

# Lesson 1 Pulls

## Big Idea

- Jobs created by the moving assembly line pulled people to factories such as the automobile plants in Michigan.

## Key Concepts

- Labor
- Workshop
- Assembly line
- Artisan
- Station assembly
- Division of labor
- Moving assembly line

## Digitized Artifacts

from the Collections of **The Henry Ford**

## Lesson 1 Pulls

- [Women Workers Assembling Magnetos at Ford Highland Park Plant, circa 1913 ID# THF23810](#)
- [Workers Assembling Car Bodies at Ford Rouge Plant, 1932 ID# THF23466](#)
- [1924 Ford Model T Cars on Assembly Line at Highland Park Plant, October 1923 ID# THF23577](#)

## Materials

- Computer with access to the Internet; digital projector and screen (preferred); OR printed handouts of digitized artifacts and descriptions
- Sign: What pushes and pulls people into new ways of life?
- Student Activity Sheet: #1: The Moving Assembly Line
- Scrap paper – lots
- Full roll of wrapping paper
- Empty wrapping paper tube
- Tape
- Desks or tables that can be lined up to make a surface that is at least 10 feet long, end to end

**Duration** One class period (45 minutes)

## Instructional Sequence

### 1 Engagement

Ask students what is needed to produce a car. Answers will likely include types of materials used, workers, factories, power, etc.

Tell students that Henry Ford was especially innovative in how he organized people to produce cars. Read Part 1 of the article on Student Activity Sheet 1: The Moving Assembly Line. Stop at the end of Part I to facilitate the Paper Airplane Workshop and Paper Airplane Assembly Line activities described below.

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## Lesson 1 Pulls Continued

### 2 Paper Airplane Workshop and Paper Airplane Assembly Line Activities\*

#### Paper Airplane Workshop

In this activity, students will produce paper airplanes using the same assembly method that was used to produce goods before the Industrial Revolution.

Have each student make his or her own paper airplanes, start to finish, for five minutes. When time is up, find out how many airplanes were made, share a few designs and allow flight-testing. Clean up.

#### Discussion Questions

- How many of the students were really good at making airplanes that flew far?
- How did these students learn how to make good airplanes?
- How many planes could each of these students make in the five-minute period?

#### Paper Airplane Assembly Line Setup

It is recommended that the moving assembly line activity be setup before your students arrive.

#### Set up

- You will need 10 feet of continuous flat surface. Line up desks or tables to create your moving assembly line working surface.
- Place the full tube of wrapping paper at one end of the surface.
- Unwind the wrapping paper enough to cover the entire length of the working surface of the assembly line. The wrapping paper will serve as the conveyor belt for moving the product (paper airplanes) from worker to worker.

- Tape the free edge of wrapping paper to the empty wrapping paper tube so that it can be wound around the empty tube. As the paper is wound around the tube, the conveyor belt of the assembly line will move.
- Place a stack of scrap paper at the start of the conveyor belt of the assembly line next to the full roll. This will be Station One of the assembly line.

#### Assembly Line Station Tasks

- Station One** Take one piece from the stack of paper and place it on the conveyor belt.
- Station Two** Make a center vertical fold in the piece of paper.
- Station Three** Open the paper.
- Station Four** Fold the top right corner of the paper in to the fold line.
- Station Five** Fold the top left corner in to the fold line.
- Station Six** Fold the center to create the nose.
- Station Seven** Fold one side down to create one wing.
- Station Eight** Fold the other side down to create the other wing.
- Station Nine** Adjust the folds so that the wings are horizontal.
- Station Ten** Test-fly the airplane.

Each station is one task in the assembly of a paper airplane. Choose ten students to fill these positions. The wrapping-paper conveyor belt should move the airplane between stations.

You will also need two students to run the conveyor belt. One student will hold the full tube at the start of the

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## Lesson 1 Pulls Continued

### Assembly Line Station Tasks Continued

assembly line. The other student will wind the wrapping paper around the empty tube and will be the belt controller, controlling the speed of the assembly line.

