Deconstruction and Assembly

**Description**

*This lesson will give students an introduction to the deconstruction and assembly processes. Students will learn what the assembly process steps are and how to assemble something by first deconstructing it. This lesson will also have a focus on measurement using a ruler and how the roles of producers and consumers affect the assembly process.*

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**Introduction**

This lesson focuses on the deconstruction and assembly processes. Students will first learn about the assembly process through videos, discussions, and assessments (quickwrite, exit ticket, reflections, and a group project). The first three days will focus on reviewing measurement, using a ruler, and introducing producers and consumers, along with how they affect the assembly process. The last two days will focus on deconstruction and assembly, while also assessing the student’s understanding of the assembly process and their ability to work collaboratively. The final part of the lesson (Days Four and Five) consists of a deconstruction and assembly, which will tie in what was covered on Days One, Two, and Three and serve as a final assessment on students’ understanding of the assembly process and their ability to work collaboratively.

**Curriculum Alignment**

**CCSS.ELA-LITERACY.W.2.7** - Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

**CCSS.ELA-LITERACY.W.2.8** - Recall information from experiences or gather information from provided sources to answer a question.

**CCSS.ELA-LITERACY.L.2.1** - Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

**CCSS.ELA-LITERACY.L.2.2** - Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

**CCSS.ELA-LITERACY.L.2.3** - Use knowledge of language and its conventions when writing, speaking, reading, or listening.

**CCSS.MATH.CONTENT.2.MD.A.1** - Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

**CCSS.MATH.CONTENT.2.MD.A.3** - Estimate lengths using units of inches, feet, centimeters, and meters.

**CCSS.MATH.CONTENT.2.MD.D.9** - Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object.

**2.E.1.1** - Give examples of ways in which businesses in the community meet the needs and wants of consumers.

**2.E.1.2** - Explain the roles and impact producers and consumers have on the economy.

**Objectives**

The objectives list what students are expected to learn after completing the lesson plan.

* Students will be able to list and explain the steps of the assembly process.
* Students will be able to distinguish between deconstruction and assembly.
* Students will be able to justify their reasoning and communicate their ideas.
* Students will be able to collaborate with peers effectively and efficiently.
* Students will be able to effectively measure height, length, and width with a ruler.
* Students will be able to use a stopwatch to measure time.
* Students will be able to compare measurements.
* Students will be able to use the vocabulary learned effectively during discussions.
* Students will be able to distinguish between producers and consumers.
* Students will be able to explain how producers and consumers affect the assembly process.

**Time & Location**

The lesson will take place inside the classroom, so students will have access to materials inside their desks and the teacher will have access to a Smartboard and internet. The lesson will take place over five days and last an hour each day.

**Teacher Materials**

* **Day One (Monday)**
  + Smartboard to show videos and project the image (<https://static.wixstatic.com/media/4594af_dc6dad5c9f494cfe9cae94214531ffca.jpg/v1/fill/w_300,h_227,al_c,q_80,usm_0.66_1.00_0.01/4594af_dc6dad5c9f494cfe9cae94214531ffca.webp>)
  + Pencil and paper for each student (1 for each student)
* **Day Two (Tuesday)**
  + Pencil and paper (1 for each student)
  + Smartboard to show videos
  + Whiteboard and Expo markers (1 - whiteboard and 1-5 Expo markers) \*I prefer to use multiple Expo colors, because then it will be easier for students to recognize the steps\*
* **Day Three (Wednesday)**
  + Students’ blue notebooks (1 for each student)
  + Pencils (1 for each student)
  + Smartboard to show videos
  + Exit Tickets = ½ piece of notebook paper (1 for each student)

