

Setting Up for Screenprint

ART 220 · Digital Illustration · Session 14

V1
10.08.26

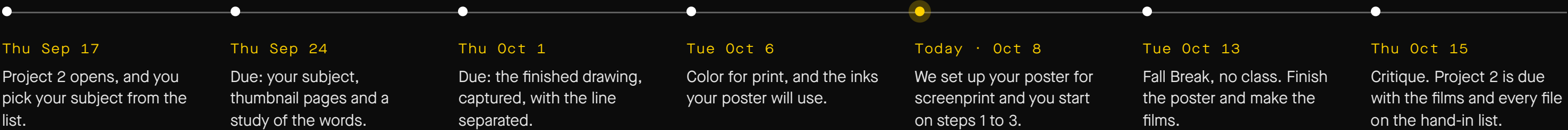
Workhorse Collective

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ART 220 · Fall 2026

Today 10.08.2026
Topic How a screen gets made from your file, and how to set up your poster, step by step, so a shop could print it.

Where the poster is, and what is left before critique.

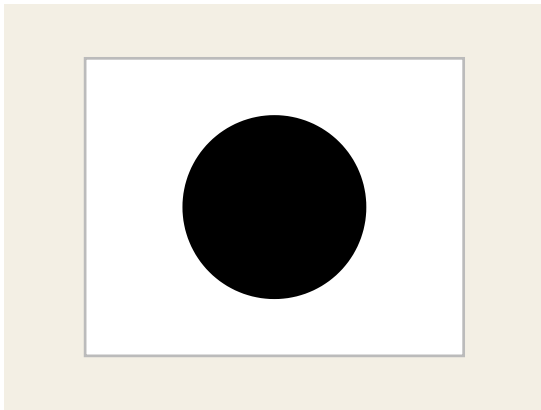


TODAY IS THE **LAST CLASS** BEFORE CRITIQUE. BRING QUESTIONS NOW.

Why the file looks the way it does

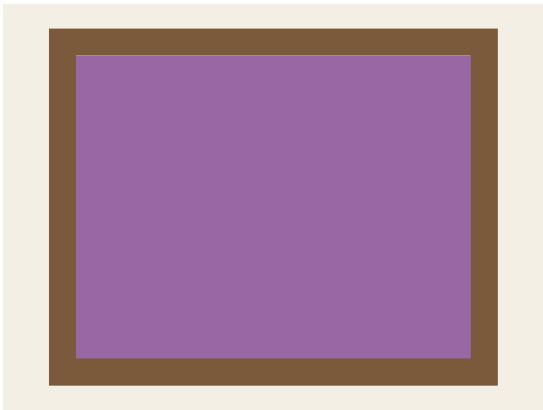
Your file becomes a stencil, one for each ink.

A shop prints your separations onto clear film. The film is used to make the screen, and the screen is what the ink goes through.



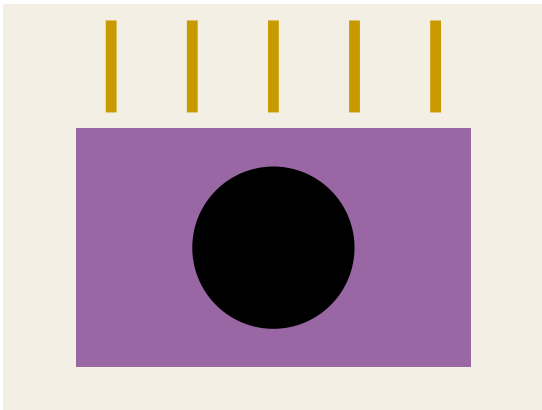
1 · The film

One page of your separations, printed black on clear film. Black marks where this ink goes.



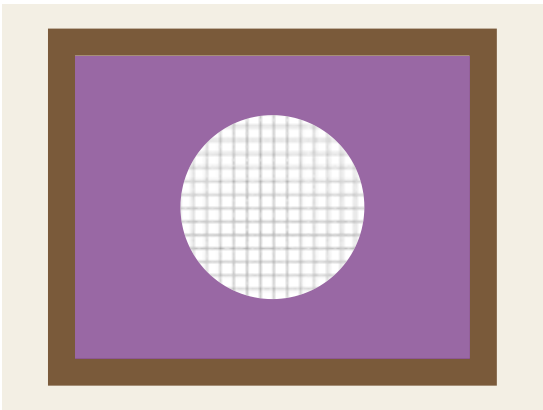
2 · Coat the screen

A mesh stretched on a frame gets a thin coat of emulsion that hardens in light.



