

METAPILOT • SEASON 1

MetaPilot

Book 1 • The Guide

A Tech-Clumsy Illustrator's
VR Flight Adventure



“Just once, I want to fly
the sky with my own hands.”

GraceFlight

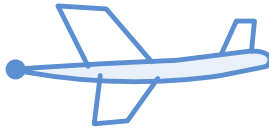
MetaPilot

Book 1 · The Guide

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GGsF

MetaPilot Season 1 · Book 1: The Guide

A Tech-Clumsy Illustrator's VR Flight Adventure

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The characters and events in this book are fictional; the story is based on flight-simulation training content. The training in this book is for simulator practice and learning only and does not replace real flight training.

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How to Read This Book

This book is both a training manual and a novel.

Our hero, Kaya, is a freelance illustrator who is hopeless with machines and computers. Install errors, VR motion sickness, botched landings: she goes through every stumble a first-time sim pilot will face, so you don't have to. Following in her footsteps, you'll learn to choose your gear, set it up, take off and land, as naturally as reading a story.

The story flows in three parts.

- **Part 1 • Laying the Runway** — Flight controls, the PC, and installation. It all starts at Tita's PC café.
- **Part 2 • Learning the Sky** — Twelve flight lessons with Tutor Ray.
- **Part 3 • Flying with My Own Hands** — The checkride in the skies over Bora Bora.

Every lesson ends with an **At a Glance** box that sums up the key points from the story. At the back of the book you'll find the **Gear Checklist**, the **Cessna 152 Key Numbers**, a **Flight Glossary**, and a guide to **Flight Simulator Apps**. Open them whenever you get confused mid-flight.

Just read it from the start, in order. Lessons 10–12 are the Advanced course, flying through cloud on instruments alone; if you can't wait to fly, skip them and come back after your graduation flight.

Wherever a move is hard to follow, you'll see a ► mark. Tap it to open a short video of that move.

The MetaPilot series continues one book per season. In Season 1, this book (Book 1, The Guide), you learn the basics of flight in a Cessna 152. In Season 2 (Book 2, The Tutor) you fly WWII propeller planes with Ray, and in Season 3 (Book 3, The Instructor) you take on the F-16C with the by-the-book Instructor SeaGAL. Alongside them come a build-it-yourself flight stick manual (Book 4, The Flight Gear Manual) and a spin-off.

Now, shall we start the engine?

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Meet the Characters CAST



Our hero

Kaya

Freelance illustrator

- Dreamed of becoming a flight attendant as a kid, then forgot all about it under the weight of real life. A dreamer at heart.
- Hopeless with machines and computers. Instead of “What does this button do?” she asks, “Am I allowed to fly through that cloud?”
- Not much knack, but plenty of grit. She learns to fly by crashing into every problem headfirst.

Role The reader’s stand-in

Install errors, VR motion sickness, botched landings: Kaya goes through every mistake a beginner will make, and grows by solving them. Stuck in a slump and hunting for inspiration, she stumbles on 『MetaPilot』 in a bookstore and impulse-buys the gear.

“Just once, I want to fly the sky with my own hands.”



Book 1 · The Guide

Tita

Owner of Titan PC Café and hardware engineer

- An expert who can take machines apart and put them back together with her eyes closed.
- Blunt to the bone: “That graphics card? Not a chance.”

- But behind the scenes she tunes your PC and even builds your flight gear by hand. A gruff, soft-hearted ally.

Role The fixer of Book 1, The Guide

Acts cool and indifferent, but turns out to be dead serious about flight simulation.



Book 2 · The Tutor

Ray

Former fighter-pilot hopeful · MetaPilot tutor

- A nonstop compliment machine. Kaya just starts the engine and he tells her she has “a natural gift.”
- The best flight teacher around, explaining tricky aerodynamics with feel-it metaphors like “sensing the wind on your palm.”

Role Teacher of the Sky Classroom in Book 1 · Star of Book 2, The Tutor

A tutor in a virtual flight-sim club. He once dreamed of flying fighter jets, and now he teaches beginners in a virtual sky. Easygoing most of the time, but mention aviation history and his eyes light up and he talks twice as fast. His mission: keep Kaya from giving up before she meets the by-the-book Instructor SeaGAL.



Book 3 · The Instructor

SeaGAL

A pilot in a past life (probably) · Chief Instructor of MetaPilot Academy

- Procedure in human form. His catchphrase: “Flying isn’t a feeling, it’s science. Virtual or not, never take a life lightly.”
- Stingy with praise and merciless about mistakes, but his skill is the real thing.

Role Main villain and mentor of Book 3, The Instructor Handsome, but not a romantic bone in his body.

PROLOGUE

A Splash of Blue on a Gray Canvas

◆ 1. The Colorless Room

I draw fairy tales. My life, however, is not one.

[Hi! The main character's expression looks way too gloomy this time. Could you bump up the saturation a bit? Oh, and you remember the deadline is tomorrow morning, right?]

The client's email was bone-dry. My wrist ached around the tablet pen. The world on my monitor was a riot of pastel flower fields, but my tiny studio (about 20 m²) was colorless from wall to wall. Gray socks on the drying rack, convenience-store lunch boxes piling up for days, and my own puffy face reflected in the dark monitor.

I couldn't draw anymore. No—to be exact, it felt like I'd forgotten which colors to use.

I shuffled out in my slippers like someone on the run and gulped the cold air deep into my chest. Then, with no plan at all, I walked into a bookstore.

◆ 2. The Blue I Found Where I Ran To

The smell of paper. Books full of print were the one thing that still let me breathe. The “healing essays” in the bestseller corner offered the same old comfort, and the self-help books just cracked

the whip, all stick and no carrot, telling me to try harder. My eyes, with nowhere else to go, drifted to the “Tech/Hobbies” corner—a place I’d never have glanced at on a normal day.

Among books full of complex circuit diagrams and stiff coding jargon, one book stood out like it didn’t belong.

『MetaPilot』

It wasn’t the title that caught my eye first—it was the cover art. Not one of those covers plastered with machinery and zeros and ones. Through the right-hand cockpit window, an airplane was flying above a horizon so blue it made my chest ache.

◆ 3. Mayday

In that instant, a forgotten memory flashed through my mind.

I was about ten, on a plane during a family trip. While everyone else slept, I watched the view through a window no bigger than a hand mirror. The tangled roads and buildings below shrank to dots and vanished, until there was only a silent world of sky and me. My dream of becoming a flight attendant and seeing that view every day had been torn to pieces by the turbulence of college entrance exams and job hunting.

As if under a spell, I picked up the book. I turned a page, and one sentence leapt out at me.

“Turn your room into an airplane and travel the world.”

My eyes flew wide open.

“I can turn my room into an airplane and travel the world?”

“Yes, with this... maybe I could draw again? The colors beyond those clouds...”

I had a powerful feeling that if I didn’t dive into the world beyond the clouds right now, my life would stay gray forever. This

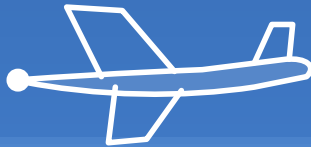
wasn't an impulsive decision. It felt like an answer to a **Mayday (distress call)** sent by my own subconscious.

◆ 4. Taking Wing

“A trip around the world in my own airplane? Sounds fun... heh.”

And so began my reckless, slightly ridiculous VR flying adventure.

Part 1



Laying the Runway

Gear & Setup — A Tech-Clumsy Artist Meets the Stick

The Giant Black Lump

◆ 1. A Package Full of Butterflies (Unboxing)

“Whoa... is this price for real?”

I clutched the back of my neck when I saw the total for the flight gear in my online shopping cart. Anything halfway decent cost way more than a month of my living expenses, and the cheap stuff looked as flimsy as a toy. And now the thing I’d finally worked up the nerve to buy was sitting in a box outside my front door.