* **Day Four (Thursday)**
  + Assemblies = 30 legos and a base (1 for each group)
  + Pencil and paper (1 for each student)
  + Ruler (1 for each group)
  + Stopwatch (1 for each group)
  + Daily Reflection Worksheet (1 for each group) <https://docs.google.com/document/d/1zlP6ApDI9_Q_0VgeC5cj1xtHKi61a712Nktq5zFGV0U/edit>
* **Day Five (Friday)**
  + Assemblies = 30 legos and a base (1 for each group)
  + Pencil and paper (1 for each student)
  + Ruler (1 for each group)
  + Stopwatch (1 for each group)
  + Daily Reflection Worksheet (1 for each group) <https://docs.google.com/document/d/1zlP6ApDI9_Q_0VgeC5cj1xtHKi61a712Nktq5zFGV0U/edit>

**Student Materials**

* **Day One (Monday)**
  + Pencil and paper for each student (1 for each student)
* **Day Two (Tuesday)**
  + Pencil and paper (1 for each student)
* **Day Three (Wednesday)**
  + Students’ blue notebooks (1 for each student)
  + Pencils (1 for each student)
  + Exit Tickets = ½ piece of notebook paper (1 for each student)
* **Day Four (Thursday)**
  + Assemblies = 30 legos and a base (1 for each group)
  + Pencil and paper (1 for each student)
  + Ruler (1 for each group)
  + Stopwatch (1 for each group)
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  + Stopwatch (1 for each group)
  + Daily Reflection Worksheet (1 for each group) <https://docs.google.com/document/d/1zlP6ApDI9_Q_0VgeC5cj1xtHKi61a712Nktq5zFGV0U/edit>

**Safety**

Students should be handling materials (pencils, legos, rulers, and stopwatches) in a safe and appropriate manner. Students will follow classroom behavior rules to ensure that the classroom is a safe environment for the lesson.

**Student Prior Knowledge**

* Students will need to know what Quickwrites and Exit Tickets are.
* Students will need to know how to measure with a ruler.
* Students will need to know what collaboration is and have practiced it before.
* Students will need to know how to work with an elbow partner quietly and efficiently.
* Students will need to know how to sequence with words and numbers. (Ex: First, Second, Third or 1, 2, 3)
* Students will need to know the basics of grammar, such as capitalization, punctuation, and how to write a complete sentence.
* Students will need to know how to do 2 column notes correctly, including how to fold the paper into 2 columns.
* Students will need to know the terminology producers and consumers.

**\*\*Explanations for Quickwrite, Exit Ticket, and Elbow Partners -** [**https://docs.google.com/document/d/1Mfq3S2SieqE8YxDdlEc\_3SapJbuGjIT0aFHEbSqSEC8/edit**](https://docs.google.com/document/d/1Mfq3S2SieqE8YxDdlEc_3SapJbuGjIT0aFHEbSqSEC8/edit)

**Teacher Preparations**

* The Smartboard should be on and the image pulled up and ready to go on Day One. (This will also help to check that the internet connection is working.)
* The teacher should make sure that the Mertek Solutions, Inc. Virtual Tour, Mertek Educational Tour and How It’s Made videos work (play and can be heard). The videos should also be pulled up and ready to go on Day Two and Day Three.
* All materials needed for each day should be separated and ready to go. Students should have a pencil and their blue notebooks at their desks. The teacher would just need to go ahead and have the paper (½ and full sheet), rulers, stopwatches, and Daily Reflection worksheets counted, organized, and ready to go.
* The teacher will need to make sure that all questions to facilitate discussion on Day One, Day Two, Day Three, and Day Five are readily available.
* The teacher will need to make sure that 1-5 (depending on how many the teacher is planning on using) good Expo markers are available and already at the whiteboard.
* The students should be divided into groups of four. The groups should be evenly divided, so each group contains a mixture of abilities.
* The teacher will need to go ahead and assemble each group’s assembly. They will need to consist of 30 legos and a base.
* The teacher will need to take a picture of each assembly and write down the steps of the assembly process. I would suggest bulleting and writing down the steps in shorthand. The teacher’s written down steps will be used to help assess each group’s written down steps of assembly.
* Each group will have a different assembly, but still need to be spread out when working. The teacher should go ahead and plan out the working areas in the classroom. This will also help groups that finish early and trade assemblies on Day Five, because they have to assemble by the other group’s written steps and not by what they hear the other group saying.

