# Unit 1: Introduction to Technical Drawing

Content Area: **Technology**
Course(s):
Time Period: **September**
Length: **2 weeks**
Status: **Published**

## Enduring Understandings

- Drawing and sketching are essential skills needed to communicate design ideas effectively.
- Engineering and architectural drawings use scale and dimensions to accurately depict their designs.

## Essential Questions

- What is graphic communication and why is it important?
- How can designers share ideas?
- How can we show large areas on small paper?
- How can small mechanical features be better understood and communicated?
- Why do engineers draw objects from different views?

## Content

## Skills

- Students will be able to identify and create technical drawings from various point of views.
- Students will be able to communicate their design ideas through technical drawings.

Suggested Activity: Create an architectural model accurate to a defined scale.

## Resources

Resources:

1. PC or Laptops with internet access, able to run TinkerCAD (or similar program) and the various 3D printer software platforms.

2. TinkerCAD (or other equivalent solid modeling program). TinkerCAD is a free, web-based 3D modelling application which allows users to create objects utilizing constructive solid geometry applications.

3. 3D Printers allow students to realize their designs by producing physical objects from their three-dimensional digital models.

4. Engineers scales allow students to measure items graphically depicted within technical drawings and physical objects according to a set scale.

5. AutoCAD is a computer-aided design (CAD) and drafting program used for producing 2-D and 3-D technical drawings.. AutoCAD is considered an industry standard and was developed and marketed by Autodesk Inc. A free version is available for education.

6. Autodesk Design Academy https://academy.autodesk.com/ , supports educators by providing free, authentic project based learning guides and supporting videos.

7. Monmouth County Executive Airport locally positioned in Wall Township, New Jersey, is a potential location for an authentic learning experience through a field trip, supporting the Exploring Flight unit.

8. Consumable Materials such as bass and balsa wood, foam, hot glue, project kits, aluminum foil, wax paper, balloons, fishing line, cups and other materials are needed to support project based learning. Suggested projects include building a model architectural structure, room or facility, bridge, tower, aircraft and more.

9. Personal protection equipment such as safety goggles and gloves are required when students are at risk of injuring themselves while creating projects or utilizing tools and/or machinery.

10. Hand Tools various hand tools such as easy cutters, craft knives, hot glue guns and hot wire cutting machine will be utilized within the classroom. Safety precautions and training will be taken and provided at all times.

## Standards

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| TECH.8.2.8.C.5a | Explain the interdependence of a subsystem that operates as part of a system. |
| TECH.8.2.8.C.5b | Create a technical sketch of a product with materials and measurements labeled. |