



TECH 912
Paint & Draw for Teachers

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General Information

Please scan the materials to familiarize yourself with the sequencing and flow of the course before beginning the assignments. Knowing what lies ahead will help you achieve maximum benefit from each individual assignment and the course, as a whole.

Per FPU policy a minimum of one week per unit of study (three weeks, in this case) must transpire **from your date of enrollment to the date your last completed assignment is returned to me** for evaluation and grading.

All grades must be submitted online to the university. When you have completed the course (shared all completed assignments and answered all the surveys) you will need to request online grading. To do so, please follow the directions found at the end of this workbook describing the process. Remember to request online grading when you submit your final assignments but no sooner, please.

Students will be evaluated on the ability to follow directions as described in the workbook to complete assigned projects which demonstrate mastery of the tools and techniques. Written assignments should contain thoughtful, reflective responses applicable to their personal and/or professional experiences which indicate they have put thought and effort in to their replies.

Kindly allot sufficient time for me to review your work and submit your grade to the university. Per FPU policy I am allowed up to 10 business days to accomplish this, though it rarely ever takes me that long unless I am out of town. Once I have reviewed your work and submitted your grade to FPU I will email you notification that your grade is in FPU's hands awaiting posting.

I can not stress this enough - never hesitate to contact me - that's why I'm here! When contacting me e-mail is preferred, but if you need to phone please do so after 10:00 AM PT, being mindful of time zone differences, as early morning calls wake the family. Thanks for your cooperation and understanding.

For information on the Fresno Pacific University Academic Policies and Procedures for Independent Study Courses, go to <https://ce.fresno.edu> and click the 'CE Policies and Procedures' link at the bottom of the page.



Course Completion Checklist

Pre-course Survey

Paint Projects - Cloudpaint

Project 1: Transparent Cube

Project 2: Solid Cube

Project 3: Cylinder

Project 4: Fish

Paint Projects - PaintZ

Project 5: Face

Project 6: Eagle and Mountain

Mid-course Survey

Draw Projects - Sketch.io

Project 1: Shapes and Layers

Project 2: Art Brushes

Project 3: Face

Project 4: Classroom Poster

Project 5: Bubble Map / Flowchart

Project 6: Captured Image

Elective Assignments (choose any 3 of the 5 presented)

Elective Project #___

Elective Project #___

Elective Project #___

Standards Correlation Chart

Post-course Survey

Course Evaluation

Submit Request for Online Grading



Welcome

Get ready to explore the possibilities of creating computer graphics with Paint and Draw! From simple lines and shapes to sophisticated illustrations and classroom posters, you will learn to unleash the power of the computer to enhance and expand your graphics skills. This course is for everyone - you do not need to be an artist (or even artistically inclined) to use Paint and Draw programs to produce professional looking results.

All three programs used in this course are web-based and accessed through a web browser on a Chromebook, Mac or Windows computer. Please keep in mind that web-based programs are subject to changes, both minor and major, beyond control of the user. Differences in the functionality, look and toolsets of any given program is subject to change without notice. I will do my best to 'keep up' with any changes and provide you with the most recent images and directions for the relevant programs. If there are directions which do not 'fit' the current iteration of a program, please let me know and I will address it - thanks!

If you are using a laptop, you might want to consider using a mouse instead the trackpad. . . using Paint and Draw programs requires a bit of finesse, and some trackpads tend to be a bit temperamental. For those working on a computer, the mouse is preferred.

Please take time and review the entire workbook before 'jumping ahead' to the projects. Countless questions and periods of frustration on your part can be avoided if you familiarize yourself with the introduction and lead-in instructions to each project.

As with my other courses, this one is built on a 'step-by-step' approach to learning. The process may seem long winded when you are doing it, but you will be able to transfer your new skills and experience to a wide array of situations, whether you are creating for yourself or passing on your knowledge to your students,

My hope is that you succeed and enjoy while learning. I appreciate, respect and rely on your candor in your feedback when completing the course evaluation. Your honesty would never effect your grade. On an ongoing basis I review and revise all my courses, especially new ones! Historically the changes made have been effected based on your recommendations. I really do listen!



Course Website

In addition to this workbook, there is a companion website containing links to all other resources you will need to complete this course. Type in this address into your **web browser**:

www.cbgraphics.steveyoungfpu.net

On the website you will note four columns of links. There are directions elsewhere in this workbook which refer to some of the links where relevant. Though not referenced in the workbook, I have included an 'Art Resources' column you may want to check out.

Utilizing the course completion checklist as a guide, you will be accessing the following links from the course website (listed in order):

- Instructor Welcome Video**
- Pre-course Survey**
- Cloudpaint Website**
- PaintZ in the Chrome Store**
- Mid-course Survey**
- Google Drive Course Folder**
- Sketchpad.io Website**
- Lesson Plan Form**
- Standards Chart**
- Post-course Survey**
- Course Evaluation**

TECH 912 Paint and Draw for Teachers

Welcome to the TECH 912: Paint & Draw for Teachers!

Please refer to the course workbook for directions before accessing or using the apps.

All links will open in a new browser tab.

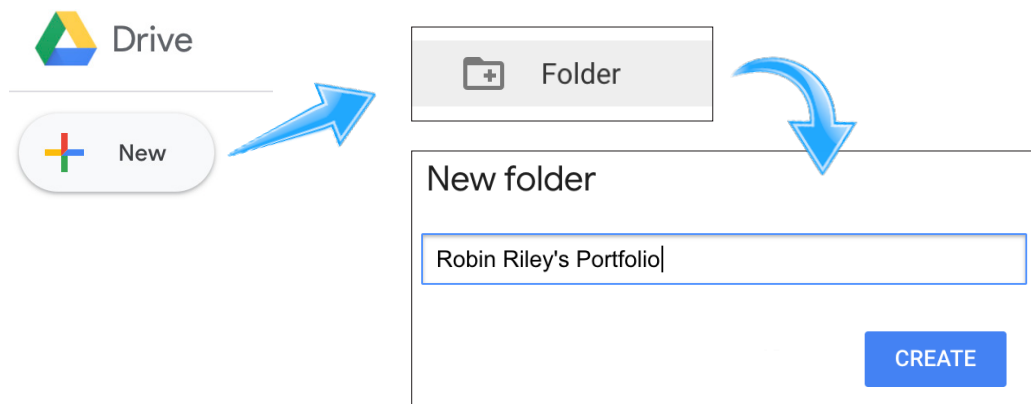
Google Chrome Websites	Forms	Art Resources	Videos	Other Links
CloudPaint Website*	Pre-course Survey	Kids and Digital Art	Welcome	Moodle
PaintZ - Chrome App Store	Mid-course Survey	Digital Art for All	MacPaint	Course Syllabus
Sketchpad.io Website	Lesson Plan Form	Intro to Graphic Design	Cloudpaint	Course Workbook PDF
Google Drive Course Folder	Standards Chart	Computer Arts Magazine	PaintZ	ISTE Standards
*Use this link if CloudPaint is not working	Post-course Survey	Digital Art Teacher	Sketch.io	Fresno Pacific University
	Course Evaluation	Graphic Design Career		Steve Young's Website



Submitting Coursework

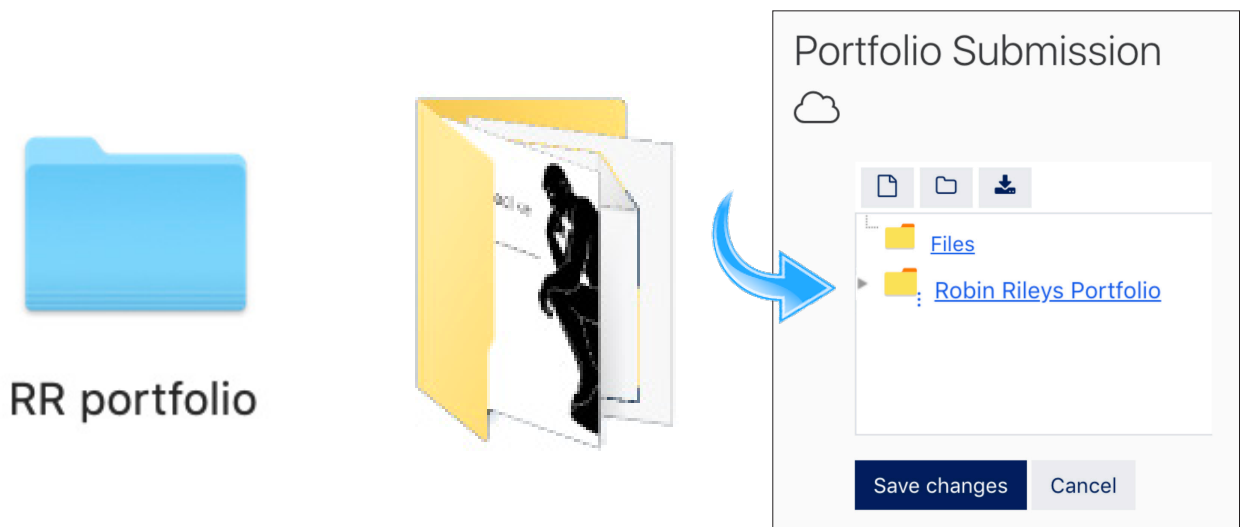
On a Chromebook:

If you are using a **Chromebook**, your saved projects will be automatically placed in your 'Images' folder. If you wish to save them onto Google Drive, you can follow the steps below to create a new folder. Either way, you will want to name each saved project with a relevant title (i.e. Transparent Cube). At the end of the course, you can upload all your saved projects at once. There is also the option of saving each project as you complete it, but I find most students prefer to do a mass upload at the end of the course. **Should you like feedback on a specific project, please just let me know - you can then upload it separately, and I will be glad to take a look at it and get back to you with any suggestions!**



Creating a new 'portfolio' folder in your Google Drive:

If you using a **Macintosh** or **Windows** computer to complete the course, simply create a new folder on your desktop and place each completed project in that folder. That folder becomes your portfolio of projects to turn in (upload) at the end of the course.

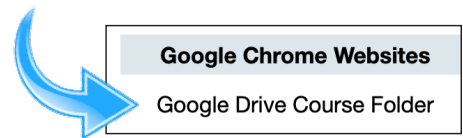




Retrieving Files For Assignments

Some assignments utilize pre-made elements. For example, with Paint Project # 6, you will be using the lasso tool to combine two images which requires moving the image of an eagle on top of a mountain background. **These images, along with others, are in the 'Google Drive Course Folder' on the course website.**

Click on this link on the course website then add this folder to your Google Drive.



When you access your Google Drive, click on the 'Shared with me' icon. You will see a new folder, titled 'Paint & Draw for Teachers - Resources'. In it you will find files to be used with the PaintZ and Sketchpad apps later in the course.

This process will be detailed further after Paint project #6.

Shared with me > Paint & Draw for Teachers - Resources ▾ 👤

Name ↓	Owner	Last modified by ...	File size
moon.png 👤	Steve Young		171 KB
Forest Scene.sketchpad 👤	Steve Young		40 KB
Eagle_and_Mountain.jpg 👤	Steve Young		249 KB



Computer Mouse

While laptops typically use a trackpad to control the cursor, you may want to consider a mouse for graphics use. Some people (myself included) find the small-scale trackpad movements needed to draw images on the screen difficult, and using a mouse can help remedy this.

If your laptop has a USB port, you should be able to plug in just about any mouse and it will start working.



Wireless mice use bluetooth to communicate with the computer, and will not work on most Chromebooks. However, some wireless mice have a USB receiver which plugs into the Chromebook, which will work.

You can find a wired mouse online (I checked Amazon.com and Walmart.com) for under \$10.

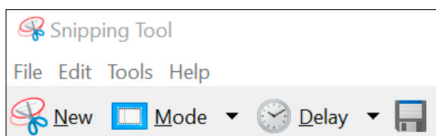
Screen Captures

With some projects, **you will need to take a screen capture of your work.** Below are keyboard shortcuts for three main types of computers.

Chromebook: Ctrl (Control) + Switch window

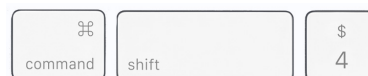


Windows: Windows logo key + PrtScn



Use the Snipping Tool for more efficient screen captures.

Macintosh: Cmd (Command) + Shift + 3

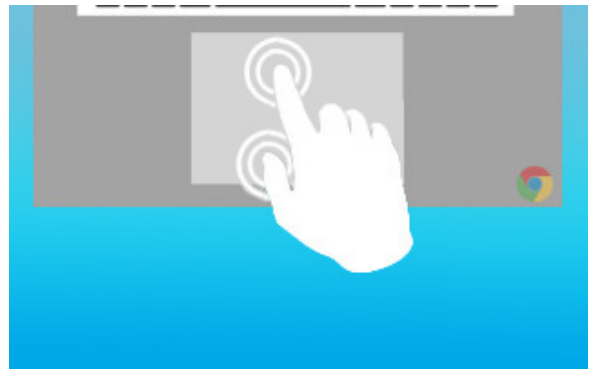




The Trackpad

Computer graphics is a very tactile use of the computer - you will seldom use the keyboard at all. Your digital dexterity and fine motor control will certainly be put to the test! Trackpad usage varies according to the type of computer, but here are the basics:

To **move** the cursor, move one finger across the surface of the trackpad.



To **drag** a tool or object (i.e. draw with a pencil), while pushing the trackpad down (usually with a thumb) move another finger across the trackpad.

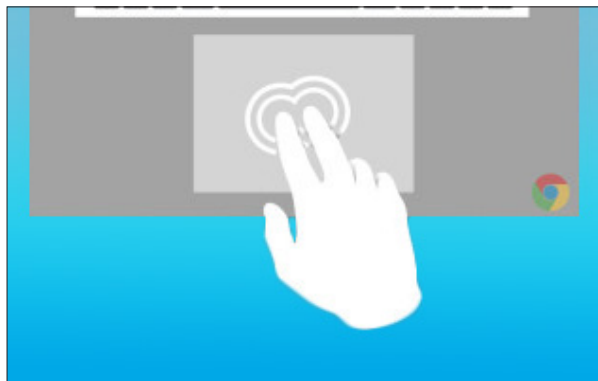
To Click on a Trackpad

To click (the same as clicking the left button on a mouse), briefly push down with one finger. Most trackpads will give an audible clicking sound.

To Right-Click on a Trackpad

To right-click on most trackpads, tap once on the trackpad using two fingers.

This will open the right-click options.





Pre-course Survey

*To fill out and submit this form, please go to the **Pre-Course Survey link on the course website**. I have copied the survey here merely for reference; you will **submit your responses via the Course Website**. A copy of your completed form should be e-mailed to you after submitted. A couple brief, succinct sentences should suffice.*

What grade and subject(s) do you currently teach?

What types of technology are currently available to you at your school?

What prior experience, if any, do you have using a computer graphics program?

How are you or your fellow teachers currently using technology in the classroom?

Are you currently using computer graphics as part of your teaching?

Do you feel you and your students could make good use of computer graphics in your classroom? How?

What do you hope to get out of this course?

TECH 912 Paint & Draw for Teachers

Pre-Course Survey

This form will be added to your TECH 912 portfolio, saved on the instructor's system. A copy will be emailed to you for your records.

*** Required**

Full Name (First, Last) *

Your answer _____

Email Address *

A copy of your completed form will be emailed to you

Your answer _____

I am enrolled int TECH 912 *

Yes

No



Why Learn about Computer Graphics?

If you are taking this course, it's because you want to learn computer graphics! Each of you may have a different reason for being here, but we are all driven by the same desire: understanding how it works! This course was created to answer this particular question. Here you will learn the basic tools and techniques used to create artwork and illustrations on the computer.

*"All students benefit from learning in the arts—today and tomorrow. In the creative economy of the 21st century, arts education is vital. It helps students develop essential skills that prepare them to become the innovators, problem-solvers, and collaborators our world needs. National research shows that involvement in the arts has an immediate, positive impact on students—elevating academic performance, deterring delinquency, and raising graduation rates. According to the Center for Arts Education's recent report, *Staying in School*, some students at risk of dropping out have cited involvement in the arts as their reason to stay in school. New neuroscience research also documents the positive effects of arts learning on cognitive function."*

<https://www.arts.wa.gov/wp-content/uploads/2019/05/Booklet-Arts-Education-Research-Initiative.pdf>

Art Resources

Kids and Digital Art

Digital Art for All

Intro to Graphic Design

Computer Arts Magazine

Graphic Design Career

**Check out the art resources links on the course website.*

For most students, art begins with crayons and clay. In the digital age, these have been replaced (I must say somewhat sadly) with tablets and computers. Using the already-in-front-of-you devices for creative projects is of great benefit. Computer graphics is a 'lean forward' activity: one in which the user is actively engaged in creating content. Too often students are spending time with 'lean back' diversions, where they are passively consuming someone else's content.

This course will help you over the learning curve and prepare you to incorporate computer created graphics into your classroom. This can be in the form of stand-alone lessons or as an element of a larger project. Computer graphics can help students develop creative problem solving skills, motor skills, decision making and inventiveness. Integrating computer graphics with other disciplines can reach students who might not otherwise be engaged in classwork.

Plus, it's fun!



Paint and Draw - What is the Difference?

There are two basic ways that a computer displays graphic information on a screen: **bitmap** and **object**. These two types are represented by two general kinds of computer graphics programs - **Paint** (bitmap) programs and **Draw** (object) programs. Some programs have both.

A **bitmap** is a collection of dots, or pixels, that define an image. A bitmap can be of various bit depths and resolutions. Each pixel takes up one space on the monitor; there can not be two pixels in the same location. All the pixels are on the same layer - that is, no pixel can be in front of or behind another pixel. This is an important distinction between Paint and Draw programs. This type of graphic is also called a **Raster** graphic.

With **Draw**, the computer sees images on the screen as mathematical objects, not a collection of pixels. This type of graphic is also called a **Vector** graphic. This allows for greater flexibility and accuracy in reshaping and moving images.

For example, a one inch line in a Paint program is made up of 72 pixels in a row. Each pixel can be erased or moved independently of the others. The same line in a Draw program is a single piece of computer code telling the program the length, thickness and color of the line. There are no 'parts' to the line which can be individually accessed. You will not find an eraser in a draw program.

Painting is better when:

You want to use the painting tools, such as the paintbrush, spray can and eraser, in addition to the drawing tools. (Many of the tools found in Paint are unavailable in Draw.)

You want to apply special effects to your images, such as blending colors, tinting, and lightening or darkening.

You want to insert a picture or graphic and use the painting tools and features to alter it.

You want to create freehand images that are more complex than simple shapes and lines.

You do not need to rearrange layers of items (you cannot move objects forward or backward in a painting, but you can in a drawing).

Drawing is better when:

You want to rearrange layers of objects (in a painting, you cannot move items forward or backward).

You only need to draw basic shapes, lines, curves, and simple freehand objects (painting is better for more complex freehand images).

You want to easily re-select and manipulate objects (everything added to a painting becomes part of the overall canvas and is not as easily selected and manipulated).

You do not need to use paint-only features, such as blending colors, tinting, lightening, or darkening (you can add a painting frame to a drawing document if you need these effects in a portion of your document).



A Paint program is distinguished by an image that is made up of individual pixels. A **pixel** is the most basic component of any computer graphic. Pixel stands for picture element. It corresponds to the smallest thing that can be displayed on a computer screen. Every computer graphic is made up of a grid of pixels. When these pixels are painted onto the screen, they form an image: this grid of pixels is called a **bitmap**.

In the simplest terms, each pixel can be represented by 1 bit, a 1 if the pixel is black, or a 0 if the pixel is white. The computer opens a black & white bitmapped image. Then it starts looking for numbers that describe image information. Every time it comes to a 0 it draws a white pixel. When it comes to a 1 it draws a black pixel. Color images simply have more bits per pixel. A 32 bit screen can have over 16 million different colors for each pixel.