The box was bigger than I expected. I swallowed hard. I’d been so eager to fly that I’d ordered the expensive stick advertised on the shopping site. Did I really order flight gear? They didn’t deliver an actual airplane wing by mistake, did they?

“Okay, shall we fly?”

Brimming with excitement, I sliced the packing tape with a box cutter. But the moment the box opened, my anticipation turned instantly into bewilderment.

Inside were chunky lumps of black plastic. I learned later that one was the stick and the other was the **throttle**. But to my eyes, one was just “a thing rearing up like a coiled snake” and the other looked like “gym equipment.”

Occupational hazard. Without thinking, I pulled over the sketchbook lying next to the box and started drawing the black lumps. The lever rearing up like a snake, the body like a piece of

gym equipment, red buttons sprouting everywhere. Strangely, while I was drawing lines, it felt a little less scary.

◆ 2. A Manual in an Alien Language

“Ugh... this is so heavy.”

I felt the cold touch of smooth curves, and mysterious red buttons and switches stuck out here and there like warts. The grip was far too thick for my hand; no matter how I stretched my thumb, it couldn’t reach the buttons on top. With a sigh, I opened the enclosed manual.

[System Requirement: DirectX 11, USB port required...]

“Di... Diet-X? And what’s a USB? Aren’t all the holes the same?”

The alien language on that palm-sized manual made my head spin. I shut it and started playing “spot the difference” with the holes in the side of my laptop. I jammed the cable into whichever hole looked about right. ▶^①

◆ 3. Takeoff Failed (Crash)

Following an installation video I found online, I first installed a free trial of some flight game. Then, after struggling for a while, I set the stick on the desk and put the throttle on its left.

“All right. Let’s fly!”

Wheeeeeeee—

My laptop fan started roaring like a jet on takeoff. The airplane on the screen stuttered—stop, stop—and then froze completely.

“Oh no, no! My work files!!”

Forget flying—the laptop I used for my illustration work, my livelihood, seemed about to explode. Cold sweat ran down my

back. The fan was screaming before I'd even started flying, so I shut the computer down in a panic.

◆ 4. SOS

I stared blankly at my flustered face reflected in the black screen, and suddenly a sign at the corner of my neighborhood popped into my head.

〈TITAN PC Café〉

There was no way I could set this up alone. I stuffed the expensive gear into a shopping bag and dashed out of the house.

The Owner of Titan PC Café

◆ 1. The Smell of Ramen and a Screwdriver

When I opened the door of the PC café—a Korean *PC bang*, the kind of 24-hour gaming room packed with high-end computers—the smell of ramen and dazzling LED lights hit me right in the eyes. Behind the counter, a woman with a pixie cut and sharp eyes had a screwdriver clamped in her mouth and was taking apart a computer tower.

“Excuse me... are you the owner?”

She looked up as if I were a nuisance.

“Use the kiosk to order ramen. If there are no seats, you’ll have to wait.”

“No, that’s not it...”

Hesitantly, I pulled the flight gear out of the shopping bag and set it on the counter. Clunk. At the dull thud, the owner’s eyebrow twitched. Her eyes darted quickly between my face, the flight gear, and the laptop I was hugging. She put down the screwdriver, folded her arms, and asked:

“Oho? Nice stick. Planning to play a flying game?”

“Oh, yes! When I connect this... to my laptop, the screen dies...”

Titan PC Café, where I’d dropped by a few times before to get my laptop fixed. Hoping for help, I held out my laptop. The name tag on her apron read “Tita · Owner.”

◆ 2. Pretty Trash

But she didn't even open it. She just looked at my laptop for a moment and let out a snort of laughter.

"Ma'am. You're trying to run a flight simulator on this pretty trash?"

"Sorry? Pretty... trash?"

"This is a laptop. Sure, it's a high-end one, but running a flight sim on integrated graphics? Not a chance."

"Th-then what do I do? I finally worked up the nerve to buy all this flight gear..."

Seeing me on the verge of tears, Tita let out a deep sigh. She took something out of the counter drawer and tossed it in front of me. It was a computer parts catalog.

◆ 3. First, Build the Runway (System Requirements)

"Sit down for now. Before we get any airplane in the air, we'd better build the runway first. Normally you'd need a gaming computer, not a laptop."

Her eyes flashed once more in the blue LED light. Like a predator that had spotted its prey—or maybe it was the fond look of an engineer watching a quirky artist who'd shown up out of nowhere with flight gear in a shopping bag.

"Do I have to buy a new computer?"

I asked, my voice almost resigned. She answered:

"Hold on." Only then did she open the laptop, click around, and narrow her eyes. "Huh? This thing has a dedicated graphics card. It's been running on integrated graphics the whole time because of a power-saving setting. Switch it to high-performance mode,

compromise a little on the settings, and you can do it without a new computer.”

Get Your Own Stick. Or Borrow One

◆ 1. Playing the Piano with a Mouse?

The PC café owner, Tita, switched my laptop's power setting to high-performance mode and deftly adjusted the graphics settings. ▶②

“With these settings, you should be able to get through monitor flight training just fine.”

I felt relieved, but worry crept in too. Carefully, I asked:

“Tita... what if I just return this gear and fly with the keyboard? You can move the plane with the arrow keys, right?”

Thinking of the pricey flight gear that didn't even fit my hand, I slumped over the PC café counter and whined.

“Seriously... flying a simulator—not even a game, a simulator—with a keyboard is like playing the piano by clicking a mouse.”

Tita shot back with a look of disbelief.

“Besides, you said you're going to fly in VR too, right? You'll be blind in there, fumbling for keys you can't see, and you'll crash within a minute.”

“But it's way too big for me! The grip's as thick as a club, and my thumb can't even reach the buttons. And it cost a fortune, too...”

◆ 2. MetaPilot Special Edition

At my wail, Tita gave a meaningful smile. With a grunt, she hauled a plain brown cardboard box up from under the counter.

“It’s not like there’s no way at all. Here—the MetaPilot Special Edition.”

What came out of the box was different from the sleek plastic products I’d seen in stores. Faint horizontal lines (layer marks from 3D printing) showed on the surface, and the color was a mix of black and dark gray. It felt less like something stamped out in a factory and more like something carved in a workshop.

“What is this? What brand is it?”

“Brand, my foot. I made it myself. With a 3D printer.”

“What? A 3D printer? Then isn’t it just a plastic toy?”

◆ 3. A Grip Your Fingers Remember

I gripped the stick with a suspicious look. But... huh?

Snap—

The grip wrapped around my hand, surprisingly solid and sturdy. There was a button exactly where my thumb landed and a trigger exactly where my index finger rested. It was so comfortable, it was as if it had been made to fit the size of my hand and the length of my fingers.

“Huh? It feels... really nice and snug, actually!”

“Right? Products on the market are either pricey replicas of real aircraft sticks or gaming sticks with buttons scattered all over. But I built this one specifically for beginner flight training. So you can find every button by feel alone, even wearing a VR headset with your eyes closed.”

◆ 4. The Engineer's Aesthetic

Tita also brought out a hefty set of **rudder pedals** with two foot-plates. Sturdy aluminum profiles of the kind I'd only seen at hardware stores, springs, and bolts were all left bare. To me they looked like "a contraption built by an engineering student who'd lost all aesthetic sense," yet oddly, they gave me a sense of trust—"tough gear made exactly for training."

"These are the rudder—you work it with your feet. You need your feet to steer on the ground, and later, to land on a windy day. Take them home along with the stick and give them a try."

I nodded. This clunky but trustworthy gear was starting to look like wings that would carry me into the sky.

A Monster Lives Behind the Secret Door

◆ 1. Staff Only

I was about to leave with the PC café owner's homemade stick and rudder pedals and the shopping bag of gear to return when Tita called me back.

