Ink & Switch

# PlayBook User's Guide

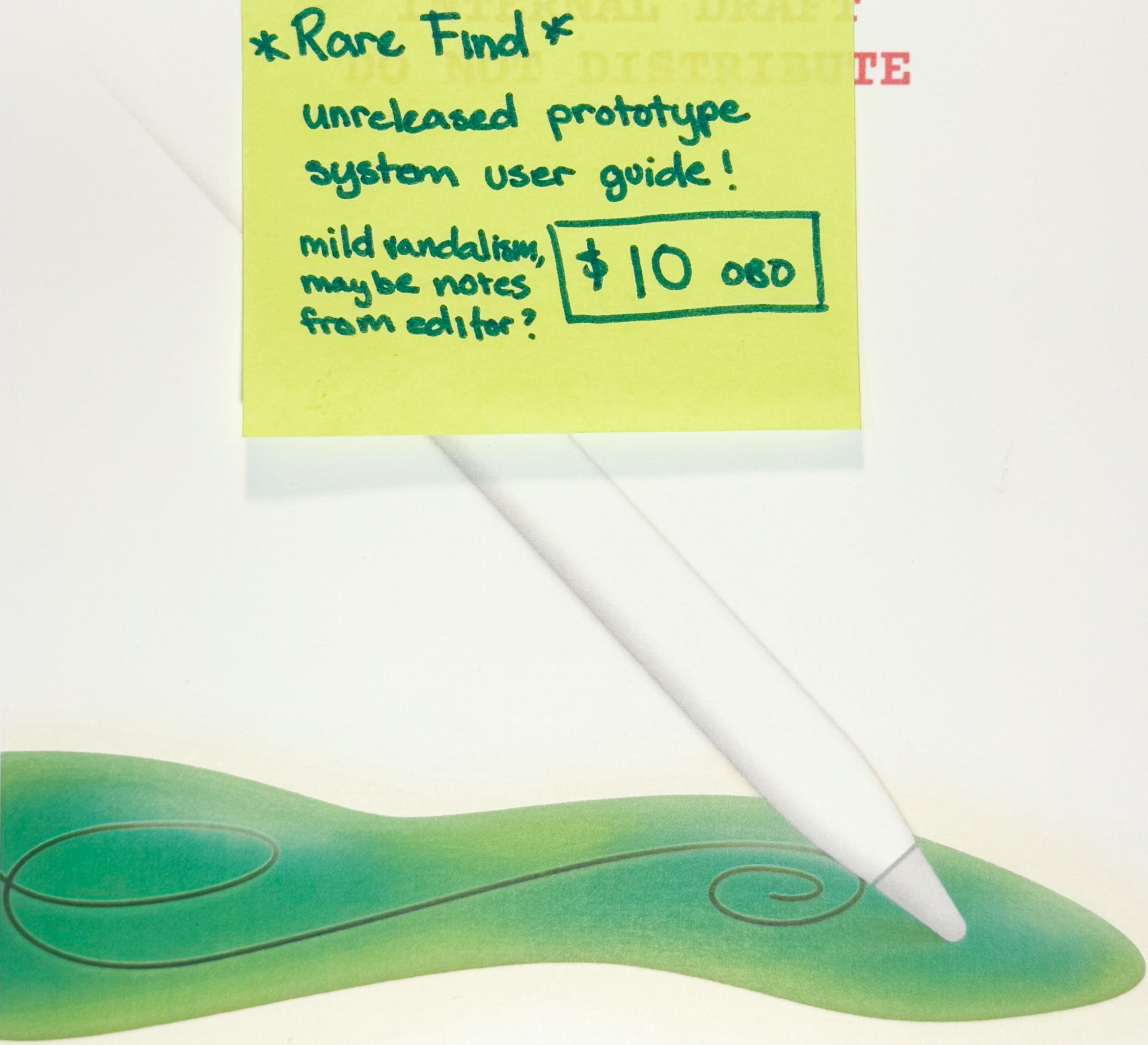
Volume I

*Rare Find*

unreleased prototype system user guide!

mild vandalism, maybe notes from editor?

$10 OBO



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Written and illustrated by Ivan Reese, Marcel Goethals, Alex Warth, and James Lindenbaum of the Ink track. The PlayBook system, or whatever we end up calling it, was designed by Marcel Goethals, Alex Warth, Ivan Reese, and James Lindenbaum, with contributions from fellow Ink & Switch researchers, alumni, and outside collaborators.

**Warning**
Caution: To prevent conceptual shock, do not perform a firm press on the PlayBook GUI before reading this guide. Only user serviceable code inside. Refer servicing to qualified service personnel, which you may become by exploring of your own volition and trusting your curiosity.

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PlayBook is a total conversion for your tablet computer. It carries on the ideas that made early computers insanely great — like undo, interactivity, and multimedia — and lets go of the rest.

PlayBook honours a tradition that has almost been lost to history: the software is built out of the same materials you use to do your work. This means you can program and reprogram nearly everything, with a novel approach to programming that puts the focus squarely on things you can see and touch.

It can do so much.

But — most importantly of all — PlayBook stays out of your way when you just need a quiet place to write, draw, and think.

It's a great notebook, and then some.

Don't love "program" - maybe "script" or "automate"?

## About This Book

This book, **PlayBook User Guide: Volume I**, covers everything you need to know to get started using your PlayBook. You'll learn how to take notes, organize your thoughts, customize the workspace, and create your own tools.

**Volume II** covers more advanced topics. You'll learn how to use PlayBook for computer-aided design (CAD), scientific simulation, and game development, leveraging advanced capabilities like version control, realtime collaboration, and general-purpose programming.

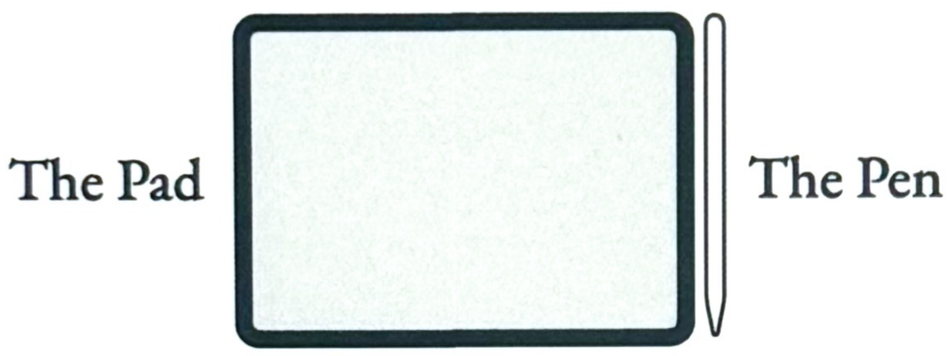
Throughout the book, we'll highlight the values and principles that informed the design of PlayBook, as well as helpful tips and references, in a little box like this.

## Pad & Pen

Install the PlayBook application on your PlayBook-compatible tablet computer.

You may obtain a copy of the PlayBook application for iPad or Daylight from Ink & Switch for a small research and development fee.

Your PlayBook-compatible tablet computer is comprised of two hardware components:



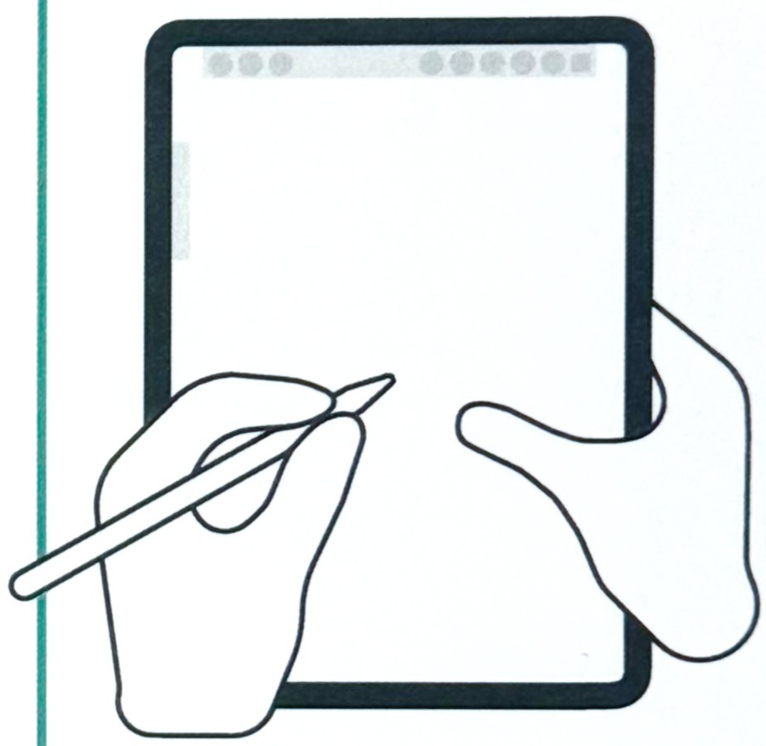

PlayBook treats the pad and pen differently than other tablet applications. This allows PlayBook to adapt to a wide range of uses.

You can do nearly everything with just the pen, so you can hold the pad comfortably with your other hand while sitting, standing, or walking around. Don't worry about your thumb — PlayBook will ignore it.

You can keep the pad screen turned on all the time, ready to be used the instant inspiration strikes, just like a piece of paper. Don't worry about stray touches — they can't harm your work.

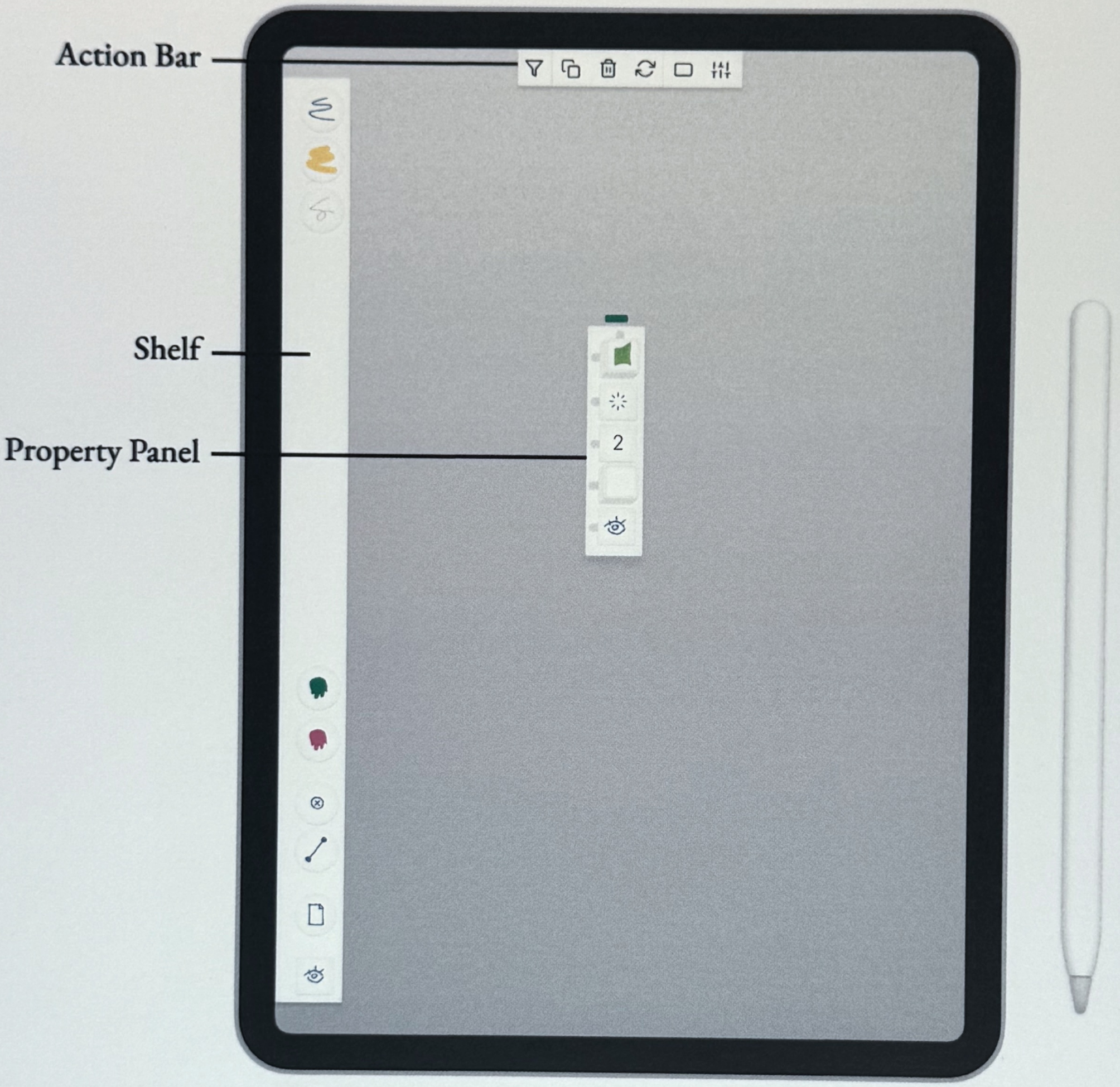
The user interface is designed to adapt to you. Hold the pen with either hand, and put the interface elements wherever they're comfortable to reach.