Students not working on the assembly line should each be assigned to closely observe one of the workers. Let the observers know that they'll be asked to comment on what their worker seems to find easy and what their worker seems to find challenging.

### Paper Airplane Moving Assembly Line Activity

Explain to the students that the speed of production is controlled by the speed of the conveyor belt in the moving assembly line. Before you begin, ask students to explain why they think Henry Ford would believe this is a good idea.

Explain to students how the moving assembly will work. Once you are sure each student understands his or her job, try out the moving assembly line!

Discuss, and record on the board, students' reactions, successes and challenges.

Next, try speeding up the line by speeding up the conveyor belt.

Run the assembly line for five minutes; then test-fly a few of the airplanes that were made.

### Discussion Questions

- How many airplanes were the assembly line workers able to produce in five minutes?
- Did the quality of the product (airplanes) change during those five minutes? How?
- How did the workers' feelings change?
- Does the work become more challenging? If so, for who, and how?

Explain to students that in the factory, the line does not stop.

### 3 Workers Needed

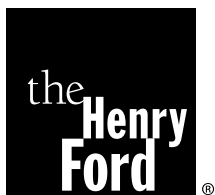
Follow up by reading Part II of the article on Student Activity Sheet 1: The Moving Assembly Line.

If students want to examine the images in the article more closely, access the digitized artifacts and images and project them onto a screen.

### Assessment

To assess students' learning and understanding, ask them to answer the questions at the end of Student Activity Sheet 1A: The Moving Assembly Line.

- \* Adapted from *The Power in Our Hands: A Curriculum on the History of Work and Workers in the United States*, by William Bigelow and Norman Diamond. New York: Monthly Review Press, 1988.



Name \_\_\_\_\_

# the moving Assembly Line

## Part I

Have you ever wondered how the items you use every day, like the shoes you wear and the pen with which you write, were made? Workers on a moving assembly line in a factory probably made them. Products have been made on moving assembly lines for almost 100 years. In 1913, though, when Henry Ford began producing automobiles on the first moving assembly line, it was a major innovation in the way workers worked. Producing anything requires people. The people who play a part in producing a product can be called “**labor**.” For hundreds, even thousands, of years,

products were made in a workshop, with an **artisan**, or skilled crafts worker, completing the work from start to finish. Then, workers made products through a process called **station assembly**. Each worker had a station to work at, and the parts for the product were brought to the station. When a worker finished a product, it was moved away from the station and the worker began making another one.

The moving assembly line is different. In the moving assembly line, a worker does only one of the tasks involved in producing the product. This is called division of labor. The work moves from worker to worker. Each worker adds a new piece to the product; then the product moves along to the next worker. At first, Ford Motor Company (the company run by Henry Ford) used the moving assembly line to make the individual parts of cars. It was so efficient, allowing workers to make parts so quickly, that eventually it spread to all aspects of the assembly process. Even the chassis (the bottom of the car to which the wheels attach) moved on a conveyor belt from worker to worker.

Women Workers Assembling  
Magnetos at Ford Highland Park  
Plant, circa 1913 ID# THF23810



## Part II

This new method of production changed the way that people worked. Instead of being involved in the whole process of building a car, workers completed just one small part of the process. This was faster and made it easier to train workers. However, since there are so many parts in a car, many workers were needed for this method of production. In addition, Ford Motor Company was so successful at selling automobiles that it needed to increase the number of automobiles it produced. Henry Ford needed to hire many more workers. But where would he find them?

(below) [1924 Ford Model T Cars on Assembly Line at Highland Park Plant, October 1923](#) ID# THF23577



(above) [Workers Assembling Car Bodies at Ford Rouge Plant, 1932](#) ID# THF23466



1. How did the moving assembly line change the way people worked?

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2. What did Ford Motor Company need because of its use of the division of labor and the moving assembly line?

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3. If you were going to apply the idea of “division of labor” to cleaning your house with your family, how would it work?

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