"Hold on. Before you lug all that heavy stuff home, why don't you take a look at the real thing?"

"The real thing?"

Tita headed for the steel door behind the counter. A red sign on the old door read '**STAFF ONLY / No Unauthorized Entry.**' Figuring it was a storeroom for ramen or a gear closet, I followed her.

When Tita punched in the code on the door lock, the door opened with a heavy clunk.

"Welcome. To my **Sanctuary.**"

The dark room was cool, and there was a distinctive mechanical smell in the air. Metal, oil, and electronic circuits.

◆ 2. The Hangar in the Back Room (Home Cockpit)

Tita flipped up a switch on the wall. Click, clack-clack— The track lights on the ceiling came on one after another, and my jaw dropped.

It wasn't a storeroom. It was a small hangar. And in the middle of the room, a giant "monster" lay crouched.

"What... is this? Is it a robot?"

It wasn't just a computer desk. A metal frame painted a dull matte gray, complex instrument panels and switches, and four thick hydraulic cylinders and motors holding the whole thing up. It was the airplane cockpit I'd seen in movies long ago. She said it was the cockpit of an **F-16 Fighting Falcon**.

"It's my number-one treasure. A **home cockpit** built 1:1 to the specs of a real F-16 cockpit. See the motors on the floor? The seat moves along with the flight."

◆ 3. Boarding the Viper

"Want to give it a try? A special service for a rare customer who walked in carrying flight gear."

As if under a spell, I stepped onto the footrest at Tita's offer and climbed up into the cockpit.

"You can keep your shoes on."

I carefully squeezed myself into the cockpit seat. It was much tighter than I'd expected. Controls wrapped around me on either side of my thighs. In front of me sat a monitor and a VR headset, and at my feet rose heavy rudder pedals that looked like gym equipment. It was as if I'd climbed right into the heart of a giant robot, and the cockpit felt strangely cozy.

"Okay, put on the VR headset in front of you and we'll start her up. Do what I say and don't panic."

Tita tapped away at a keyboard outside. Whummm— Wheeee—

Suddenly, the vibration of motors kicking in under the seat ran up through my backside. The displays (MFDs) on the instrument panel in front of me lit up with a green glow. The sharp whine of a

jet engine poured from the surround speakers and pounded my ears.

◆ 4. Full Afterburner

“Push the throttle! Full afterburner!”

she shouted. With my left hand, I pushed the throttle lever all the way. The runway on the screen rushed backward.

KA-BOOOOOOOM—!

At the same moment flames roared out of the fighter’s exhaust on the screen, my body was thrown back hard.

“Oof!”

The whole simulator had tilted backward to imitate the **G-force** that pushes your body back when a real airplane accelerates. My brain, combined with the picture in the headset, mistook it for real acceleration.

“Now pull the stick back toward you.”

The jet shot into the sky. The seat jolted, creating the vibration of the climb. My body leaned whichever way the stick tilted, and when we punched through the clouds, I could even feel a faint shudder.

“So this is... what a real fighter jet is like.”

I murmured, looking back and forth between the airport spread out below and the sky. The vibration under my feet, the resistance at my fingertips, the smell of the cramped cockpit. Me, someone who’d never flown an airplane even once, had at that very moment become a VR fighter pilot for the first time. Or maybe it was my second time.

◆ 5. The Ticket to the Pilot's World

Once we were airborne, Tita switched on the autopilot, and all I had to do was look around. Thirty minutes went by like three. The flight on the screen stopped partway, and the jet and the motors stopped too.

“So? Think you can handle it?”

Tita grinned and pulled the headset off me. I must have lost my sense of space for a moment, because my legs wobbled as I climbed down from the cockpit. My heart was racing. The afterglow of that demo flight was so strong that the game scenery on the PC café monitors felt fake by comparison.

“Tita.”

“Yes?”

“That thing... how much did it cost?”

Tita burst out laughing at my question.

“Oh boy, your standards are way too high already. Get a light aircraft in the air first. You need solid basics before you can fly fighter jets or spaceships later, right?”

I looked down at the stick in the shopping bag that had seemed so expensive just a little while ago. It wasn't a mere toy anymore. It was an **“admission ticket”** to the world of pilots, where only a very few live.

“Okay. I don't know if I can do it, but I'm pretty excited. Someday...”

I turned and glanced back at the monster, asleep again in the dark. She said its name was **“Viper.”** Why a venomous snake?

Before I knew it, my finger was tracing lines on my thigh. The Viper's rounded canopy, its sharp nose. Tonight I'd try drawing that. It felt strange to want to draw again after so long.

The steel door closed. The engine in my chest had only just started warming up.

150 GB Just to Install? A Patience Test

◆ 1. So Many Flight Apps?

After getting my thrill in the secret hangar of Titan PC Café, I came home, looked at my illustration work, and felt motivated all over again. I was ready to throw open the window and take off right then and there.

But the moment I turned on my laptop and typed “**flight simulator**” into the search bar, I was paralyzed by choice all over again.

“Aren’t they all the same airplane game? Why are there so many?” ▶③

The prices were all over the place too. Some were cheap, and others cost more than a brand-new console game. If it hadn’t been for Tita’s note, I might have given up on flying right at this confusing gate. Without wasting any time agonizing, I unfolded the “Installation Guide” note Tita had slipped into my shopping bag.

◆ 2. Tita’s Guide to Picking an App

The note had a solution as bold and clear-cut as Tita’s handwriting.

Tita's Note**Which App Should I Pick?**

There are several kinds of flight simulator apps that let you fly light aircraft. Any of them works with this book, as long as it has the Cessna 152. (See Appendix D at the back of the book.)

Most of these apps are sold on PC game stores. With one store account, you can keep every app in one place, including the WWII fighters and jets you'll fly later.

Before you buy, check just two things: your PC's specs and storage space, and whether the aircraft you want comes included or has to be bought separately. Catch a store sale and you're golden.

"Aha, so there's a way to pick a flight app!"

I slapped my knee. An app with the Cessna 152 that runs on my PC. With a rule to go by, the messy list sorted itself out at a glance. And the store just happened to be in the middle of a sale.

"All right. With this, maybe I can blast all the way to graduation in one go? Totally doable."

Without hesitation, I hit the buy button. Feeling like a savvy consumer, I started humming.

◆ 3. Now Downloading Planet Earth (150GB)

Payment took one second. Now all I had to do was install it. But the moment I hit the "Install" button, I couldn't believe my eyes.

Required space: 152.4 GB / Estimated time: 8 hours 30 minutes

“A hun... a hundred fifty gigs? My laptop drive is only 500 gigs!”

The numbers were unreal. I’d heard games were huge these days, but this wasn’t a game—it was like downloading the whole **Earth**. I found out later that’s actually exactly what it was: terrain and satellite data of the entire world for flying.

The progress bar was slower than a turtle. 1%... 2%... 5... The laptop fan started to whirr. I stared blankly at the monitor. It was already getting dark outside. Today’s flight was a lost cause.

◆ 4. Waiting Is Training Too (Loading...)

On the desk lay the homemade 3D-printed stick that Tita had lent me to try out for a while. While the download crawled along, I took the stick in my hand. Click, click. I pressed the buttons, flipped the switches up and down, and rocked the stick up, down, left, and right. It looked clunky, but I really liked the way it felt in my hand.

‘I love how it handles. But the color’s a bit drab. My favorite color is pink... maybe I’ll repaint it someday?’

I took a pencil case of colored pencils out of the drawer and slipped a little pink onto the grip of the stick in my sketchbook. The drab black lump turned cute in an instant.

The download bar slowly filling on the monitor felt like the process of filling an airplane’s giant fuel tank.

‘Right, I guess waiting is training too.’