When you rotate the pad, certain elements of the user interface, like icons, will remain upright. Everything else remains fixed in place — just like paper.



***Just like paper.***
That's a guiding principle that motivated many of our design choices.

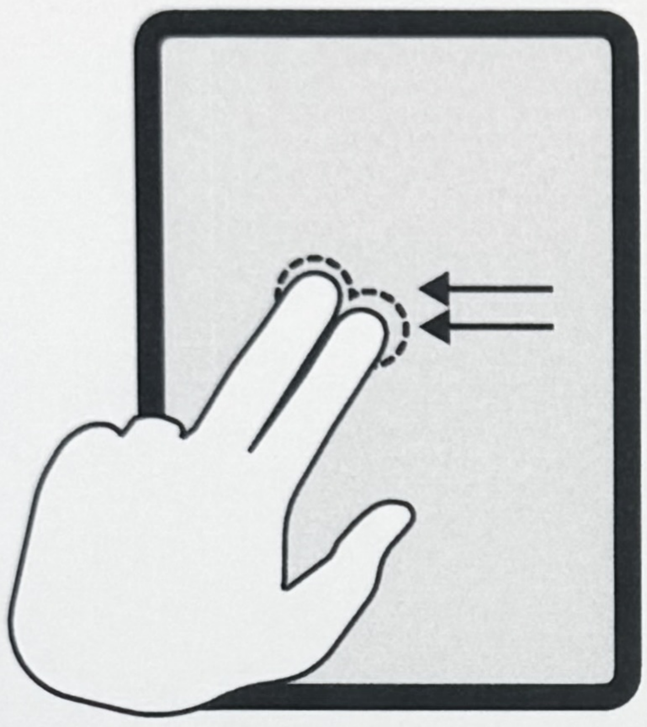
## User Interface



## Common Gestures

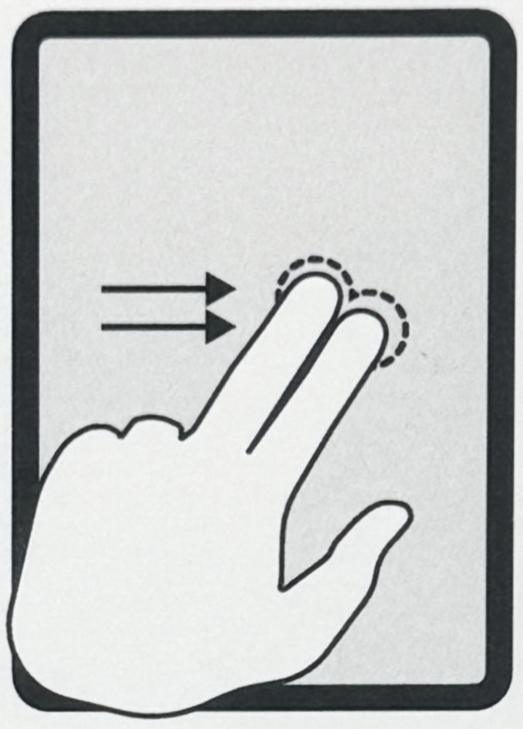
### Undo

Swipe left with two fingers.



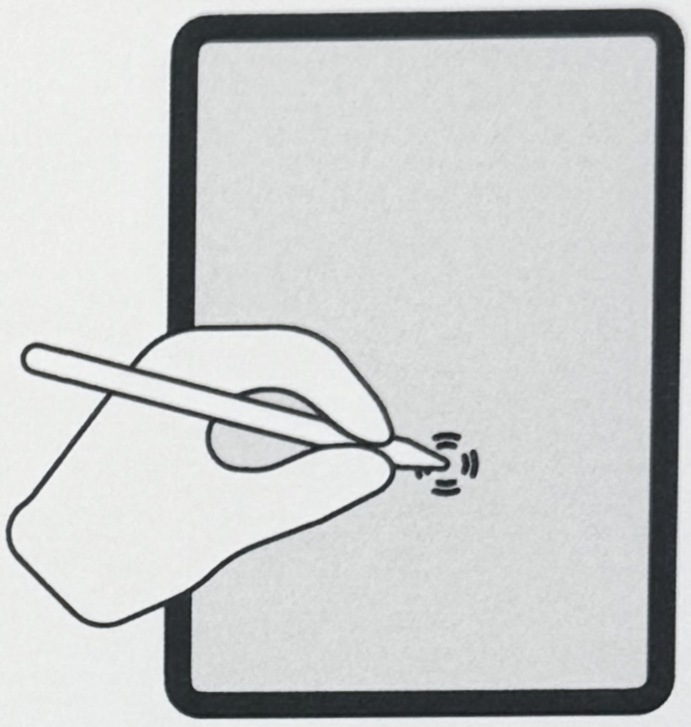
### Redo

Swipe right with two fingers.



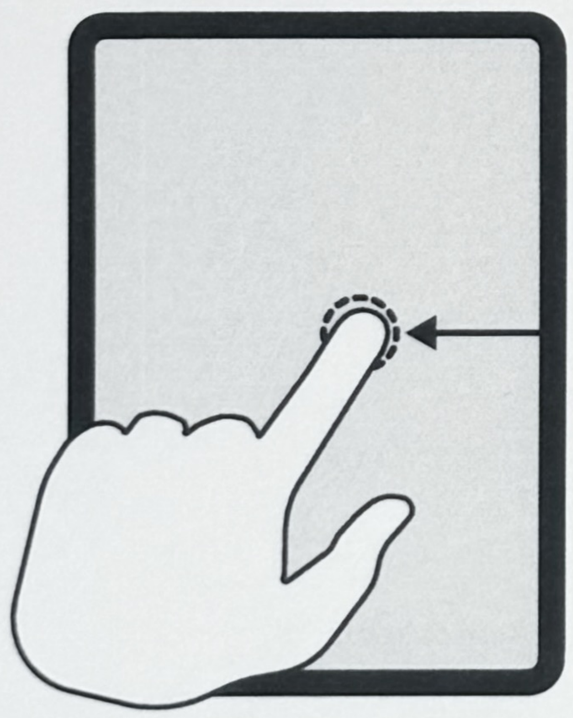
### Select

Press firmly with the pen.



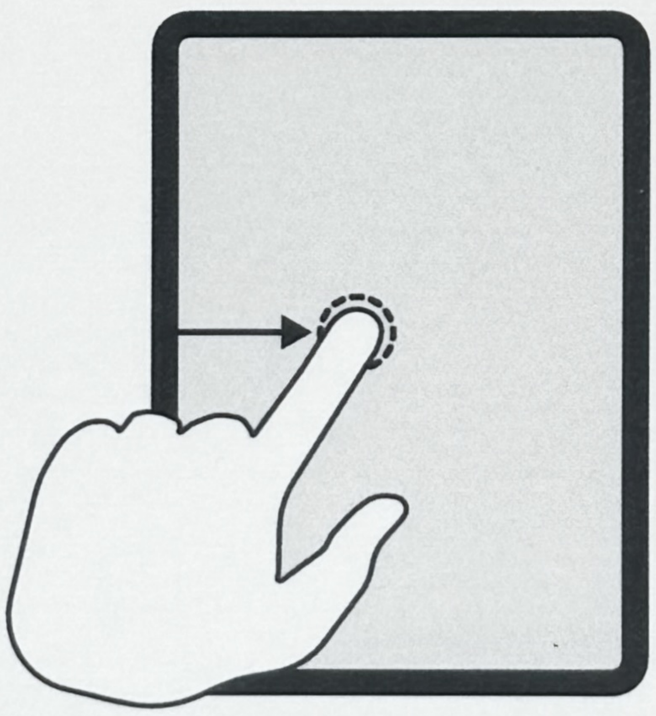
### Next Page

Swipe from the right with one finger.



### Previous Page

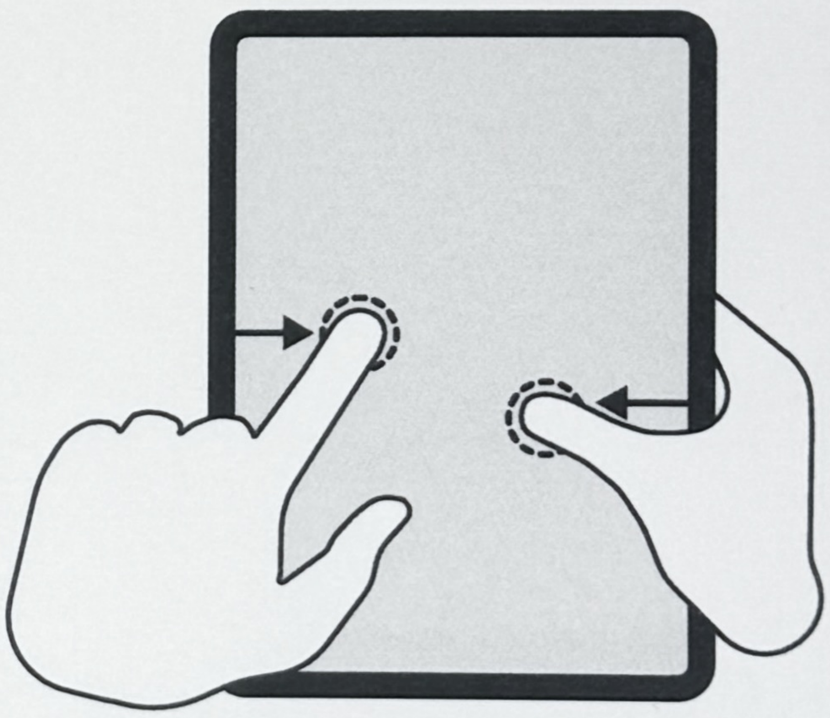
Swipe from the left with one finger.



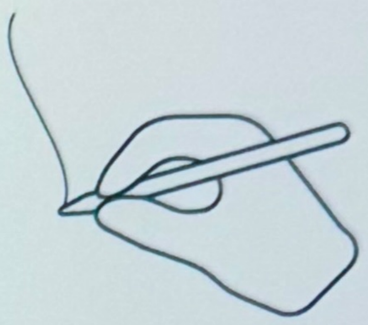
### Go To Overview

The "Joni Mitchell"!

Swipe inward from both sides, now!



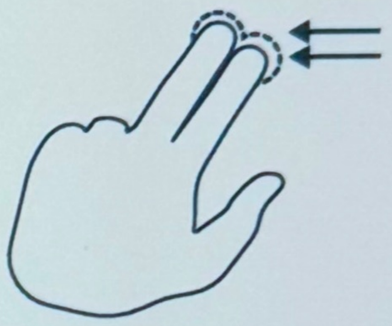
When you first begin using your PlayBook, the screen is empty. It is a blank page, a clean slate, a brand new sketchbook. Take a moment to enjoy the refreshing expanse of unknown potential. Then begin.



