



## Exploratory Tasks:

*Where will your journey take you?*

# MANUFACTURING

Look at all the things around you and think about where it all came from. Everything you see began as an idea in someone's mind, usually to meet the needs or wants of an individual or group. Manufacturing systems produce products in quantity. The process includes designing products, gathering resources and using tools to separate, form and combine materials.

### PRODUCTION PATHWAY

People with careers in production work on the shop floor making parts or assembling them. They work with machines, making or assembling parts, performing welding jobs or printing materials.

**EXPLORATORY TASK:** Choose a common object, e.g., bicycle, football, violin, etc. Search the internet to find how it was made. Use the information to create a **production flowchart** describing the item was made and assembled.

**EXTENSION:** What types materials are used to produce manufactured goods? Research **common raw materials**. Create a flipbook of common materials with examples of products made from each.

### PRODUCTION PROCESS DEVELOPMENT PATHWAY

These individuals are responsible for product design and work to ensure products meet customer expectations.

**EXPLORATORY TASK:** Look at the things around you. Do you have an idea of how to make an existing product better? Is there a new product that would meet a need? Use graph paper to create a sketch of your idea. Include a key to the scale, i.e.,  $\frac{1}{4}$  inch = 1 inch. Consider these questions:

- What type of materials could be used?
- Why would you choose one material instead of another?

**EXTENSION:** Create a **prototype** – or model – of your idea. Seek feedback from others:

- Would this be useful to you?
- What would make this better?

### MAINTENANCE, INSTALLATION & REPAIR PATHWAY

These specialists perform preventive maintenance procedures on machines tools and equipment. They also troubleshoot and repair electrical, electronic and mechanical systems.

**EXPLORATORY TASK:** Completing work efficiently and within budget guidelines is critical to the success of any company. Business owners use a variety of documents to communicate, record and trace work projects. Research **quotes, work orders, purchase orders and invoices** to learn how these are used. Create an infographic explaining their use. Include a sample of each.



#### *What Is a Career Cluster?*

Career Clusters are a way to organize career options. There are **16 Career Clusters** in the National Career Cluster Framework. They are further divided into specific pathways that can lead you to a successful future.

#### *What Are Career Pathways?*

Each of the 16 Career Clusters are divided into approximately 80 Career Pathways. The pathways are further divided into specific careers that share similar skills.

A Career Pathway offers a range of entry options, from entry level positions that require a high school diploma or industry certificate to those that require a professional degree.

**EXTENSION:** What does a customer need to know to keep their new washer running efficiently? Research *how to maintain your washer*. Create a washer maintenance leaflet for new owners.

## QUALITY ASSURANCE PATHWAY

Quality Assurance professionals work to prevent mistakes and defects in manufactured products and avoid problems when delivering products or services to customers

**EXPLORATORY TASK:** Use the *United States Consumer Product Safety Commission* website to find an item that has been recalled. Consider:

- What type of product was it?
- Why was it recalled and what was the consumer advised to do?
- How many products (units) were sold?

**EXTENSION:** Randomly select 20 products. Are there common problems? Create a graphic analyzing the quality assurance issues that you find.

## LOGISTICS & INVENTORY CONTROL PATHWAY

Materials and parts required for a manufactured product must be purchased, stored and then moved from the warehouse to the production line. Finished products must be packaged and prepared for delivery. Coordinating this process is the responsibility of logistics and inventory experts.

**EXPLORATORY TASK:** Explore the production of a bicycle or other common object. Make a list of all the parts needed. Consider:

- Where these materials or parts would be stored?
- How would these materials or parts be transported to the production area at just the right time?

**EXTENSION:** Your bicycle company needs to produce 10 bicycles a day. Consider:

- How many of each part would be needed each week?
- How would materials or parts be stored and moved to the assembly area?
- Create a diagram or model to show your plan.

## HEALTH, SAFETY & ENVIRONMENTAL ASSURANCE PATHWAY

People with careers in this pathway work to ensure the safety of employees and environment.

**EXPLORATORY TASK:** Search the web for a *classroom safety checklist*. Use it to do a safety inspection of your classroom. Share your findings with your class.

**EXTENSION:** Create a *home safety checklist*. Explain to your peers how to conduct their own home safety inspection.

### *How Can I use Career Pathways?*

Career Pathways are planning tools to help you prepare for your future career goal. They provide a map of required courses at both the high school and college level.

A pathway also lists opportunities to earn college credit, industry certificates or gain real-world experience while in high school.

### *What Is an Industry Certificate?*

Industry certifications are credentials recognized by business and industry that demonstrate mastery of necessary knowledge and/or skills.

### *Discover More*

Choose a career in one of the pathways to discover:

- Demand for this career
- Location of jobs
- Starting wage
- Education requirements
- High school pathway
  - Classes
  - Dual/articulated credit
  - Industry certificates
  - Work-based learning
- Related careers