150 gigabytes. Thinking that inside that enormous file were the sky I’d fly through, the clouds, and the terrain and landmarks of the whole world made my heart beat strangely fast. I closed my eyes, holding the stick. The moment that gauge hit 100%, my room would no longer be just a cramped little studio.

Where should I fly?

▶ Scene Videos · Gear & Setup			short scene clips
No.	Scene · Watch it when...	Code	QR
①	Connecting the stick and throttle to your PC When the USB hookup confuses you	1-001	
②	Tuning graphics settings instead of buying a new PC When your laptop starts screaming	1-002	
③	Installing a flight app from a PC game store When you don't know which app to pick or how to install it	1-003	
Reading on a phone? Tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

Over My Neighborhood

◆ 1. Earth Has Arrived (100%)

[Download complete. Ready to play.]

When I opened my eyes, it was morning. The laptop I'd left on all night was snoring away with its fan. Green text glowed in the middle of the screen. It had said 8 hours 30 minutes, and sure enough, it had taken all night.

"Finally... Earth has arrived."

I set Tita's stick in the middle of the desk and gripped it with both hands. The chunky black grip fit snugly in my palm. My heart was pounding. Now I could really go to the sky.

The menu had a button labeled "Free Flight." A map screen popped up asking where I wanted to start. I typed my home address into the search box.

◆ 2. My Neighborhood from the Sky

The Earth on the screen spun around once, and then the camera began to sink slowly down through the clouds. I saw the sea, then a city, then a river, until at last a familiar neighborhood spread out beneath me.

On the screen, it happened to be sunset. Familiar rooftops passed by in the sunset glow. The convenience store where I

bought my lunch every day. The round sign of the bookstore where I'd bought the book. Far off, the <TITAN> neon sign twinkled, tiny. And between them, a building like a matchbox.

"That's my place."

I looked down at it for a long time. Somewhere in that building, behind one small window, was my room, where the light would be on even at this hour. That room, which had looked nothing but gray for months, was, from the sky, just one tiny dot among countless lights.

'So it was just a tiny dot.'

My room, which I'd thought was nothing but gray, was part of this neighborhood. Among the rooftops washed in sunset, the streetlights, and the convenience store sign, my room was definitely a patch of color too.

My eyes grew hot. I didn't know why. It wasn't sadness. For the first time in a long while, I could breathe.

On the desk sat my tablet, gathering dust for months. I opened the sketchbook beside it and picked up a pen. I drew a little airplane and the neighborhood dotted with lights. It was clumsy. But one color had come back to life at my fingertips. Sunset orange.

◆ 3. Then I Sat in the Cockpit

I picked an airplane. No need to think about it: the cutest one. A white Cessna 152 with red stripes. I set the runway closest to my neighborhood as the starting point and clicked "Start Flight."

The screen changed, and I was sitting inside the cockpit. And I froze right there.

In front of me were six round gauges, rows of switches below them, and knobs and levers sticking out everywhere. Every needle pointed at a different number. I didn't understand a single thing.

"...I've installed everything. So now what am I supposed to do?"

My hand on the stick grew sweaty. I felt like if I pressed something random, my laptop would start screaming again. Without touching a thing, I just stared blankly at the propeller spinning on the screen.

◆ 4. In Search of a Video Teacher

I picked up my phone and typed into the search bar:

‘how to fly a Cessna for the first time’

Dozens of videos poured out. But not one of them answered my question. One spent a whole hour explaining nothing but menu screens; another just rattled off an English checklist at top speed.

The most popular video started with the plane already in the sky. The expert in the video floated down onto the runway and said:

“Okay, when the runway fills your view, pull back smoothly.”

“...How smooth is smoothly?”

Part 2



Learning the Sky

12 Flight Lessons — with Tutor Ray

Professor Video, a Private Tutor, and VR

◆ 1. Professor Video Has Nothing to Say

“Okay, but what am I supposed to do first?!”

I was on my tenth replay of a beginner video lesson. The instructor in the video said, with infuriating calm, “When the runway fills your view, gently pull back,” and floated down onto the runway like a feather. But that video started with the plane already in the middle of the sky. How to start the engine, why you pull the stick, what someone sitting in a cockpit for the very first time should even look at—not one video told me.

“Where am I even supposed to start? And how much is ‘gently’ anyway?”

I argued with the screen, but Professor Video kept his silence. I dug through the comments and found only vague wisdom like “Practice more,” “Just do it right,” and “You have to get a feel for it.” The limits of self-study had never been clearer.

◆ 2. Ray, the Hype Man (Tutor Ray)

In the end, I clicked MetaPilot Academy’s **[Live Tutor Matching]** to call for help. A list of available instructors popped up with a bunch of profiles. One tutor’s bio, a guy named Ray, caught my eye.

[Notice · Chief Instructor SeaGAL] Do not treat your life lightly just because it's virtual. Basic course check rides are conducted strictly by the book.

"Treat your life lightly...?" I had no idea what that meant, but it sent a little chill down my spine.

[Flying isn't hard! I specialize in total beginners—I'll compliment you until you're dancing.]

"Compliments? That's exactly what I need right now."

I hit the [Request Lesson] button without a second thought. A moment later, the academy app chimed, and a fresh, bright voice came through my headset.

"Hi, Kaya! I'm Ray, and I'll be your tutor for basic flight starting today."

Just from his voice, I could picture a kind face. But my motivation was already in pieces.

(He had no profile picture, and his voice was so perfect that it crossed my mind he might not be a person at all, but an AI tutor.)

"Hi... but honestly, I don't think I can do this. There are so many numbers I feel motion sick just looking at them."

◆ 3. A Canvas Called the Sky (Flight is Art)

"Haha, everyone feels that way at first. Hey, you said you're an artist, right?"

"Yeah, an illustrator."

"Then how about thinking of this instrument panel as a '**palette**'?"

"A palette?"

Puzzled, I looked at the panel again.

“Yep. Flying is a lot like painting. Okay, see the ‘attitude indicator’ here? Blue is the sky, brown is the ground. That’s your canvas. It shows how close the airplane is to the blue paint we call the sky.”

After hearing that, I looked at the attitude indicator, and it really did look like a round canvas with sky and ground blended half and half.

“And the ‘airspeed indicator’ next to it is the speed of your brush. Too slow and the paint clumps, too fast and it splatters, right? Airplanes have a sweet spot for speed too.”

“Ah...”

It was fascinating. All those stiff mechanical gadgets suddenly started to feel as friendly as the tools I knew by heart.

“So? Let me draw a line on the canvas. Right now you’re sitting in the seat next to me in my plane. I’ll pull the stick back very gently, like a brushstroke—just watch the attitude indicator.”

As Ray slowly pulled the stick back, the airplane gently lifted its nose. The blue sky inside the attitude indicator filled the whole canvas.

“See? That’s one brushstroke!”

Ray sounded so excited that a little smile crept onto my face too. With this guy, somehow, I felt like I might actually fly.

◆ 4. The Hidden Item (VR Headset)

After hearing Tutor Ray’s comparisons, the cockpit started to feel a little less scary.

“Last thing for today. I’ll show you a landing. You just sit beside me and watch the runway.”

The plane Ray was flying began to descend toward the runway. But to my eyes, it was just a flat gray strip slowly getting bigger.

“Kaya, how far do you think we are from the ground right now?”

“I don’t know... I can’t tell if we’re touching down or still in the air.”

“That’s normal. Everyone feels that on a monitor. That’s why there’s ‘**that item**’ for times like this.”

“That item?”

“A VR headset. A monitor is a flat picture, so it’s hard to tell how much height you have left. In VR you see with both eyes, so you just feel the height and distance. And your body remembers that feeling in a few days. So there’s no need to buy one up front. Borrow one from the academy for a little while, and once you’ve got the feel, you can land just fine on a monitor with the screen and the gauges.”

