer who lived from 287 BC – 212 BC. Some of the items he is famous for include his work with classifying simple machines, discovery of principles for simple machines as well as inventions using simple machines.

Let’s use some machines we see in our kitchen, determine what types of simple machines are combined to make them work, and try to determine how they operate.
Activity: Simple Machines

The kitchen is a place where we find many tools that help us complete our cooking tasks. Let’s take a look at some of these tools, use them, and enjoy the product of our time.

Station 1:
Apple and Cheese
Apple peeler and corer in one machine - (An apple per student)
Cheese slicer and a cheese grinder with a hand crank
Sharp cheddar cheese (½ block cheese per group)

Take a close look at the apple peeler/corer. Try using the apple peeler to peel and core an apple.

1 Explain below how it works:

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

2 What simple machines are found in the apple core/peeler?
_______________________________________________________________________

3 What simple machines are found in the cheese grater?
_______________________________________________________________________

Station 2:
Eggs/Beans
A Bean slicer
Beans (3 to 4 per student)
Egg dicer
Hard boiled eggs (one per student)
Carrot peeler (one carrot per student)

Take a close look at the bean slicer. Try using the bean slicer to slice beans.

1 Explain below how it works:

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

2 What simple tools are found in the bean slicer?
_______________________________________________________________________

3 What simple tools are found in the egg dicer?
_______________________________________________________________________

4 What simple tools are found in the carrot peeler?
_______________________________________________________________________

Teacher notes:
Set up four stations with simple cooking machines and food.
The following are ideas to help you get started.
MATERIALS NEEDED:

Station 3: Whipped cream and fruit
- Grapefruit sectioner
- Grapefruit (one per four to six students)
- Melon ball maker
- One large melon for class or two small melons
- Strawberry huller
- Strawberry per student
- Egg beater
- Heavy cream and sugar
- One pint heavy cream per two groups

Station 4: Bread/Spinach/butter
- Knife (for cutting fresh bread by the teacher)
- Large Italian baguette per class
- Butter knife (spread butter on bread)
- One butter pad per student or several sticks of butter to slice up
- Lettuce spinner (spins water off of greens)
- Baby spinach (one bag per class)

Teacher notes:
- Have the students think about other simple tools they use in their daily lives and talk about the types of machines that are incorporated in them.

Activity: Simple Machines

Name: ____________________________ Date: _________

Station 3:
You will find four tools at this station. An egg beater, a strawberry huller, a grapefruit sectioner and a melon ball maker.

Take a close look at the egg beater. Try using the egg beater to whip cream.
1 Explain below how it works.

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

2 What simple tools are found in the grapefruit sectioner?

_____________________________________________________________________

3 What simple tools are found in the melon ball maker?

_____________________________________________________________________

4 What simple tools are found in the strawberry huller?

_____________________________________________________________________

Station 4:  
You will find three tools at this station. A lettuce spinner, a bread knife, and chop sticks.

Take a close look at the lettuce spinner. Try using the lettuce spinner to dry off baby spinach leaves.
1 Explain below how it works.

_____________________________________________________________________

2 What tools are found in the bread knife?

_____________________________________________________________________

3 What tools are found in the chop sticks?

_____________________________________________________________________
Notes:

New York State Elementary Level Science Standards

Classifying, comparing and contrasting, generalizing, making decisions, manipulating materials, observing

Standard 1: Scientific Inquiry:
Key idea 1; s1.1, s1.3a
Key idea 2; s2.2a, s2.3
Key Idea 3; s3.3, s3.4

Skills and Strategies for interdisciplinary problem solving:
Working effectively, generalizing and analyzing ideas,

General Skills:
Safely use simple machines
l, iv, ix, xii, xvi, xix

Standard 4:
Key idea 5: 5.1f