A black & white bitmapped image



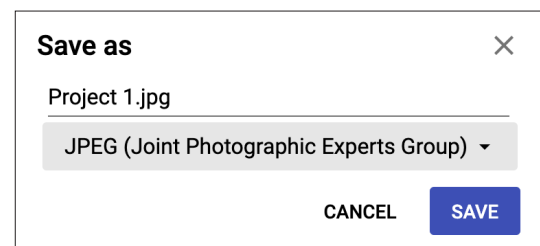
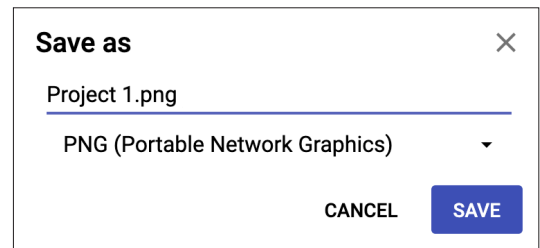
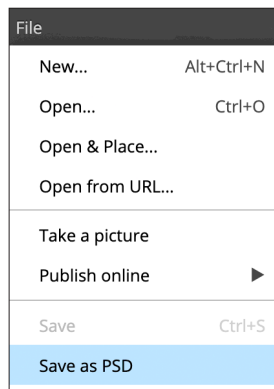
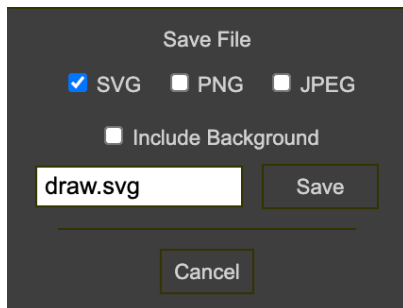
The same image, magnified to show the individual pixels



Graphic File Types

When you save a file, part of its name is the extension. This three or four letter suffix tells the computer what program created it, and what program should (or can) open it. If you save a Word file, it uses the .docx extension. Graphics programs also have extensions - here are the formats you may encounter in this course.

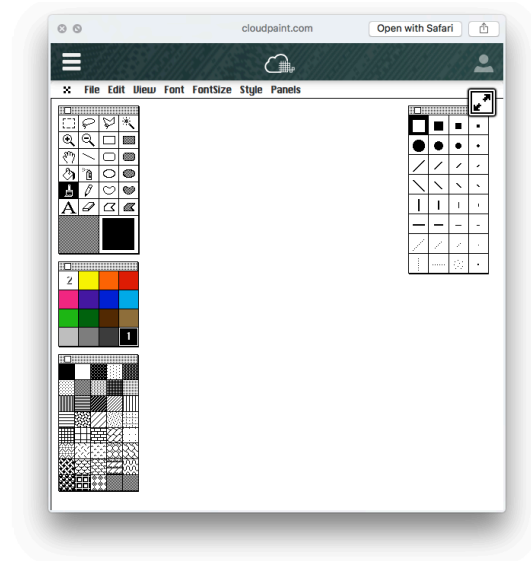
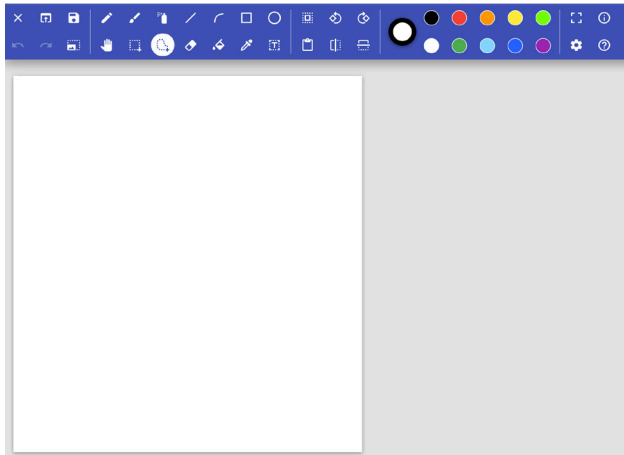
- .png Portable Network Graphic; it is the most common format for web pages images
- .jpg Joint Photographic (experts) Group; the second most common web format
- .svg Scalable Vector Graphics; a Draw format that can be enlarged without loss of quality
- .bmp BitMap; Microsoft's image format (similar to a .jpg)
- .psd PhotoShop Document; format wherein a document can contain layers and channels





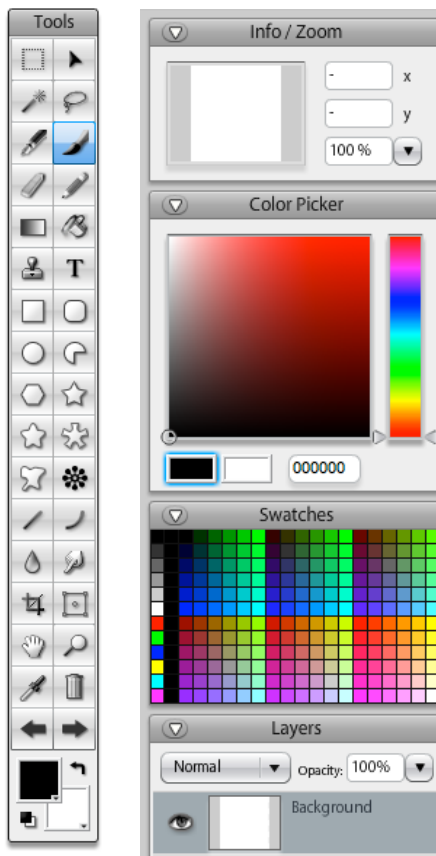
Paint Programs

Here are the tool palettes of several of the many hundred available paint programs. If you look closely, you will see tools common to all the programs. These tools will be the focus of this part of the course.



Cloudpaint.com

BrushZ Chrome App



sumopaint.com



chromeocrxstore.com/onlinepaint



Cloudpaint

Cloudpaint is a basic, classic computer graphics **Paint** program. I selected this program to start you off with because it utilizes tools in their simplest, most straight forward form. The interface is modeled after the first public, mouse-based graphics program - **MacPaint**.

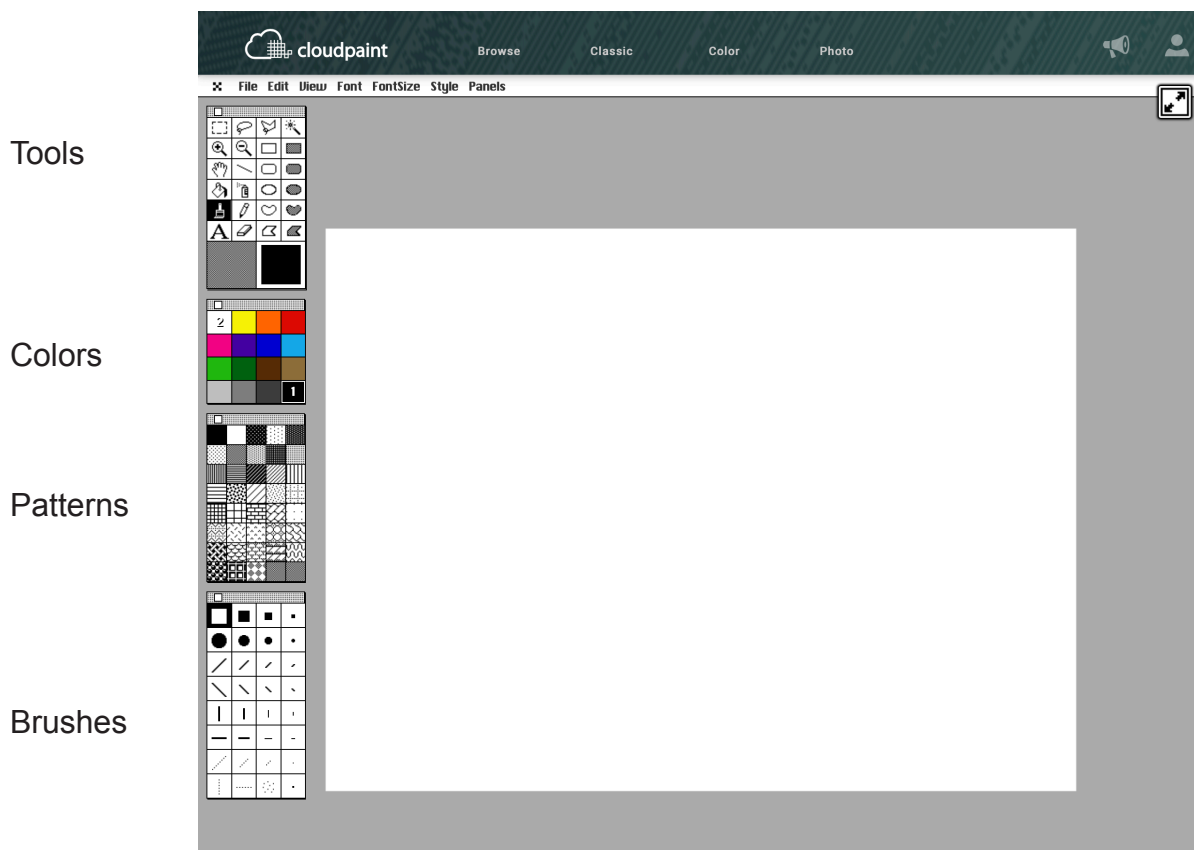
You will be using **just one portion** in this web-based program, the **Color** screen (as opposed to Browse, Classic and Photo), only the 'Color' screen.

***Note:** Occasionally Cloudpaint experiences technical difficulties - use the alternative Paint program referenced on the course webpage; it contains the same tools as Cloudpaint.*

You can find the link to these programs on the course website:

www.cbgraphics.steveyoungfpu.net

The tools contained in the four palettes are further described when you get to Paint Projects #1~3 and establish the basis for learning and using similar tools in other graphics programs. You will literally be starting at square one.





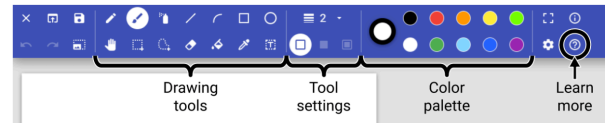
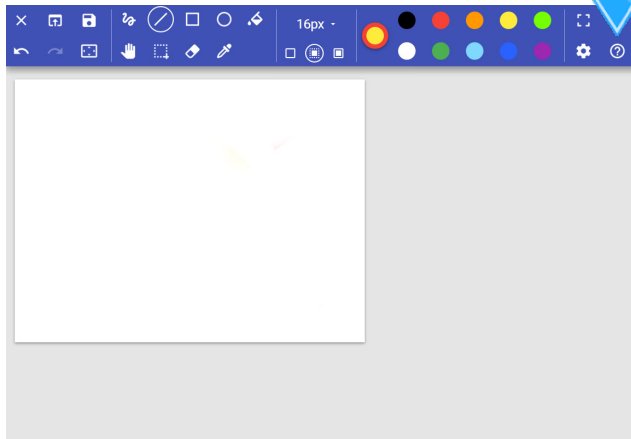
PaintZ

PaintZ is a simple **Paint** program for creating and editing artwork and other images, similar to Microsoft Paint.

PaintZ is designed to be fast and easy to use, with a touch- and mouse-friendly interface, full offline support, and no Flash Player required.

This is one of the easier **Paint** programs to master. It has a limited set of tools, but is easy to understand and use.

Click the ? icon for help



Document actions

- Clear your current drawing and start over.
- Open a new image for editing. Shortcut key: ⌘O
- Save your current drawing to your computer. Shortcut key: ⌘S
- Undo your last change. Shortcut key: ⌘Z
- Redo the last change you undid. Shortcut key: ⌘Y
- Crop or scale your drawing.

Tools

- Draw single pixels in the current line color. Right-click to use the current fill color. Shortcut key: P.
- Draw any shape you want in the current line color. Right-click to use the current fill color. Shortcut key: B.
- Spray paint in the current line color. Right-click to use the current fill color.
- Draw a straight line in the current line color. Right-click to use the current fill color. Shortcut key: L.
- Draw a line in the current line color, then turn it into a curve. Right-click to use the current fill color. Shortcut key: C.
- Draw a rectangle. Right-click to swap the line and fill colors. Shortcut key: R.
- Draw an oval. Right-click to swap the line and fill colors. Shortcut key: O.
- Grab and pan around your drawing by clicking and dragging. Shortcut key: H.
- Select a rectangular section of your drawing to move (click and drag), duplicate (⌘D), or delete (Backspace/Delete). Shortcut key: S.
- Draw a shape to select that section of your drawing to move (click and drag), duplicate (⌘D), or delete (Backspace/Delete). Shortcut key: F.
- Cover any part of your drawing with the current fill color. Right-click to use the current line color. Shortcut key: E.
- Fill the section with the current line color. Right-click to use the current fill color. Shortcut key: K.
- Select a color in your drawing to use it as the line color. Right-click to select the fill color instead. Shortcut key: I.
- Add text to your drawing in the current line color. Shortcut key: T.

PaintZ actions

- Show off your drawing in full screen mode.
- Customize PaintZ settings.
- View information about PaintZ.
- Open this help page.







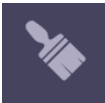



Paint Tools

The next several pages illustrate various tools used in many Paint (bitmap) programs. There are literally hundreds of such programs, each with a slight twist of the same theme: creating graphics! All programs, whether on a Chromebook, Windows or Macintosh computer, share a common set of tools - pencil, paintbrush, eraser, spray can, and simple geometric shapes. Paint programs may be quite simple, including very few tools (like the **Cloudpaint** website), or highly sophisticated, such as the Adobe Photoshop program.

Please do not think this course is designed to teach you a specific piece of software. Such is not the case. The purpose of this course is to teach you the tools and techniques common to the majority of computer graphics programs. I chose the three apps addressed in this course as they contain a good representation of graphics tools and functions.

The illustrations that follow are for a generic Paint program; the icons in whichever app or website you are using may look different. **Keep in mind not all programs have identical tool sets.** You may find some programs lack certain tools - for example, **PaintZ** does not have a Magic Wand tool, Sketchpad has no eraser. Rest assured, in the following projects all the tools to complete that project are available.

	Paintbrush	Eraser	Circle
Cloudpaint			
PaintZ			
Sketchpad		Not Available	



Paint Brush

To use the Paint Brush:

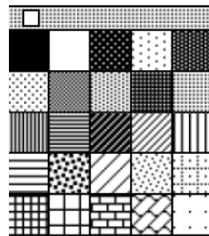
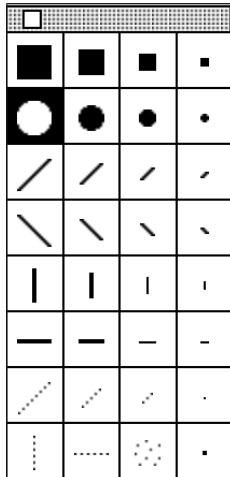
Click to select the Paint Brush from the Tool Palette.

Select a color (if other than the default color black is desired) from the Fill Color Palette.

Move the cursor to the document and click once to paint a spot. Click and drag to paint a line.

To change the brush shape or size:

Click to select a shape from the Brush Palette.



You can also select a pattern from the Pattern Palette.



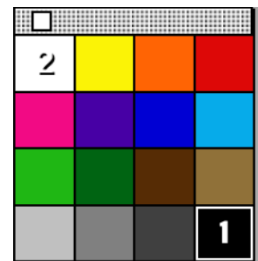
Pencil

To use the Pencil:

Select the Pencil from the Tool Palette by clicking on it.

Select a color (if other than black is desired) from the Fill Color Palette.

Click once to paint a single dot or drag the Pencil to draw a line.



Note: If the pencil (set to black) starts drawing on a black portion of the screen, it will draw white.

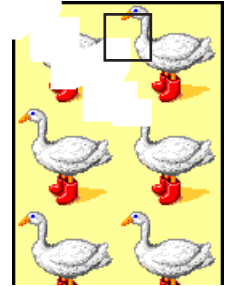


Eraser

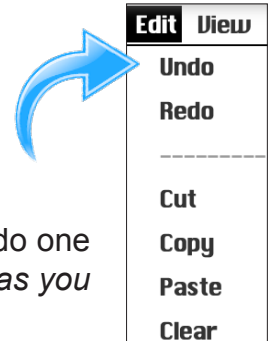
To use the Eraser:

Click to select the Eraser from the Tool Palette.

Click to erase only what is beneath the Eraser, or click and drag the Eraser to erase large areas.



NOTE: If you change your mind or double-clicked the Eraser accidentally, choose Undo from the Edit menu **before taking any other action**. Undo applies to any single action you take.



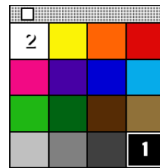
NOTE: In **Cloudpaint**, there is only one level of undo - you can only undo one time per action. As I used to tell my students, *"make as many mistakes as you want, just make them one at a time."*

Using The Pencil As An Eraser =

To use the Pencil as an Eraser:

1. Select the Pencil from the Tool Palette.

2. Select white paint from the Fill Color Palette.



3. Zoom in with the magnifier tool. Click on the pixel(s) you wish to 'erase.' Click and drag to erase larger areas.



To erase the whole screen, choose **New...** from the File menu.



Spray Can

Use the Spray Can to “spray paint” the fill with color and / or a pattern.

To use the Spray Can:

Click to select the Spray Can in the Tools Palette

Choose a color from the Fill Color Palette

Click once to paint a spot, hold down the mouse button to spray, or drag to spray paint a stroke.

Paint Bucket

Zoom in on an image to look for gaps, and fill them with pixels. If the paint leaks, choose Undo from the Edit menu before doing anything else.

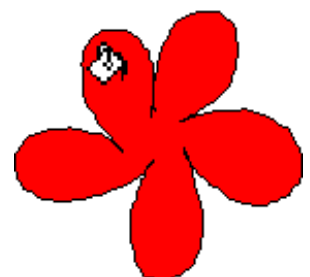
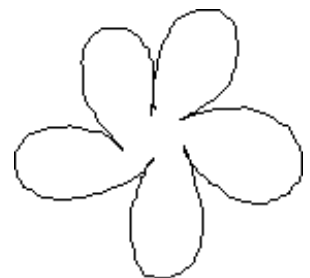
TIP - If the area being filled isn't completely enclosed, the paint will leak into areas you didn't intend to fill. A closed shape is an area of one color or shape with an unbroken outline or perimeter.

To fill an enclosed area:

Click to select the Paint Bucket from the Tool Palette.

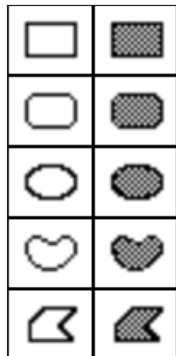
Select a color and pattern. The Fill sample shows your selection.

Position the tip of the Paint Bucket pouring spout over the area you want to fill, then click the mouse once.





Shape Tools

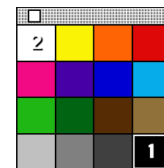
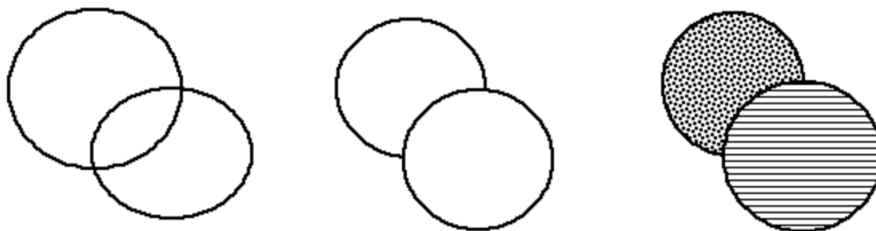
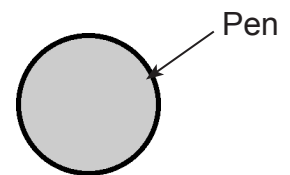
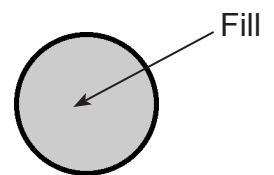


The shape tools come in two styles, empty and filled. The left column has the empty shapes, meaning that the interior is transparent. The filled shapes are opaque and contain whatever color and/or pattern is selected.

Select a tool and drag from point A to point B in a document to define the size, shape and direction of the shape.

Fill is the inside of the shape, surrounded by the Pen line. Certain attributes of each can be changed independently of the other.

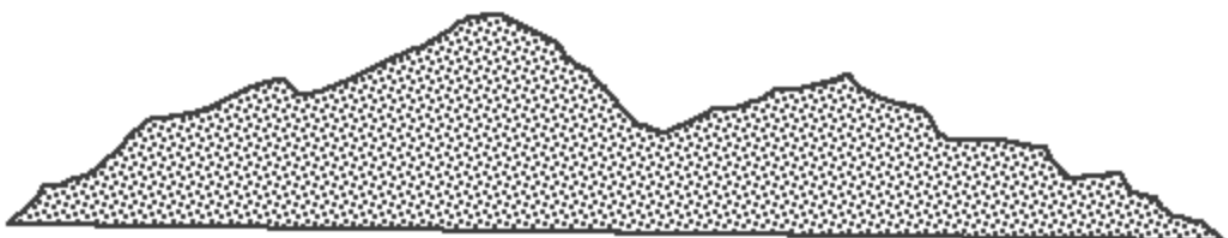
Different Paint programs handle Pen and Fill differently. In **Cloud-paint**, note the numeral '1' and '2' in the Color Palette. The '1' represents the fill color.