**Write & Draw**

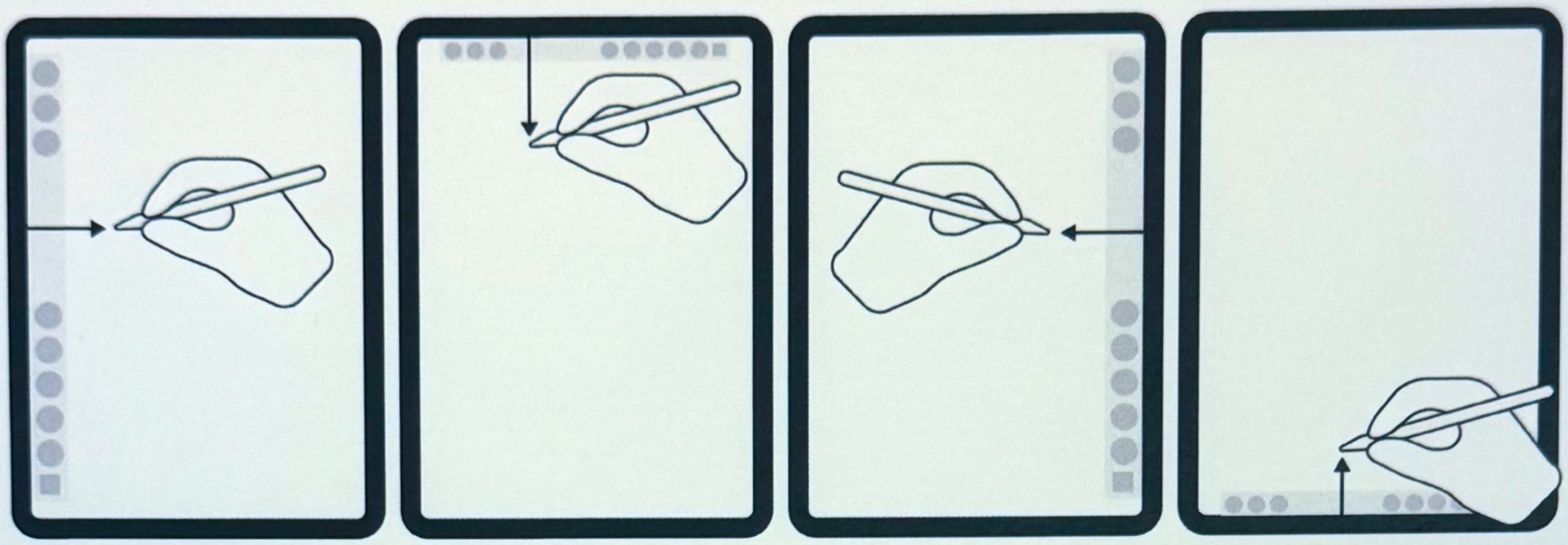
Use the pen to write and draw.

If you make a mistake, swipe to the left with two fingers to undo by rewinding time. The faster and longer you swipe, the more you rewind. Flick your fingers quickly again and again to soar backward through time.



Swipe to the right with two fingers to redo what you've just undone. Note that after you draw or make any other changes to your work, you'll no longer be able to redo.

With the pen, swipe in from any side of the pad to access the shelf.

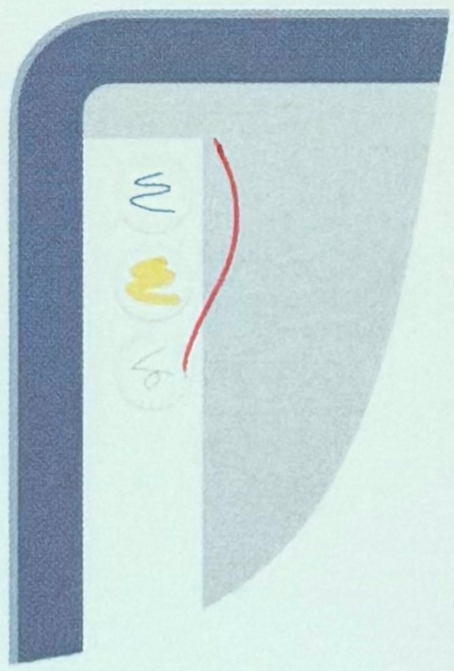


Interface elements like the shelf can be summoned and dismissed at your leisure by swiping the pen inward or outward across any side of the pad.

At the top of the shelf, you'll find an array of ink pots:

- dark felt (the default),
- blue ballpoint,
- gray graphite, and
- yellow highlighter.

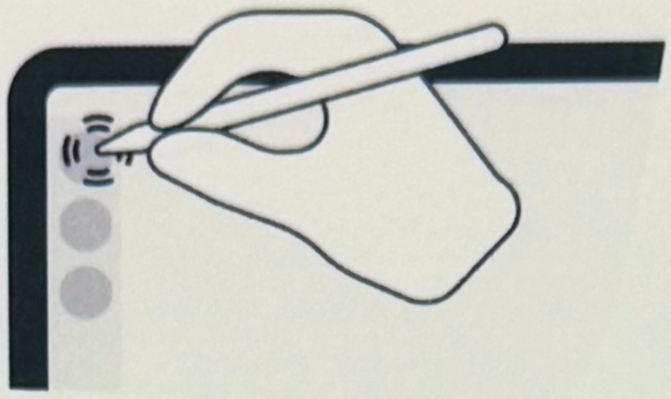
Image doesn't match description

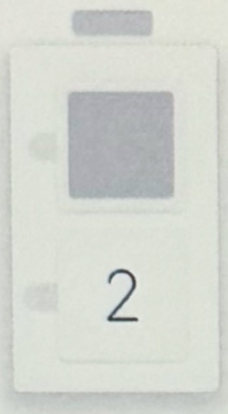


Dip the pen in an ink pot.
The ink will coat the tip of the pen.
Now when you draw, you'll draw with this ink.

## Ink Properties

Press the pen firmly into an ink pot.






A panel will appear, allowing you to customize the ink color and thickness.

Place the pen on the color to show a color wheel, slide to your desired color, and lift the pen to confirm your choice.

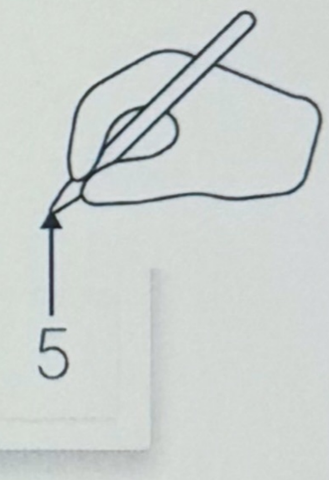
Place the pen on the thickness number, then move the pen up and down to adjust the ink stroke thickness.

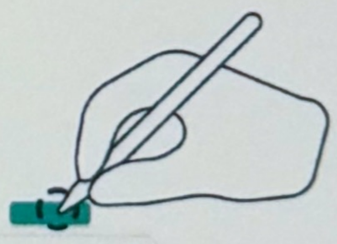
When you begin to write or draw, the panel vanishes. Firmly press an ink pot again to bring it back.

Tap the handle at the top to lock the panel. It will remain in place while you draw, so you may quickly change color or thickness. Each ink pot can have its own panel open at the same time. When you're done with a panel, tap the handle again to unlock it.

The screen of the pad is pressure sensitive. To perform a firm press, hold the pen to the screen and push inward with a moderate amount of force.

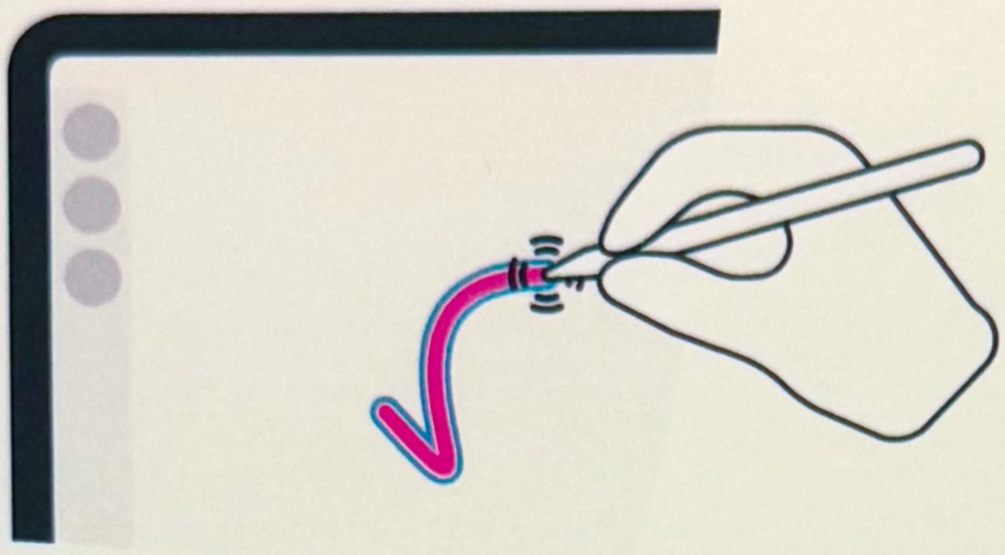
The color and thickness are called *properties*. You'll learn much more about properties in an upcoming chapter.



### Selection

Firmly press the pen on an ink stroke to select it.



To select more than one ink stroke at a time, firmly press the pen in an empty spot on the page, then relax the pressure (but don't lift the pen off the screen) and draw. The pen now draws a dashed line we call the lasso. Anything you encircle with the lasso will be selected when you lift the pen.

You can move the selection by sliding your finger or the pen anywhere on the screen.

If you lasso only part of an ink stroke, the stroke will stretch when you move the selected bit.

Use two fingers to rotate and resize.

Dismiss the selection by tapping the pen or your finger anywhere on the screen.

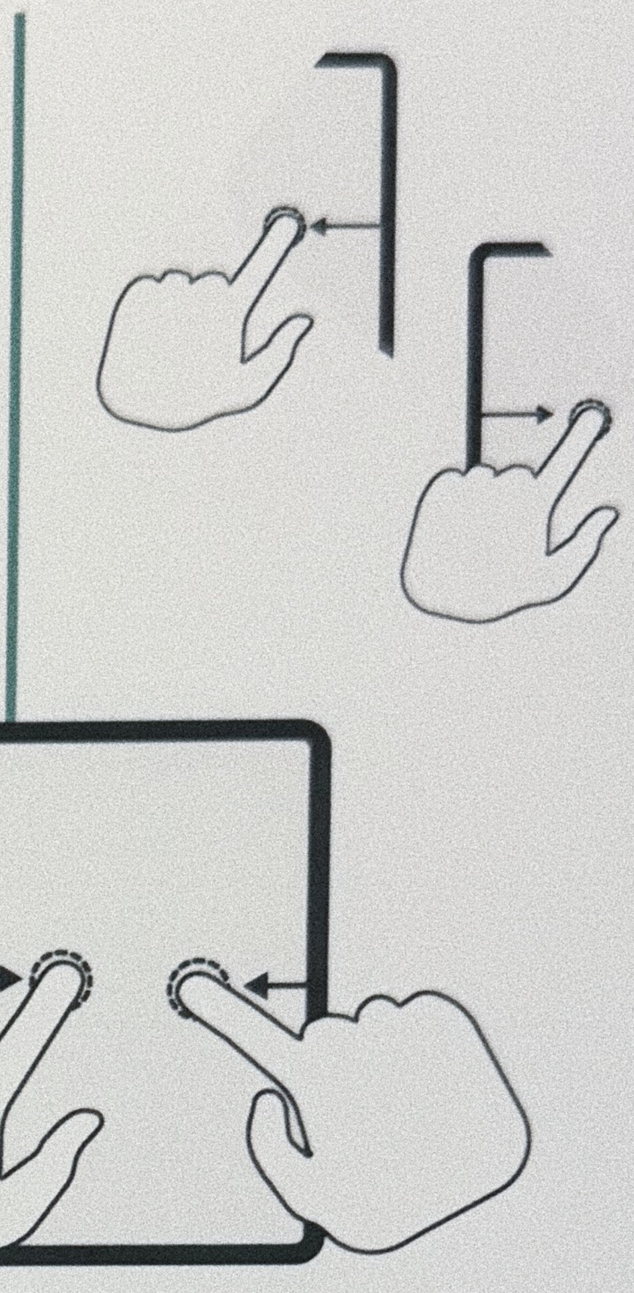
You can also begin drawing a stroke, then firmly press the pen to change the stroke into a lasso. This reflects another of our values — whenever possible, you should be able to perform actions in whatever order you want.