**Activities**

**Day One (Monday)**

* **(10 minutes)** Quickwrite - Students will begin with a Quickwrite to assess what the students already know. For the Quickwrite each student will need a pencil and piece of paper. The teacher will pull this picture (<https://static.wixstatic.com/media/4594af_dc6dad5c9f494cfe9cae94214531ffca.jpg/v1/fill/w_300,h_227,al_c,q_80,usm_0.66_1.00_0.01/4594af_dc6dad5c9f494cfe9cae94214531ffca.webp>) up on the Smartboard for the students to see. The teacher will instruct the students that they will be completing a Quickwrite off of the picture and it is to be done independently. Students will write for 3-5 minutes about the picture. Students can describe the picture, create a story based off the picture, write what they think the picture is about...etc. Once time is up students are to put their paper and pencil in the top right corner of their desk.
* **(40 minutes)** Mertek Videos/Discussion - The teacher will need to pull up Mertek Solutions, Inc. Virtual Tour under Mrs. Melissa Harris on Youtube. There is a playlist to play all of the 4 video clips. <https://www.youtube.com/channel/UCWHuSnXwztAlsv2eIbGh5_g/playlists?shelf_id=0&view=1&sort=dd>
* The questions listed below will help facilitate discussion for the Mertek Solutions, Inc. Virtual Tour videos. The students should be able to distinguish the difference and will focus on how do they apply to the assembly process.
  + Video 1 of 4
    - 1. Why do you think they test the machines after they build them?
    - 2. Why does it take less people to make something if you use a machine?
    - 3. Why is it important that some machines test to see if the products are good to go?
    - 4. What are some of the roles of the office manager?
    - 5. Why is it important to be organized?
    - 6. Why does a design need to be created before starting work on machine?
  + Video 2 of 4
    - 1. Why would it be important to label everything with the job number?
    - 2. Why do you need to have organized shelves?
    - 3. What do they keep on these organized shelves? Designs/Parts/Materials
  + Video of 3 of 4
    - 1. Why use a machine when you could create something yourself?
    - 2. How do you think they continue to use their education in their careers?
  + Video 4 of 4
    - 1. What do the builders do with the parts that have been created or purchased?
    - 2. What did they program the machine to do?
    - 3. What does green mean? The program is running
    - 4. What does sequence mean with a machine?
    - 5. What does fault mean?
* **(10 minutes)** Finisher - The students will return to their Quickwrite to add more details they learned from the videos/discussion and to fix any grammar mistakes. The Quickwrite will serve as an assessment.

**Day Two (Tuesday)**

* **(5 minutes)** Brief Review - Students will spend just a couple of minutes discussing with their elbow partner the answer to the question, “What is the most important part of the assembly process?” Teacher will then go around the room allowing the different elbow partners to share their answers quickly.
* **(40 minutes)** Mertek Videos/Discussion - the teacher will focus on some videos from the Mertek Educational Tour playlist under Mrs. Melissa Harris on Youtube. There are some discussion questions within the videos to help facilitate discussion. Link - <https://www.youtube.com/channel/UCWHuSnXwztAlsv2eIbGh5_g/playlists?shelf_id=0&view=1&sort=dd>
  + Video 3 of 8 - Shows men working to cut parts that will be used in the machine assembly
  + Video 4 of 8 - Shows a painter working, the welding room, and talks about building up the machine
  + Video 5 of 8 - Shows how to build a frame that will be part of an assembly (Only play until 2:22)
  + Video 6 of 8 - Shows how to put a panel together for a machine
* **(15 minutes)** Brainstorm/Identify Steps - Students will get back with their elbow partners to brainstorm what the main 5 steps of the assembly process are. After allowing students to brainstorm for 5 minutes, have each group share one step that they came up with. As a class students need to all agree on what they consider the main 5 steps to be and the teacher will need to write them down on the board. On Day Three the students will be listing and defining the steps of the assembly process.