Left: Empty Circle Shape, Center: Filled Circle Shape (with a white fill) and Right: Filled Circle shape (with two different fill patterns).



The FreeForm Fill tool will automatically connect its beginning and ending points with a straight line and fill itself with the selected pattern.





Selection Rectangle (Marquee)

To use the Selection Rectangle Tool:

Select the Selection Rectangle Tool (Marquee) from the Tool Palette. The pointer will look like a **crosshair** when you move it in to the work space.

Position the **crosshair** at a corner (usually the upper left-hand corner) of the image you want to select. *With the mouse still depressed*, drag down and to the right to define a rectangle, one which encompasses the image you wish to select.

When you release the mouse button you will know the selection is complete as it will now be surrounded by animated dotted lines (giving the appearance of 'marching ants') which will remain around the selection until the mouse is clicked somewhere other than inside the selection.

The Selection Rectangle Tool selects everything surrounded by it, not just the object. When repositioning the selected object(s) elsewhere in your document, it may obscure other objects, depending on where you place it.

Once something is selected, it can edited with any item in the Edit menu.



Edit	View	Font
Undo		
Redo		

Cut		
Copy		
Paste		
Clear		

Invert		
Fill		
Trace Edges		
Flip Horizontal		
Flip Vertical		
Rotate		

Lasso

To use the Lasso:

Select the Lasso from the Tool Palette. The pointer looks like a lasso when you move it into the working area.

Position the Lasso beside the image you want to select and drag the Lasso down and over to draw a loop around the image.

When you release the mouse button, the image is selected. If you encircle several separate images with the Lasso, each image is selected individually.

Once something is selected, it can edited with any item in the Edit menu.



Magic Wand

The Magic Wand is a type of a selection tool, but with limited and fairly specific uses.

To select adjacent pixels of the same color:

Select the Magic Wand from the Tool Palette.

Click on an area that contains the color you want to select. You may need to Zoom in for more precision.

You can now use with any item in the Edit menu on the selection.

Select and Move

You select a paint image by using one of the following selection tools:



Selection Rectangle Tool



Lasso



Magic Wand

Use this tool:

Selection Rectangle

Lasso

Magic Wand

To select:

A rectangular portion of an image

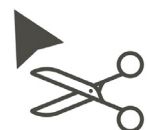
Irregular shapes with the surrounding white space

Adjacent pixels of the same color

To select and move an image:

Select the image using one of the selection tools.

Use the pointer (the icon will look like scissors) to drag the selected image to a new location.



Click outside of the image to deselect it.



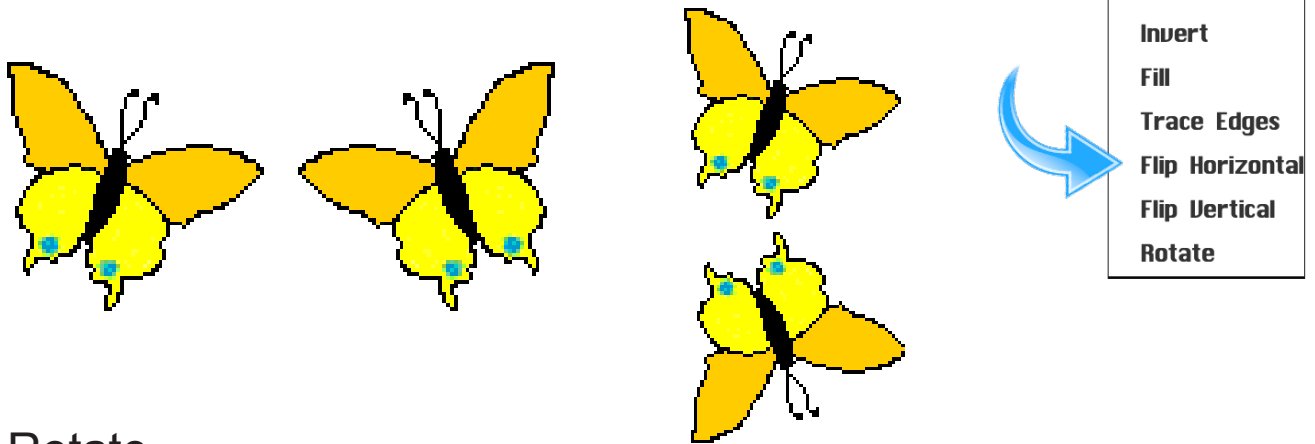
Flip An Image

You can flip images **horizontally** (side-to-side), **vertically** (upside down), or **both**.

To flip an image:

Select the image by surrounding it with the Selection Rectangle or Lasso.

Choose Flip Horizontal or Flip Vertical from the Edit Menu.

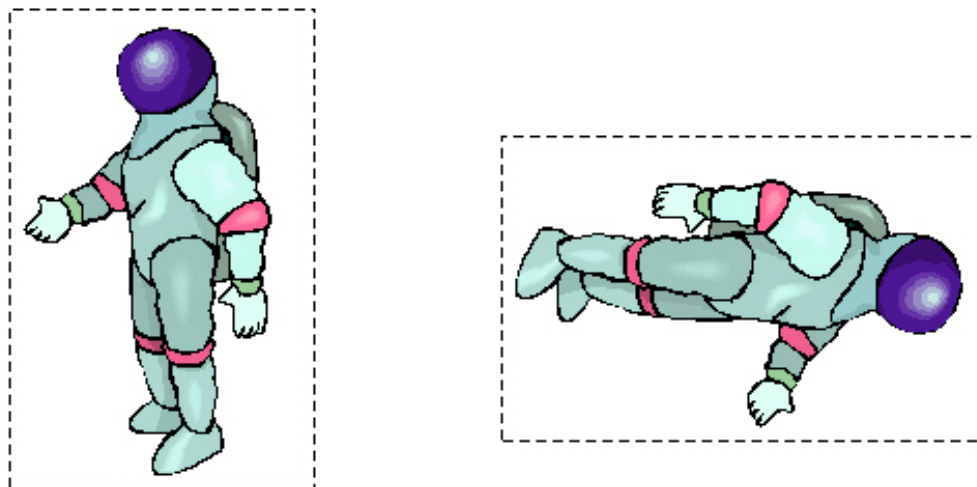


Rotate

To rotate an image by 90°:

Select the image by surrounding it with the Selection Rectangle or Lasso.

Choose Rotate from the Edit Menu.





Copy and Paste (Duplicate)

The technique you use to copy an image depends on where you want to place the copy. If the copy will be near the original, **duplicating** is recommended. When the copy will be far from the original or in another document, **copying** and **pasting** is recommended.

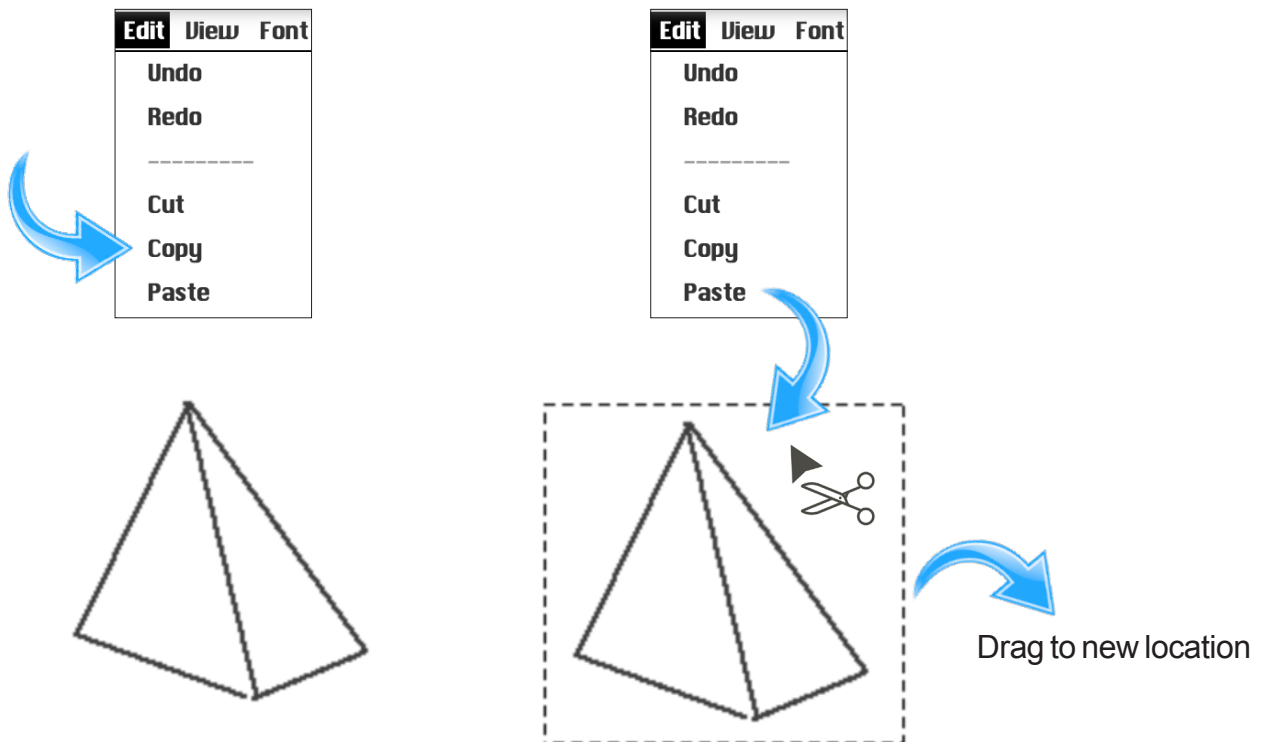
To copy and paste an image:

Select the image or the part of the image you want to copy by surrounding it with the Selection Rectangle, Lasso or Magic Wand.

Choose Copy from the Edit menu.

Choose Paste from the Edit menu. The copy appears in the document with a selection rectangle surrounding it.

Drag the copy to the desired location. You can paste as many copies as you like by repeatedly clicking the Paste button.



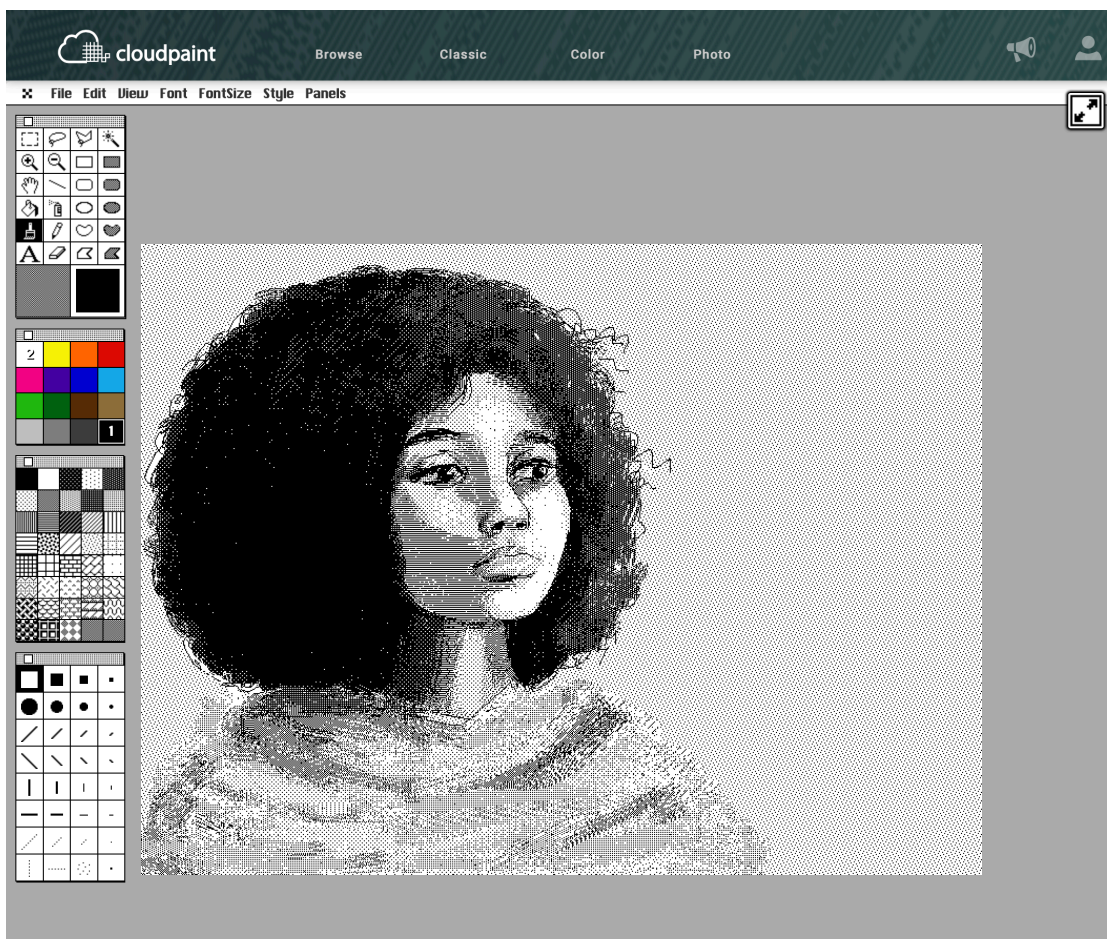


Paint Projects

The following projects will progressively introduce you to the tools common to the majority of paint programs. Feel free to experiment; you can learn more from 10 minutes of playing than an hour reading an instruction manual. Keep in mind that it may take several attempts to 'get' a particular concept or technique. Stay below your frustration level, but keep trying!

The first four projects are done in the most basic paint program addressed in this course, **Cloudpaint**. You have just reviewed some the basic tools in **Cloudpaint**.

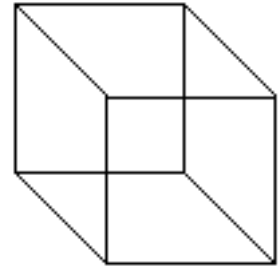
Please feel free to embellish, personalize and expand on the assignments if you wish. It's not required but it sure makes grading much more enjoyable!





Project 1: Transparent Cube

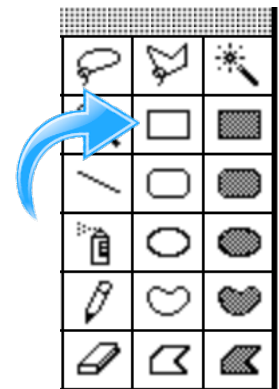
Learning Objectives: Mouse / trackpad control
 Selecting the appropriate tool
 Using the fewest steps possible
 Transparent shapes & objects



TIP: Generally, the larger the image you draw, the easier it is to control. Your boxes should be at least 2" wide - any smaller and you will be forced to work in a very small area.

Setup: Go to www.cloudpaint.com/color (or MacPaint)

If you have been playing with Cloudpaint, you can create a new, blank painting by going to the File menu and Choosing New. . .



Step 1: Click on the EMPTY SQUARE tool in the tool palette.

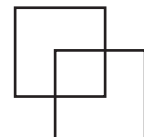
Step 2: Position the cursor in the middle of the screen.



Step 3: Press and hold the mouse button down. Slowly move the mouse down and right to define a square. Let up on the mouse button.

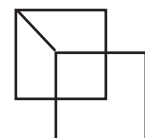
Step 4: Position the cursor in the middle of the square.

Step 5: Press and hold the mouse button down. Slowly move the mouse down and right to define a second square. It should be the same size and shape as the first square you drew. Let up on the mouse button.

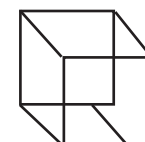


Step 6: Click on the LINE tool in the tool palette.

Step 7: Move the cursor to the upper left-hand corner of the first square. Hold the mouse button down to begin painting a line. Move the mouse (and the line) to the upper, left-hand corner of the second square, connecting the two.



Step 8: Following the steps in 7, connect the other three corners of the first square with their counterparts in the second square.



Step 9: Save your cube by taking a screen shot (see next page). Cloudpaint does not have a normal 'Save' function.



Chromebook: Saving Projects

The next step with your first piece of computer graphic artwork is to save it. With your cube still visible, take a screen capture - see "Screen Captures" on the bottom half of page 8.

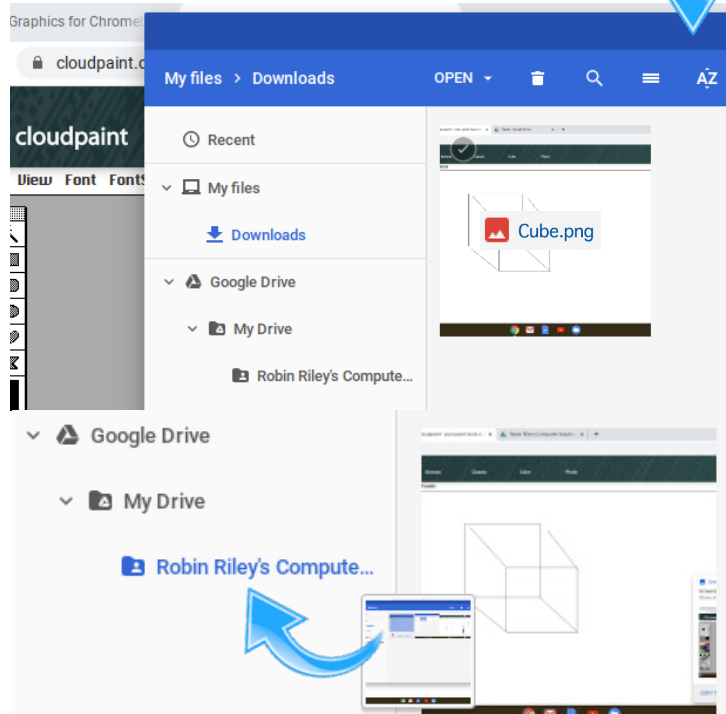
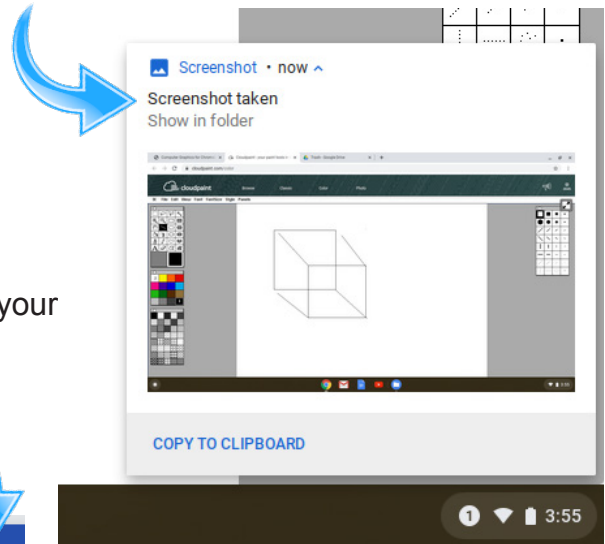
On a Chromebook, you will see a thumbnail of the screen capture image in the lower right corner of the screen. Click the 'Show in Folder' prompt.

A new window will appear, showing the Images folder in your Chromebook. If you want to save the image on your Google Drive, do the following:

Click to expand the 'Google Drive', then click to expand the 'My Drive'.

You should then see the self-named folder on your Google Drive folder (see page 6).

The screen shot will automatically be named and date / time stamped.



Screenshot 2020-05-05 at 7.36.31 PM.png

You can display the folder as icons or as a list, and sort the downloads by name, size, type and date.

The final step is to drag the relevant file from the downloads list into the self-named folder.

To access the Images / Downloads folder, click the App Launcher icon in the bottom-left corner of your screen, then click the 'Files' icon.

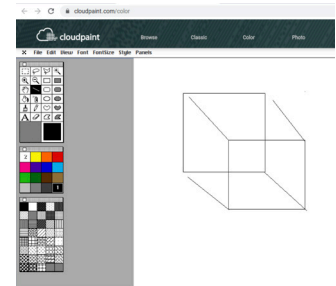
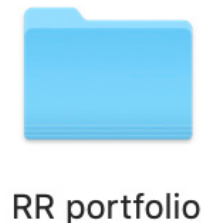




Mac: Saving Projects

With your cube still visible, take a screen capture - see "Screen Captures" on page 8. By default, screenshots are saved to your desktop with the name "Screen Shot [date] at [time].png."

