



# Grade 9 Introduction to Drafting Design Technology (10G)

A Course for  
Independent Study



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**GRADE 9**  
***INTRODUCTION TO DRAFTING***  
***DESIGN TECHNOLOGY (10G)***

*A Course for*  
*Independent Study*

**2009**

Manitoba Education, Citizenship and Youth

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## Contents

### **Acknowledgements *iii***

### **Introduction *1***

Course Organization *1*

Measurements *2*

Technical Writing *2*

Course Work *2*

Course Supervisor *3*

Tutor/Marker Address *3*

Equipment List *3*

Modules *4*

Evaluation *6*

### **Module 1: What Is Drafting and Why Do We Study It?**

### **Module 2: Drafting Equipment and Practices**

### **Module 3: Freehand Sketching**

### **Module 4: Measuring/Scales**

### **Module 5: Geometric Applications**

### **Module 6: Single-View Template Drawings**

### **Module 7: Basic Dimensioning**

### **Module 8: Multi-View Drawings**

### **Module 9: Pictorial Drawings**

### **Module 10: Sectioning**

### **Module 11: Pattern Development**

### **Conclusion**

### **Bibliography**



## Introduction

Welcome to *Grade 9 Introduction to Drafting Design Technology: A Course for Independent Study*. You are about to begin a course that will help you gain knowledge and understanding of the world of drafting and design.

In this course you will take on a dual role: that of student and teacher. As a student, you are responsible for reading each module, working through each practice assignment, and completing each test. As a teacher, you are responsible for checking your work carefully and correcting any errors that you find.

Another responsibility you have is to record your progress on the log sheets provided in each module. On the log sheets you can explain any difficulties you have encountered, and document your learning outcomes per module.



Important

**Note:** It is important to complete each log sheet. They will be used by your tutor/marker to calculate a part of your final grade.

### Course Organization

This course is divided into 11 modules of study.

All of the modules contain information to be read. It is important that you read this information carefully and understand it. The knowledge that you gain in each module will be built upon in the following module.



Important

Most of the modules contain practice assignments. These should be completed in the order that they are assigned. You will send some of these assignments (known as your “**assignment of choice**”) to your tutor/marker for grading.

Most of the modules contain **tests**, which you will also send to your tutor/marker for grading.

Finally, all of the modules contain **send-in cover sheets, log sheets, and mark sheets**. These sheets must be completed and sent to your tutor/marker at the end of each module, along with any module assignments and tests.

## Measurements

Measurements are expressed using either the imperial system or the metric system. The imperial system is based on feet, inches, and parts of inches, while the metric system is based on the millimetre, centimetre, and the metre. All of the assignments in this course are based on the millimetre, but it is important to remember that there are a variety of different measurements. For example, consumer products like televisions, computer monitors, picture frames, nails, and most lumber are described using the imperial system, while things like car parts, manufactured components, or anything made in modern industry are described using the metric system.

## Technical Writing

This course is written using technical language. Reading technical writing is different from reading a story. A story can be motivating and can allow for your imagination to aid in the process. At times, technical writing may not be the most exciting kind of text to read. With this in mind, the amount of text in this course has been limited, and illustrations have been provided to help you to understand the concepts. Note that you may have to read the text in each module more than once to fully understand the concepts.

## Course Work

Since drafting is a visual form of communication, all of the assignments in this course are sketches, drawings, or both. An outline of each module is provided later in this introduction, detailing your responsibilities.

It is recommended that you follow the log sheets and complete the assignments in the order that they are assigned. Answer keys are provided for the assignments, but they are not in scale. Note that the modules that have assignments that are marked **SI** (“send in”) on your log sheet are the ones to be sent in to your tutor/marker for grading. These should be your best pieces of work. **As well, for most modules you must hand in any one assignment that you think is your best work (your “assignment of choice”).**



## Course Supervisor

To help you to stay on track and overcome difficulties, you must find someone to act as a “supervisor” for the course. The supervisor’s role is to verify that the required work is completed, and indicate this by signing all of the log sheets. Remember, it is your responsibility to do **all** of the assignments in the course. The role of the supervisor is to witness and confirm that you have completed the required work. Your supervisor should be a responsible adult from your community or school.



Please ask your supervisor to complete the “Supervisor Declaration” form (at the end of this introduction) and send it to the listed address **before** you begin the coursework.