Needs illustration!

### Turning Pages

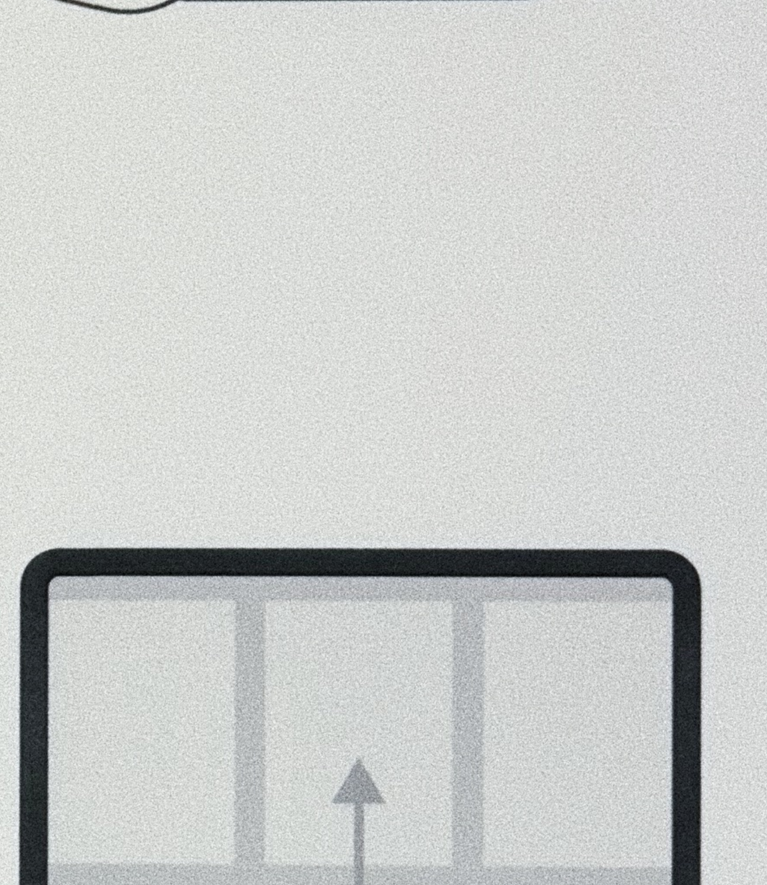
With your finger, swipe from the right side across to the left to turn to the next page.

Swipe from the left side across to the right to turn to the previous page.

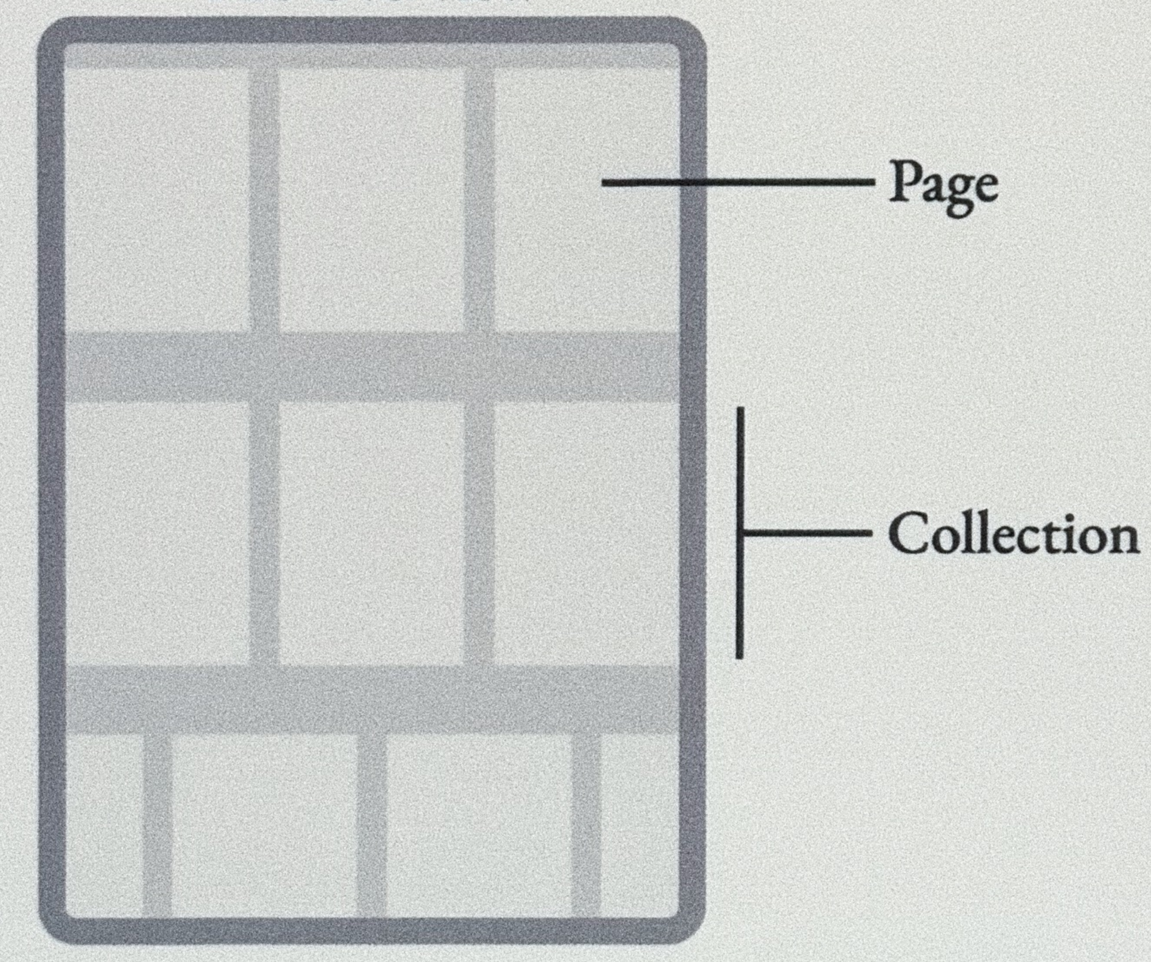


### Overview

There's a special gesture you perform with both hands to access an overview of all your pages. This gesture is just like the swipe from the side that you use to turn pages, but you do it simultaneously on both sides.

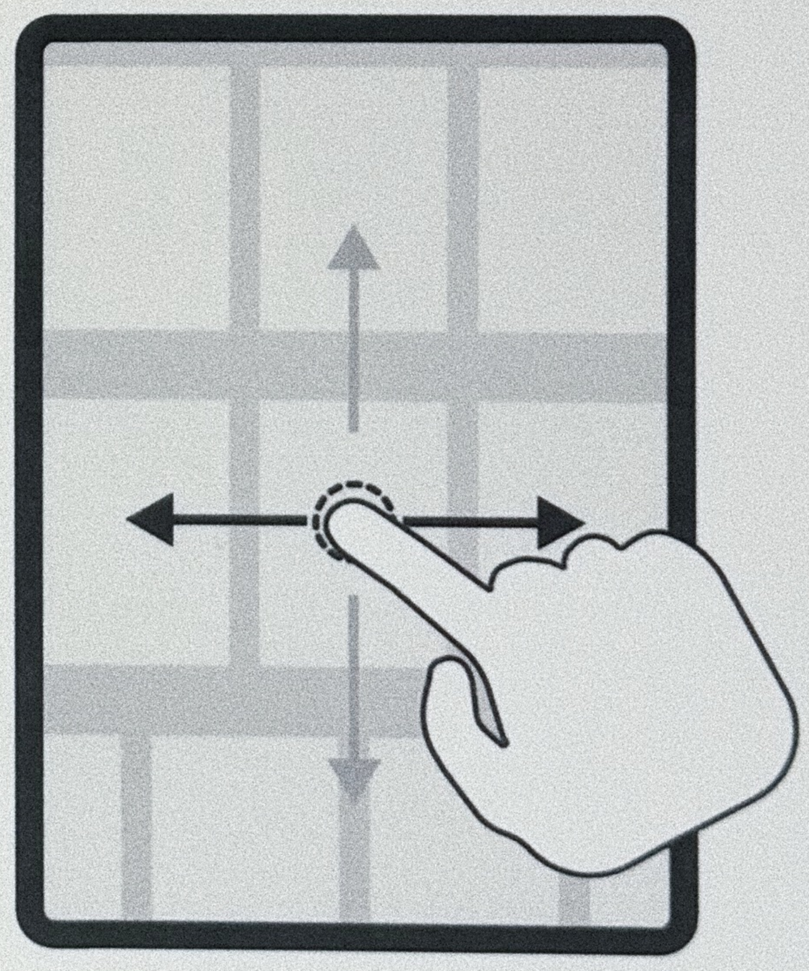


The Overview




Swipe horizontally with your fingers or the pen to scroll through pages.

Swipe vertically to switch to a different collection of pages.

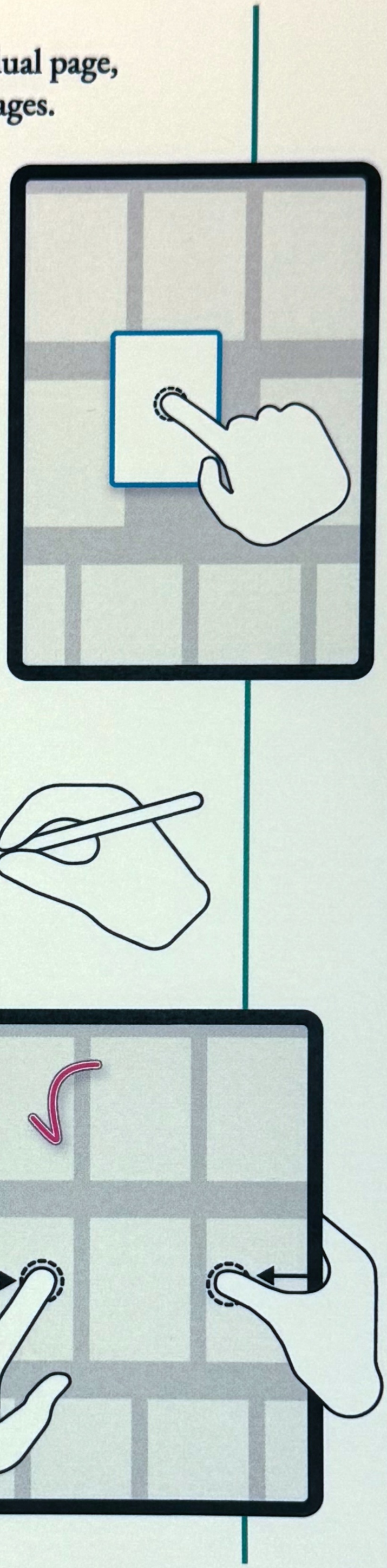


Firmly press with the pen to select an individual page, or firmly press then lasso to select multiple pages.

With the pen or your finger, drag selected pages horizontally to reorder them within a collection, or vertically to move them to a different collection.

Tap the screen with your finger to deselect.

With nothing selected, tap a page with your finger or the pen to open it.



If you have something selected on a page, and then perform a swipe from both sides to see the overview, the selected items will be brought into the overview as a floating selection.

This floating selection will stay in place until you open another page and tap to deselect.

This is still confusing. Perhaps explain what need this feature addresses.