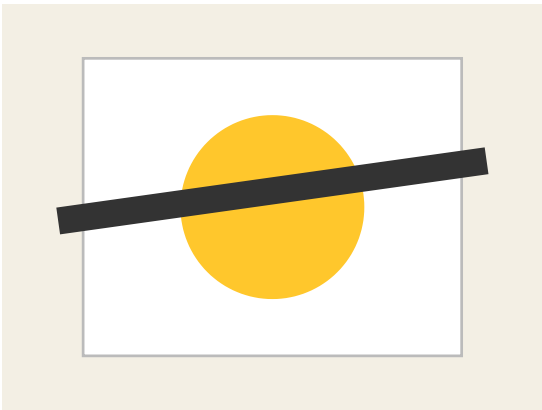
3 · Expose it

The film sits on the screen under a bright light. The light hardens the emulsion everywhere except under the black.



4 · Wash it out

Water rinses away the soft emulsion that was under the black. Now the mesh is open in that shape.



5 · Pull the ink

A squeegee pushes ink through the open mesh onto the paper. Then the next screen, the next ink.

SO EVERY FILM IS BLACK ON WHITE, WHATEVER COLOR IT PRINTS. BLACK MEANS INK. WHITE MEANS NO INK. THERE IS NOTHING IN BETWEEN.

Why the file looks the way it does

What survives the screen.

THING	WHAT HAPPENS	WHAT TO DO
Solid black SHAPES AND LINE	Prints clean.	This is what most of your film should be.
Gray ANY GRAY AT ALL	The screen half opens and the ink comes through patchy.	Turn every gray into solid black or into dots.
Very thin lines UNDER 1 POINT	They close up in the screen, or break into dashes.	Keep lines at least 1 point thick at full poster size. A point is 1/72 of an inch.
Tiny dots LIGHT TINTS	Dots smaller than the mesh holes fall through or vanish.	Keep tints between about 15% and 85%.
Two inks that only touch EDGE TO EDGE	If one screen lands a little off, a white gap shows.	Overlap them a little. This is called trapping.

Your poster, step by step

Open your own file and follow along. Each step shows Illustrator and Photoshop side by side, on the Marsh Night Market poster from Tuesday.

Name your inks and put them in printing order.

Shops print the lightest ink first and the darkest last, usually the line. Your layers follow the same order, with the first ink at the bottom.

	ILLUSTRATOR	PHOTOSHOP
Layers ONE PER INK	Name them 1 Yellow , 2 Teal , 3 Navy .	The same names. Put each ink's layers in a group with that name if you have more than one layer per ink.
Check NOTHING LEFT OVER	Window > Output > Separations Preview . Turn CMYK off. Nothing should change.	Hide one ink group at a time. Every colored pixel should belong to exactly one ink.

Step 2 of 7

Run the color under the line.

Do not stop a color exactly at the edge of the line. Let it run partway under the line, and set the line to print on top.



COLOR STOPS AT THE LINE
ONE SCREEN LANDS OFF AND A SLIVER OF PAPER
SHOWS.



COLOR RUNS UNDER IT
SAME MISS. THE LINE STILL COVERS THE EDGE.

AI

Draw or extend the color shapes to the middle of the line. Select the line, then
`Window > Attributes > Overprint Fill` and
`Overprint Stroke`.

PS

Paint the color layers past the line's edge. The line layer sits on top on Multiply, so the color underneath never shows a gap.