◆ 5. A World That Broke Through the Monitor (Immersion)

Two days later, a box stamped with the MetaPilot logo arrived. Inside was a VR headset. Tutor Ray helped me set it up in time for my lesson, and I put the headset on.

“Whoa...”

The flat rectangle of the monitor vanished, and the world I’d felt in the Viper at the PC café came back—a world where I was really sitting in a cockpit. Tutor Ray’s voice came through the headset crystal clear.

“How is it? Can you feel the sense of space?”

“Yes, this is insane! I feel like I could reach out and touch the wingtip.”

“Okay, now look down at the runway again just like that. It’ll be different from before.”

I craned my neck and looked down. On the monitor, the runway had been just a flat gray strip; now it lay far, far below me, in full 3D.

“I can see it... I can just feel how high I am and how far away the runway is!”

“Right? People judge distance with two eyes. That’s hard to feel on a monitor. Now, I’ll take us down again. Feel that distance.”

◆ 6. I Could See the Ground (Depth)

The engine roared, and Ray’s plane pointed its nose toward the runway again. This time was different. I could feel the ground rushing up with my whole body.

‘Still high... a little more... a little more...’

I didn’t need to look at the gauges or do math in my head. The height and texture of the runway growing in front of me came straight through.

“Is it now?”

The words slipped out of me, and at that very moment Ray pulled back the stick. The plane rose just a touch, and then—screech—with a crisp chirp of the tires, it settled onto the runway. “Nice! The moment you said ‘now’ was exactly when I pulled. That feeling will be your secret weapon when you land in Lesson 6.”

At Ray’s words, I clenched my fist without even realizing it. The girl who’d been lost in front of video lessons had, with a tutor’s coaching and the secret weapon called VR, felt the “ground” for the first time.

“Thank you, Ray! How many days do I have this for? I’m going to practice and sightsee until I’ve gotten every penny’s worth!”

Real Dizziness from a Fake Sky

◆ 1. The World Beyond the Monitor (Virtual Reality)

Just putting on the VR headset made me feel like a pilot. It was an amazing gadget that tricked me into believing I was sitting in a cockpit. Today: the academy's 'VR adaptation course,' where you just sit in an airplane flying on autopilot and enjoy the view. I took a deep breath and put the headset on. Once I adjusted the lens focus, my cramped room vanished in an instant, and the cockpit of a well-worn Cessna 152 wrapped around me.

"Whoa..."

Another gasp escaped me. This was a whole different dimension from the monitor. Turn my head right, and there was the wing past the passenger seat; look up, and dazzling sunlight poured through the skylight. The depth of the instrument panel that a flat monitor could never give me, and the sense of the runway's end stretching far into the distance, lit up every nerve in my body. I felt like a real pilot.

I didn't need to touch the stick. The airplane started rolling down the runway on its own, slowly at first, then faster. When the nose came up, I vividly felt the ground drop away beneath me. I took another deep breath. Just then, the airplane banked to the left on its own and began a turn.

◆ 2. The Brain's Rebellion (Motion Sickness)

That was the moment.

“Ugh...!”

A sudden wave of nausea hit me right in the pit of my stomach, as if my insides were being wrung out. Cold sweat ran down my forehead, and the vivid scenery I'd been marveling at a second ago felt like a horrible prison. Motion sickness. And a brutal case of it.

I yanked the headset off, tossed it aside, and slumped over my desk. The world was standing still, but my head was spinning like a top.

◆ 3. The Lie Between Eyes and Ears (Sensory Conflict)

A sentence from the adaptation course's guide belatedly flashed through my mind.

‘It's because your eyes are flying, but your ears think you're sitting still.’

Was that what they called ‘**sensory conflict**’? Following the airplane's motion, my eyes were sending the signal, “My body is tilting left right now!” But the vestibular system in my inner ear, butt planted firmly in a cushy computer chair, was firing back, “What are you talking about? I haven't budged an inch.” ▶①

According to the most widely known explanation, my poor brain couldn't resolve the contradiction, so it concluded I was ‘hallucinating’ or ‘poisoned,’ and ordered me to throw up to get the toxin out. Supposedly it's proof that my body is perfectly healthy and normal, but that didn't make it any less miserable right then.

◆ 4. Fake Wind, Real Flight (The Fan Trick)

“This isn’t going to work.”

Before putting the headset back on, I turned the little desk fan in the corner to face me head-on. Whirr— a cool breeze brushed my forehead and cheeks. ▶②

I went back into the flight. This time, instead of the wobbling horizon in front of me, I kept my eyes on the fixed instrument panel and a distant ridgeline that didn’t move. It was amazing. The wind on my face felt like it was whispering to my brain, “You’re flying with the wind in your face right now.” Looking far away calmed the dizziness down a lot, too.

How to beat the real pain a fake sky gives you: fly with a ‘breeze’ that fools your body and the calm to keep your eyes on a ‘faraway spot’ that doesn’t move. And with that, I finished my VR adaptation training.

VR Motion Sickness Tips

Kaya’s Fan Trick

Motion sickness happens when the motion coming in through your eyes doesn’t match what the vestibular system in your inner ear senses. Nothing is wrong with your body; it’s a perfectly normal reaction.

- Point a fan straight at your face to give yourself the ‘feeling of flying with the wind on you.’
- Instead of the wobbling horizon, keep your eyes on the fixed instrument panel and a distant ridgeline that doesn’t move.
- If you feel dizzy, don’t tough it out—take the headset off and rest right away. At first, fly in short sessions of 15–20 minutes to let your body adapt.
- Stuttering frames make motion sickness worse. Lower your graphics settings to keep the picture smooth.

▶ Scene Videos · Chapter 8			short scene clips
No.	Scene · Watch it when...	Code	QR
①	Why do I get sick? Sensory conflict When you wonder where motion sickness comes from	1-004	
②	Try the fan trick When you want less motion sickness right now	1-005	
Reading on a phone? Tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

LESSON 1

My First Wings

Control Surfaces

◆ 1. Dancing with a Single Stick

In VR, I was sitting in a white Cessna 152 parked on the ramp. Tutor Ray's voice came through the headset.

"How did yesterday's VR adaptation training go?"

"Don't even ask. I almost threw up. I ended up flying with a fan blowing in my face."

For a moment, there was silence on the other end of the headset.

"...That's brilliant. I use that trick too."

"What? You get motion sick too?"

"Okay, Kaya. Before we start the engine today, shall we loosen up a bit?"

Instead of answering, Ray changed the subject, a laugh in his voice.

"Loosen up? Like, stretching exercises?"

"Kind of. Airplanes have joints too. Take that stick (joystick) you're holding and push it all the way to the left."

I flicked the stick hard to the left.

"Now look at the tip of your left wing."

I turned my head, and a plank-like piece on the back edge of the wing had popped up.

“Huh? Part of the wing lifted up?”

“That’s the ‘aileron.’ When the left one goes up, it catches the wind and the left wing goes down. Then the airplane tilts to the left. That movement is called ‘roll.’ Okay, now to the right!” ▶^①

When I pushed it right, this time the aileron on the right wing came up.

“Ooh... it looks like the airplane is waving ‘hi.’”

“Haha, I like that. Now pull the stick toward your stomach. Then look behind you.”

I pulled the stick back a little and looked back, and the back edge of the tail wing was tilted up.

“That’s the ‘elevator.’ When it goes up, it pushes the tail down, and in turn the airplane’s nose lifts toward the sky. That’s called ‘pitch.’” ▶^②

I pulled and pushed the stick, watching the tail wing nod up and down.

“That’s fun! It’s like controlling a giant jointed puppet.”

◆ 2. The Tail You Kick (Rudder)

“Last, and most important. Try pressing the pedals under your feet.”

I pressed down hard with my left foot. The vertical plank on the tail swung to the left.