**Day Three (Wednesday)**

* **(5 minutes)** Brief Review - Teacher will quickly review with students what they decided on as the 5 main steps in the assembly process.
* **(30 minutes)** 2 Column Notes (steps/definition) - Students will pull out their blue notebooks and turn to their next free page and fold it into two columns. One column needs to be labeled steps and the other column needs to be labeled definitions. The teacher needs to label the board the same way, so the students will be able to copy down the steps and definitions. Students are to skip a line between each step/definition, so they do not get mixed up. (These are the steps that the students agreed upon during the Brainstorm session at the end of Day Two.)
* **(20 minutes)** How It’s Made Videos/Discussion - The teacher will divide the students into four groups of five. Each group will watch a different video and answer the questions that are listed below on a notecard. The students will also take some notes, because they will do a quick share of what they have learned from the video.
  + Bubblegum (4:49) <https://www.youtube.com/watch?v=2kttVyakHN4>
  + Doughnuts (5:03) <https://www.youtube.com/watch?v=DePRyZE5sn4>
  + Crayons (5:17) <https://www.youtube.com/watch?v=lmiRjmbnn8Q>
  + Balloons (5:03) <https://www.youtube.com/watch?v=_asrhvc4dPg>
* The questions listed below will help facilitate discussion for the How It’s Made videos.
  + Bubblegum
    - 1. When was modern chewing gum patented? 1869
    - 2. Who patented chewing gum? A dentist
    - 3. When was bubblegum invented? 1928
    - 4. How does bubblegum start? As a gum base
    - 5. The second step is to add ingredients to what? A mixer
    - 6. What does the stirring action do? Creates heat, which blends everything together
    - 7. When is the mixture ready? When it reaches consistency of bread dough
    - 8. What does the extruder do? Cut the mixture into bubblegum shape in long strands
    - 9. Do they wrap the bubblegum right away? No it is to hot and would stick to wrapper
    - 10. The machine processes how many pieces of bubblegum in a minute? 900
    - 11. What does the machine do when packaging containers of bubblegum? Weighs the buckets to be sure the right amount is in them and seals with plastic wrap to keep fresh.
    - 12. Why is bubblegum pink? It is the only color that the inventor had back in 1928
  + Doughnuts
    - 1. What did doughnuts use to be called? Oily Cakes
    - 2. What did removing a dot in the center of the doughnut do? Help them cook more evenly
    - 3. How many basic types of doughnuts are there? 2: Yeast and Cake
    - 4. What does the first machine do? Drops from a mixer into oil to fry
    - 5. What does the conveyor belt do? Allows the doughnuts to cool
    - 6. What does the rotating cylinder do for the yeast doughnuts? Rolls them into a log
    - 7. What is the proofer? Like a heat box to allow the yeast to rise
    - 8. Why do you need to flip the doughnuts? So they cook evenly throughout
    - 9. Why is there cornstarch on all the machines? So the doughnuts do not stick
    - 10. How are the doughnuts filled? A worker fills 2 at a time, it is not a machine
  + Crayons
    - 1. Where were crayons invented? In America in 1903
    - 2. Crayons are made from a combination of what? Waxes
    - 3. What is the first step in the process? The wax is melted
    - 4. What does the secret powder do? Act as a filler
    - 5. What does the rotary machine do? Injects wax into crayon shape molds, then puts cold water over them to harden the wax in 60 seconds
    - 6. What happens to the excess wax? It is recycled
    - 7. How many crayons leave the factory a hour? 30,000
    - 8. The crayons leave the mold and go to what machine? The labeling machine
    - 9. The crayons are sorted how into the packing machine? By color into hoppers
    - 10. A sensor will stop the machine when? If a crayon breaks or looses a wrapper
    - 11. What does a built in scale do? Makes sure each box has the right weight (Checks if a crayon is missing)
  + Balloons
    - 1. When were rubber balloons invented? In the 19th Century
    - 2. Dye is poured into a tank of what? Latex
    - 3. Why is it filtered through cheesecloth? To remove any lumps
    - 4. How many hours is the tank mixed? 15
    - 5. How many shades do the balloons come in? 53
    - 6. A fixture carries what through the machine? Balloon molds/forms
    - 7. What do the spiral brushes do? Roll up the bottoms of the balloons
    - 8. Why do the balloons go in a hot bath? Rubberize the latex and cleans out impurities
    - 9. What does the talcum powder and water mixture do? Help balloons comes off of the molds/forms
    - 10. Why do they check the balloons? To see if it has imperfections or pops easily
* **(5 minutes)** Exit Ticket - Students will complete an Exit Ticket for assessment. The Exit Ticket will be students writing down on a half sheet of paper the name of the product (Bubblegum, Doughnuts, Crayons, or Balloons) and three things that they have learned from the video about how it is made.