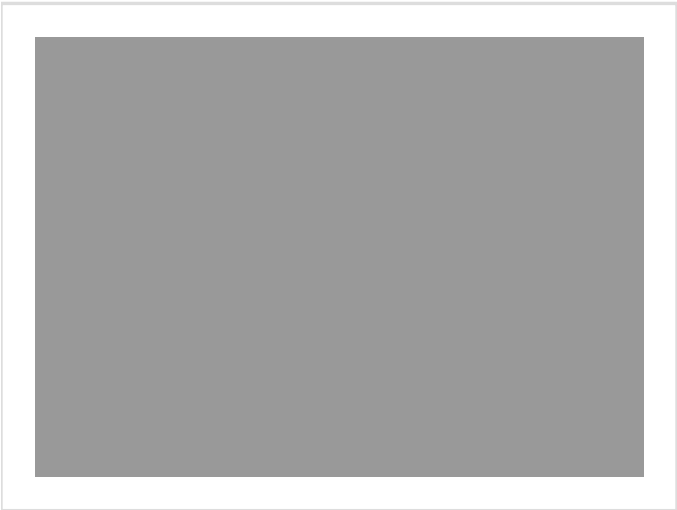
Where two colors meet without a line, overlap them.

This overlap is called a trap. The lighter color spreads a little under the darker one, so the darker one hides the edge.

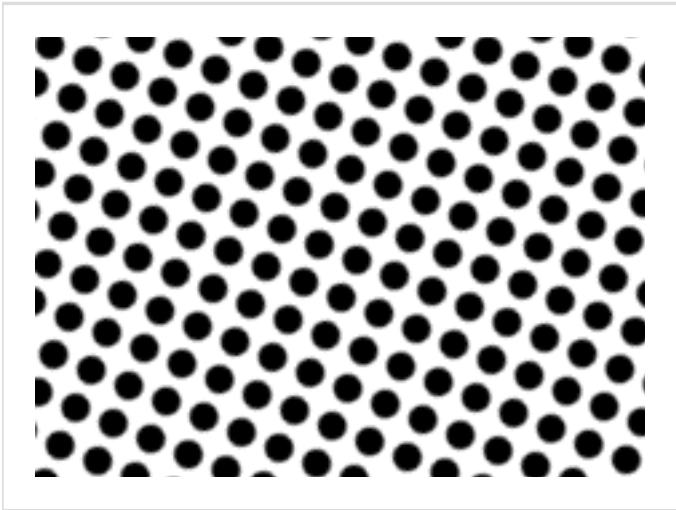
	ILLUSTRATOR	PHOTOSHOP, AT 300 PPI
How much AT 18 BY 24	About 1 to 2 points.	About 4 to 8 pixels.
How THE LIGHTER INK	Select the lighter shape and add a stroke in the same ink, 2 to 4 points wide. Or select both shapes and use <code>Pathfinder panel menu > Trap</code> .	Cmd-click the lighter ink's layer thumbnail to select it. <code>Select > Modify > Expand</code> by 4 pixels, then fill with the same color.
Which way ALWAYS	The light color spreads under the dark one. If the dark one spreads instead, its shape gets fatter and you can see it.	

Lighter shades and textures become dots.

A screen cannot print gray, so a lighter shade of an ink has to become a pattern of solid dots. Screen dots are big, around 45 to 55 lines of dots per inch.



GRAY ON THE FILM
WILL PRINT PATCHY



40% AS DOTS
WHAT THE FILM NEEDS

AI	Keep the tint slider between 15% and 85%. The shades turn into dots when you make the films.
PS	Soft brushes, shadows and grain all count as gray. Keep them bold, look at them at 100%, and they become dots when you make the films.
Line	Your scanned line must be pure black. Image > Adjustments > Threshold until no gray is left.

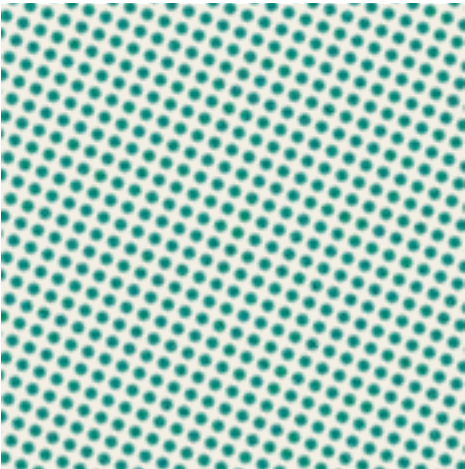
The settings that make the dots.