## Tutor/Marker Address

At the end of each module you will send in your cover sheet, log sheet(s), mark sheet(s), and all relevant module work (assignments and tests) to your tutor/marker. Send your packages to the following address:

ISO Tutor/Marker Grade 9 Introduction to  
Drafting Design Technology  
555 Main Street  
Winkler, MB R6W 1C4

## Equipment List

You will need to purchase a drafting kit (MTBB #8978), or obtain the following equipment (or an equivalent to it) before you begin this course:

24" Wooden Centre: T-Square  
Staedtler #964-12-60° Set Square  
Staedtler #964-10-45° Set Square  
Staedtler #987-19-SI Metric Scale  
Staedtler #100-214 Pencils (2)  
Staedtler #100-614 Pencil  
Staedtler #259-50 Erasing Shield  
Selectum White Vinyl Eraser  
Berol #R-2140 Circle Template  
Berol #R-2123 Isometric Template  
Pico #B20/00-6" Master Bow Compass

You will also need to purchase a package of 8½ x 11" standard bond paper, a pencil sharpener, and a roll of masking tape.

**Note:** All of this equipment is discussed in detail in Module 2.



## Modules

The modules and the work they encompass are as follows:

### Module 1: What Is Drafting and Why Do We Study It?

- no assignments
- no tests

### Module 2: Drafting Equipment and Practices

- no assignments
- no tests

### Module 3: Freehand Sketching

- six assignments to be completed
- one assignment of choice to be sent in /10
- one lettering sheet to be sent in /15
- one test to be sent in /20

### Module 4: Measuring/Scales

- six measuring assignments to be completed
- one assignment of choice to be sent in /15
- three title blocks to be constructed for use in Module 5
- one test to be sent in /10

### Module 5: Geometric Applications

- two drawings to be completed
- one assignment of choice to be sent in /15
- one test to be sent in /20

### Module 6: Single-View Template Drawings

- four drawings to be completed
- no assignment of choice
- three drawing tests to be sent in /20, /20, /20

**Module 7: Basic Dimensioning**

- four drawings (from Module 6) to be dimensioned
- two drawings (from Module 6) with dimensions added to be sent in, as assignments of choice /15, /15

**Module 8: Multi-View Drawings**

- 11 assignments to be completed
- two assignments of choice to be sent in /5, /10
- two missing view tests to be sent in /20, /20
- six drawings with sketches to be completed
- three drawing tests with sketches to be sent in /20, /15, /20, /15, /20, /15

**Module 9: Pictorial Drawings**

- four ortho/iso grid sketches to be completed
- one ortho/iso grid sketch to be sent in /40
- six isometric drawings to be completed
- two assignments of choice to be sent in /10, /10
- three isometric drawing tests to be sent in /10, /15, /20
- three cavalier drawings to be completed
- three cabinet drawings to be completed
- one cavalier drawing test to be sent in /15
- one cabinet drawing test to be sent in /15

**Module 10: Sectioning**

- five drawings to be completed
- one assignment of choice to be sent in /10
- three drawing sheet tests to be sent in /15, /15, /15

**Module 11: Pattern Development**

- two layout drawings with sketches to be sent in /15, /10, /15, /10
- two test sketches to be sent in /15, /15
- two drawing tests to be sent in /10, /10
- two folding pattern tests to be sent in /5, /5

## Evaluation

Your final mark in this course will be based on the results of your sent-in assignments and tests, along with your log sheets. The breakdown is as follows:

Log sheets	5%
Tests	40%
Assignment of choice	55%
Total	100%

Modules 1 to 7 are worth 30% of your final mark and Modules 8 to 11 are worth 70% of your final mark.

**Note:** Your tutor/marker may request that you send in additional assignments, so please keep all of your work in a safe place. A binder, notebook, or portfolio-type folder is ideal for storing your work.

Now is a good time to determine who your course supervisor will be, and ask him or her to complete the “Supervisor Declaration” form on the following page.

Good luck and good learning! Enjoy the course!