“That’s the ‘rudder.’ Just like a boat’s rudder. It swings the airplane’s nose left and right, like shaking your head ‘no.’ That’s called ‘yaw.’” ▶^③

“Ah... with my hands I tilt (roll) and nod (pitch). With my feet I shake my head (yaw). That’s simpler than I thought.”

“The principle is simple. The catch is that flying is the art of blending all three to move in ‘three dimensions.’ So, ready to start painting with these joints?”

✈ Lesson 1 · At a Glance

- 1 Stick left and right → the ailerons move and the airplane tilts. This is roll.
- 2 Stick forward and back → the elevator moves and the nose goes up and down. This is pitch.
- 3 Press the rudder pedals → the rudder moves and the nose swings left and right. This is yaw.
- 4 No rudder pedals? Assign rudder to a stick twist or buttons, or turn on your app's auto-rudder feature instead (Appendix A).

▶ Scene Videos · Lesson 1			short scene clips
No.	Scene · Watch it when...	Code	QR
①	Ailerons and roll To see what the wings do when you move the stick left and right	1-006	
②	The elevator and pitch To see what the tail does when you move the stick forward and back	1-007	
③	The rudder and yaw When pressing the pedals confuses you	1-008	

Reading on a phone? Tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

LESSON 2

Six Eyes

The Six Pack

◆ 1. The Airplane's Five Senses

“Okay, now let’s turn our eyes to the instrument panel. See the six round gauges in front of you?”

“Yeah. Why are there so many?”

“Pilots call these ‘the Six Pack.’ Like abs, they’re the core—super important and super basic. If you can’t read these, it’s like driving with your eyes closed.”

I sighed and glared at the panel. Numbers and tick marks were scattered everywhere.

“It’s too complicated. I’m supposed to take all of this in at a glance?”

“Remember how I called the panel a ‘palette’ last time? Today we’ll squeeze out those paints one at a time.”

◆ 2. A Frame That Holds the Sky (Attitude Indicator)

Ray pointed to the gauge dead center, the one split half blue, half brown.

“This is the most important one. The ‘attitude indicator.’ It’s also called the artificial horizon. Blue is the sky, brown is the ground. The little orange wing shape in the middle is our airplane.” ▶①

“Oh, this one’s pretty intuitive. If the airplane tilts, the picture tilts too, right?”

“Exactly. It’s your reference point for setting the composition on the canvas we call the sky. More blue? You’re looking at the sky, so you’re climbing. More brown? You’re diving toward the ground.”

“Ooh... setting the composition. That totally clicks.”

◆ 3. The Speed and Height of the Brush (Airspeed & Altimeter)

“Then the one to its left, the ‘airspeed indicator,’ is the speed of your brush. If the brush is too slow, the paint clumps (a stall), right? And if it’s too fast, the bristles split (structural damage). The Cessna draws its prettiest lines when it stays inside the green band.”

“Inside the green band... okay.”

“The ‘altimeter’ on the right is the height of your brush. You read it just like a clock. The long hand is 100 feet, the short hand is 1,000 feet.” ▶②

“The other three are the heading indicator (which way you’re pointing), the vertical speed indicator (how fast you’re climbing or sinking), and the turn coordinator (how fast you’re turning). We’ll bring each of them out when a lesson needs it.”

After Ray’s explanation, I looked at the panel again, and the dizzying machinery looked a little different. Speed (the speed of the brush), attitude (the composition), altitude (the height of the brush).

“So? Now you can tell what kind of picture your airplane is painting, right?”

I nodded.

“Yeah. It finally feels like those needles are talking to me.”

“Great. Your brush and paints are ready, so shall we go draw some real lines?”

 Lesson 2 · At a Glance

- ① Attitude indicator: blue is the sky, brown is the ground. It shows the airplane's attitude—its 'composition.'
- ② Airspeed indicator: the Cessna is most stable when it flies inside the green arc. Too slow risks a stall; too fast risks structural damage.
- ③ Altimeter: read it like a clock. The long hand counts 100 feet, the short hand counts 1,000 feet.
- ④ The other three—heading indicator, vertical speed indicator, turn coordinator—come in one at a time when a lesson needs them.

▶ **Scene Videos · Lesson 2**

short scene clips

No.	Scene · Watch it when...	Code	QR
①	Reading the attitude indicator When the blue-and-brown display confuses you	1-009	
②	Reading the altimeter needles When you can't tell which needle counts thousands	1-010	

Reading on a phone? Tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

LESSON 3

Engine Start & Taxi

Start & Taxi

◆ 1. Waking Sleeping Beauty

“Okay, shall we get our airplane’s heart beating?”

Tutor Ray said. Nervous, I looked all around the cockpit. I’d assumed you just turn a key like in a car, but there seemed to be a lot of things to push and pull.

“Can’t I just stick the key in and turn it?”

“An airplane isn’t a princess you can wake with a kiss. You have to wake it up in order. First, turn on the red ‘master switch’ at the lower left and check that the fuel valve is open. Then the red lever on the right, the ‘mixture’—push it all the way in. That gives it fuel.” ▶①

I flipped the master switch on and pushed the red lever all the way in.

“Open the throttle just a finger’s width, and now turn the key. Just like starting a car!”

Tick, tick... whirr, whirr!

When I turned the key, the propeller made a struggling, grinding sound as it turned over. And then, a moment later—

Vrrrooom—!

With a crisp bang, the airplane shuddered. The propeller that had been sitting still began spinning hard, drawing a see-through circle.

“Whoa! It started! The vibration is no joke!”

“Congratulations. Your airplane has started breathing.”

“By the way, this is ‘Real Mode.’ The MetaPilot stick also has an ‘Easy Mode.’ Press the square switch once and it handles this whole sequence for you.”

“Then I could’ve just used that from the start!”

“Haha, Easy Mode is for after you know the sequence. Starting the engine is your first hello to the airplane. Today, say hello yourself, and once you’re used to it, use whichever is easier.” ▶②

◆ 2. Not Your Hands—Your Feet?

“Okay, now let’s move to the runway. This is called ‘taxiing.’ Release the brake and push the throttle in just a tiny bit.”

I released the parking brake and pushed the throttle in about the length of a fingertip. The airplane started creeping forward.

“Oh, it’s moving! Now I just steer with the wheel (the stick), right?”

Like a seasoned driver, I turned the stick to the left. But the airplane kept rolling straight ahead, as if laughing at my hand.

“Huh? Huh?! Ray! The wheel must be broken! The car won’t turn!”

“Haha! Kaya, what did I tell you in Lesson 1? Who’s in charge of turning the airplane’s nose?”

“Um... the rudder? My feet?”

“Right! On the ground, you drive an airplane with your ‘feet,’ not your ‘hands.’ No matter how much you turn the stick, all it does is wiggle the wings. Okay, keep your hands still and use your feet!” ▶③

◆ 3. The Drunken Duck

“Wait, what kind of driving uses your feet?!”

Flustered, I pressed the left pedal. The airplane swung hard to the left.

“Aaah! It turns way too hard!”

Startled, I hit the right pedal. This time it whipped to the right. My airplane wobbled down the taxiway in a zigzag, like a drunken duck.

“Whoa, whoa, easy! Don’t stomp the pedal—press it steadily. Gently, with the tips of your toes, like a piano pedal!”

“This is... way more sensitive than I thought. My hands are doing nothing and only my feet are busy, so it feels so weird.”

“You’ll need to get used to it. On takeoff and on landing, the only thing keeping you on the runway centerline is your ‘two feet.’”

◆ 4. Follow the Yellow Line

After a few rounds of trial and error, I slowly got a feel for it with my toes. Not stomping too hard, just pressing lightly as much as needed, and the airplane gradually started to behave.

“Good. Now, see the ‘yellow line (centerline)’ painted on the ground?”

“Yeah. The taxiway centerline.”

