

art + math

**Using Measurements
to Map Your Own Face**

NAEA 2018 CONFERENCE
MARGARET WELTY, PRESENTER

materials list

These are the materials we will use today, and what I feel will work best if trying the workshop methods on your own.

Items	Notes
LIGHT VALUE PRISMACOLOR PENCILS	I really like the Botanical Garden Set
SOFTER GRAPHITE PENCIL	6B or darker works great
SOFT VINE OR WILLOW CHARCOAL	SOFT is the most important thing here
GOOD QUALITY KNEADED ERASER	any size will do
BRISTOL PAPER PAD	14 x 17 or larger; vellum surface; 100 lb.
DRAWING PAPER PAD	14 x 17 or larger; 80 lb.
CANSON TRACING PAPER PAD	14 x 17; This is the MOST transparent tracing paper pad that I have found
SELF-PORTRAIT MIRROR	A small mirror that stands on its own. We are using single sided mirrors from Blick.

why measure?

1. In order to build a portrait that feels realistic, **relationships between features are just as important** — if not more! — as the features themselves.
2. When it comes to relationships of features, you have **faulty assumptions** in your head built along the way. (Certain features you naturally see, whereas others you will completely ignore)
3. It forces you to draw from **what is actually there**, and not from what is in your head.
4. **Measuring works immediately.** If you don't measure, it will **take far longer** (thru trial-and-error time and effort) to internalize actual relationships between features.

tools for measuring

Finger “Caliper”

- always available
- flexible (can measure curves, etc)
- transparent (you can see your face behind it)
- can measure things that aren’t in the same alignment
- least precise

Piece of String

- flexible (can measure curves, etc)
- soft and non-invasive (cannot be used as a sword or poking object)
- fun to play with!
- can measure further than finger calipers
- pretty precise
- you can make marks on it (disposable)

Strip of Paper

- flexible, but LESS flexible than string
- reliably level edge (good for plumb lines, i.e. horizontal and vertical alignment)
- can also measure further than finger calipers
- you can draw all over it and rip notches for measurement

Right Triangle

- NOT flexible
- NOT soft and non-invasive (CAN be used as a sword or poking object)
- MOST precise, however!
- transparent to features

mapping the face

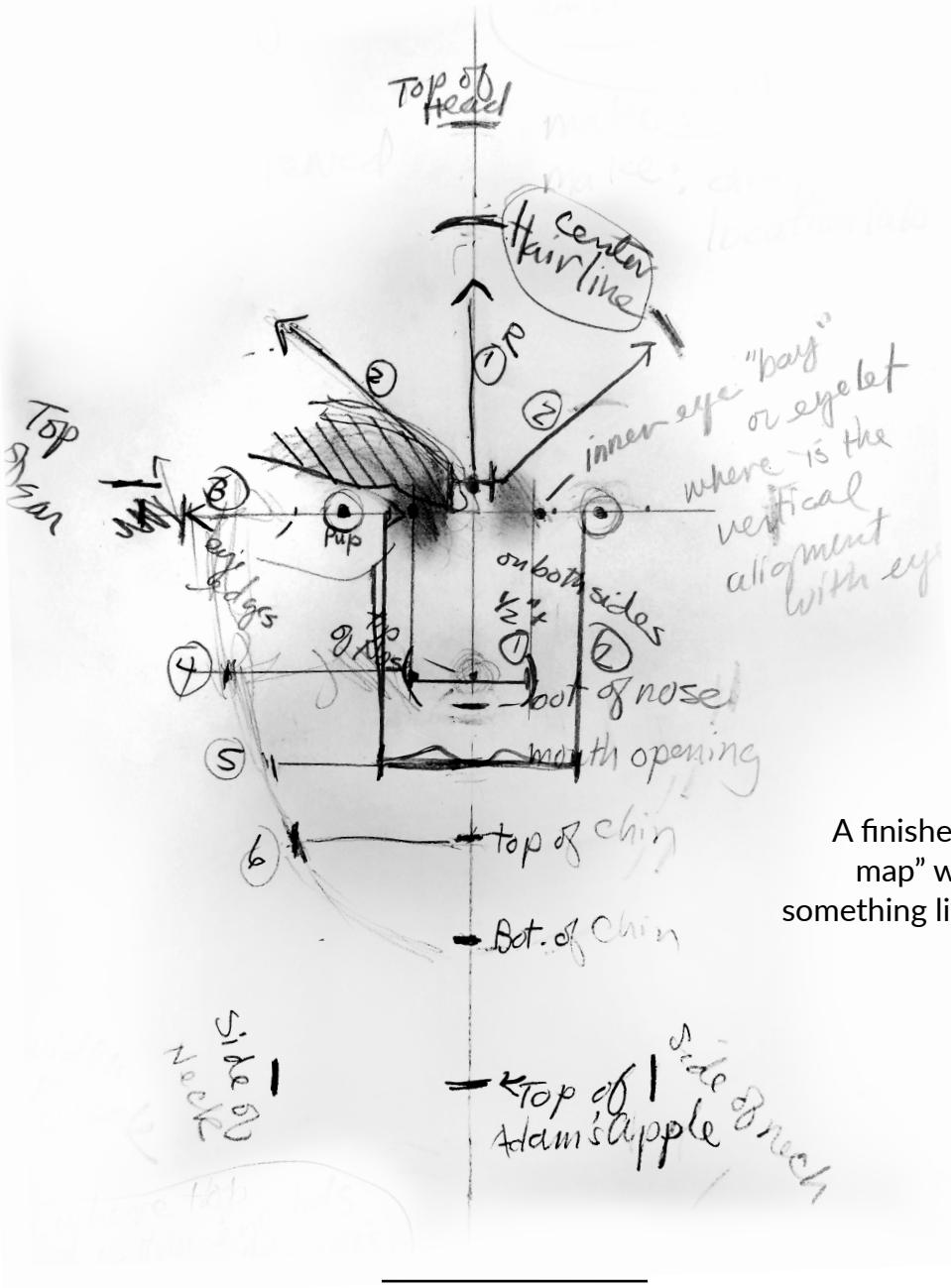
What is a “face map”?