In Photoshop these are in `Image > Mode > Bitmap`, which opens two dialogs. In Illustrator the same three numbers, frequency, angle and shape, go in the Print dialog in step 6.

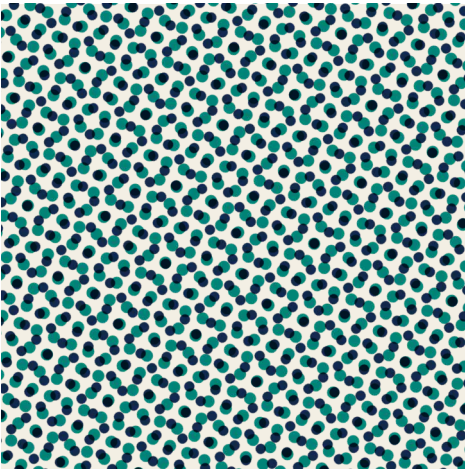
SETTING	WHAT TO CHOOSE	WHY
Output FIRST DIALOG	<code>1200</code> Pixels/Inch.	The film is only black or white pixels, so it needs a lot of them. At 1200 the dot edges come out smooth.
Method FIRST DIALOG	<code>Halftone Screen</code> for any page with lighter shades. <code>50% Threshold</code> for a page that is all solid.	Diffusion Dither makes a fine grain that looks good on screen, but most of it is too small to hold in the mesh.
Frequency SECOND DIALOG	<code>50</code> Lines/Inch. Use the same number on every ink.	This is how many rows of dots fit in an inch. A 230 mesh holds about 50. Finer dots close up.
Angle SECOND DIALOG	<code>22.5</code> degrees for your first ink with dots. Every other ink with dots gets its own angle (next slide).	At 0, 45 or 90 degrees the rows of dots line up with the threads of the mesh and make a wavy pattern.
Shape SECOND DIALOG	<code>Round</code> .	Round dots hold best in a screen. Ellipse gives smoother middle shades. Line makes stripes, which you can use as a look on purpose.

Each ink with dots gets its own angle.

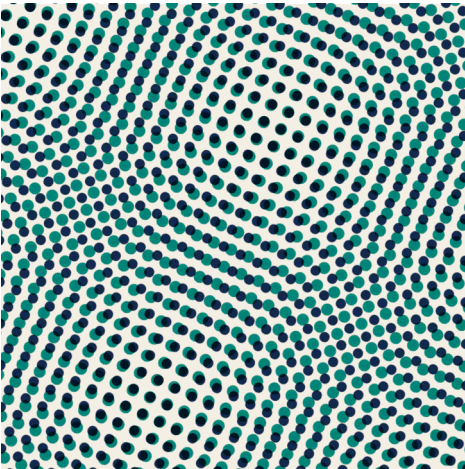
When two dotted inks print on top of each other at almost the same angle, the dots drift in and out of line and make a wavy pattern called moiré. Keep them 30 degrees apart.



ONE INK · 22.5
EVEN DOTS



22.5 AND 52.5
A SMALL, EVEN PATTERN



22.5 AND 26
MOIRÉ: BIG WAVES

INK WITH DOTS	ANGLE
First	22.5
Second	52.5
Third	82.5
Solid inks AND THE LINE	No angle. They have no dots, so they use 50% Threshold.

Make the films where your tones live.

Both programs make one black page per ink. The difference is the dots: Photoshop shows them on screen, and Illustrator only adds them when it prints the films.

Illustrator

FLAT COLOR AND LINE

Your colors are spot swatches, and any lighter shades are tints of them, like 40% of 3282 C. Illustrator turns those tints into dots in the Print dialog, at the frequency and angle you give each ink.

Photoshop

SHADING AND TEXTURE

If you shaded, textured or brushed your drawing in Photoshop, make the films there. You see every dot at full size and set its frequency, angle and shape for each ink.

A print shop

IF THEY MAKE THE FILMS

Many shops only want your spot color file with the tints in it. Their own software makes the dots to fit their screens. The 15 to 85% tint range and the 1 point line still apply.

Before you print, look at each ink alone.

Separations Preview shows what will land on each film. Use it before every Print, and again whenever a page comes out wrong.