**Day Four (Thursday)**

* **(5 minutes)** Brief Review - Teacher will quickly review with students what they decided were the 5 main steps in the assembly process.
* **(15 minutes)** Project Introduction - Teacher will explain to the students what they are going to be doing for their project.
  + 1. The students will be separated into four groups of five and each member of the group will only need to take a pencil with them. Each group will be working together. Collaboration between all team members will be assessed!
  + 2. Each group will receive an assembly (base/legos). The group’s responsibility is to draw a design, deconstruct the assembly while making notes about each step they take, and then reassemble the assembly correctly and quickly.
  + 3. The teacher will hand out paper to each group. The students will use the paper to make notes and draw a design of the assembly. The teacher needs to stress to the students that they will be assessed on having a complete design drawing and on having the correct steps written out for putting the assembly back together!
  + 4. The teacher will hand out a ruler to each group. The students will be responsible for making measurements of the assembly in order to be able to put it back together correctly. The students can make measurements of the height, length, width, pieces, etc… All measurements need to be recorded with the steps of assembly, because students will be assessed on having measurements.
  + 5. The teacher will hand out a stopwatch to each group and go over with the students how they will use it to time themselves at how quick they can put the assembly together again.
  + 6. The teacher will quickly review with students what deconstruct and assembly mean to be sure students have a handle of what is expected of them.
  + 7. The teacher will then instruct them that they have 30 minutes of project time. Each group is to work independently and collaboratively. The students should remember the steps of the assembly process that have been reviewed each day.
* **(30 minutes)** Project Time - Students will split into their groups. Each group will work at a desk, which will have their assembly (base/legos) on top. The students are expected to deconstruct the assembly and put it back together correctly as quick as possible while recording data (design, notes, and measurements). The teacher will explain to the students a few things, but not give the students explicit instructions on how to do the deconstruction and assembly. However, the teacher can remind the students to remember the steps in the assembly process. The students will need to collaborate and use critical thinking to complete the project. In order to complete the project, however, listed below are several steps that the students must do.
  + 1. Students must first draw a design of their assembly. It will help to show them how the assembly is supposed to look and is part of their assessment.
  + 2. Students must take measurements of the assembly to check themselves later on by making sure their end measurements match the ones they took at the beginning. Taking and recording measurements are also part of the assessment.
  + 3. As students deconstruct they are to be noting what the process was, so they can reverse the process later to reassemble the assembly. The students are to write out, clearly and legibly, the steps of the assembly process. The written out steps are also part of the assessment.
* **(10 minutes)** Clean Up/Daily Reflection - Students will clean up their area and place their group’s assembly (legos and base), group work (notes and design drawing), ruler and stopwatch on the red table. The students will also have Day Five to finish, so it is okay if the assemblies are in pieces and not put back together. Once the group has their area clean, then they will complete their group’s daily reflection. (The students can use their notes, measurements, and design drawing, if needed, to help with their group’s daily reflection.) <https://docs.google.com/document/d/1zlP6ApDI9_Q_0VgeC5cj1xtHKi61a712Nktq5zFGV0U/edit>