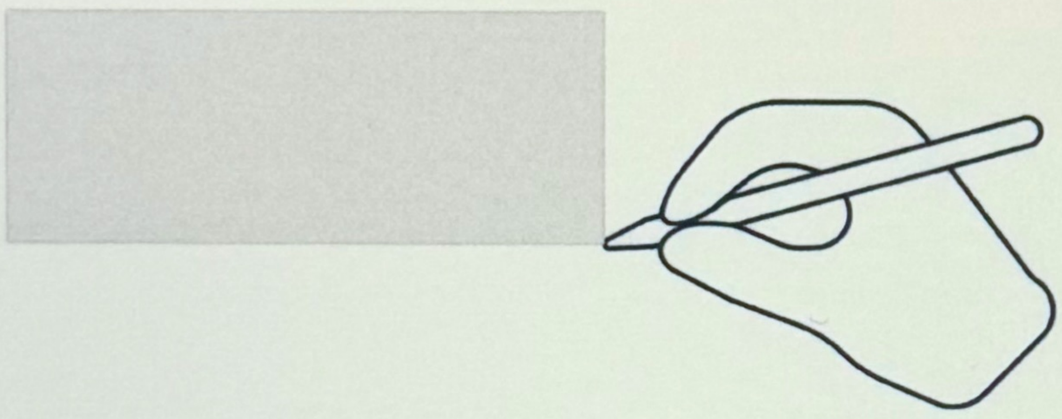
You've learned how to draw in various styles of ink, make selections with the lasso, and organize your work into pages.

Ink is the first of several materials that you'll encounter in PlayBook. In this chapter, we'll introduce you to a few materials that help you work with the space around your ink. The more you work with them, the more proficient you'll become — a real material maestro.

### Paper

On the shelf, second from the bottom, you'll find an icon showing a sheet of paper. Tap it with the pen.

Now when you draw, you'll create pieces of paper at the size of your choosing.

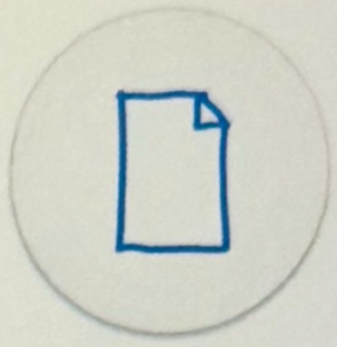


The paper is a selectable, movable, resizable surface you can write and draw on. Use paper to organize your space. Group related ideas. Create layouts that reflect how you think.

You can select a piece of paper by firmly pressing on it or drawing a lasso around the perimeter. When selected, you may move the paper with one finger or the pen, and rotate & resize the paper with two fingers.

When you move paper, any ink that was drawn on the paper will move with it.

Smaller pieces of paper will sit in front of larger pieces.



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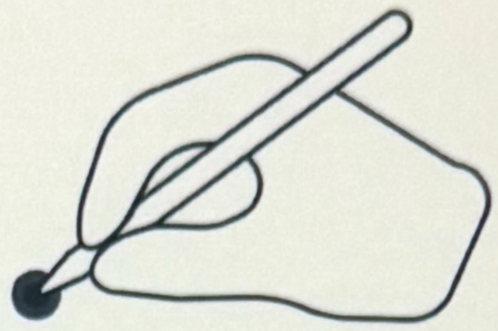
## Pin & Beam

On the shelf, above paper, you'll find icons for pin & beam. Let's start with pin. Tap the pin icon with the pen.



Now when you draw, you'll place a single pin at the tip of your pen.

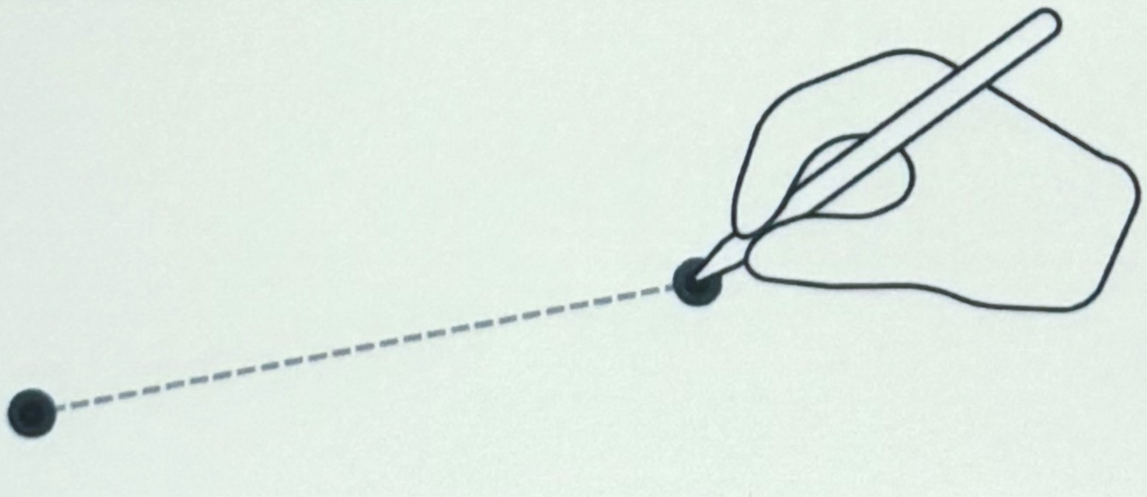
If you put the pen down on the pin again, you can move it freely without needing to select it first.

If you put a pin on a piece of paper, the paper will move when you move the pin, and vice versa.

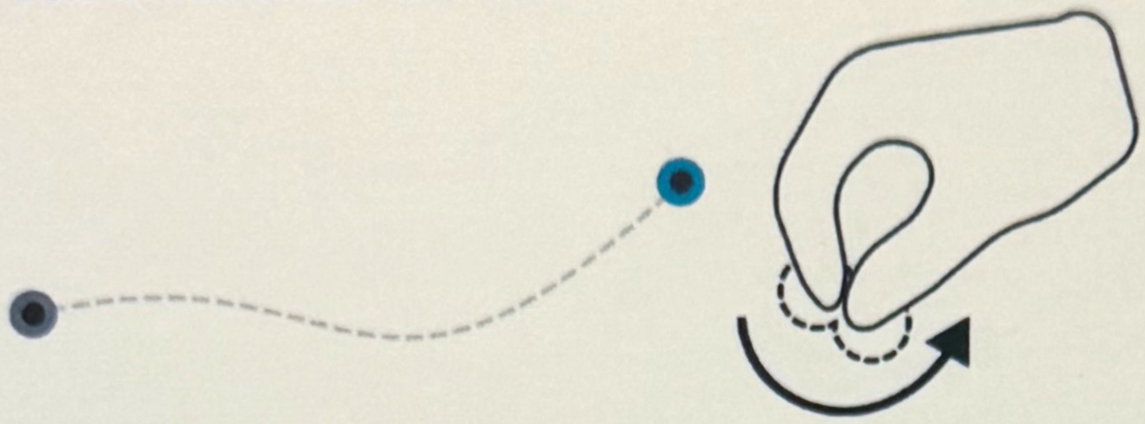
To move the pin independently, press firmly to select the pin, then move it.

You can use pins to mark points of interest, or as handles on pieces of paper to make them easy to shuffle.

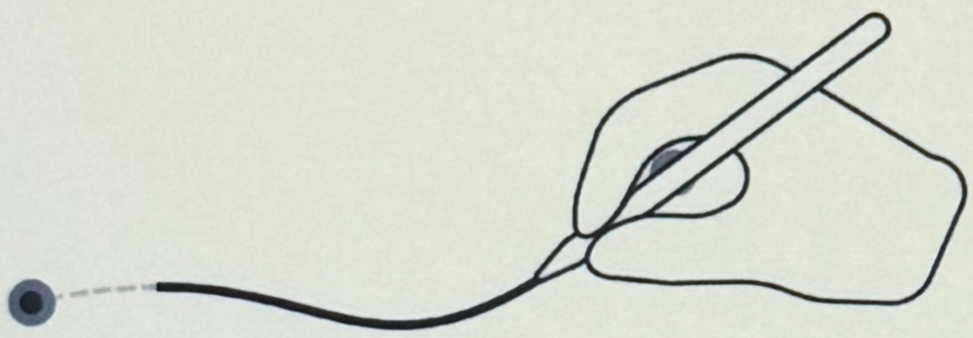
Now let's place a beam. Tap the beam icon, then draw with the pencil. When you begin to draw, it places a pin to anchor one end of the beam. As you draw, the beam stretches. Lift the pencil to place a second pin to anchor the other end of the beam.



When you select and rotate a pin at either end of the beam, the beam will bend in a curve.



When you begin drawing ink on a beam, the entire stroke exactly follows the shape of the beam.



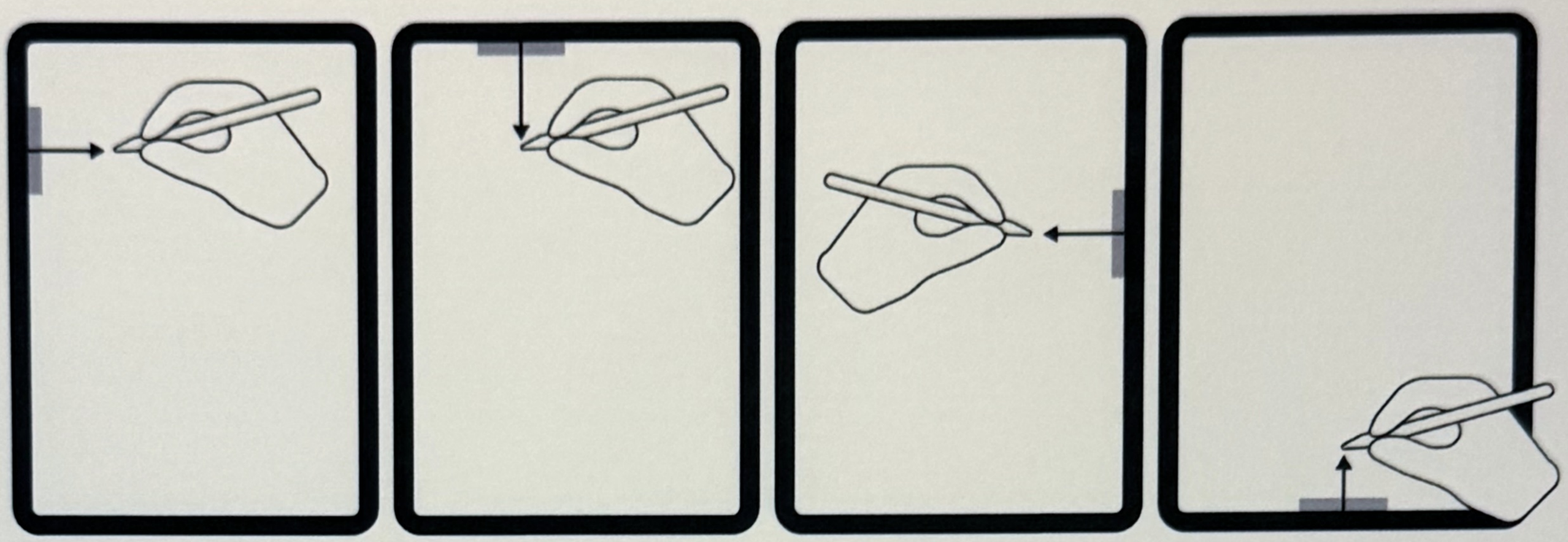
You can use a straight beam like a ruler, and a curved beam like a french curve, to draw precise markings.

Beam & pin allow you to measure lengths, angles, and other dimensional qualities. They also act as a linear and radial actuator, respectively. These attributes make beam & pin particularly useful for computer-aided design (CAD) work, and for building dynamic simulations. Consult the **PlayBook User Guide: Volume II** to learn how.