- 01

Window > Output > Separations Preview , and check Overprint Preview at the top of the panel.
- 02

Hide Process Cyan, Magenta, Yellow and Black. Nothing on the poster should change. If something disappears, it is still a process color: recolor it with one of your spot swatches.
- 03

Show one spot ink at a time. That is its film. Tints look lighter here, and they become dots only when you print.
- 04

Hide the line's ink. The color should run under where the line was, with no white gaps. A gap means the color stops at the line, or the line is not set to overprint.
- 05

A gradient between two spot inks puts tints on both films. That is fine, as long as both inks get their own angle in the Print dialog.

SEPARATIONS PREVIEW · OVERPRINT PREVIEW ON		
off		Process Cyan
off		Process Magenta
off		Process Yellow
off		Process Black
on		PANTONE 123 C
on		PANTONE 3282 C
off		PANTONE 2767 C

WITH THE LINE INK HIDDEN, THE YELLOW AND TEAL SHOULD FILL UNDER EVERY LINE

Illustrator makes the marks and the films for you.

The Print dialog can split your poster into one black page per spot ink, with registration marks, trim marks and a label on each. You do not draw any of them.

- 01

Bleed, if your art runs to the edge: `File > Document Setup` , Bleed `0.125 in` on every side.
- 02

`File > Print` . Printer: `Adobe PostScript File` . Size: Custom, `20 x 26 in` , so the marks fit around the poster.
- 03

`Marks and Bleed` : check Trim Marks, Registration Marks and Page Information. Printer Mark Type: Roman. Bleed: Use Document Bleed Settings.
- 04

`Output : Mode` `Separations (Host-Based)` , Emulsion `Up (Right Reading)` , Image `Positive` . In the ink list, print only your spot inks, and set each one's frequency and angle.
- 05

Click Save to get a .ps file. Drop it on `Acrobat Distiller` , which comes with Acrobat in Creative Cloud. Out comes one PDF, one page per ink.

PRINT · OUTPUT · DOCUMENT INK OPTIONS			
	INK	LPI	ANGLE
off	 Process Cyan		
off	 Process Magenta		
off	 Process Yellow		
off	 Process Black		
on	 PANTONE 123 C	50	52.5
on	 PANTONE 3282 C	50	22.5
on	 PANTONE 2767 C	50	82.5

PAGE INFORMATION PRINTS EACH PAGE'S INK, ANGLE AND FREQUENCY IN THE MARGIN

In Photoshop, each ink becomes a spot channel.

A spot channel is Photoshop's version of a spot ink: one channel per ink, black where the ink prints. The Print dialog then adds the marks and labels.

- | | |
|----|---|
| 01 | Cmd-click an ink layer's thumbnail to select its pixels. Then Channels panel menu > New Spot Channel , click Color, choose the ink from Color Libraries . The selection becomes that ink. Repeat for each ink and the line, then hide the color layers. |
| 02 | Flatten a copy, then Channels panel menu > Split Channels . You get one grayscale file per channel, named after its ink. Close the red, green and blue ones. |
| 03 | On each ink file with lighter shades, make the dots with step 5's settings and that ink's angle. On solid ones, 50% Threshold. |
| 04 | File > Print , Scale 100%. Under Printing Marks check Corner Crop Marks, Center Crop Marks, Registration Marks and Labels. Labels prints the file and ink name. |
| 05 | Print Settings : paper size 20 x 26 in (Manage Custom Sizes), then PDF > Save as PDF . Repeat for each ink file. |

Step 6 of 7 · what you get

The demo poster as films.



FILM 1 · YELLOW 123 C
SOLID

FILM 2 · TEAL 3282 C
SOLID WATER, SKY AS DOTS AT 22.5

FILM 3 · NAVY 2767 C
THE LINE AND THE WORDS

THE KEY
THE POSTER IN COLOR, LAST PAGE

Check every film before you hand it in.

Zoom to 100% and go through this list on each page.

01	Only black and white. Zoom in on the shadows and the edges of the line, where gray hides.
02	The targets sit in the same place on every page. Flip between pages fast and they should not jump.
03	Every line is at least 1 point, and the dots in the light areas did not disappear.
04	Color runs under the line, and colors that meet overlap a little.
05	Each page is labeled with its ink, every dotted ink has its own angle, and the pages run light to dark with the color key last.