A face map is a *scaffolding of the essential relationships between your facial features.*

Once created, you can use and re-use it to experiment and play with your portrait drawings in any way you desire, while maintaining the fundamental essence of what makes your subject’s face look the way it does.

You can map your own face now by following the steps on the next pages.

mapping the face



A finished "face map" will look something like this.

mapping the face (pt. 1)

Set Up

1. Make a *Pupil-to-Pupil Ruler* with 1st paper strip.
2. Make an *Eye-Width Ruler* with 2nd paper strip.
3. Make a *Bridge-Width Ruler* with 3rd paper strip.
4. Draw a full-length vertical center line on a blank piece of Bristol paper.
5. Mark top of head about two inches below top of paper on vertical center line.
6. Investigate with dual *finger calipers* to confirm that top and bottom halves of head are approximately the same height.
7. Find the **top** of the **nasal bridge**, or what we will call the “**holy bridge**” on paper using *finger caliper*.

Eyes

1. Use *piece of string* to notice the horizontal level (above or below the **holy bridge**) for:
 1. **pupils**
 2. top **lid of eye** (notice where it crosses the iris)
 3. bottom **lid of eye** (notice where it crosses the iris)
2. Draw horizontal line at **pupil line** across the vertical center line (so you have a cross on your paper)
3. Use *Pupil-to-Pupil Ruler* to draw dots for **pupils** on your horizontal **pupil line**.
4. Use *Eye-Width Ruler* to draw dots for **inside and outside of eyes** on your **pupil line**.
5. Use *Bridge-Width Ruler* to mark the **width** of the **holy bridge**.
6. Place your *thumb* in the space between your **supra-orbital ridges** (these are the bone protrusions under your eyebrows) and the **top of your eyes**.
7. Rough out this space on your paper by smudging your pencil and using your *thumb width* as a guide.

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mapping the face (pt. 2)

Nose

1. Use *finger calipers* to measure from **holy bridge** to **base of nose** and mark on vertical center line.
2. Use *piece of string* to measure from **holy bridge** to **tip of nose** and mark on vertical center line.
3. Notice the relationship and distance between the **base of nose** and the **tip of nose**.
4. Use *right triangle* to measure **width of nostrils** and mark with horizontal line across **tip of nose**.
5. Use *right triangle* to draw two vertical lines from **outer edges of nostrils** up across the **pupil line**. This will help clarify the vertical alignment between nose and eyes.

Mouth, & Chin

1. Use *finger calipers* to measure from **holy bridge** to the **center line of mouth** (where your two lips touch together and open) and mark on vertical center line.
2. Use *right triangle* to measure **corner-to-corner width of mouth** and mark with horizontal line across **center line of mouth** (later we will make this line curved).
3. Use *right triangle* to draw two vertical lines up from **outer edges of mouth** to **pupil line**. This will help clarify the vertical alignment between mouth and eyes.
4. Use *finger calipers* to measure from **base of nose** to **bottom of chin** and mark on vertical center line.
5. Use *finger calipers* to measure up from **bottom of chin** to **top of chin** and mark on vertical center line.

mapping the face (pt. 3)