To stay organized, you may want to drag your screen capture image into your TECH 912 portfolio folder.



Windows: Saving Projects

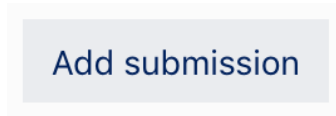
With your cube still visible, take a screen capture - see "Screen Captures" on page 8. By default, screen shots save to your Pictures folder. To stay organized, you may want to drag your screen capture image into your TECH 912 portfolio folder.

Moodle: Immediate Project Submission

If you choose to submit your completed project immediately (as opposed to waiting till all your projects are done), you may do so.

Once you are logged into your Moodle account and have accessed the *Paint and Draw for Teachers* course, click on module 3.1 Paint Project 1 (Transparent Cube) File Submission.

At the bottom of the resulting page, click the **Add submission** button.



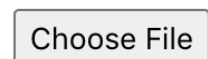
Click the **file** icon



Click the **Upload a file** button



Click the **Choose File** button



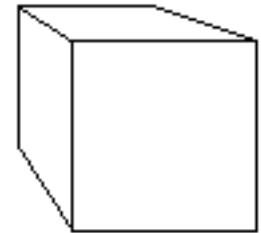
A standard 'Open' window will appear, where you can navigate to your 'portfolio' folder and select (in this case) the transparent cube screen capture. Once you have selected the relevant file, click the **Upload this file** button





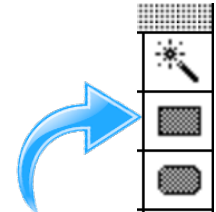
Project 2: Opaque Cube

Learning Objectives: Mouse / trackpad control
Selecting the appropriate tool
Fewest steps possible



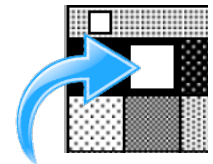
Setup: Go to www.cloudpaint.com/color (or MacPaint)

Step 1: Click on the SOLID SQUARE tool in the tool palette



Step 2: Click the WHITE cell in the PATTERNS palette.

Step 3: Position the cursor in the middle of the screen.

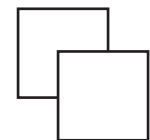


Step 4: Press and hold the mouse button or trackpad down. Slowly move the mouse down and right to define a square. Let up on the mouse button/trackpad. You will see the square you created.



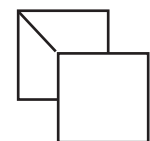
Step 5: Position the cursor in the middle of that square.

Step 6: Press and hold the mouse button/trackpad down. Slowly move the mouse down and right to define a square of the same size and shape. Let up on the mouse button/trackpad.

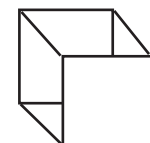


Step 7: Click on the LINE tool in the tool palette.

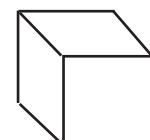
Step 8: Move the cursor to the upper left-hand corner of the first square. Hold the mouse button/trackpad down to begin painting a line. Move the mouse (and the line) to the top corner of the second square.



Step 9: Following the steps in 7, connect the other three corners of the first square with their counterparts in the second square. This will make an opaque box but you're not done yet!



Step 10: Click on the ERASER tool. Erase the lower middle horizontal line. Erase the middle vertical line. This will make a solid cube. You're done!



Remember to save (screen capture) your image. See page 8.



Project 3: Cylinder

Learning Objectives: Selecting the appropriate tool
 Copying a picture



This project introduces the most powerful tools in computer graphics: the ability to copy and transform pictures on the screen. With little or no extra work, it is possible to turn one part of an image into a complete one. In nature, most things are symmetrical. So why draw both sides? Just draw one side, then let the computer do the rest of the work for you.

Because the techniques in this exercise are so important, you should repeat them several times until you are comfortable with them.

Setup: Go to www.cloudpaint.com/color (or MacPaint)

Step 1: Click on the CIRCLE tool in the tool palette.

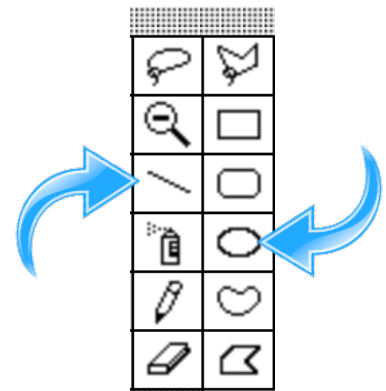
Step 2: Position the cursor in the middle of the screen.

Step 3: Press and hold the mouse button or trackpad down. Slowly move slightly down and right to define an oval. Let up on the mouse button/trackpad.

Step 4: Click on the LINE tool in the tool palette.

Step 5: Move the cursor to the left side of the oval. Hold the shift key down to constrain the line to a straight line. Hold the mouse button down to begin painting a line. Move the mouse down to paint a vertical line.

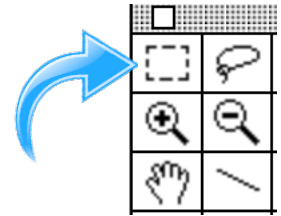
Step 6: Again, holding the shift key down, paint the right-hand vertical line.



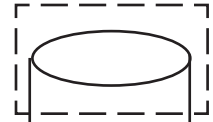


Project 3: Cylinder (continued)

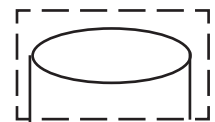
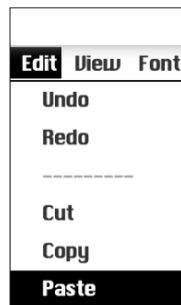
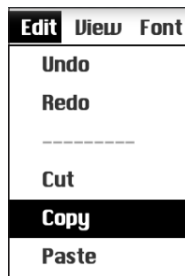
Step 7: Click on the Selection Rectangle tool in the tool palette.



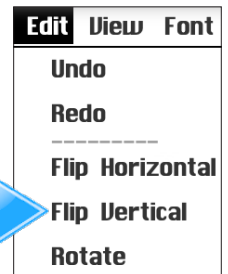
Step 8: Move the cursor above and to the left of the figure. Holding the mouse button/trackpad down, move down and to the right to surround the figure. **Make sure the vertical lines extend down past the marquee selection.**



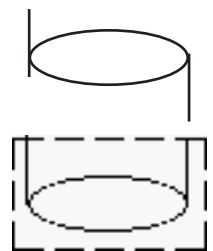
Step 9: The next three steps are done using the **Edit** menu at the top of the window. **With the selection still active**, choose **Copy** and then **Paste**. This will place a duplicate of the selection at the top corner of the canvas.



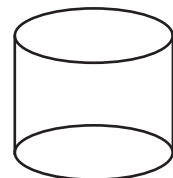
Step 10: From the **Edit** menu, choose **FLIP VERTICAL**. The duplicate top of your cylinder is now the bottom!



Step 11: Move the cursor back into the selection (of the second image). Hold the mouse button/trackpad down and drag the image to its new position, matching the sides of the cylinder. As long as you hold down the mouse button or continue to depress the trackpad, you may reposition the image. Once set, release the mouse button/trackpad.



Step 12: Move the cursor outside the selection. Note that the cursor changes from an arrow to a cross. Click the mouse to deselect the marquee. You're done!

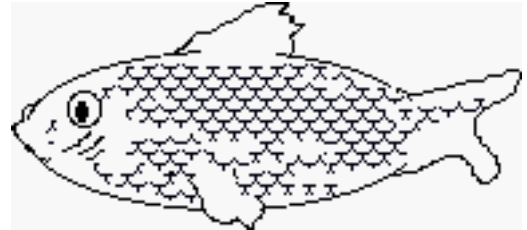


Remember to save (screen capture) your image. See page 8.



Project 4: Fish

Learning Objectives: Choosing the right tool
Using the paintbrush



Setup: Go to www.cloudpaint.com/color (or MacPaint)

Step 1: Click on the CIRCLE tool in the tool palette.

Step 2: Position the cursor in the middle of the screen.

Step 3: Press and hold the mouse button/trackpad down down. Slowly move the down and right to define an oval. Let up on the mouse button/trackpad.

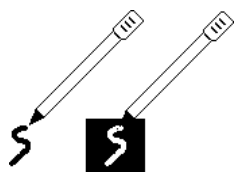
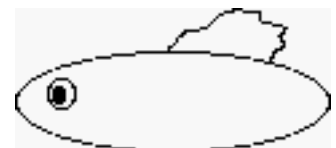
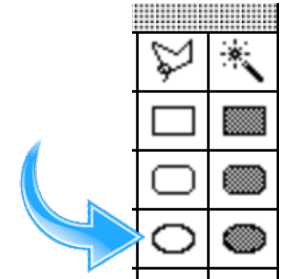
Step 4: Still using the circle tool, draw a small circle toward one end of the oval. This will be the eye.

Step 5: Click the SOLID CIRCLE tool and then the BLACK cell in the PATTERNS palette.

Step 6: Still using the circle tool, draw an even smaller oval inside the eye circle. This will be the pupil.

Step 7: Select the PENCIL tool from the tool Palette.

Step 8: With the pencil tool, you are in freehand drawing mode. Position the cursor at the appropriate places and draw ventral and dorsal fins then a tail on your fish figure. It doesn't have to be perfect!



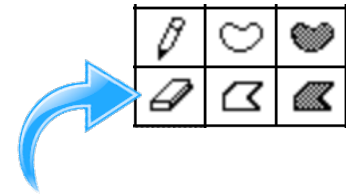
NOTE: It is important to note where the pencil is positioned. If the tip of the pencil is on a white pixel, a black line is produced. If the pencil tip is touching a black pixel, a white line is produced. Be aware of this, and start the fins slightly off the oval.





Project 4: Fish (continued)

Step 9: Click on the ERASER tool in the tool palette. Erase the line segments where the tail fin and side fin overlap the body.



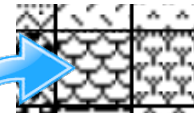
TIP: You can also use the paintbrush (with white paint) as an eraser. You can also use the PENCIL as an eraser, as its default color on selection is white. Just place the pencil tip on a black pixel, and it will 'erase' the black lines (replace the black pixels with white). But to do this you'll need to ZOOM IN to get a closer view of the lines you wish to erase. Click the magnifier glass tool (+ zooms in, - zooms out) then click the image. If you are using a trackpad, pinch - zooming enlarges the entire webpage - the image will be larger but the tools will be off-screen until you zoom back out..



Step 10: Click on the PAINT BRUSH tool from the tool palette.

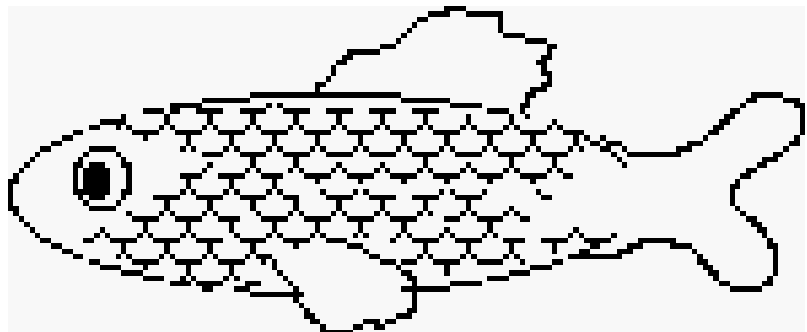


Step 11: Then click on (select) the SCALE PATTERN from the PATTERN palette.



Step 12: Paint on some scales (by dragging the cursor) - just enough to give the impression of fish skin. You can also use the SPRAY CAN tool and spray on the scales but this method is much slower and less efficient. I suggest dragging the PAINT BRUSH!

You're done!



Remember to save (screen capture) your image. See page 8.



PaintZ

For the next two Paint projects, we will move from the very basic **Cloudpaint** to the newly updated **PaintZ**. You will note that the tool palette is set up differently than **Cloudpaint**, but the tools should look familiar.

To open **PaintZ**, type in **https://paintz.app** into your browser or use the hyperlink on the course webpage.



PaintZ has **tooltips**: if you hover the cursor over a tool, the name and keyboard shortcut of that tool will appear.

Text (T)

Click the ? icon for the HELP menu.

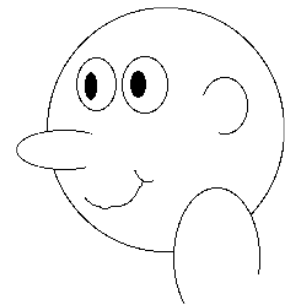


Project 5: Face

Learning Objectives: Using the circle tool
Using Pen and Fill

Setup: In the Chrome browser, go to **paintz.app**

Step 1: Click on (select) the OVAL tool from the tool palette. Place the cursor on the document and, with the mouse button/trackpad still depressed, move the cursor down and diagonally to create a circle about 2"~3" in diameter.

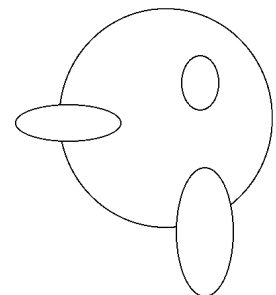


The default when you open **PaintZ** is a black pen and white fill. This means that the circle tool will have a black (as opposed to another color) outline and a solid white interior. The default thickness of the line is set at 2 points. You can change the thickness by using the control.



Step 2: Next, position your cursor where you would like the tip of the nose to start. Move the cursor slightly down and over (right) to create an oval (nose). Repeat the same process for the shoulder and ear moving the cursor down and over.

By using opaque white fill, the nose and shoulder ovals mask the larger circle (the head), saving you the trouble of erasing the underlying lines.



Use **Undo** to reverse the last 20+ actions.





Step 3: The eye is done in two parts; the eye and the pupil. For the eye, continue to use the circle tool and place the eye in the appropriate position.

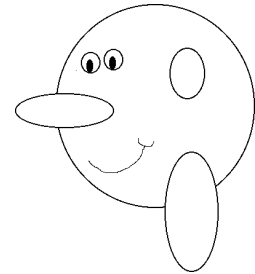


Step 4: Change the fill color to black. To do this, alt-click the black circle to the right of the pen/fill indicator. If you are using a mouse, you can right-click.



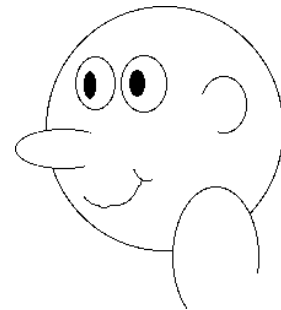
Create a pupil inside of the larger eye shape.

Step 5: Repeat the process for the second eye. To change back to a white fill, **alt-click** (or right-click with a mouse) the white color circle.

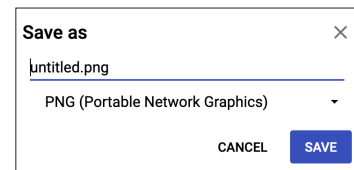
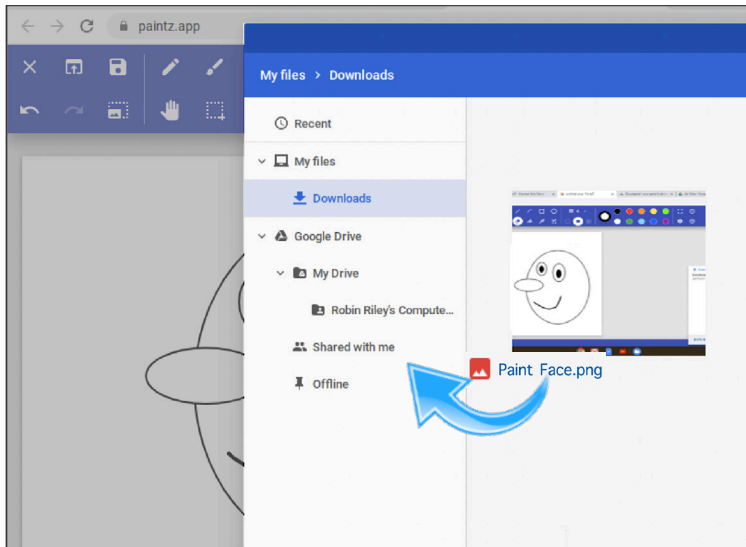


Step 6: Choose the paintbrush tool. The line thickness should still be set to the default 2 points. Draw a mouth and any small details you may wish to add.

Step 7: Choose the eraser tool and set the fill color back to white (the eraser is actually a paintbrush). Change the size of the eraser to 18 or so, making it larger. Erase the left side of the ear, and the bases of the nose and shoulder ovals.



Step 8: To save your image, click the save icon. Give your image an identifiable name (i.e. face) and click the Save button. The file will be saved to the downloads folder where it can then be transferred into your shared Google Drive folder.



Remember to save and title your image. See pages 28 - 29



Importing images From Google Drive

This assignment uses a pre-made element. You will be using the lasso tool to combine two images. These images, along with others, are in the 'Google Drive Course Folder'.

Project 6: Eagle and Mountain

Learning Objectives: Uploading images
Photo editing
Using the lasso tool
Changing an image
Adding text



Setup: Open **PaintZ**, type in **https://paintz.app** into your browser or use the hyperlink on the course webpage.

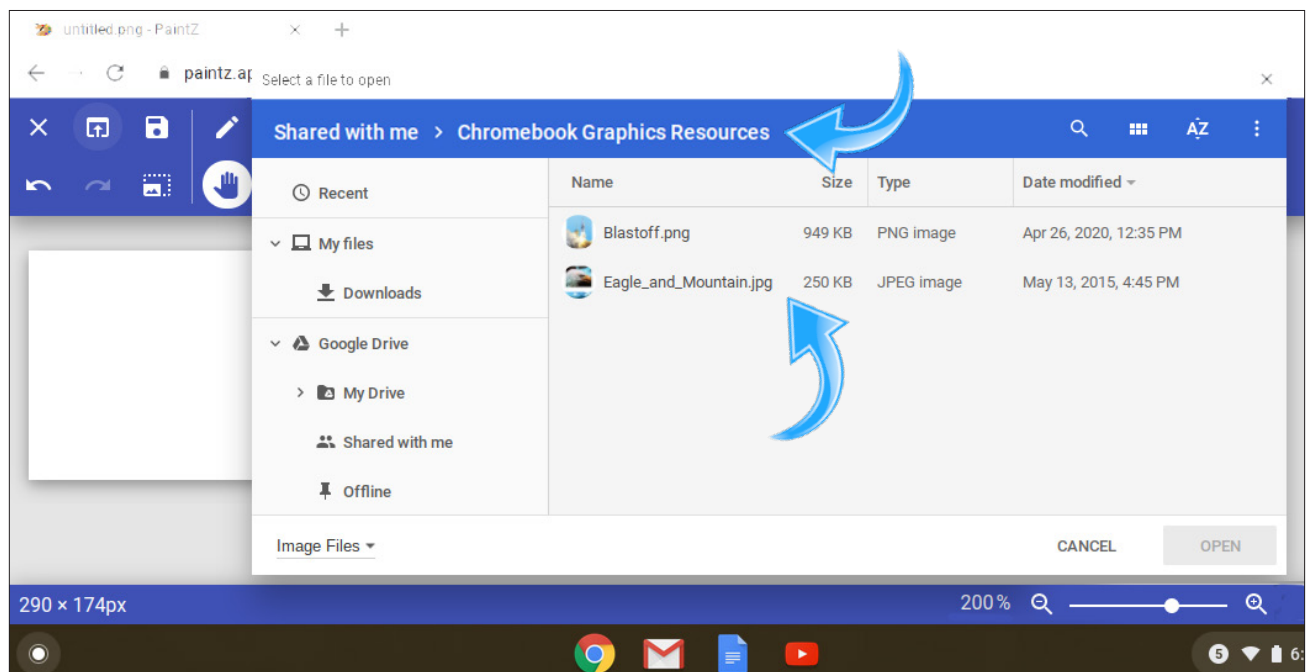
If you are using a Mac or a Windows computer, see next page for Step 1

Step 1: (Chromebook) Click the Open Image button at the upper left.



You will see the Google Drive screen.

Click on 'Google Drive', then 'Shared with me'



There may be other files in the folder, but PaintZ will only show files it can work with.

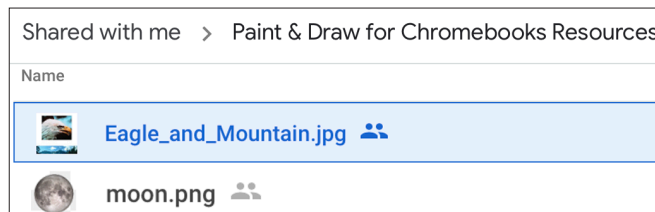


Importing images From Google Drive (Mac or Windows)

This assignment uses a pre-made element. You will be using the lasso tool to combine two images. These images, along with others, are in the 'Google Drive Course Folder'.