Marks that get smaller down a row.

For rows of soil, fence posts or a line of trees: draw the nearest mark and the farthest one, and let a blend fill in the rest along the path of the row.

- 01

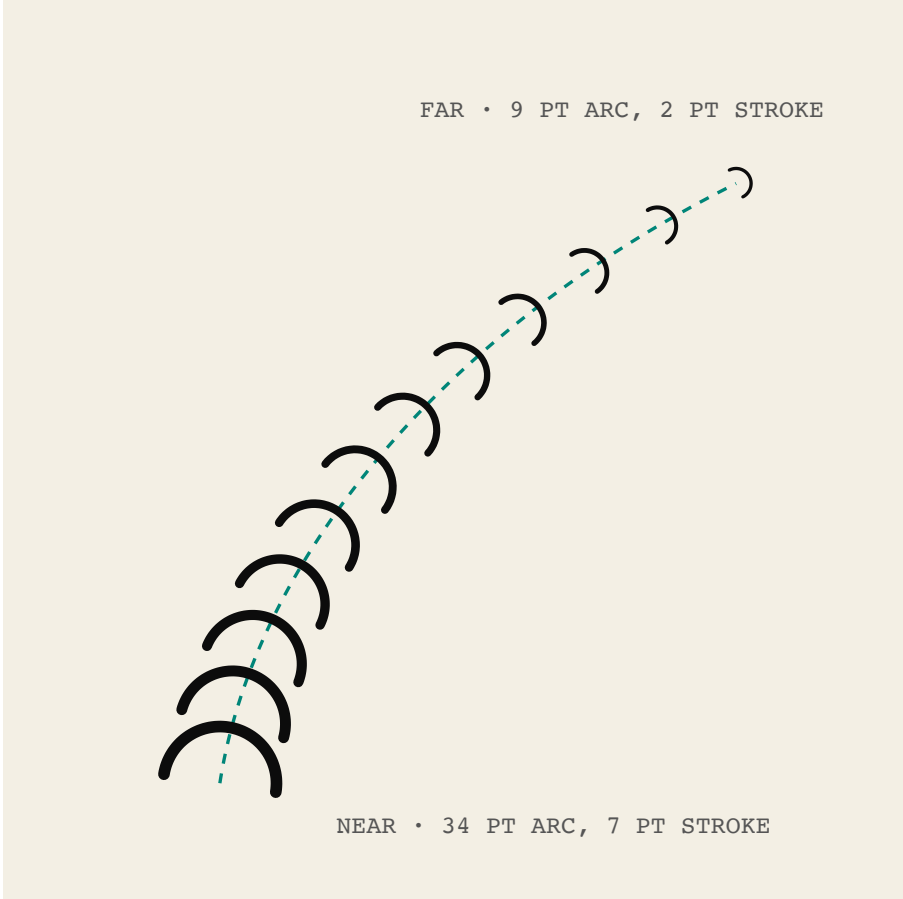
Draw the near mark big, low on the page, and the far mark small, up toward the horizon. Near is the bottom. To make the far lines thinner too, give the far mark a smaller stroke, like 7 pt near and 2 pt far.
- 02

Select both, then `Object > Blend > Make`. In `Blend Options`, set Spacing to Specified Steps and choose how many marks.
- 03

Draw the path of the row with the Pen, from the near end to the far end. Select it with the blend, then `Object > Blend > Replace Spine`.
- 04

If the big marks end up at the top, `Object > Blend > Reverse Spine` flips them to the bottom. In Blend Options, Orientation: Align to Path turns each mark with the curve.
- 05

It stays live. Reshape the path with the Direct Selection tool and the marks follow. For more rows, Option-drag a copy and Replace Spine on a new path.



THE DASHED LINE IS THE SPINE. TWO MARKS DRAWN, TEN MADE BY THE BLEND

Or let the Perspective Grid do the shrinking.

Draw one row with every mark the same size, then drop it on the ground plane. Marks get smaller and closer together toward the vanishing point, and every copy points the same way.