Neck & Facial Edges

1. Use *finger calipers* to measure from **bottom of chin** to **clavicle** and mark on vertical center line.
2. Use *finger calipers* to measure from **bottom of chin** to **top of Adam's apple** and mark on vertical center line.
3. Use *finger calipers* to measure **width of neck** at **top of Adam's apple** (this is where the neck is thinnest) and make two marks for the width of the neck.
4. Use *right triangle* to measure from **facial features** out to **edge of the face** and mark on paper:
 1. vertically from **holy bridge** to **center hairline**
 2. 45 degrees up from **holy bridge** to **diagonal right and left hairlines**
 3. horizontally from left and right **pupils** to their corresponding **ears**
 4. horizontally from left and right **outer edge of nostrils** to **edges of face**
 5. horizontally from left and right **corners of mouth** to **edges of face**
 6. horizontally from **top of chin** to **edges of face**
 7. horizontally from **bottom of chin** to **edges of face**

Ears

1. Starting from **top of ear**, use *piece of string* to notice the horizontal level of **top of ear** to **eye**.
2. Use *piece of string* to notice the horizontal level from **bottom of ear** to **facial features**.
3. Use *finger calipers* to measure the **ear height** directly.
4. Use *right triangle* to measure from **start of ears** to **outer edge of ears**.

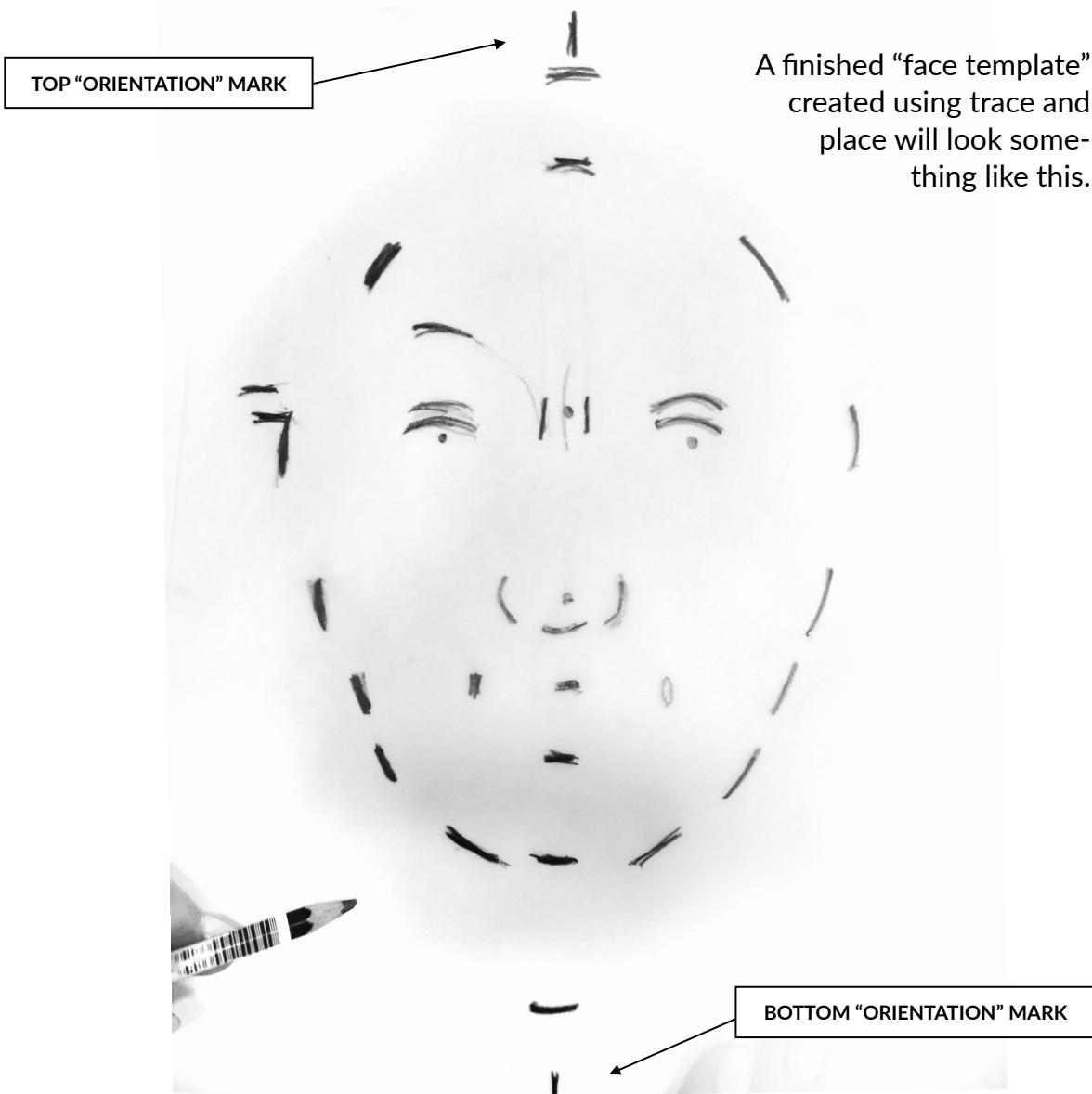
trace & place the face map

What is “trace and place”?