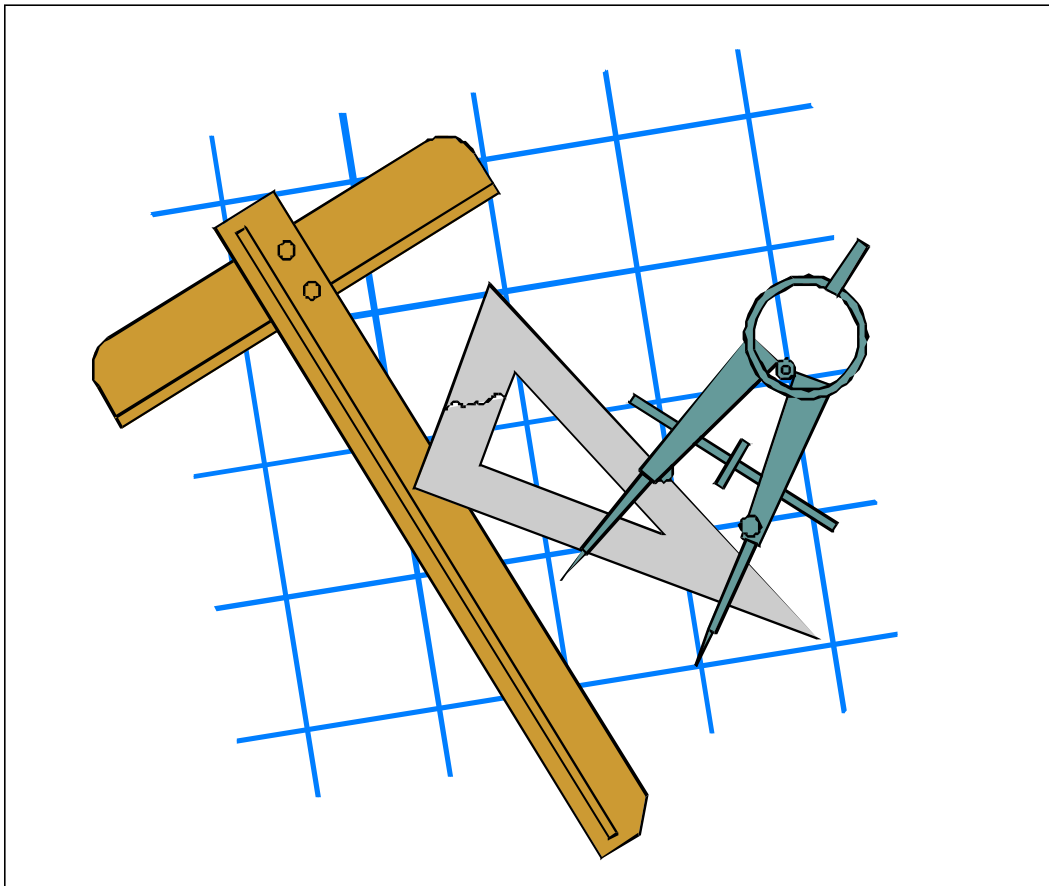




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**GRADE 9**  
**INTRODUCTION TO DRAFTING**  
**DESIGN TECHNOLOGY (10G)**

*Module 1*  
*What Is Drafting and*  
*Why Do We Study It?*





## Module 1

### What Is Drafting and Why Do We Study It?

#### Learning Outcomes

After working through this module, you should be able to

- explain the importance of drafting
- understand the need to communicate ideas
- understand the need for world-wide standards
- show an appreciation for modern manufacturing

#### Terms to Remember

industry

manufacturing

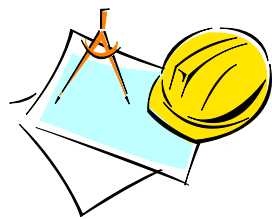
ideas

language of industry

universal language

#### Module Objectives

Students will often say, “What is drafting and how will it help me?”



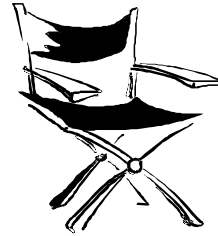
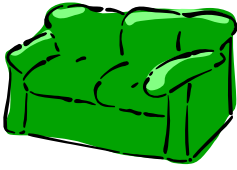
Before we discuss drafting, we need to study what manufacturing and the drafting industry are all about.

Look around your home—you will probably see various manufactured items. A manufactured item is one that is made by a person or a group of people, usually in a plant or factory.

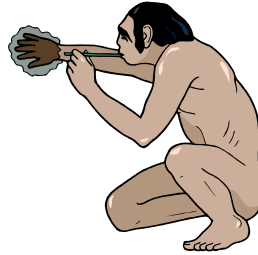


From chairs to tables to toasters, all of the items in a home were manufactured by somebody. The items can be made from wood, metal, plastic, fabric, or any combination of materials.