**Day Five (Friday)**

* **(5 minutes)** Brief Review - Teacher will quickly review with students what they decided were the 5 main steps in the assembly process.
* **(5 minutes)** Brief Review - Teacher will quickly remind students what they are working on during their project time. (Project instructions are listed by Project Introduction under Day Four.)
* **(30 minutes)** Project Time - The students will continue with their assemblies from Day Four. (Project Time details are listed by Project Time under Day Four.)
* **(10 minutes)** Discussion - The teacher will lead the students in a discussion about the deconstruction and assembly process. The questions to facilitate discussion are listed below.
  + 1. Did deconstructing the assembly help you in understanding how to assemble it? Why or why not?
  + 2. What was the first thing you did in the deconstruction process?
  + 3. What do you consider the easiest part of the assembly process to be?
  + 4. What proved to be the most challenging part of the assembly process?
  + 5. How did your group collaborate?
  + 6. Were there any group collaborating problems? If so, what were they? If not, what could be possible collaborating problems within a group? How could we fix them?
  + 7. What did your group take measurements of? How did the measurements help you in the deconstruction/assembly process?
  + 8. What did you notice went well on Day One?
  + 9. What did you notice could have gone better on Day One?
  + 10. Did what you list under “could have gone better” on Day One go better on Day Two? Explain.
* **(10 minutes)** Clean Up/Daily Reflection - Students will clean up their area and place their group’s assembly (legos and base) on the red table. Once the group has their area clean, then they will complete their group’s daily reflection. (The students can use their notes, measurements, and design drawing, if needed, to help with their group’s daily reflection.) <https://docs.google.com/document/d/1zlP6ApDI9_Q_0VgeC5cj1xtHKi61a712Nktq5zFGV0U/edit>
* If certain groups finish early on Day Five, then the groups will switch assemblies and work on deconstructing and reassembling them, while timing themselves. The groups will use each other’s’ written procedure for the deconstruction and assembly. Only a group’s first deconstruction and assembly will be looked at for an assessment.
* The lesson can be amended if students are struggling. For example, on Day Three during the 2 column notes process the teacher can use videos or pictures to help students understand what each step is and how it works.
  + The groups should be diverse enough that not all struggling students are in one group. Creating diverse groups will help to ensure that all students are able to offer input and can get help, if needed, from their peers within their group.
  + If there is one group that is considerably struggling, the teacher can offer support and suggestions of how to deconstruct and assemble, such as “What would happen if we took this off? or “What part would you put on first between these two parts?”