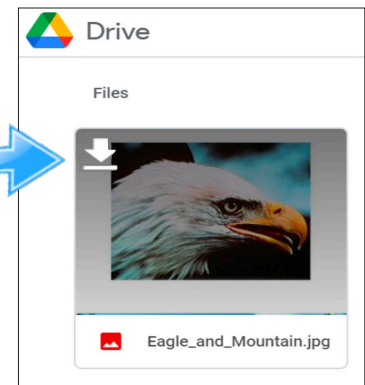
Step 1: Open the course website at **cbgraphics.steveyoungfpu.net**

Click the 'Google Drive Course Folder' link at the bottom of the left column. This connects you to the course Google Drive folder, containing several resource files.

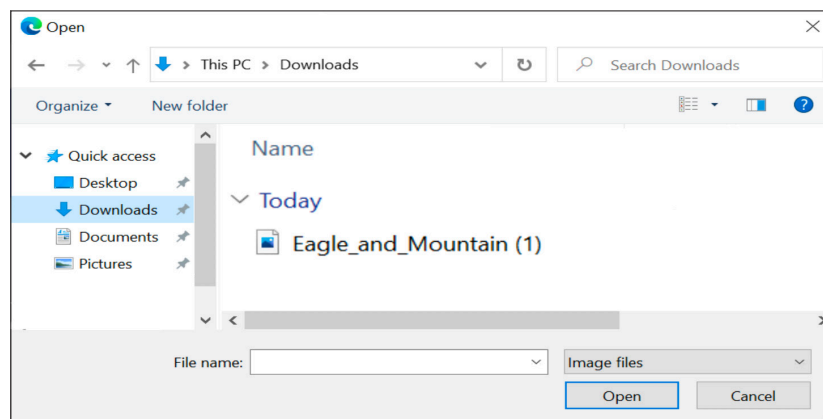


(Mac) Right-click the 'Eagle and Mountain' file and choose the 'Download' option from the drop down menu. The image will be saved in the default location, probably in the Downloads folder. Depending on your Mac, the file might save to the Desktop.

(Windows). Each thumbnail image has a white arrow in the upper left corner. Click the icon and the image will be saved in the default location, probably in the Downloads folder.



In PaintZ, click the 'Open' icon. Open the 'Downloads' folder, then select the 'Eagle and Mountain' image which you just downloaded. Click the 'Open' button to import the image into PaintZ.

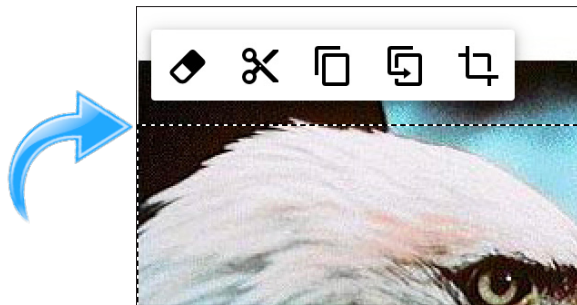




Step 2: Using the freeform selection (lasso) tool*, carefully trace the edges of the eagle. This may take several tries - remember you can use undo - it does not have to be 'perfect' by any means. You are learning a technique, not perfecting your coordination! Clicking another tool and then clicking the lasso again will 'reset' and let you start fresh. **TIP:** Using the zoom control at the bottom right of the window may help to see detail in the eagle image.



After you have lassoed the eagle, the selection tool palette will appear.



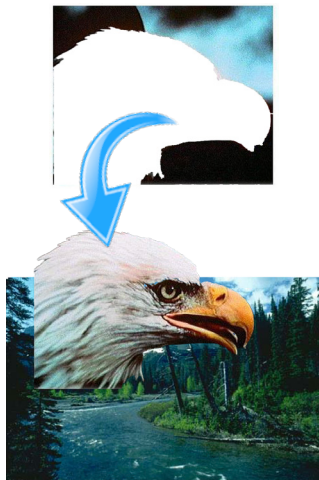
From left to right:
Erase
Cut
Copy
Duplicate
Crop.



Note the dotted line creating a box around the selected area.

Step 3: Zoom back out so both the eagle and mountain images are on-screen. With the cursor inside the selection box, drag the eagle downward and place it in the bottom left corner of the mountain image.

Remember Undo is your friend! It may take several tries before you are satisfied with your selection and placement of the eagle. You can also reload the file (step 1) and start from scratch.



To 'clean up' the image if desired, use the selection box to surround the eagle/mountain image and then click the crop tool.



*In other programs, especially those designed to run on Windows and Mac computers, the lasso tool will automatically adjust itself, shrinking to the exact shape of the object lassoed. The inability to do so in **PaintZ** is a limitation of web-based computer graphic programs.





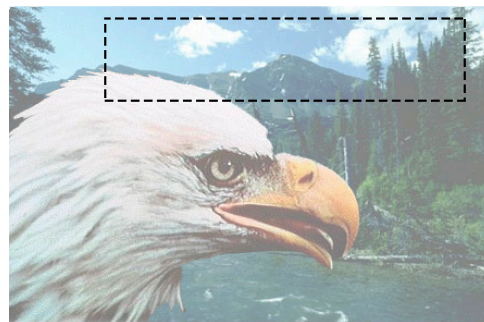
Step 4: Select the Text tool which will cause the text control tools to appear. PaintZ has now become a basic word processor! There are options to change font, size, style and color.



Adjust the size to 48 pts and set the pen color to a light color by clicking a color sample. The outer ring on the color disk will reflect your choice.

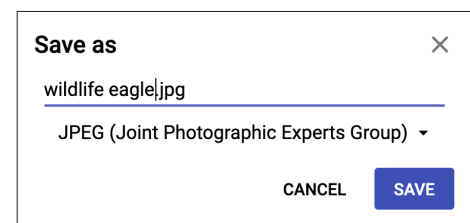
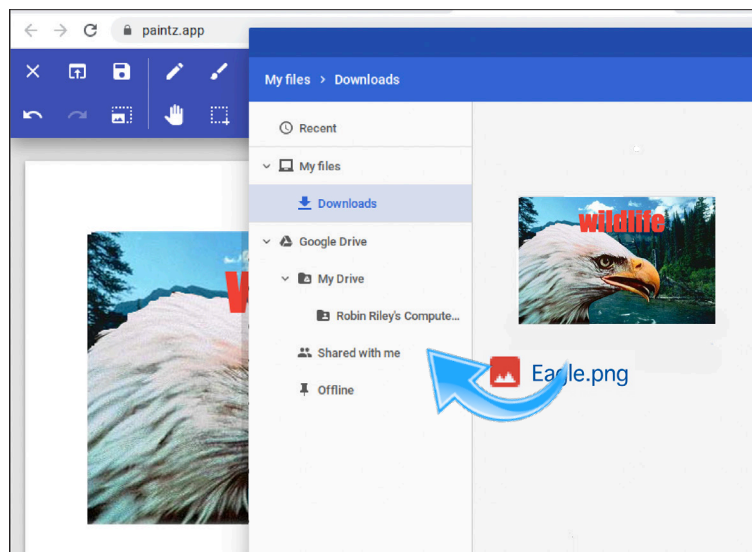


The text tool is used to define a rectangle within which text can be typed. The size and position of the text box can not be adjusted once set. This is a limitation of Paint programs. Later you will use text in a Draw program. There you will see the stark difference.



Step 5: Create a text box in about the same position and size as illustrated. Immediately after the box is drawn, type in the word 'wildlife'. Again, the Undo tool is your friend.

To save your image, click the save icon. Give your image an identifiable name (i.e. Eagle) and click the Save button. The files will be saved into the downloads folder where they can then be transferred into your shared Google Drive folder.



Remember to save and title your image. See pages 28 - 29



Mid-course Survey

To fill out and submit this form, **please go to the Pre-Course Survey link on the course website**. I have copied the survey here merely for reference; you will **submit your responses via the Course Website**.

A copy of your completed form should be e-mailed to you after submitted. A couple brief, succinct sentences should suffice.

What prior experience do you have using a Paint or Draw program to create artwork on a computer?

What are your first impressions of the assignments? Are they too easy or difficult? Please explain your answer.

Are you able to put your prior computer experience to use in completing the assignments thus far?

At this point in the course, are you envisioning your students making use of the skills you are learning now? If so, how?

TECH 912 Paint & Draw
for Teachers

Mid-Course Survey

This form will be added to your TECH 912 portfolio, saved on the instructor's system. A copy will be emailed to you for your records.

*** Required**

Full Name (First, Last) *

Your answer _____

Email Address *

A copy of your completed form will be emailed to you

Your answer _____



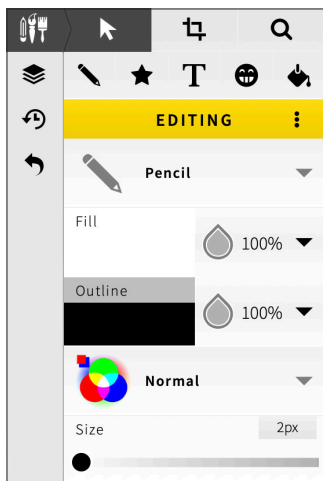
Draw Tools

We now move to the second type of computer graphics, **Draw**. Let us examine the difference between a **Paint** program and **Draw** program. _____ That was a 2 inch long line. In a paint program, the computer sees that not as a line, but as hundreds of pixels lined up in a row. Each pixel is separate and distinct from the others, so the line is not really a line at all (it just looks that way); it is simply a row of dots. A draw program sees the line as one object which is why draw programs are sometimes called **object oriented** or **vector graphics** programs. Each object, no matter how complicated, is a single unit. Because of that, **there is no eraser in draw**. In **Paint** you can erase individual pixels which make up an object or a figure. In **Draw**, it is 'all or nothing' as you can't erase part of a single unit.

The chief advantage of **Draw** is you can change elements of your picture *after* you have created them. Just coming from the Eagle and Mountain Paint exercise, I am sure you can appreciate the advantage!

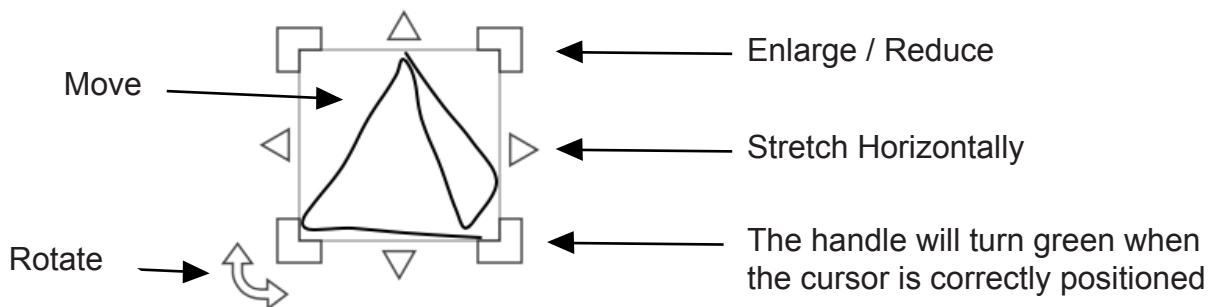
Draw programs use **LAYERS**. Draw sees each object on its own unique layer that can be placed above or below other objects (which also have their own layers). Think of each object as a playing card that you can shuffle up or down in the deck.

The eraser, spray can, magic wand, paint bucket and pencil tools are not available in draw (you just might miss that eraser!).



To select objects, Draw programs have a **SELECT** tool. By clicking on the select tool, then clicking an object, that object is **selected** (so you can then manipulate it as you did once you selected an object in paint with the lasso or marquee).

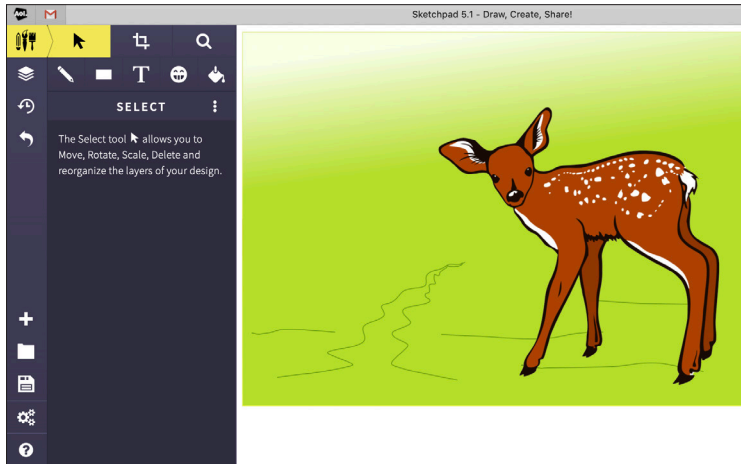
In Draw, a selected object has **handles**. They appear as shapes bounding the object. With the arrow tool on top of an object, holding down the mouse button/trackpad will allow you to drag the object, moving it around the document. With the tip of the arrow **touching** a handle, you can **resize, reshape** and **rotate** an object. Pressing the delete key will erase a selected object. **TIP:** Holding the shift key down will allow you to select (click on) several objects at once.



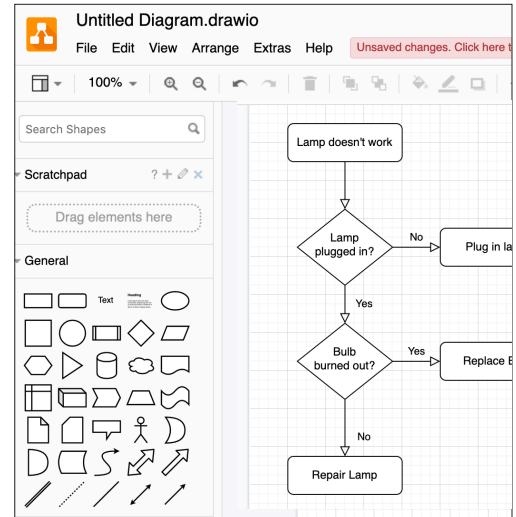


Draw Programs

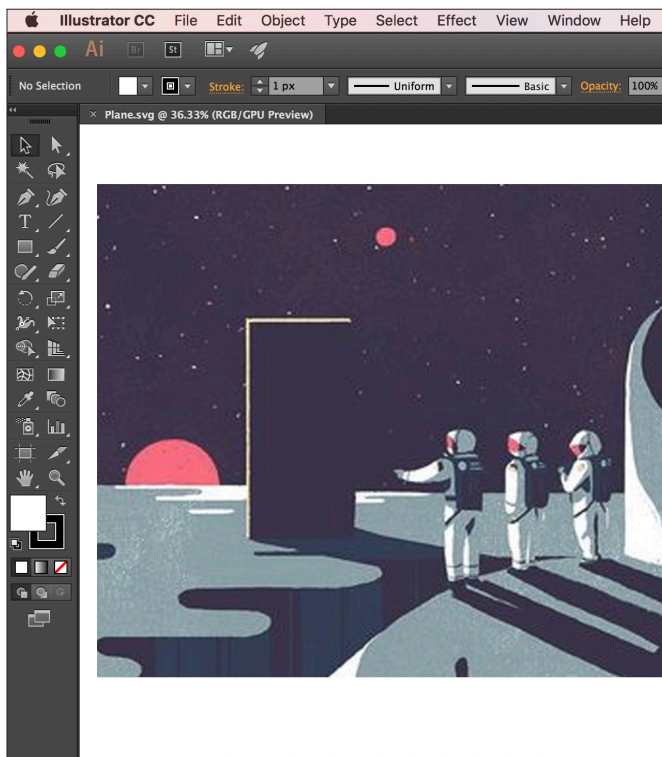
Here are the screens of several draw programs.



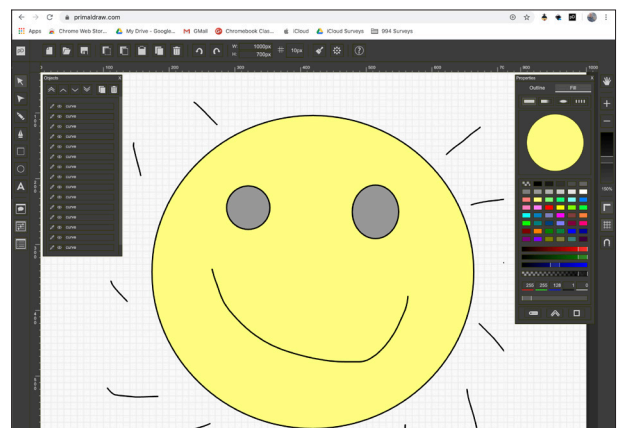
Sketchpad



<https://app.diagrams.net>



Adobe Illustrator (for Mac and PC)



PrimalDraw

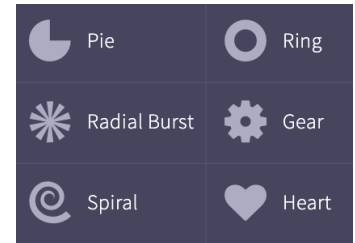
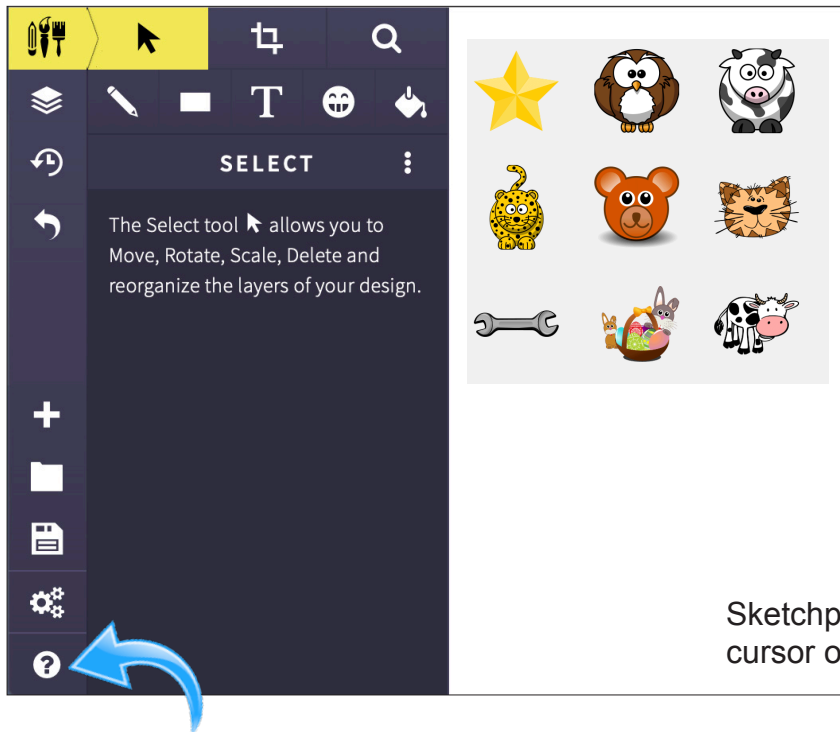


Sketchpad

Sketchpad is a free online **Draw** program which will be used for the following six projects.

In addition to an array of Draw tools, **Sketchpad** has a library of thousands of high quality vector images to use in your project. All images are open source and available for use in professional and commercial artwork. **Sketchpad** also has some great 'artsy' tools for making designs and abstract images. Take a few minutes to review the help screen and watch the short demo videos of each tool.

To open **Sketchpad**, use the link on the course website or type in **sketch.io/sketchpad** into your browser.



Sketchpad has a wide assortment of **shapes**.

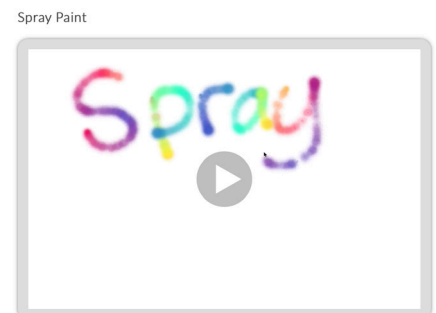
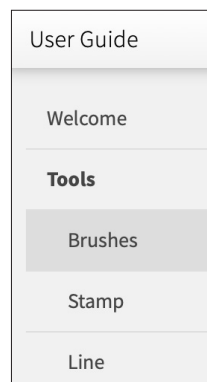


Sketchpad has **tooltips**: if you hover the cursor over a tool, its name will appear.

Click the ? icon for the HELP menu.