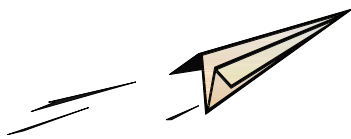
The industries that bring us products that are made from wood, metal, plastics, or fabrics affect us directly by the fact that we use these products. For example, we sit on a chair, lie down on a couch, and usually eat with a spoon or fork. These items have a physical presence in our daily lives.



The drafting field also affects us, albeit indirectly or in a round-about way. That's because all of the products that we use in our lives on a regular basis had to be first thought of,

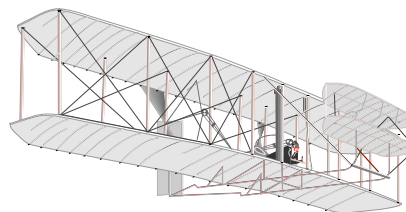


then designed, then drawn, and finally, made or manufactured. Remember, every manufactured object first came from an idea. It is these ideas that can lead to new and improved products.

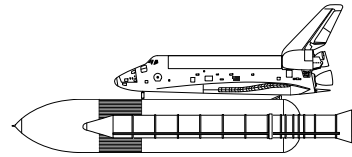


Ideas are, of course, thought of by people. In order for an idea to become a product, the person who thought of the

idea needs to share or communicate it with others. Whether you have very creative ideas or just simple ones, you must communicate them with other people, or your ideas will not be used. The communication of these ideas is what drafting is all about.



Around the world people use drafting to pass along information, to instruct, to give directions, and to record their ideas.



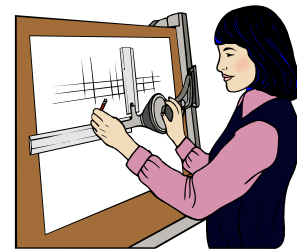
Imagine a simple wooden bench or a dog house. You could probably build one without a drawing or plan, but if a friend



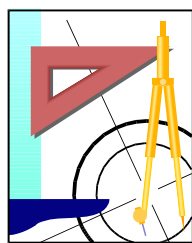
who lived someplace else saw it and wanted to build one just like it, he or she would need a sketch or drawing that described it completely and accurately. This drawing or sketch could be in various forms. You will

learn about the forms available to a drafter in future modules.

What is important to remember is that the easiest way to describe an item or object is by pictures (think of the expression, “a picture is worth a thousand words”). Drafting is a graphic language that is concerned with the preparation and construction of drawings needed to develop and manufacture products.



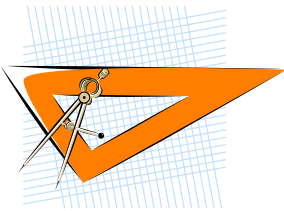
Drafting is a language that uses lines, not letters. In any



written language, letters are used to make words, and words are grouped together to form sentences. These sentences are then used to give information. Drafting works the same way, except that it uses lines instead of letters, and groups of lines or symbols instead of

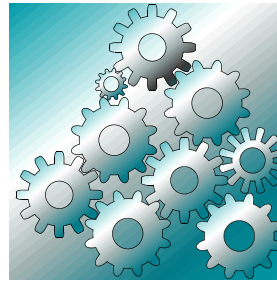
words. These groups of lines or symbols are put together to form a drawing, much like words and sentences are put together to form stories.

Because all industries use some form of drafting in manufacturing, drafting is considered the “language of industry.” All levels of manufacturing use this language because it is a precise way to communicate the idea of a designer to the people who actually make or build the product.



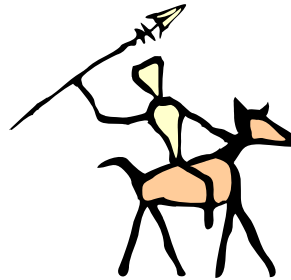
The drafting industry uses lines and symbols that have been set as standards in most parts of the world. This makes it possible to interpret or

understand drawings made by drafters in other countries. For this reason, drafting is referred to as the “universal language.” In this course you will cover



material that is exactly the same as the material that students in other parts of the world are studying.

It would be difficult to name any job or occupation in our modern industry that does not require the ability to read or understand graphic information. Graphic information can be in the form of drawings, charts, or diagrams. This course uses various graphic forms to help you understand concepts.



When something doesn't work, you might hear a person say “it's back to the drawing board.” What that statement means is that the design has to be modified or improved; the plan needs to be reworked or redrawn.



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