- 01

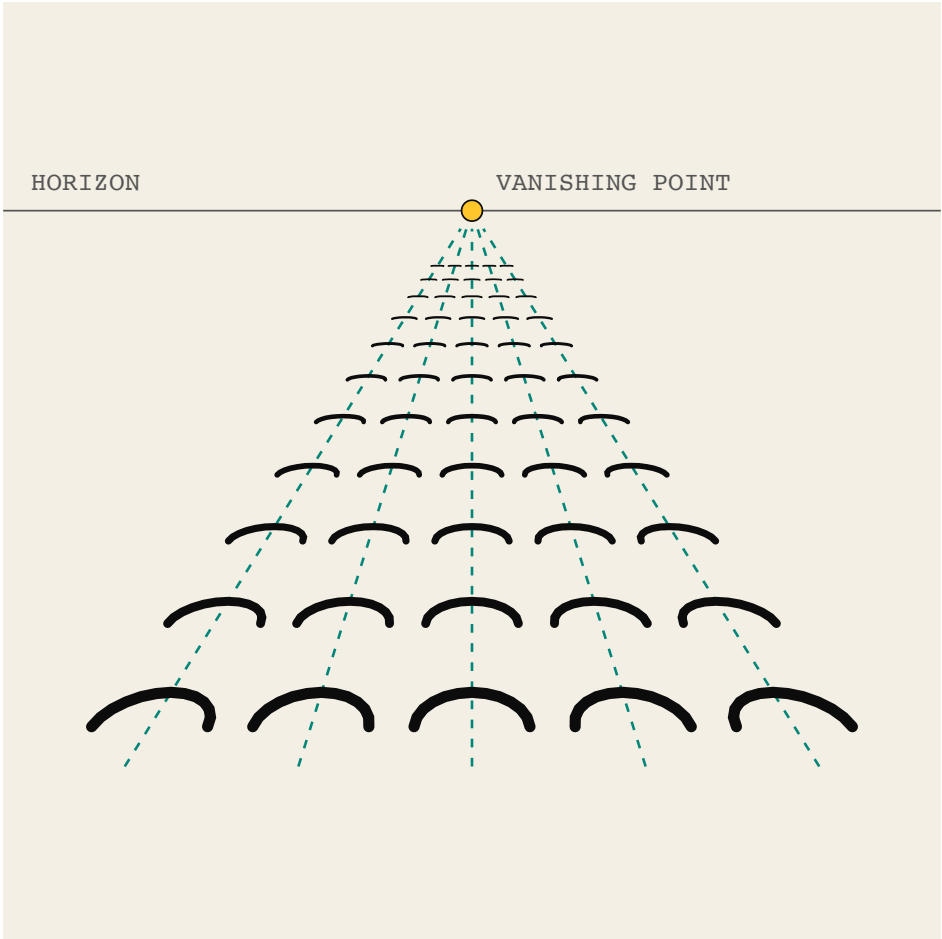
Draw one straight row of same-size marks, as if you were looking straight down at the ground. Then `Object > Blend > Expand`, `Object > Path > Outline Stroke`, and group.
- 02

`View > Perspective Grid > One Point Perspective > 1P-Normal View`. Drag the horizon and the vanishing point to match your drawing. Shift-Cmd-I shows and hides the grid.
- 03

Pick the Perspective Selection tool (Shift-V) and press 2, which makes the ground the active plane.
- 04

Drag the row onto the grid. It snaps into perspective.
- 05

Option-drag sideways along the ground to copy it, then Cmd-D to repeat. The rows fan out from the vanishing point like a real field.



ONE ROW DRAWN, FOUR COPIES, ALL SHARING ONE VANISHING POINT

Work time

Now, on your own file.

Today

IN CLASS

Steps 1 to 3 on your poster: inks in order, color under the line, traps. I will come around to your desk.

Fall break

OCT 13

Finish the poster, then do steps 4 to 7 and make the separations PDF.

Thursday Oct 15

CRITIQUE

Project 2 is due, with the separations and every other file on the hand-in list from Tuesday's slides.

FINISH THE POSTER FIRST. ONCE THE FILE IS CLEAN, THE FILMS TAKE ABOUT AN HOUR.