Tutorials are in the form of short videos, providing an easy, fast learning curve. **The projects in this section assume that you have viewed the videos and have acquainted yourself with them.**

NOTE: Sketchpad uses 'Live' buttons, and their appearance may differ from session to session.





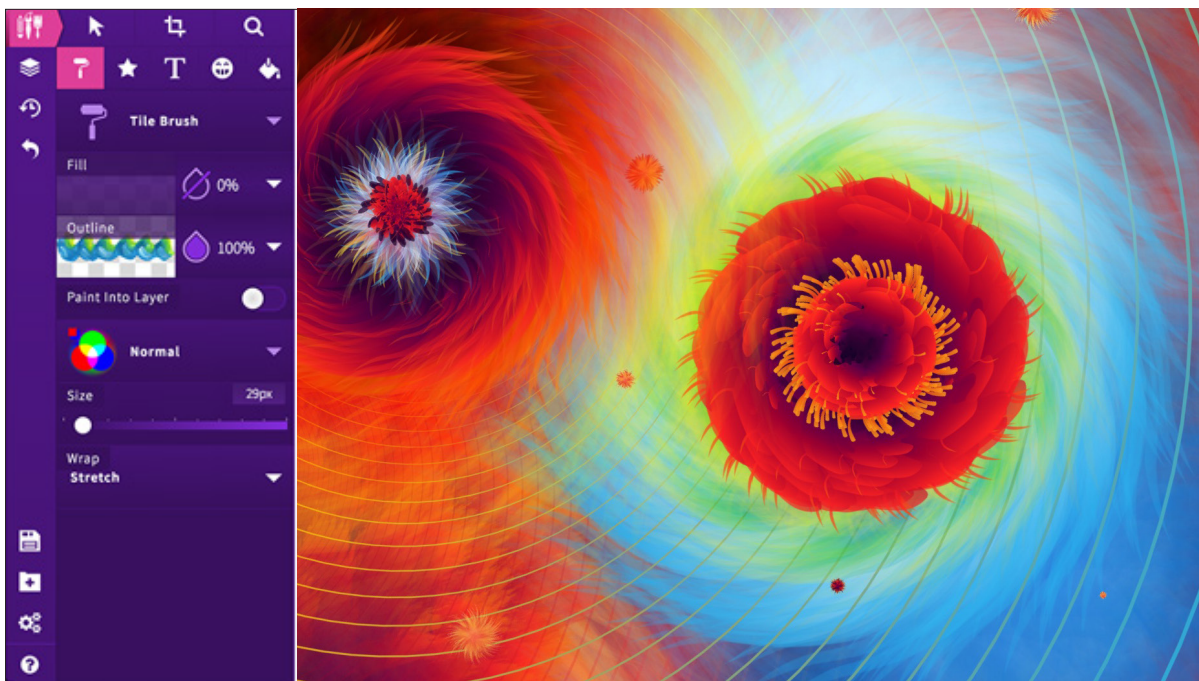
Draw Projects

The next projects will progressively introduce the concepts and tools of Draw programs. I would ask you to recall the previously discussed differences between Paint and Draw programs. This next section is designed to demonstrate these differences in a way you can come to appreciate and respect as you discover the idiosyncrasies, subtleties and nuances of both Paint and Draw.

I have found some people prefer Paint and some Draw. Personally, I believe these preferences to be individual, and somewhat tailored to the skills and preferences of each user. I have had many complete this course and strongly favor the Paint tools and techniques, yet I have found just as many would rather Draw than Paint. One of the benefits of this course is the exposure you are getting to both Paint and Draw software!

Feel free to experiment! You can learn more from 10 minutes of playing than an hour reading an instruction manual. Keep in mind that it may take 5 or 10 tries to 'get' a particular concept or technique. Stay below your frustration level, but keep trying!

And please remember, just like Paint apps, there are many Draw apps available. **Sketchpad** is an excellent start, but you may settle on another app for day-to-day use. You may already be using Google Draw - in that case I hope you will find some new ideas and techniques.

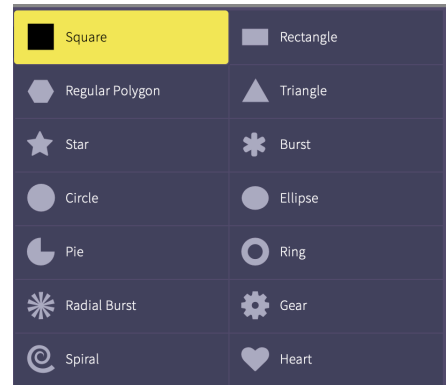




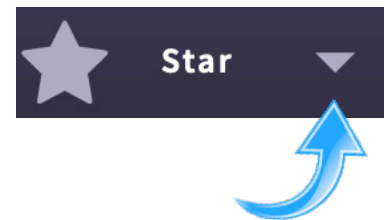
Project 1: Shapes and Layers

Learning Objectives: Using shape tools
Working with Fill
Working with Layers

Setup: In the Chrome browser, go to **sketch.io/sketchpad**
Use the default settings. Make sure the **Tools** are visible by clicking the Tools icon. Click **+** to open a new document.



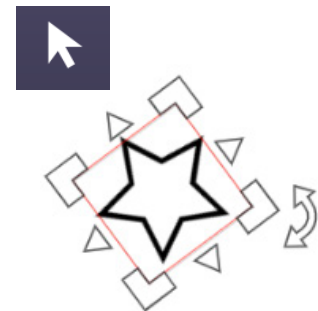
Step 1: Click on the **Shape** tool. It probably looks like a star, but the menu icon will change depending on what shape is selected.



Click the small triangle to show the shape palette.

On the canvas (the part of the screen where you will draw) drag the mouse (or click and hold your finger if you are using a trackpad) to make a shape.

Step 2: Click the **Select** tool and click (or touch) the shape so the handles appear. (Refer to the bottom of p.48). Practice re-sizing and re-shaping the star.



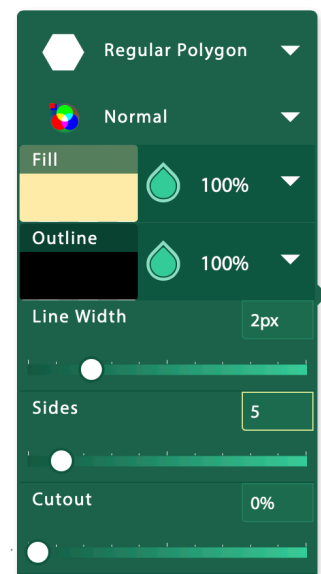
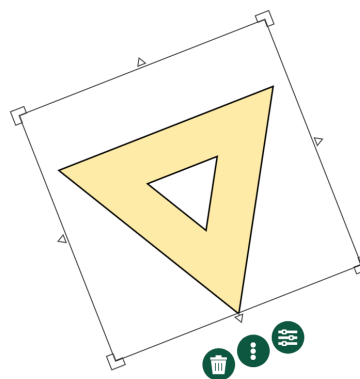
Step 3: Select at least four other shapes and **create a total of five images** on your canvas.

To remove an image, click on the **Select** tool, click on the relevant image, then press the backspace / delete key on the keyboard.

Remember the **Undo** button.



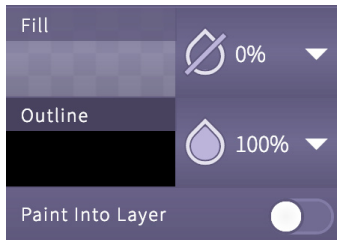
Shapes have other settings, such as setting the number of sides for a polygon. With a shape selected using the **Selection** tool, click the **Styles** tool to view the options.





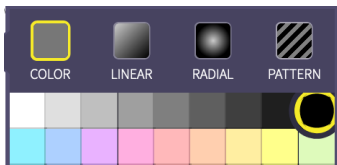
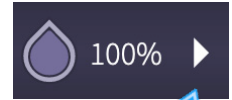
Project 1: Shapes and Layers (continued)

Step 4: Click on the **Select** tool, then click one of your shapes.



Note the **Fill** and **Outline** (Pen) controls appear. The top control, **Fill**, is set to transparent. *Note the line through the droplet icon. Clicking on the droplet turns the fill transparency on and off.*

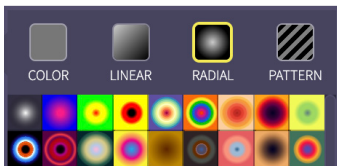
Click the Fill droplet icon to turn **OFF** transparency.



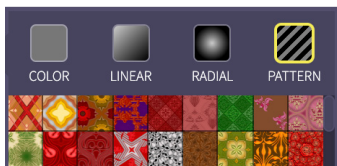
Click the small triangle to show the color palette. The palette is divided into four sections: Color, Linear, Radial and Pattern.



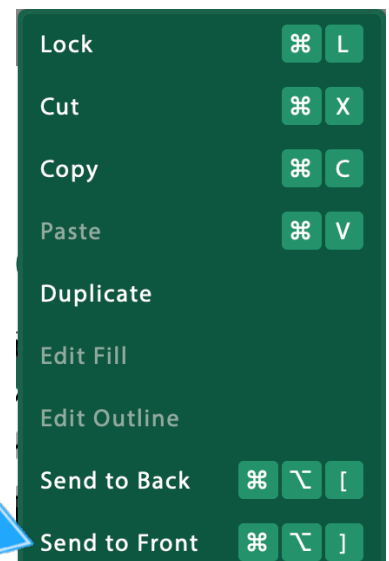
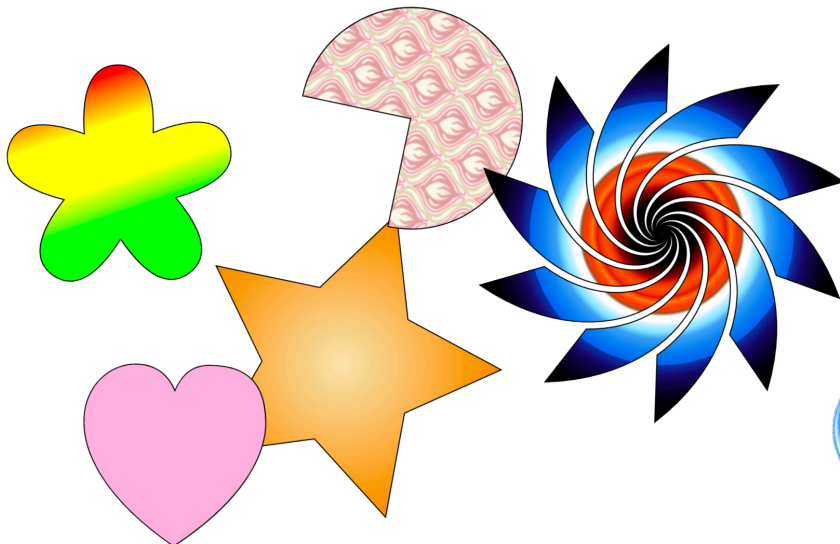
Clicking on each section will show its palette.



Experiment with different colors and patterns on each of your five shapes. With one shape selected, you can change its color as many times as you like.



Remember the deck of cards analogy mentioned earlier; you can shuffle the order of the layers. Upper layers will cover lower layers. If you want the heart in front of the star, simply click the **Selection Tool**, click the **Options** button, and select the **Send to Front** option.





Project 1: Shapes and Layers (continued)

Step 5: To save your image, click the **Export** icon. For you youngsters out there, the icon represents a floppy disk. Back in the day, it was the only way to save data. If memory serves, they each held a whopping 1.4MB. **It would take 7,354,396 floppy disks to make the equivalent amount of storage space on the computer I am using to write this course.!!!**

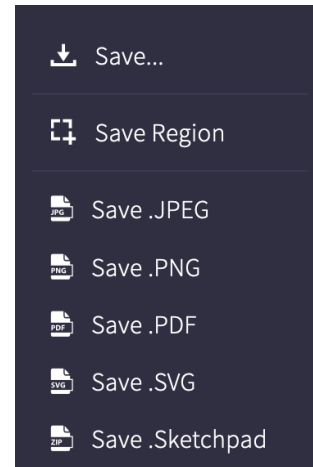


The Save dialog box will appear with several formats in which to save.

JPG and PNG are file types shared with Paint images.

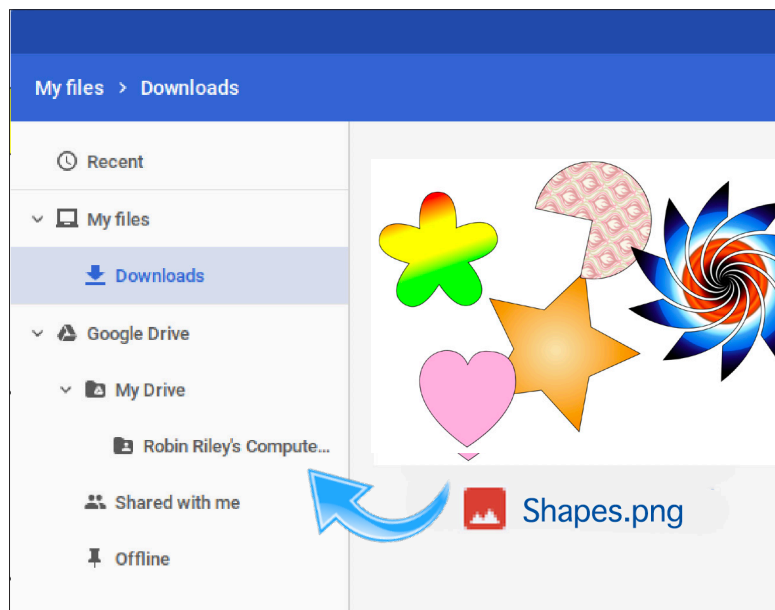
SVG files are in Draw (Vector Graphic) format, but compress the document to a single layer.

Sketchpad format is native to the program, and saves all the document information, including layers. You would save a document in this format if you wanted to alter it later.



I would recommend saving in .png format so you can use the images in other programs; perfectly fine with me!

Give your image an identifiable name (i.e. Shapes, Draw Project 1, etc.) then click the **Save** button. The files will be saved into the downloads folder where it can then be transferred into your self-named TECH 912 portfolio folder. If you wish to upload the project immediately, see pages 28 & 29.

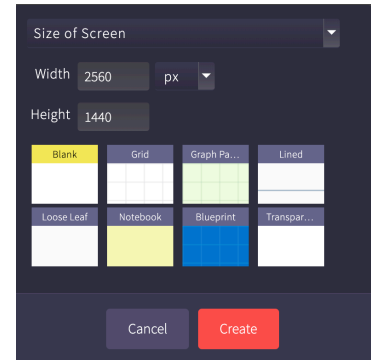




Project 2: Art Brushes

Learning Objectives: Using brushes
Duplicating objects
Using Layers

Setup: In the Chrome browser, go to **sketch.io/sketchpad**. Click the **+** icon to create a new document. **Sketchpad** lets you decide the size the new document, and if it is going to be blank or have a background pattern. Choose **'Size of Screen'** (from the pull down menu) and **'Blank'** for this assignment.



Step 1: Select the **Brushes** tool, then click the triangle to show the **Brushes** palette (here are many more than are illustrated here).

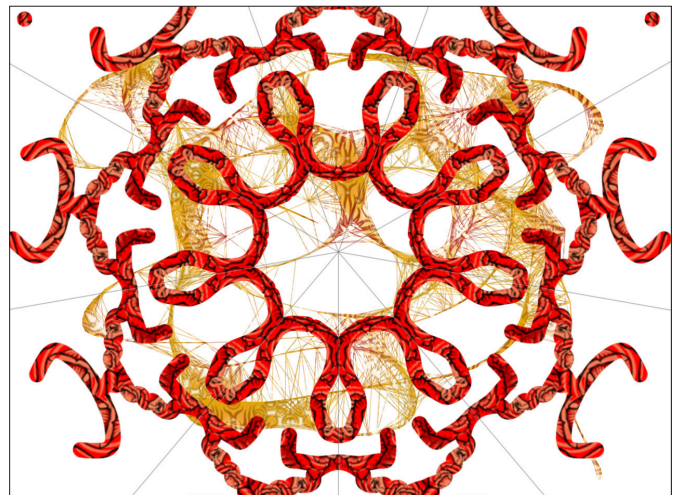
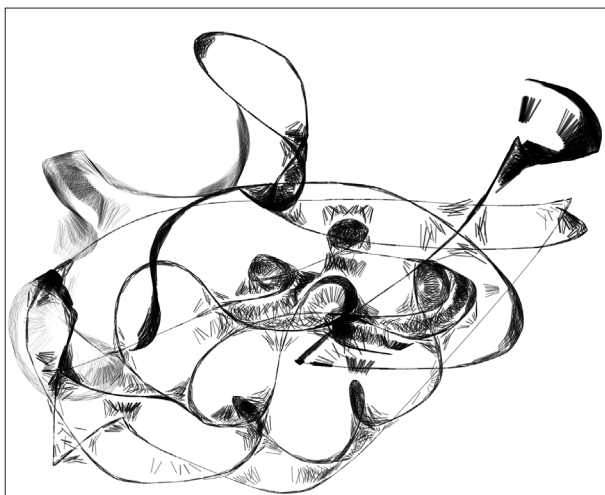


Step 2: Have fun experimenting! Doodle a design or picture using a number of brushes. Change the color and other settings, as you did with Project 1. Play, start over, move, resize, layer to your heart's content. Remember the help videos give examples of what each brush does. (I think the sketchy brush is my favorite)



Step 3: At some point, draw a final image.

Step 4: Give your image an identifiable name (i.e. Brushes) and click the **Save** button. The files will be save into the downloads folder where it can then be transferred into your portfolio folder. Refer to step 5 on the previous page.





Project 3: Face

Learning Objectives: DRAW versus PAINT
Duplicating objects
Hiding parts of objects



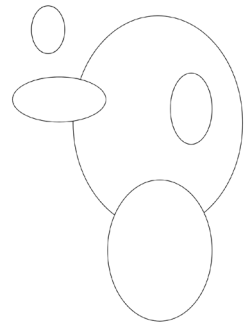
Setup: In a browser, go to **sketch.io/sketchpad**. Click **+** to open a new document. Click to select the **Shape** tool.

Step 1: Select the **Ellipse** tool, chose white fill and black outline by clicking the **Adjustment** tool.



If you recall, you have already completed this project in **Paint** - redoing it in Draw will give you a good indicator of the difference between the two formats.

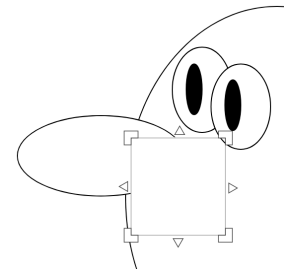
Step 2: Draw five ovals, representing one eye, nose, ear, head and shoulder. Switching to the **Selection** tool, position and resize the ovals.



Step 3: Change the Fill color to black in the **Adjustment** menu and draw a small oval for the pupil of the eye. With the selection tool, move the black oval into the eye shape.



To make both eyes exactly the same, use the **Duplicate** command from the **Options** menu. Repeat for both the eye and the pupil.



Step 4: Reposition the eyes on the face to your liking.
TIP: There is no eraser in DRAW, but here's the trick-set both the **Fill** and the **Outline** to white, set the tool to **square**. You might see a small black square as a cursor, but don't despair! Place your cursor (small black square) where you wish to 'erase' and click, which will essentially apply white paint to obscure the unwanted areas.

Step 5: The final step ... using this technique, obscure the bottom of the shoulder, base of the nose, and part of the ear. Using the **Paintbrush** tool set to one pixel, draw in a mouth. Any other details you wish to add would be extra credit!



Step 6: **Save** your project, as you did with Draw projects 1 ~ 2.



Project 4: Classroom Poster

Learning Objectives: Using clipart
Adding text
Send to front/back


Setup: In the Chrome browser, go to **sketch.io/sketchpad**. Click the **+** button to start a new document, then, for the purpose of this assignment, chose 'Size of Screen'. Click to select the **Create** button.

Step 1:  Click the Clipart button, then click the **Chose Graphic** button to show the library. 

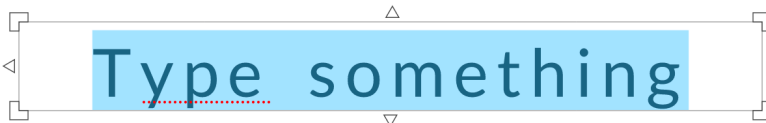
Step 2: Scroll through the (searchable) library then click on your choice of Clipart. Click on the canvas to place the image.