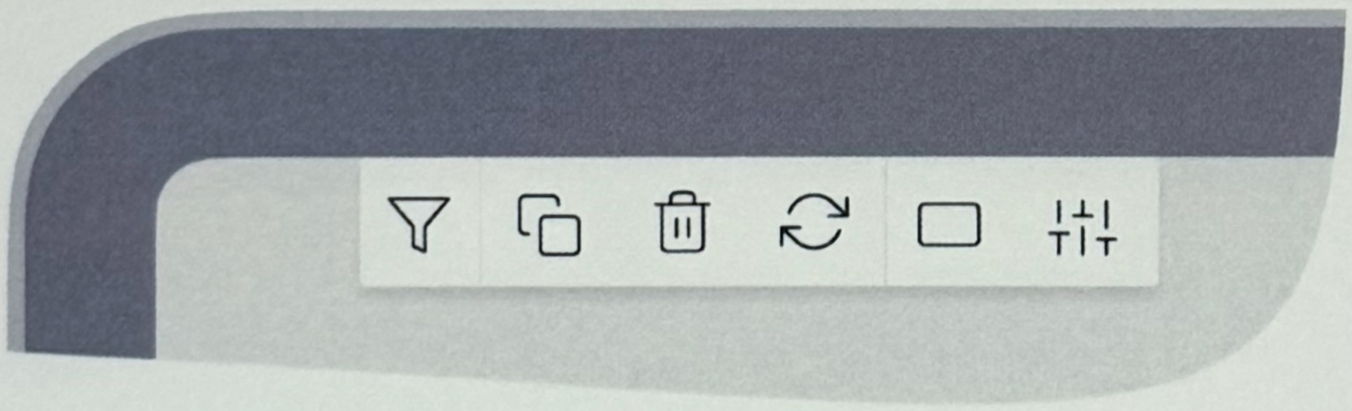
You can also put a physical ruler down on your pad to guide the strokes you draw with the pen.

### Action Bar

When you have some material selected, swipe the pen inward from any side of the screen to reveal the action bar.



The action bar is a row of buttons you can tap with the pen. Some of these actions are performed immediately, and others present additional tools you can use to manipulate the selected materials.



Just like the shelf, you can pull in the action bar where and when you need it, and push it off when you'd rather not see it at all.

**Refine Selection**

When you lasso materials, it's sometimes difficult to select just the materials you'd like. Refine Selection presents various options to narrow down the selection to just the materials of interest.

**Duplicate**

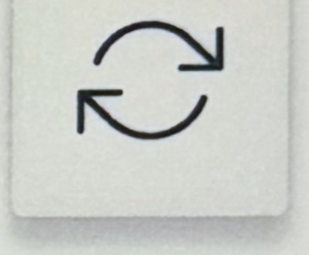
Creates a copy of the selection. The copy appears slightly offset from the original.

**Delete**

Removes the selection. You can always undo if you delete something by accident.

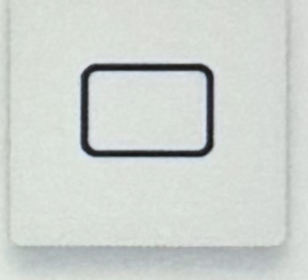
**Convert**

Many of the materials can be converted into different forms. The convert menu presents a list of possible conversions based on the current selection.



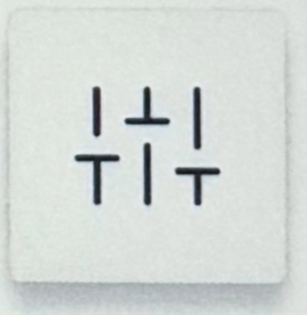
**Nodes**

Shows various programming nodes you can use to process the current selection. You'll learn about nodes in an upcoming chapter.



**Properties**

Shows a panel of properties for the current selection. You've probably seen this panel already, and will learn all about it in the next chapter.

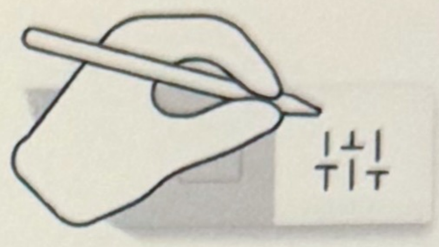


Don't love "nodes" Can we come up with something better?

PlayBook is a peaceful space for sketching and writing, with helpful materials and tools at your beck and call. Every material is made of dynamic properties that you can pull apart and bind together. Learning to manipulate properties is the first step toward building your own tools.

### Property Panel

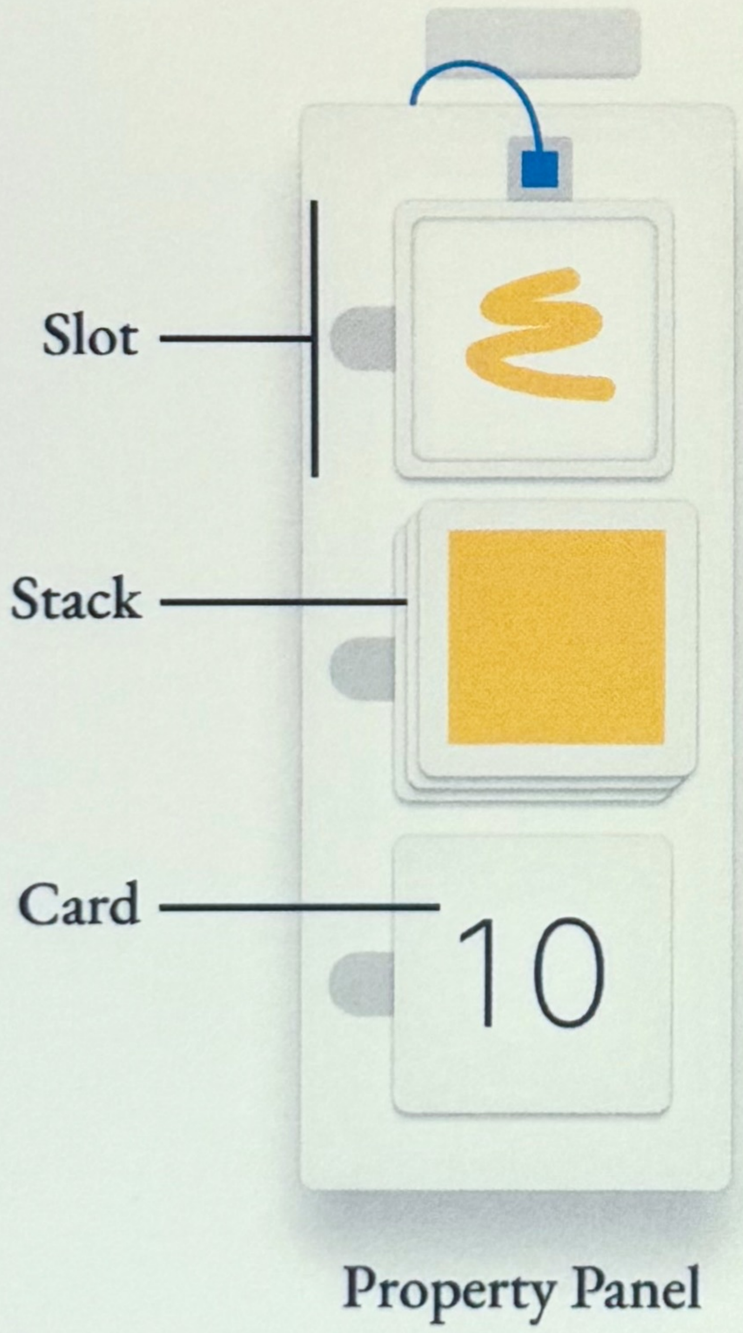
To view the property panel for a selection, tap the property panel icon in the action bar.



The property panel lists the properties of the selected materials.

Each property is represented by a *slot.*

If you lasso several materials that have differing values for a property (for instance, several different colors of ink), you'll see these different values appear as a *stack* in the panel.

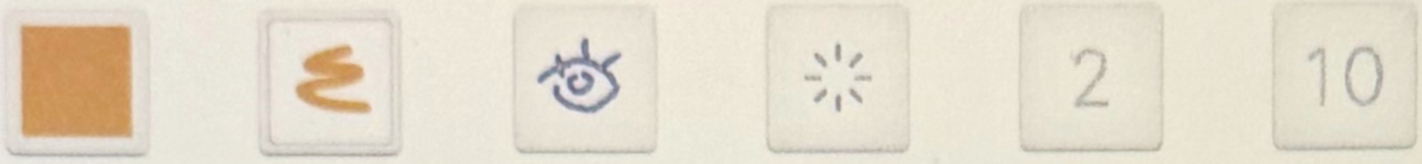



To-do:
- Show "crunching"
- Show "fanning" of multiple props

Selections, and the property panels that represent them, are useful for creating reusable groups. This marks an important difference between PlayBook and other tools: grouping in PlayBook is not exclusive. The same bit of material can belong to several selections at once.

## Cards

The colors, numbers, and various other values shown in the property panel are cards.



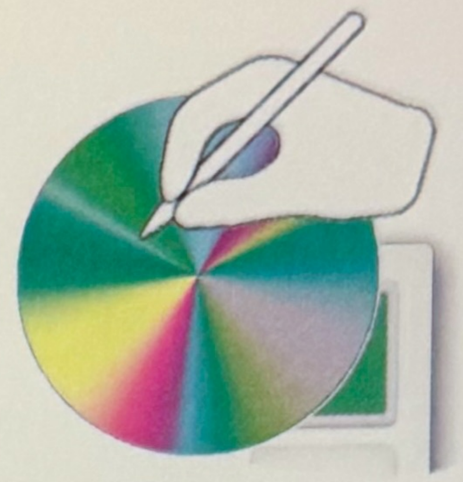

Each type of card has its own special affordances. For instance, you can use the pen to change the color of a color card, or to change the number of a number card.

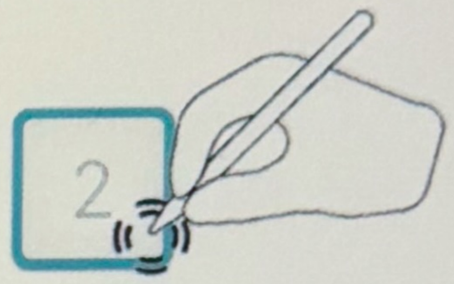
Just like the other materials, you can select cards by lassoing or pressing firmly with the pen.

You can then move the card with one finger or the pen.

When you move a card away from the property panel, it creates a copy of the card, leaving the original in place.

What happened to the colors?





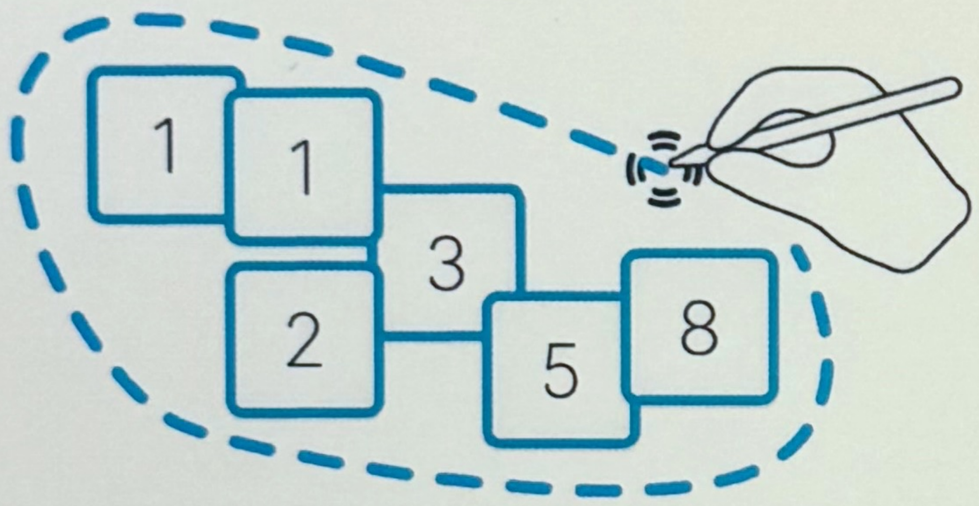

For a complete listing of card types, see **Appendix I: List of Cards.**

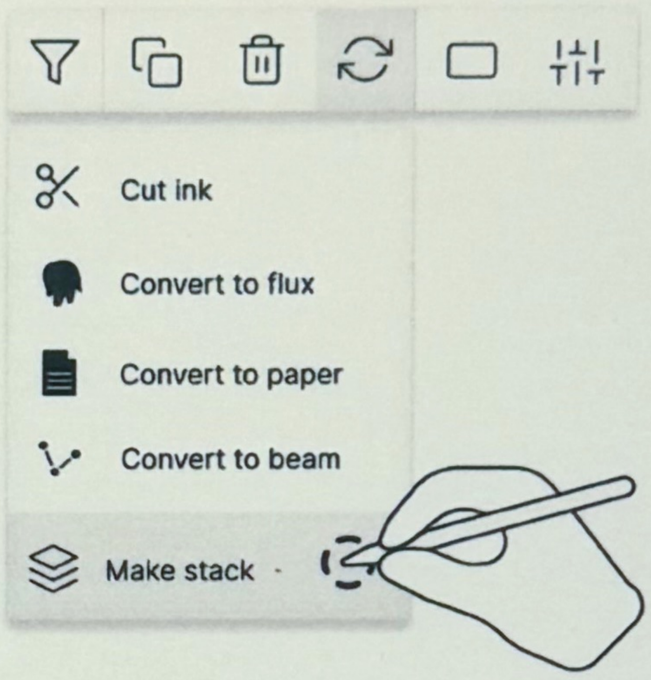
### Stacks

Several cards of the same type can be put together into a stack. The stack is a space-efficient way to work with several cards at once.