**Assessment**

* Quickwrite Rubric (Day One) - <https://docs.google.com/document/d/1NxRkitbxDVPQj7nWw6cB5IyxiCxqL4AGuGFrKHkU-kk/edit>
  + Assessment focuses on standards **CCSS.ELA-LITERACY.W.2.7**, **CCSS.ELA-LITERACY.W.2.8**, **CCSS.ELA-LITERACY.L.2.1**, **CCSS.ELA-LITERACY.L.2.2**, and **CCSS.ELA-LITERACY.L.2.3**
* Exit Ticket Rubric (Day Three)) - <https://docs.google.com/document/d/1CtPKGa0k5gBpEsr788-td6tnOGijeaJw0P1bSALG6Es/edit>
  + Assessment focuses on standards **CCSS.ELA-LITERACY.W.2.7**, **CCSS.ELA-LITERACY.W.2.8**, **CCSS.ELA-LITERACY.L.2.1**, **CCSS.ELA-LITERACY.L.2.2**, and **CCSS.ELA-LITERACY.L.2.3**
* Daily Reflection Rubric (Day Four and Day Five)- <https://docs.google.com/document/d/1J2xN6XI8DDeKZg_fMw6xFZWueT4lksp93oZA4pcigq8/edit>
  + Assessment focuses on standards **CCSS.ELA-LITERACY.W.2.7**, **CCSS.ELA-LITERACY.W.2.8**, **CCSS.ELA-LITERACY.L.2.1**, **CCSS.ELA-LITERACY.L.2.2**, **CCSS.ELA-LITERACY.L.2.3**, **CCSS.MATH.CONTENT.2.MD.A.1**, **CCSS.MATH.CONTENT.2.MD.A.3**, and **CCSS.MATH.CONTENT.2.MD.D.9**
* Deconstruction and Assembly Rubric (Focuses on Day Four and Day Five)- <https://docs.google.com/document/d/1PnI_KWou_kYbPdxZhArjIsCQTJvIuN4F09ZQSHzxt-k/edit>
  + Assessment focuses on standards **CCSS.ELA-LITERACY.W.2.7**, **CCSS.ELA-LITERACY.W.2.8**, **CCSS.ELA-LITERACY.L.2.1**, **CCSS.ELA-LITERACY.L.2.2**, **CCSS.ELA-LITERACY.L.2.3**, **CCSS.MATH.CONTENT.2.MD.A.1**, **CCSS.MATH.CONTENT.2.MD.A.3**, and **CCSS.MATH.CONTENT.2.MD.D.9**
* **2.E.1.1** and **2.E.1.2** standards focus on producers and consumers. These standards will not be assessed, but will be discussed and focused on during the instruction of the lesson. At the end of the lesson students should know the difference between them and how they affect the assembly process.

**Critical Vocabulary**

* **Assembly** - The action of fitting together the component parts of a machine or other object.
* **Blueprint** - A design plan.
* **Centimeter (cm)**- A metric unit of length. (1 cm = 2.54 in)
* **Component** - A part of a larger whole, such as a part of a machine.
* **Construct** - To build something, such as a machine.
* **Consumer** - A person who purchases good and services for personal use.
* **Deconstruct** - To take something apart into smaller pieces.
* **Data** - Facts and notes collected during assembly and deconstruction.
* **Design** - A plan or drawing made to show how a machine will look and function.
* **Efficiency** - Being able to accomplish something with the least waste of time and effort.
* **Estimate** - A rough guess of a value, number, or quantity.
* **Function** - Purpose of the design.
* **Generate** - To make or create something.
* **Goods** - Objects you buy and use, such as clothes, toothbrush, and food.
* **Height** - How tall something is.
* **Inch (in)** - A customary unit of length. (2.54 in = 1 cm)
* **Length** - How long something is.
* **Machine** - Something that is made with multiple parts to perform a certain purpose.
* **Measurement** - The size, length, or amount of something.
* **Needs** - Something that is wanted or required.
* **Procedure** - A series of actions conducted in a certain order or manner.
* **Producer** - A person that makes, grows, or supplies goods.
* **Purpose** - The reason you are doing something. For example, the reason the machine was created.
* **Quickwrite** - Providing students with a short amount of time (3-5 minutes) to write about a picture, observation, or question. Sometimes students will share their responses with another student.
* **Ruler** - Tool for measurement. One side is inches and the other side is centimeters.
* **Services** - Something that is performed for someone, such as yardwork, haircut, or walking a dog.
* **Time** - How long it takes to do something. This will be recorded on a stopwatch.
* **Two Column Notes** - Dividing a piece of paper into two columns. One side will be the assembly process steps and the other side will the be definition of each step.
* **Wants** - Something you desire to have, but may not need. For example: a toy, video game, or candy.
* **Width** - How wide something is.

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