Using the Arrow tool (select) you can select the illustration and enlarge it ad lib. If you lose the handles, simply click the object again.

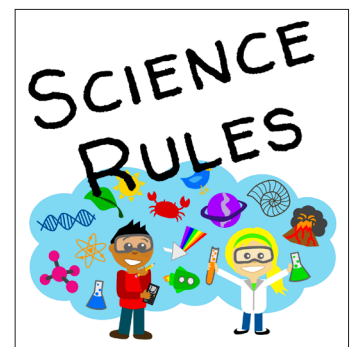
Step 3: Select the **Text** tool, then click the **Chose Font**  button to show the font selections.

Step 4: After you have clicked on your chosen font, your canvas will reappear. Draw a rectangle across the screen from left to right. to create a text field.



Step 5: Using the **Selection** tool, click on your text. You can resize and reposition your text using the handles. **Double-clicking** the text highlights the text in edit mode, so you can retype or add words. 

Step 6: **Save** your project, just as you did with Draw projects 1 ~ 3.





Project 5: Bubble Map / Flowchart

Learning Objectives: Creating shapes
Working with layers
Working with text

Setup: In the Chrome browser, go to **sketch.io/sketchpad**. Click **+** to open a new document. Select the **Shape** tool.

Step 1: Using the oval tool, draw a circle, ellipse (preferred), rectangle, or square.

Step 2: Draw (or duplicate if you want the same size) at **least five shapes**.

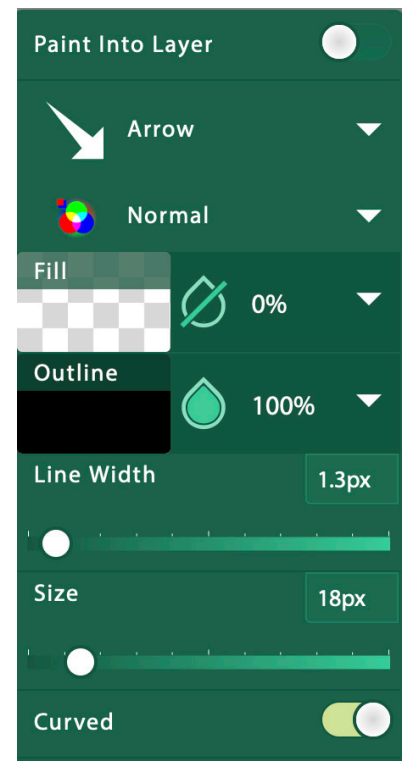
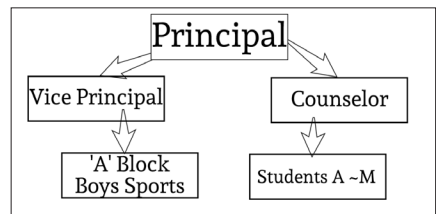
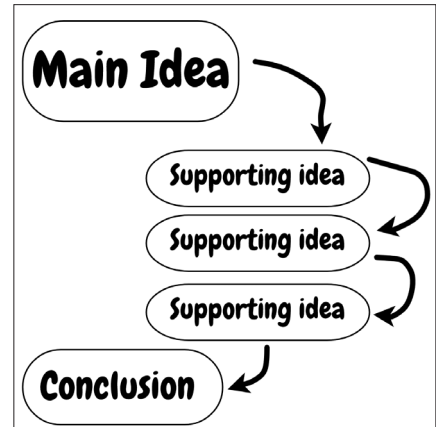
Step 3: Switch to the **Text** tool. Select a font and draw a text rectangle to match the size of your objects. TIP: It is easier to prepare the text block separately, then move it inside its shape.

Step 4: Type in your text. It may be overly large at first, but you can **RESIZE** it (after clicking on it with the **Select** tool). Repeat the process for all the other bubbles.

Step 5: Select the **Brush** tool and choose **Arrow**. You can set the thickness of the arrow with the size bar (a line with an arrow at the end of it). Turn on **Curved** if you want the ability to freehand draw the connecting lines.

Step 6: Draw connecting lines (the arrows show direction of flow or thought) among or between the bubbles.

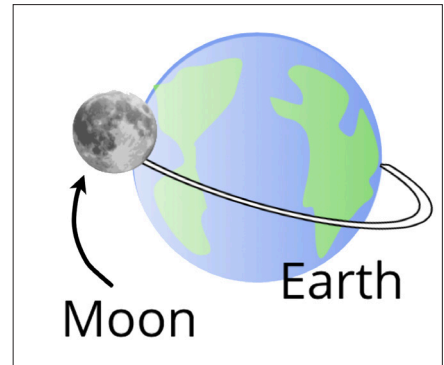
Step 7: **Save** your project, as you did with Draw projects 1 ~ 4.





Importing Images from the Internet

Sometimes you will want to create a document using images you found online. Say you are setting up an astronomy lesson and you want a diagram of the Earth and Moon, or want to use that perfect photo you saw on the NASA website, this project will walk you through the steps to retrieve images (from Google Image Search) and place them in a document.



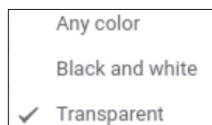
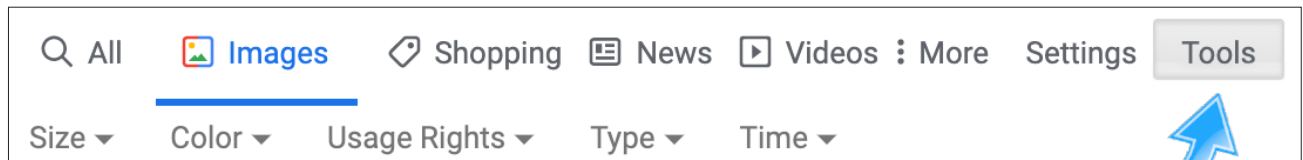
Project 6: Captured Image

Learning Objectives: Importing images
Using Google Drive
Adding Text

Setup: Using the Chrome web browser, go to Google.com

Step 1: In the search box, type: **moon**

When the search results appear, click the **Images** button.



Next, choose the **Tools** button.

From the **Color** tab choose the **Transparent** option.

NOTE: Transparent images have what is referred to as an **alpha channel**, which means part of the image is see-through. Instead of getting a picture of the Moon with a solid background (illustrated on the right), the transparent version has a visible, circular moon with a transparent background (internet images are, by definition, rectangles).



To the right is an image with an alpha channel background, so you only see the disk of the moon.



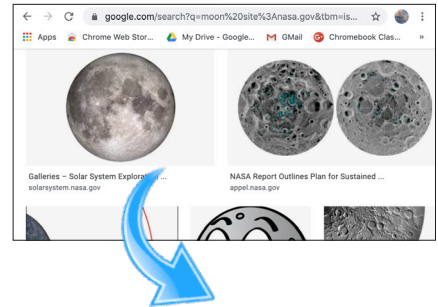
To 'see' the transparent background, a light grey checkerboard pattern is used, but fret not, it will not be visible when the image is used in a document.



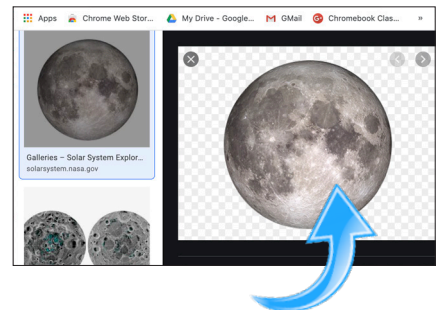
Project 6: Captured Image (Continued)

Step 2: The next step involves moving the image you chose from your Google search to the **Sketchpad** document.

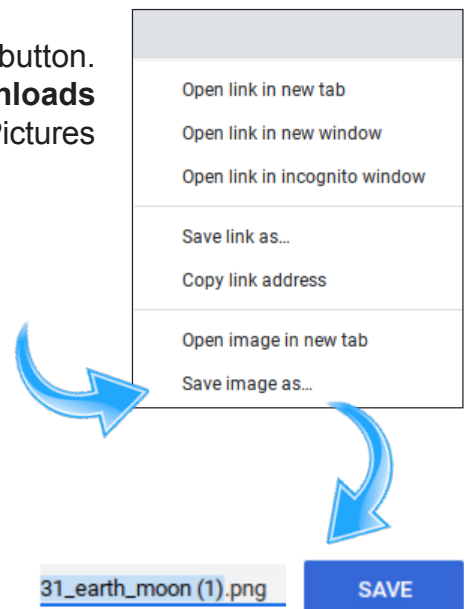
This is a two step process and differs slightly, depending on what type of computer you are using. The Google search page displays an array of images. Clicking one of the smaller images brings up a larger version of the image, with additional details. **It is this larger image you will save** - there is no need to visit the website from where it came.



Move the cursor over the larger image and then **alt-click** on a Chromebook (right click on a Mac or PC) to invoke the drop down menu.



Choose **Save image as...** and click the **SAVE** button. The image is now in your Google Docs **Downloads** folder. On a PC the image will be saved in the Pictures folder, and on a Mac on the Desktop.



NOTE: Any time you save an image, you have the option to rename the file.

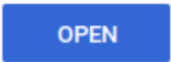
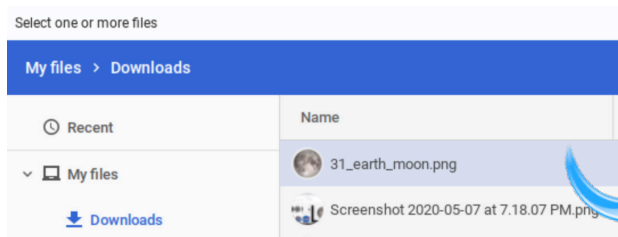
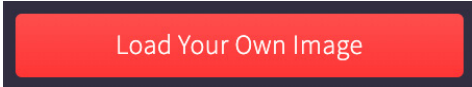


Project 6: Captured Image (Continued)

Step 3: In the Chrome web browser, go to **sketch.io/sketchpad**. If the canvas is not blank, Click the **+** button to create a new document.



Click the **Clipart** tool, then click the red 'Load Your Own Image' button

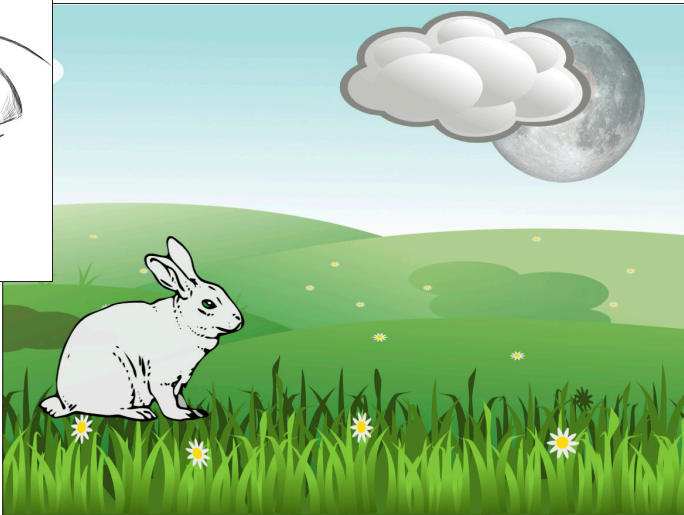


Select the Moon image and click the OPEN button.

You now have an image from the internet on canvas, ready to work with.

Step 4: Using shapes, text, brushes, etc. create an embellishment for your Moon image. It may be a science illustration, a scene from a poem or story, or any other flourish you wish to add.

Step 5: **Save** your project, just as you did with Draw projects 1 ~ 5.





Elective Projects:

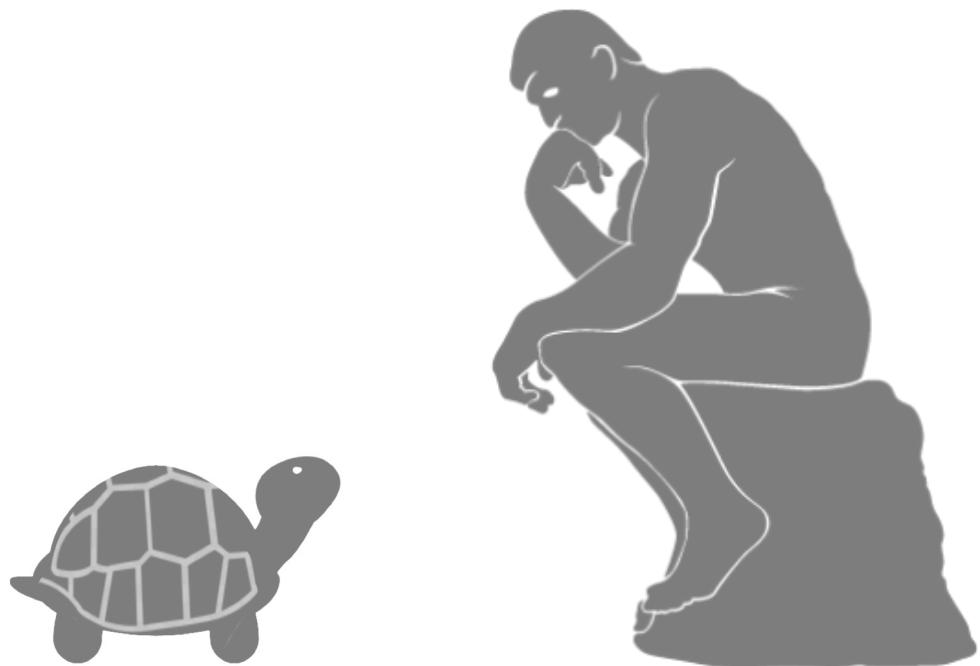
The next few pages contain options for your elective assignments. **Choose any three of the five assignments to complete.** They are designed to be extensions of the skills you have already learned in completing the preceding **PAINT** and **DRAW** projects.

You may simply recreate the projects exactly as shown, or modify them to suit your tastes. If modified, your work should contain the same general elements and construction techniques as the example.

Consider this next series of assignments your 'final exam' in the course! Because of that, you will notice there are no 'step-by-step' instructions included for these assignments. But fret not, there should be no tools or techniques required to complete any of these projects that we haven't already covered in the course. Relax ... I know you'll do fine!

Elective Assignment 1: Chef's Choice

Using either **Cloudpaint**, **PaintZ** or **Sketchpad**, create an original graphic, illustration or artwork.








Give your image an identifiable name (i.e. Chef's Choice) and click the **Save** button. The file will be saved into the downloads folder where it can then be transferred into your portfolio folder. If you wish to upload the file immediately, see pages 28 - 29.



Elective Project 2: Picture Story

Using **Sketchpad**, create a 'fill in' story with the text tool and the **Clipart** library. Include **at least five** pieces of clipart in the story. You may want to watch the help videos on working with text.

Add extra spaces in your text to make room for the **Clipart**. Place the cursor in the relevant location in your paragraph and press the spacebar. On some systems, use opt/alt while tapping the spacebar to add more spaces.

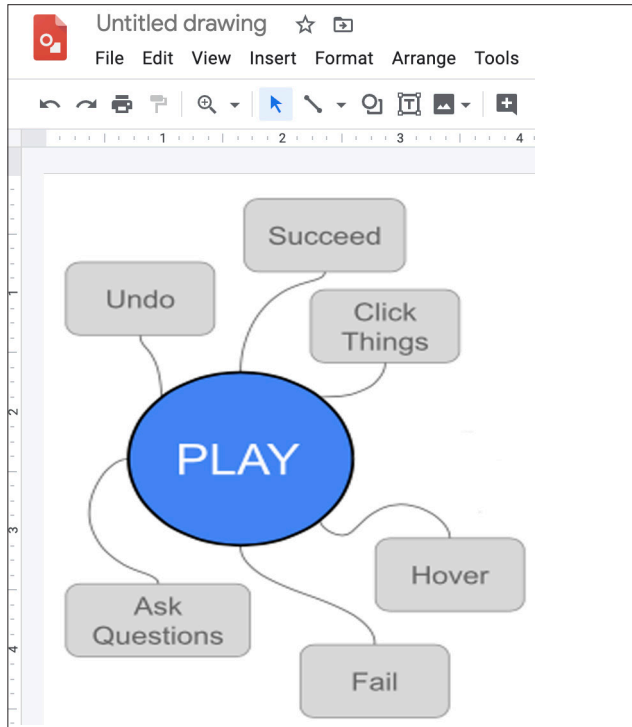
Once upon a time there was a 
who lived in a . One day
the  saw a little  who
stole his heart. Together they
went to the .

Give your image an identifiable name (i.e. Elective 2) and click the **Save** button. The file will be saved into the downloads folder where it can then be transferred into your portfolio folder.



Elective Project 3: New Territory

If you are feeling adventuresome, try using a different computer graphics program (such as those illustrated on pages page 14, page 43 and page 62) to recreate any **ONE** of the projects in this workbook. For my benefit (and grading purposes) make sure you make a notation somewhere which program you used!

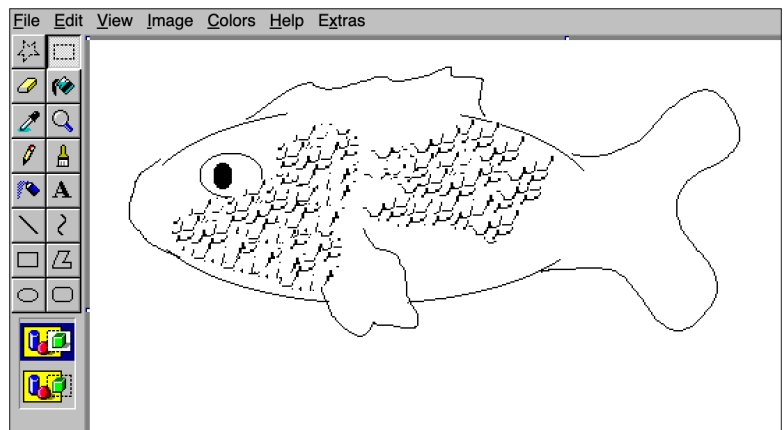


Draw Project 5 in Google Draw



Draw Project 4 or Draw Project 6 in <https://www.youidraw.com/apps/drawing/#>

Paint Project 4 in jspaint.app



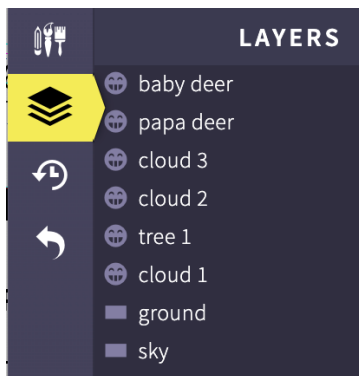
Give your image an identifiable name (i.e. Google Draw) and click the **Save** button. The file will be saved into the downloads folder where it can then be transferred into your portfolio folder.