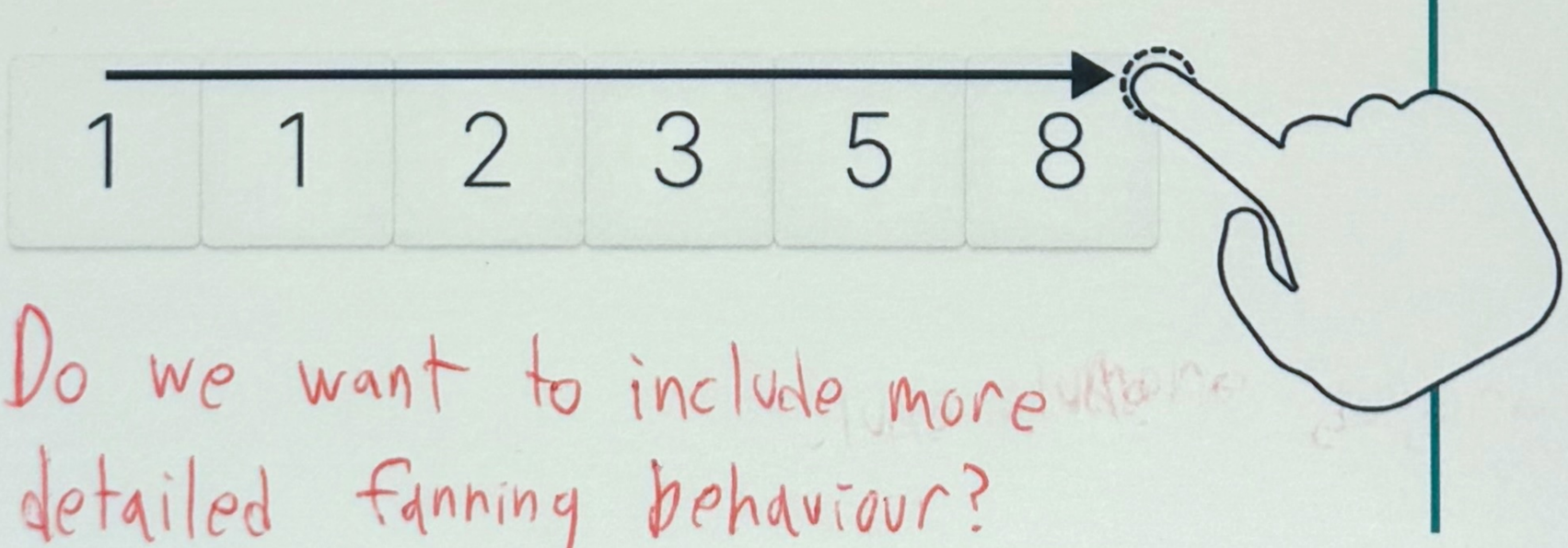
To create a stack, use the lasso to select more than one card of the same type, then from the action bar choose:

**Convert > Make Stack.**



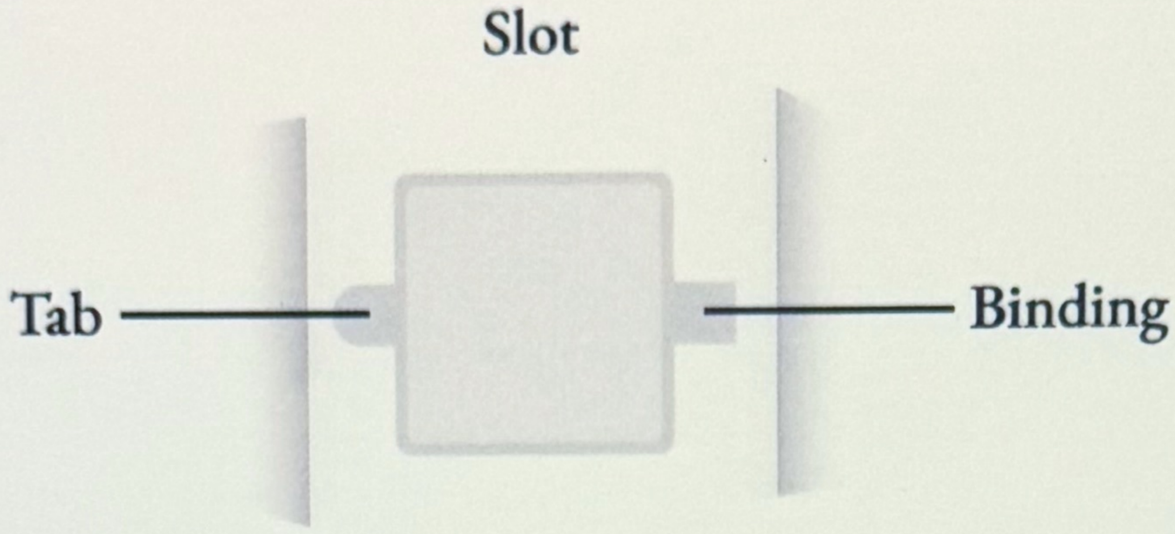
Touch the stack with your finger and drag in any direction to fan the stack. When the stack is fanned, you can adjust any of the individual values with the pen.



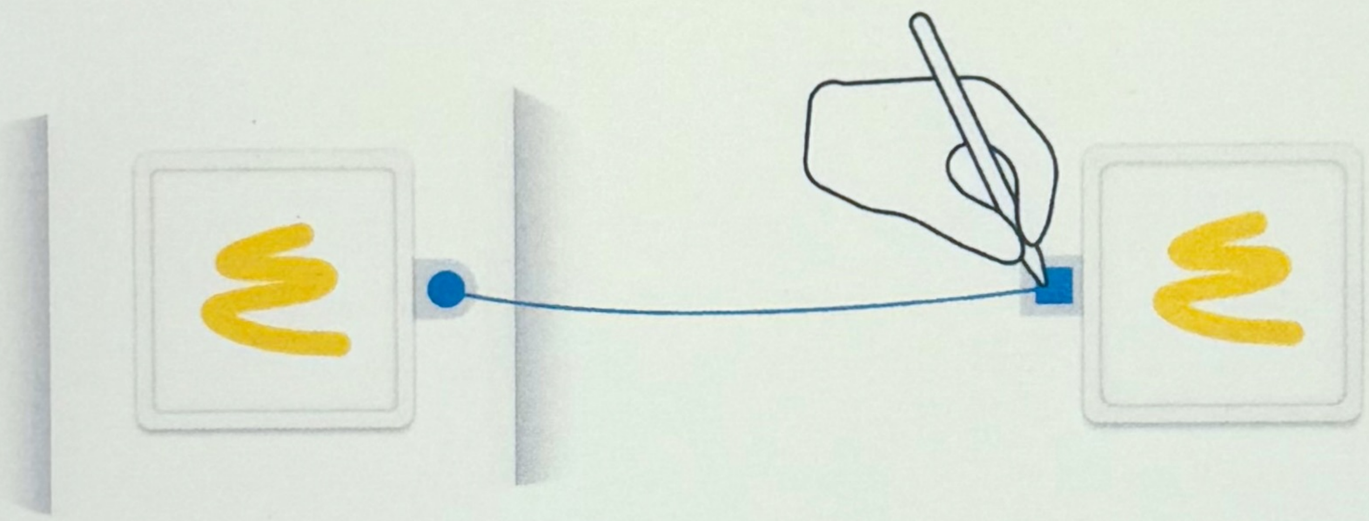

Do we want to include more detailed fanning behaviour?

## Slots

Each card in the property panel is placed in a slot. The slot is what establishes the meaning of each property.




Place the pen on a slot tab, then slide away to make a copy of the slot and card.



The new copy is connected to the original with a whisker. The tab moves to whichever side of the slot is best for the whisker.

Tap either slot tab to toggle the visibility of the whisker.

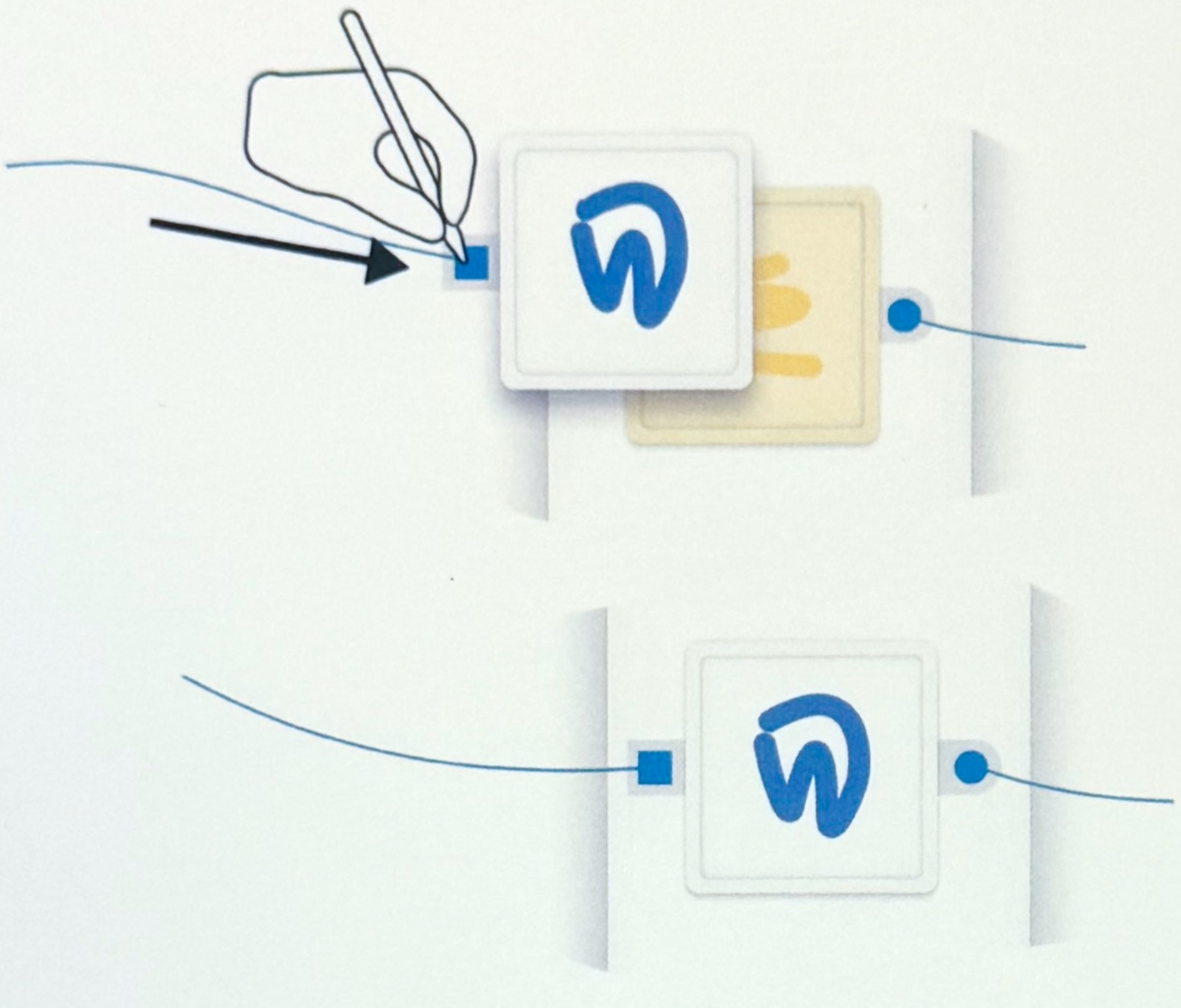
When you change the value of a card in a slot, all connected slots are updated to match. When you move a card onto a slot, the new card replaces the original.