Trace and place is a *simple method that uses tracing paper to lift marks made on one piece of paper and place them lightly on another.*

We can use trace and place to create incredibly flexible, reuseable templates of any or all of the scaffolding in your face map. We can then place this scaffolding on any piece paper to lock in, guide, and support the relationships and proportions in our portrait drawings.

trace & place the face map



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trace & place the face map

1. Take a piece of blank tracing paper and **fold it in half** (this will give you a vertical center line). **Make a mark on the very top and very bottom of the center line**, which you will use later as “orientation” marks.
2. Place a piece of **blank tracing paper** on top of your completed face map worksheet.
3. **Trace all the essential marks** from the face map. You can add *as many or as few of these features as you want*, as you can always come back later and pick up more.
4. Flip the tracing paper over, then **firmly trace over all the marks** with a soft graphite pencil. This “back of paper” graphite is now transferable to the paper you will draw your actual portraits on.
5. Place your loaded tracing paper wherever you want it on your drawing paper. First, re-trace your top and bottom orientation lines. Then, re-trace over all your essential marks, **transferring them to your drawing paper**. You are now ready to draw your portrait!

drawing the portrait

Okay! Our scaffolding is ready, and we can now begin drawing our portrait. Below are some simple ideas to investigate and play around with as you work.

- **Make your marks *lightly* and in *layers*.** By building up multiple layers of very light graphite and soft vine charcoal — instead of “committing” quickly with heavier ones — we can slowly build our facial forms much more effectively and accurately.
- **Use your kneaded eraser as a drawing tool.** A eraser is not just for mistakes. As you build up multiple layers of graphite by drawing lightly, you can use your eraser as a deliberate sculpting tool to create contrast and refine your forms.
- **Layer colors.** Layer *analogous* colors for richness; layer *complementary* colors for high contrasts, low constraints, and desaturation.
- **Prioritize negative space.** Draw the spaces *around* the facial features first. In other words, *avoid* drawing the “named features” like eyes, nostrils, lips, etc, until you have covered all the unnamed contours of skin between them.

bonus content from **CAEA 2017 WORKSHOP**

closeness vs. distance

	Being Close	Being Distant
TONAL VALUES	All values, including darkest darks and lightest lights	Lighter to mid values, excluding darkest darks and lightest lights
COLOR	vibrant, full color, higher intensity, SATURATED*	faded, mixed colors, muddy, less intensity, DESATURATED**
SIZE OF SHAPES	all sizes, especially L-A-R-G-E	mid-size to smaller to especially tiny
FORMS	dimensional, well developed, more detailed with more details specific to all sizes – especially LARGE edges of forms: crisp, defined in higher color and value contrasts	less dimensional, not defined, less details to little to no details, general – not much specificity, mid to small to tiny sizes, edges of forms: fuzzy, less defined, lower color and value contrasts
LINES	any and all, full range of line quality, BOLDER, more movement, dynamic	lighter weight, finer, fuzzy, smaller, less variety of line qualities, subtle
SPACE	any and all transitions of tonal value, any (high and low) tonal value contrast with adjacent forms and lines	low transitions of tonal value, lower tonal value contrast with adjacent forms and lines

* **Highly saturated colors** are more “PURE COLOR” – or mixed with very little, mostly with colors that are more alike (aka an analogous color.)
You can mix colors of low contrasts, which are colors in the “neighborhood” (next to each other) and still maintain higher saturation.

Examples: Yellow, Red, Blue (primary); Orange, Green, Violet (secondary)

** **Lower saturated (desaturated) colors** are more “MUDDIED COLOR” – mixing colors with a high color contrast will cut the saturation of any color. Mixing colors that are opposite on the color wheel is the most efficient way to desaturate colors. Layer colors in a transparent way will also desaturate colors.

Examples: Olive Green (green + red); Brown (yellow + red + blue); Chromatic Grey (orange + blue)

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thank you!!

I'd love to hear how these methods worked for you and your students!

Thank you so much for attending this workshop! I hope you had as much fun participating in it as I had devising and delivering it :)

Please share your thoughts, suggestions, and experiences at any time at margaretwelty.com/feedback/

I can give a custom art workshop to your team, group, or community.

I believe that the benefits of making art are profound, and that those benefits should be available to everyone. My favorite thing in the world is to give those benefits to people of all walks of life.

To learn more about my workshops, watch my drawing videos, or just say hello, **please visit me on the web at margaretwelty.com.**

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