“Imagine that line running under your right leg, and follow it.”

“My right leg? Not the middle?”

“Because you’re sitting in the left seat. If you set your eyes that way, you’ll be right on the center. You’ve done line tracing when drawing, right? It’s exactly the same.”

I moved my feet as if I were tracing the yellow line with a brush. The wobbly duck finally started walking straight.

“Nicely done! We’re all the way up to the runway now. It’s finally time to take off.”

 Lesson 3 · At a Glance

- 1 Engine start sequence (Real Mode): turn on the master switch → check the fuel valve is open → push the mixture all the way in → open the throttle a finger’s width (about 1/4 inch) → turn the key. Use ‘Easy Mode,’ which starts everything at once with the stick’s square switch, after you know the sequence.
- 2 On the ground, you turn with your feet (rudder pedals), not your hands (stick).
- 3 Don’t stomp the pedals—press them steadily and gently with your toes, like a piano pedal.

 Scene Videos · Lesson 3

short scene clips

No.	Scene · Watch it when...	Code	QR
①	The start-up order, and where the mixture is When you can’t find the lever	1-011	
②	Easy Mode vs. Real Mode When you wonder how auto start differs from a manual start	1-012	
③	Taxiing with your feet When the plane won’t behave on the ground	1-013	

Reading on a phone? Tap the **bold title**. If the QR won’t scan, enter the code at metapilots.kr/v.

LESSON 4

The Power to Defy Gravity

Take-off & Climb

◆ 1. Full Power

I lined up dead center on the runway. More than 3 km of asphalt stretched out in front of me.

“Kaya, an airplane isn’t a car. There’s no such thing as ‘gently’ on takeoff.”

Tutor Ray’s voice turned firm.

“To break the giant shackle called gravity, you have to pour in every ounce of power the airplane has. Don’t hesitate. Shove the throttle all the way in!”

I gulped and pushed the black throttle lever all the way forward. VROOOOM—!

The engine roared. The plane shuddered and leapt forward. I felt the acceleration press my back into the seat.

“Feel the nose creeping left? A propeller plane pulls to the left when you add power. Right foot, gently! Remember Lesson 3? Your two feet keep you on the centerline.”

I pressed the right pedal a little, and the wandering nose swung back onto the centerline.

“Watch the airspeed indicator! See the needle moving? That’s called ‘Airspeed Alive.’”

◆ 2. Kicking Off the Ground (Rotation)

The rumble of the wheels on the pavement buzzed all the way into my fingertips. The airspeed needle swept past 40, 50, and pointed at 55 knots.

“Now! Ease the stick back toward your belly button. Like drawing a curve on canvas with a brush!” ▶①

I held my breath and pulled the stick. The nose lifted right up. Thunk, thunk... whoosh. The rough vibration of the runway vanished in an instant. A soft, floating feeling wrapped around my whole body, as if someone had lifted the plane up in their hands.

“Whoa... we’re up! We’re actually flying!”

“The force that lifts you like that is called ‘lift.’ Congratulations on breaking free of the ground.”

◆ 3. A Ladder to the Sky

The plane kept climbing. Outside the window, the houses shrank into toys, and the whole wide world came into view at once.

“Keep holding it back. Hold 67 knots on the airspeed indicator! That’s the speed at which the Cessna climbs most efficiently. It’s like climbing an invisible ladder into the sky.” ▶②

I strained to pin the needle on the number 67.

“Ugh... my arm kind of hurts? The plane keeps trying to put its nose down.”

“Of course it does. The plane still wants to pick up speed, so it keeps trying to run forward. The pilot has to rein it in and haul it upward. Let’s climb all the way to 1,000 feet!”

 Lesson 4 · At a Glance

- 1 There's no 'gently' on takeoff. Push the throttle all the way in for full power.
- 2 If the nose pulls left during the takeoff roll, press the right pedal gently to stay on the centerline.
- 3 When the airspeed indicator reads 55 knots, ease the stick back to raise the nose (rotation).
- 4 Hold 67 knots in the climb. It's the speed at which the Cessna climbs most efficiently.

▶ Scene Videos · Lesson 4			short scene clips
No.	Scene · Watch it when...	Code	QR
①	Raising the nose at 55 knots When you don't know when to pull	1-014	
②	Holding 67 knots in the climb When the nose keeps dropping during the climb	1-015	
Reading on a phone? Tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

LESSON 5

Level Flight, Trim, and Turns

Straight & Level, Trim, Turns

◆ 1. Arm-Wrestling the Airplane

The short needle on the altimeter pointed to 1 and the long needle to 0: 1,000 feet (about 300 m).

“Good. We’re at the height we want, so let’s fly level. Lower the nose and line it up with the horizon. As the speed builds, ease the throttle back to around 2,300 RPM.”

I relaxed my pull on the stick a little. The nose came down and the plane leveled out, and when I eased the throttle back, the engine noise settled down. But there was a problem.

“Ray! I can’t let go of this! The second I take my hand off, the plane either shoots up or tries to sink!”

I groaned, gripping the stick for dear life. If I relaxed even a little, the plane’s attitude fell apart.

“Is flying always this hard? My arm’s going to fall off.”

“Haha, I knew that was coming. It’s the most common mistake beginner pilots make. You’re arm-wrestling the airplane.” ►③

◆ 2. The Magic Wheel (Trim Wheel)

“Okay, let me show you how to make peace with the plane. See the black wheel standing upright below the stick?”

“Yeah. The one that says ‘TRIM?’”

“That’s the magic wheel. Right now you have to keep pulling the stick to stay level, right? So roll that wheel down (toward Nose Up), a little at a time.” ▶^①

Eyeing it suspiciously, I rolled the trim wheel down with a click-click-click.

“Huh? Wait, what?”

Something amazing happened. The heavy pressure of the stick pushing back against my hand slowly faded away.

“More, keep rolling. Until the stick stays put even when you completely relax your hand.”

(I learned later that in a virtual cockpit you can roll this wheel with the mouse, and assigning trim to buttons on the stick makes it far easier. Tita’s stick already had it set up.)

◆ 3. Hands Off, Still Flying

At some point, I took my hand off the stick, and the plane kept flying straight and true, as if drawn by a magnet.

“No way... I let go and it’s just flying! Did you turn on the autopilot?”

“Nope. You balanced the airplane. That’s called ‘trimming it out.’” ▶^②

I shook out my aching wrist.

“Flying isn’t about strength. You set up the balance like this, and then the pilot just nudges it lightly with two fingers. That’s how you get to look at the scenery around you and enjoy the ride.”

When I looked out the window, the beautiful clouds and the landscape below finally started to sink in.

“Wow... it’s so peaceful. I feel like I’ve finally loosened my grip on the brush.”

◆ 4. Bank, Pull, Release (Turn)

“Now that you’ve got some breathing room, shall we change direction? An airplane doesn’t turn by steering a wheel like a car. It turns by leaning.”

“By leaning?”

“Yep. Watch the attitude indicator and ease the stick to the left. When the little plane’s wings tilt about 20 degrees on the scale, bring the stick back to center. The bank stays put.” ▶④

I pressed the stick gently to the left. The horizon in the attitude indicator tipped onto its side, and the horizon outside began to slowly turn. But the long needle on the altimeter started creeping down.

“Ray, it’s turning, but we’re going down!”

“That’s why there’s a second beat. When you bank, some of the lift the wings make goes sideways, so the nose sags a little. Pull the stick back just a tiny bit to hold your altitude.”

When I pulled back slightly, the altimeter needle stopped where it was. The plane carved a big, smooth circle.

“Last beat: release. A little early—about 10 degrees before the heading you want on the heading indicator—tilt the stick gently the other way to level the wings. And let go of that back pressure too.”

Once the wings were level again, the plane flew straight on its new heading.

“Bank, pull, release. It’s like drawing a big curve with a brush.”