The binding behaves similarly to the tab. For now, think of them as equivalent. The differences will become clear as you read the **PlayBook User Guide: Volume II**.

## Overriding

When you move a slot, you'll notice certain other slots are highlighted, indicating that these two slots are compatible.

Place one slot atop a compatible slot to create an override.



The slot being overridden will now use the card in the slot that was placed atop it, temporarily changing the value used by any materials associated with that property.

Place the pen on the binding to pull the overriding slot away. The property returns to its original value.



For two slots to be compatible, two conditions need to be met. First, they need to contain the same type of card — color and color, or number and number, for instance. Second, if the slot being moved contains a stack, the other slot must have a stack of equal size.

confusing!

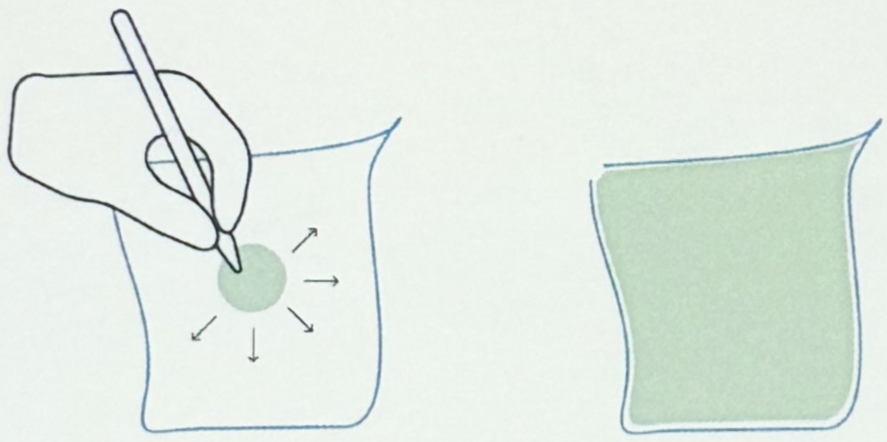
Properties, cards, stacks, slots, and overrides. These features are already useful for quickly manipulating large drawings and pages of writing. In this section, we'll explore the final key pieces you'll need to build your own tools and customize PlayBook to suit your unique needs.

### Flux

Programming in PlayBook is built from selections and properties. But how do you create selections programmatically? That's where flux comes in.

Flux is a material that creates a dynamic selection. It spreads through other materials and across small gaps of space, collecting all the things it touches so that you can work with their properties dynamically.

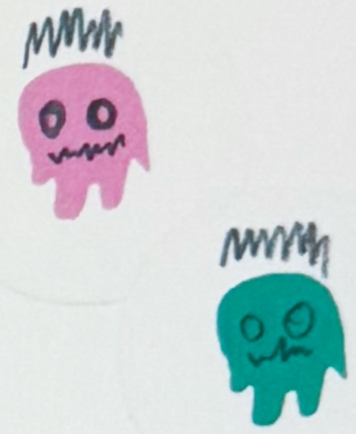
Flux is a material you can draw, so you'll find it in the shelf. Tap the flux icon with the pen, then draw to place flux.



Press firmly or lasso to select flux. Flux behaves quite a bit like ink when selected. You can move, rotate, and resize it.

Flux has a handful of properties you can use to customize how it looks and how it spreads. These are available — you guessed it — in the property panel.

It also has a special property, contents, which acts like a selection of all the things contained within the flux.

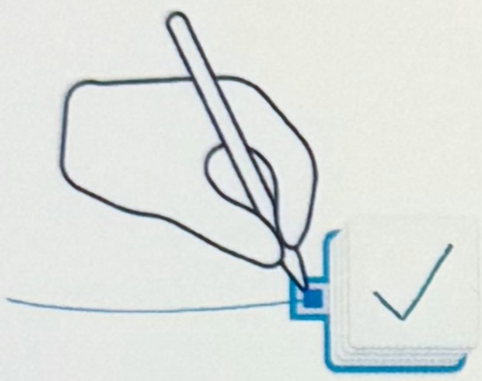


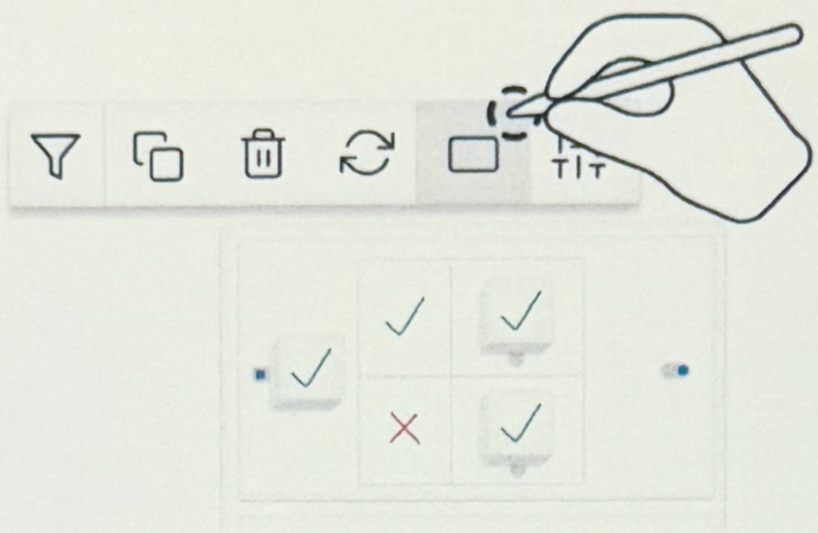
Consult the **PlayBook User Guide: Volume II** to learn advanced techniques for controlling the spread of flux through space and across materials.

## Nodes

Nodes are small units of computation that act on cards, transforming them or taking actions automatically based on their values. This is how you program in PlayBook.

To get started with nodes, first make a copy of a slot from the property panel. Firmly press on the slot tab to select the slot. Then, from the action bar, tap the Nodes button.



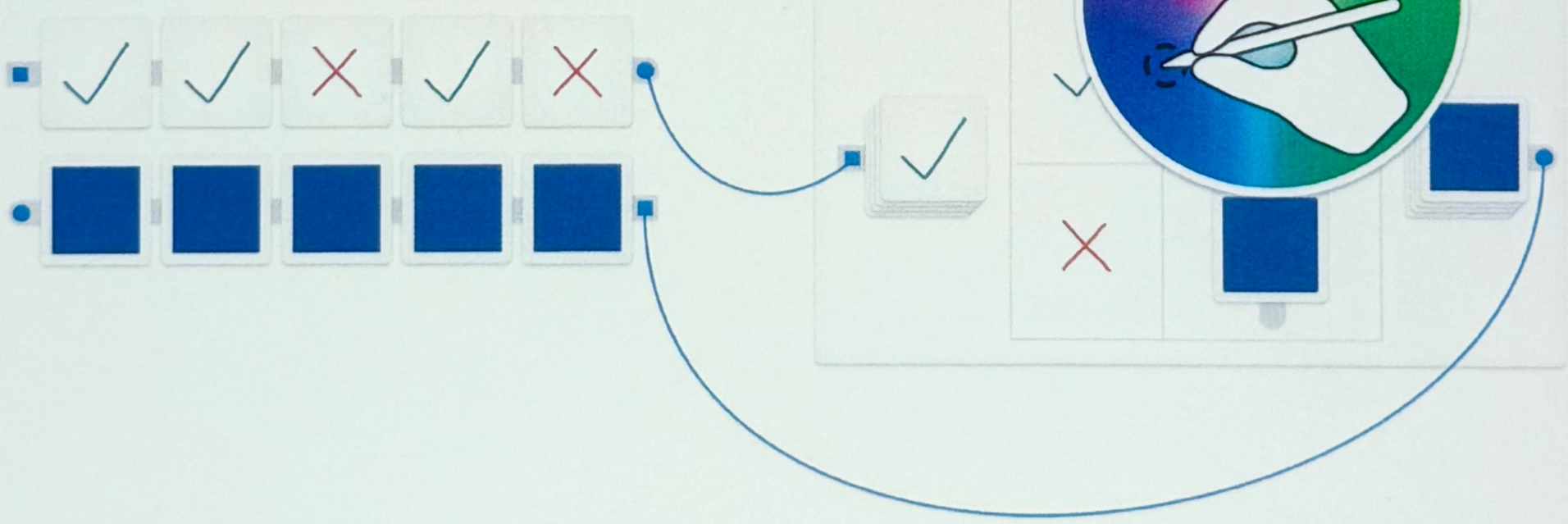



Scroll through the list of nodes with your finger.

You can immediately see how each of these nodes will work with the selected slot.

When you've found a node that you'd like to use, tap it with your finger or the pen. It will appear in place around the selected slot.

Continue programming by pulling out another slot from the node you just created, creating more nodes as needed, and using slots to override properties.



You can think of a program as a "recipe for values".

This is all too abstract. Need a walkthrough?

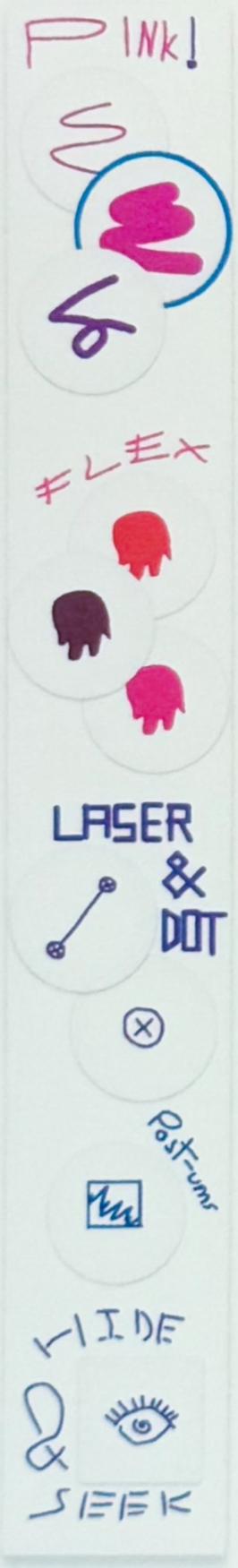
### Organization

When you've created a useful program, you'll often want to use it without the nodes cluttering your workspace, and reuse it on other pages without duplicating the nodes. Here are a few ideas for how you can organize your programs to keep them handy while keeping your space tidy.

One option is to put the nodes on a piece of paper, and then stash the paper off to the side.

Another option is to move the nodes to a different page.

At the bottom of the shelf, tap the Eye icon to open a special property panel. From here, you can quickly toggle the visibility of whiskers, pin & beam, and flux.




### Customization

All the interface elements in PlayBook are made from materials. The shelf, action bar, property panels, and nodes are made of paper. You can draw on them. You can put things on them.

Customize the space and make it your own.

In the **PlayBook User Guide: Volume II**, you'll learn how to build your own entirely custom interface elements.

From video, sound, and pictures to text, numbers, and code, cards are the key thing that makes PlayBook a multimedia-rich notebook. Below, you'll find a comprehensive list of the types of cards available for you to use, how you can create and manipulate them, and how to best use them together.

### Number

The number card represents numeric values, useful for measurement and calculation alike. You create a num' card just like any other — by tapping the card ic shelf and choosing the number card in the p appears — but they're also so commonl panels and nodes that you may fin existing card.

### Text

The text card repres writing text. You c tapping the card in the panel th used in prope to duplic