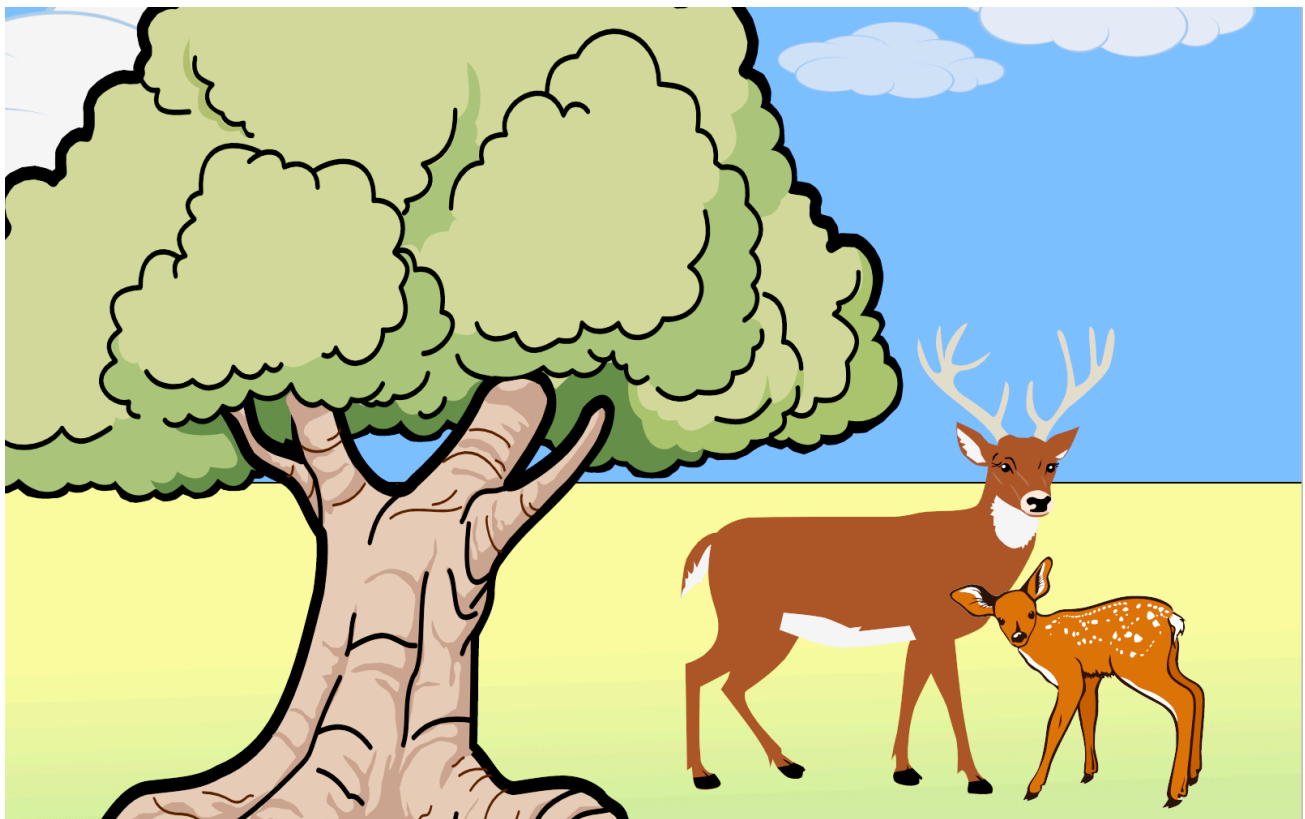
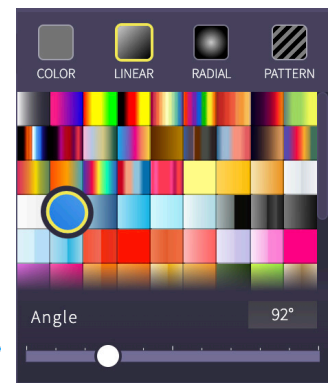
Elective Project- 4: Forest

Using the clip art library in **SketchPad**, create a forest scene. The forest should have a tree, clouds, and a distant horizon. For extra credit add some animals, people, or objects.

The ground and sky are rectangles, using a linear gradient fill. You can adjust the angle of the gradient change; in this case, the lighter portion of the green is at the top of the rectangle.



You will need to put some thought into the layer ordering, building the scene from back to front. Using the layer control, you can shift layers by dragging the icon up or down. I renamed the layers (by double-clicking the name) for clarity.



Give your image an identifiable name (i.e. Elective 4) and click the **Save** button. The file will be saved into the downloads folder where it can then be transferred into your portfolio folder.



Moodle: Portfolio Submission

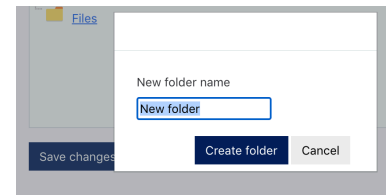
If you chose to submit your Paint and Draw projects as a complete portfolio, I have illustrated the steps here:

Once you are logged into your Moodle account and have accessed the *Paint and Draw for Teachers* course, go to **Module 8 - Standards and Evaluations**, then click the Portfolio Submission link located under the video.

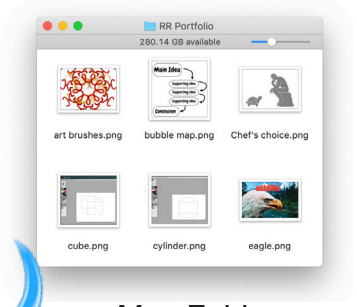
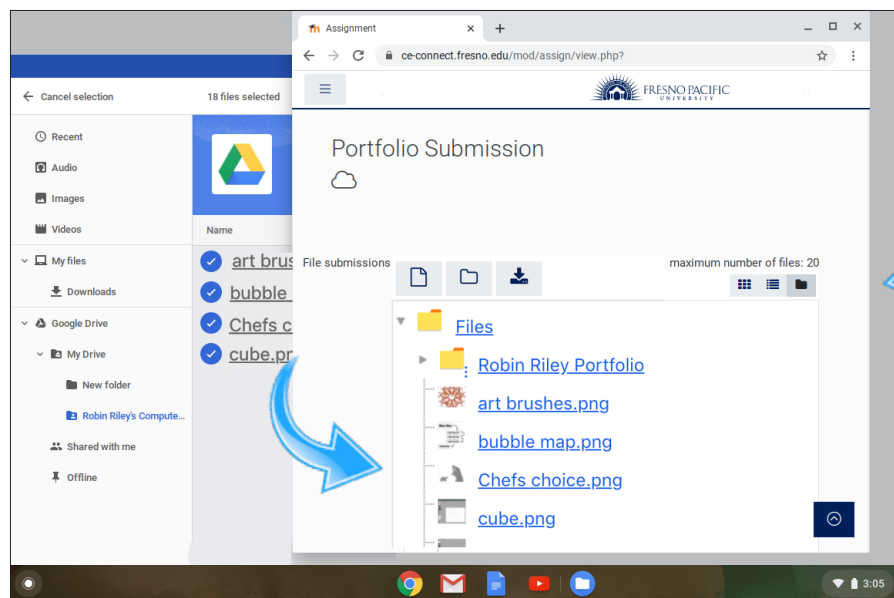
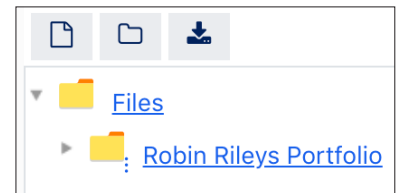
Portfolio Submission

At the bottom of the resulting page, click the **Add submission** button.

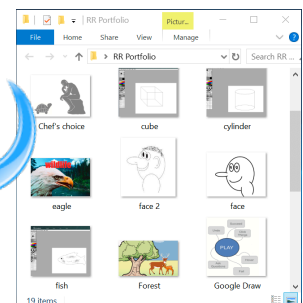
Click the **folder** icon. Here you create and name a new folder. After you type in a relevant title, click the **Create folder** button.



You should now see your self-named folder beneath the default 'Files' folder. It is now a matter of opening your portfolio folder in separate window and dragging its contents (six Paint, six Draw and three elective images) into the Moodle folder you just created. It may take one or two minutes to upload, but you will see your list of files appear on the Moodle page. **The process is the same on Mac, Windows and Chromebooks.**



Mac Folder



Windows Folder

After the upload, click 'Save changes'





Elective Project 5: Lesson Plan

To fill out and submit this form, please go to the relevant link on the course website. A copy of your completed lesson plan will be automatically e-mailed back to you.

Subject of lesson:

Lesson Objective:

Lesson Activities:

Teaching Strategy:

TECH 912 Paint & Draw for Teachers

Lesson Plan

Please note: This task will be weighted the same as other assignments in the course. I am expecting a thorough reply to the lesson plan prompts. The intent is for you to develop a lesson plan to use in your (real or future) Chromebook classroom. A lesson should contain (at least) the following elements:

- Objectives and Goals
- Anticipatory Set
- Direct Instruction
- Guided Practice
- Closure
- Independent Practice
- Required Materials and Equipment
- Assessment and Follow-Up

If you would like to word process the project using Word, Pages, or another program, you are welcome to do so. You can copy your word-processed document and paste it into the relevant field.

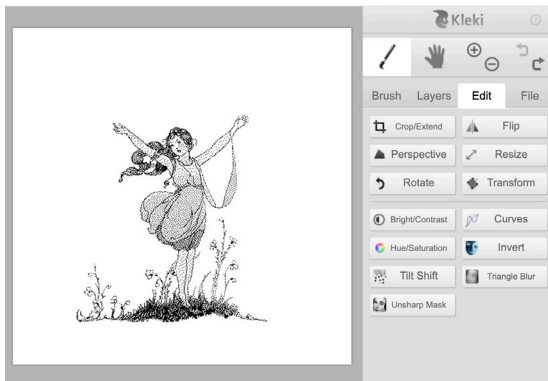
*** Required**

Evaluation (Optional if lesson was not presented): Was the lesson objective met? Did all students participate and complete the project? How was achievement measured? How would you modify the lesson in future presentations?

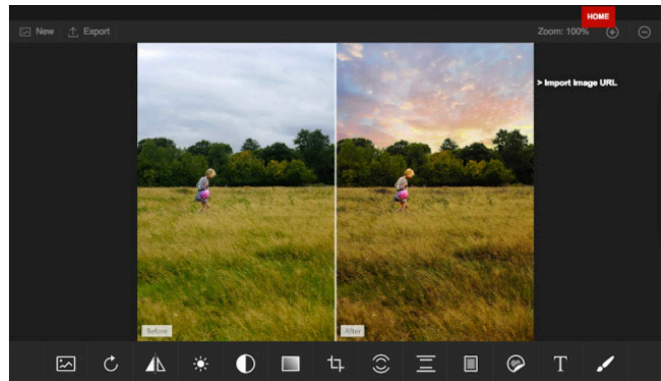


Other Graphics Programs

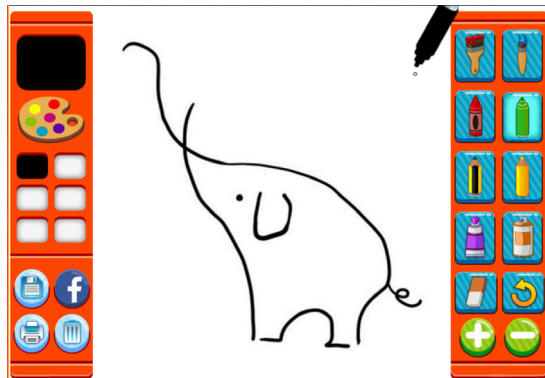
Through the Chrome Web Store or online, there are a multitude of other computer graphics programs available. Feel free to explore those listed below or do a search and find more!



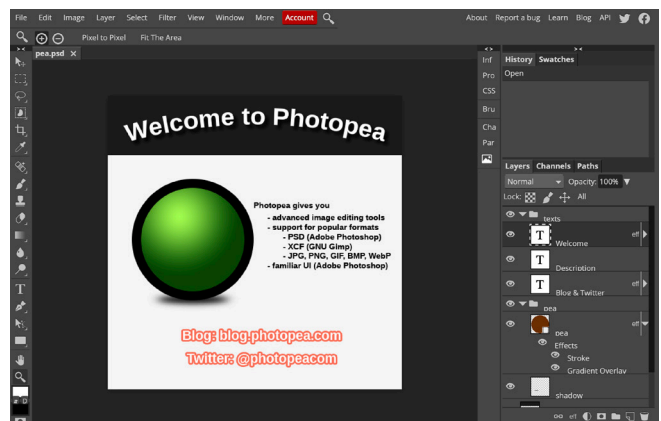
www.kleki.com



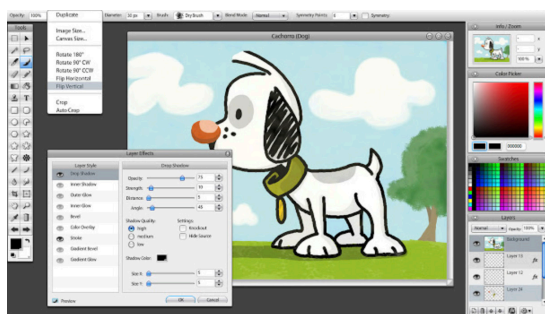
PhotoStudio for images (Chrome Store)



www.kidmons.com/game/paint-online



www.Photopea.com (online)



sumopaint (Chrome Store)



XPaint (Chrome Store)



Standards Correlation Assignment

By designing graphic-enhanced lessons for your students using the experience gained from this course, you will fulfill several of ISTE's Technology Standards for Teachers. These have been defined as necessary tools for today's teaching professional. This course does not address any specific states' technology standards. It does, however, reinforce the ISTE educator standards. It is important you understand these standards and their performance indicators, and can effectively apply them for practical use. You can find the standards detailed further at: www.iste.org/standards. Once the web page is loaded, scroll down a bit and click on the 'Learn More' link under the center 'Educators' column. You can also see the standards on the 'Resources' page of the course website.

For the purpose of this next assignment you will be asked to select any 3 projects presented in this course, then align them to the **ISTE Educator Standards**.

You will be asked to record your findings for three (3) assignments. To assist you in completing this project, please refer to the sample below.



Example:

To correlate Draw Project #4, the "Classroom Poster," to the ISTE educator standard, the digit '5' indicates that the project meets standard 5 - "DESIGNER."

Next, the letter 'a' is the relevant Performance Indicator for Standard 5: "Use technology to create, adapt and personalize learning experiences that foster independent learning and accommodate learner differences and needs. . ."

In explanation of the rationale underlying the selections, annotated graphic-laden posters in your classroom engage varying learning styles of all ages.

So, in putting it all together, this is how the completed Standards Correlation Chart would appear had you chosen Draw Project #4 - "Classroom Poster"

Project	<u>Draw #4</u>	Standard Number:	<u>5</u>
Name of Project:	<u>Class Poster</u>	Performance Indicator:	<u>a</u>

NOTE: You do not need to explain the rationale behind your selections; I did so only to illustrate the concept. The same standards might apply to multiple projects / assignments.



Standards Correlation Chart

To fill out and submit this form, please go to the **Standards Correlation** link on the course website. This is reproduced here solely for demonstration purposes.

TECH 912 Paint & Draw for Teachers

Standards Correlation Chart

To demonstrate your familiarity with standards and correlate them to your work, choose any three assignments, research which ISTE educator standard and performance indicator each assignment addresses (refer to <https://www.iste.org/standards/for-educators>) then record your findings on the following form.

*** Required**

Correlation 1

Name of Assignment *

Your answer _____

Standard:

- Learner
- Leader
- Citizen
- Collaborator
- Designer
- Facilitator
- Analyst

Performance Indicator

- a
- b
- c
- d



Post-course Survey

To fill out and submit this form, **please go to the Post-Course Survey link on the course website**. I have copied the survey here merely for reference; you will **submit your responses via the Course Website**.

About how many hours did you spend completing the assignments?

Did you do the bulk of the work at home or at school?

If other than the demo, what program(s) did you use to complete the assignments?

Did you use a mouse or a trackpad to complete the majority of the projects?

Having used the major elements of computer graphics, which part do you find most useful? Why?

Have you thought of any curriculum specific uses for computer graphics? What are they?

TECH 912 Paint & Draw for Teachers

Post-Course Survey

This form will be added to your TECH 912 portfolio, saved on the instructor's system. A copy will be emailed to you for your records.

* Required

Full Name (First, Last) *

Your answer _____

Email Address *

A copy of your completed form will be emailed to you

Your answer _____



Course Evaluation

To fill out and submit this form, **please go to the Course Evaluation link on the course website**. I have copied the survey here merely for reference; you will **submit your responses via the Course Website**.

Did this course meet your expectations? Please briefly explain.

How do you feel about the structure of the course? Was it organized in an orderly way, making it easy to follow? How would you improve the structure?

Have you any comments to offer about the assignments?

How did the workload of this course compare to that of other courses with equivalent units?

How did you hear about the course?

TECH 912 Paint & Draw for Teachers

Course Evaluation

* Required

Full Name (First, Last) *

Your answer _____

I am enrolled int TECH 912 *

Yes

No

Did the course meet your expectations? *

Your answer _____



About Your Instructor ...

I was born in 1953 at the Presidio in San Francisco, California. The second child of Maj. John and Bette Jane Young, I was enthusiastically welcomed by my only sibling - a brother, six years my senior. After my dad retired from the Army he still had a touch of the wanderlust so we spent the next few years exploring Wyoming and Colorado. In 1963 we settled in Durango where my brother and I spent our days climbing trees, skipping stones across the Animas River, and exploring the La Plata mountains, which were our backyard.

In the late 1960s my parents moved back to the Bay area of California where I finished high school then went off to college, enrolling at California State University in Fresno. I majored in Mass Communications - a combination of English, Theater Arts and the technical aspects of radio, television and film production. I had those typical, youthful aspirations of becoming a 'rich and famous' script writer and filmmaker. Upon graduation I partnered with a local film production company and spent the next several years writing, producing and filming documentaries and television commercials.

A combination of the reality of parenthood and a souring economy in the early '80's guided my decision to return to school to obtain my teaching credential. The birth of my daughter in 1983 cemented my decision to opt for the stability of teaching over the uncertain world of the arts. I began as a classroom teacher at the same time computers were first being introduced to schools. I have always had an affinity for machines and gadgets so I soon transitioned from 'traditional' teaching to working with technology in education; the best decision ever!

Within a year I was the Technology Teacher/Coordinator for a small high school; teaching programming in a lab and setting up local area networks. As technology evolved and became more affordable, the District purchased classroom computers and I, seeing the need, began writing record-keeping and database programs for teachers.

By the early '90's I was assisting with technology District-wide and speaking at regional and state conferences. It was at this time I began teaching summer and weekend seminars at Fresno Pacific University (then Fresno Pacific College) on integrating technology in to the classroom. Through membership in CTAP (California Technology Assistance Project) I also provided professional development, planning, and implementation assistance to help schools utilize technology to support teaching and learning.

I have now retired from classroom teaching after more than 30 years of service to Madera Unified School District. With my 'extra' time, I develop new courses for Fresno Pacific. My wife, Becky, and I enjoy interacting with teachers from all over the country - we recently began traveling across the US on Amtrak and have already logged over 25,000 miles riding the rails, making whistle stops at many of your hometowns!



Using a Steadicam during the filming of a commercial for a regional TV station in the days before gray hair!



My beautiful bride Becky, on our wedding day! After all these years she's still the love of my life (and the world's greatest cook!).



Taking a break at my desk at Madera Unified, while administering an early (circa 1990) school-wide network.



Scuba diving (a passion of mine) with my daughter off the coast of Maui, in the beautiful state of Hawai'i.



Fishing the Animas River in Durango, CO, where my brother and I used to roam. Pretty nice catch! We only keep what we eat, and this one was delicious!



In San Francisco receiving California's prestigious Golden Bell Award for an exemplary program in technology, with Madera Unified school board trustees.



Visiting the St. Louis Arch with my wife - a day trip from Indianapolis after our annual trip to the Indy 500.



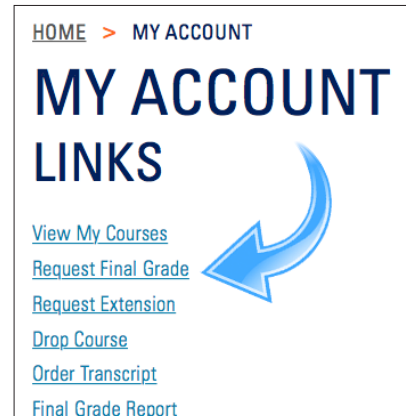
Me with Becky's family, including her three children and all eight (so far!) of our grandkids, at Becky's parents' 60th wedding anniversary celebration.



DIRECTIONS FOR SUBMITTING A REQUEST FOR ONLINE GRADING

FPU requires I submit your grade online. For me to do that you must first request online grading via your FPU account. When you've submitted your completed coursework (no sooner):

- Login to your account on the CPD website at <https://ce.fresno.edu/my-account>
- Click on 'Request Final Grade' SIGN IN
- Select this course from the list of ungraded courses in which you are currently enrolled
- Click the box confirming accuracy of the information
- Click Submit
- FPU will email me that you have completed the course and are ready to be graded



Please submit your request for online grading the same day you submit your final coursework (no sooner). I cannot submit your grade until online grading has been requested.

If I receive your final coursework but you've yet to request online grading, expect a delay while I attempt to contact you in reminder. If you encounter technical difficulties with the on-line grading system please contact FPU directly; I am unable to troubleshoot their system.

Once I have submitted your grade to FPU I will notify you via email that this has been accomplished. Processing grades submitted electronically is not automatic; FPU strives to post grades the same day, but it may take up to 2 business days to certify and post your grade (FPU will email you once your grade has been posted).

Prior to ordering a transcript, particularly a '*RUSH*' transcript, verify your grade has *officially* been posted. Login to your FPU account and click Final Grade Report. If your grade in this course appears, print off your Final Grade Report (FPU no longer mails Grade Reports - you must print them out yourself) and proceed with ordering transcripts.

If this course does not appear, although I notified you I submitted your grade, please contact FPU (1-800-372-5505) directly with your inquiry. It may be they are 'holding' your grade for whatever reason, typically if you are overenrolled.

I hope you found the course beneficial. Again and as always, thanks!