“Good. Enjoy it. But don’t enjoy it too much. The hardest part, ‘landing,’ is waiting for you.”

✈ Lesson 5 · At a Glance

- 1 Once level, ease the throttle back to cruise power (about 2,300 RPM).
- 2 If you have to keep holding the stick, fix it with trim, not muscle.
- 3 Turn the trim wheel a little at a time until the stick stays put even with your hand completely relaxed.
- 4 Flying is balance, not strength. Once you're balanced, you have room to enjoy the view.
- 5 Turning has three beats: bank about 20 degrees with the stick → pull back slightly so you don't lose altitude → level the wings about 10 degrees before the heading you want.

▶ Scene Videos · Lesson 5			short scene clips
No.	Scene · Watch it when...	Code	QR
①	Where the trim wheel is and how to turn it When you can't find the trim wheel in the cockpit	1-016	
②	What "trimming" really means When you wonder why the plane flies on with your hands off	1-017	
③	Relaxing your grip on the stick When you keep squeezing the stick too hard	1-018	
④	Bank, pull, release: a gentle turn To see how to turn the airplane	1-036	

Reading on a phone? Tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

LESSON 6

The Devil's Stretch: Landing

Landing & Flare

◆ 1. Aim for the Runway (Aiming Point)

Ray flew a wide circuit around the airport and set us up facing the runway head-on. “From here, it’s all yours, Kaya.” Far ahead, the long gray runway looked tiny, like a strip of masking tape stuck on a canvas.

“Okay, shall we head down? Ease the throttle back slowly to reduce power. RPM 1,500! And keep the airspeed around 65 knots.”

I pulled the throttle back. The engine noise softened and the plane began to sink.

“Ray, the ground’s coming up way too fast! I’m scared!”

“Don’t panic. You’re not falling, you’re riding down a ‘slide.’ See the number painted at the end of the runway? The spot that says ‘36.’”

“Yeah, I see it.”

“Keep that number locked in place at your eye level, so it neither rises nor sinks. That’s our ‘aiming point.’ In art terms, it’s like a vanishing point.” ▶①

I made tiny movements on the stick, fighting to keep that number pinned to the center of my view.

◆ 2. Waiting

The runway grew bigger and bigger. 300 feet, 200 feet... It got so close I could see the rough texture of the asphalt. Every instinct told me to yank the stick back and escape.

“Aaah... we’re going to hit! Do I pull? Do I pull now?”

“Not yet! Wait! Remember that sense of distance you first felt in VR? Hold on until the runway looks so big it’s about to swallow you.”

Altitude 10 feet (about 3 m). The moment when it really felt like the plane’s belly was about to scrape the ground.

“Now! Throttle all the way out (Idle), and move your eyes to the far end of the runway! Then pull the stick very gently... like lifting the tip of your brush!”

◆ 3. The Flare

I held my breath and pulled the throttle all the way out. Then I eased the stick steadily back toward my stomach.

‘Gently... like a brushstroke...’

The nose lifted slightly, and the plane, which had been diving at the ground, shifted into a level attitude. Hovering just above the ground, gliding on a cushion of air. This was the **‘flare.’** ▶②

BEEEEEP—!

Suddenly a shrill alarm rang out in the cockpit.

“Oh my god! What’s that noise? Is that an alarm?!”

“That’s a good sound! It’s the ‘stall warning (Stall Horn).’ The wings are screaming that they can’t fly anymore. When you land, you want to hear it. Now the plane stops flying and...” ▶③

Screech— A crisp squeal of tires, and a solid thump came up through my seat.

“Congratulations. You’re back on the ground.”

“Whoa... that just now felt exactly like skipping a stone.”

“Perfect analogy. Landing isn’t ‘slamming’ into the ground. You ‘fly’ just above it until the energy runs out and the plane settles down on its own.”

 Lesson 6 · At a Glance

- 1 On approach, reduce engine power to RPM 1,500, hold about 65 knots, and keep the runway number (the aiming point) fixed so it doesn’t rise or sink in your view.
- 2 At about 10 feet, pull the throttle to idle, look to the far end of the runway, and ease the stick back gently, like lifting the tip of a brush (the flare).
- 3 The stall warning that sounds now is normal. Landing isn’t ‘slamming it in’; it’s ‘flying until it settles down.’

► **Scene Videos · Lesson 6**

short scene clips

No.	Scene · Watch it when...	Code	QR
①	Locking in the aiming point When the runway numbers keep drifting	1-019	
②	Timing the flare When you don’t know when to pull	1-020	
③	Is the stall warning normal? When the horn startles you on landing	1-021	

Reading on a phone? Tap the **bold title**. If the QR won’t scan, enter the code at metapilots.kr/v.

LESSON 7

It's Okay to Let It Go

Go-Around

◆ 1. Coming In Too Fast

The next day, Ray said we were doing landings again. After yesterday's stone-skipping touchdown, I was feeling pretty full of myself.

"I'll do the landing on my own today. You just watch!"

"All right. I'll trust you, Kaya."

Ray brought us to the last straight stretch facing the runway—what he called 'final.' From here, it was my turn. The runway appeared straight ahead. But something felt off. The runway seemed to be coming at me faster than yesterday. The airspeed needle was hanging at the very top of the green arc, and the runway number was creeping down below my eye level.

"Kaya, you're high and fast."

"It's fine! I can just land like this. If I just pull the power back..."

"Go around."

"What? But we're almost there!"

◆ 2. Not an Eraser, a Fresh Sheet

"Kaya, when you're drawing and a line goes way off, what do you do?"

"Well... I scrub it out with an eraser and try again..."

“Sometimes, while you’re rubbing away trying to fix it all the way, the paper tears. In that case, it’s faster to pull out a fresh sheet.”

I glanced back and forth between the runway and the instrument panel and pouted.

“But... that’s giving up. Climbing back up without even landing once is embarrassing.”

“That’s called a ‘go-around.’ It’s a standard flying maneuver: if you don’t like how the landing is going, you start over from the beginning. It’s not giving up. It’s a judgment call.” ▶^①

Ray sounded as cheerful as always, but there was something solid underneath it.

“The runway isn’t going anywhere. What’s scarier is your impatience hitting the ground before the runway does.”

I let out a breath. Then I said it out loud.

“Going... around.”

◆ 3. The Go-Around in Five Beats

“Good. The sequence is simple. Count the beats and follow along.”

“Beat one: commit. Say ‘Going around!’ out loud. Say it, and your body follows.” ▶^②

“Going around!”

“Beat two: push the throttle all the way in. Don’t overthink it, give it everything.”

The engine roared louder.

“Beat three: raise the nose and climb. Don’t look at the runway, look at the sky.”

As I eased the stick back, the ground began to fall away. The runway that had been right under my nose slid back beneath my feet.

“Beat four: if you had the flaps down, wait until you’re climbing steadily, then bring them up slowly, one notch at a time. Don’t yank them all up at once. We’ll learn flaps properly in Lesson 9.”

“Beat five: then fly the traffic pattern again. You’re not erasing the line you drew, you’re drawing it once more from scratch on a fresh sheet.”

I took a deep breath. My heart was pounding, but strangely, my hands weren’t shaking.

◆ 4. The Second Runway

Ray flew us around the pattern and set us up on final again. This time I pulled the throttle back early. The airspeed needle settled at 65 knots, near the bottom of the green arc, and the runway number stayed glued to my eye level without budging.

‘Aiming point... locked.’

10 feet. Throttle to idle, eyes to the far end of the runway. I eased the stick back like the tip of a brush.

Screech—

The wheels touched the runway even more softly than yesterday.

“Whoa... it worked.”

“It’s okay if you can’t land on the first try. In fact, the more experienced the pilot, the more go-arounds they fly. A pilot’s skill shows not just in landing well, but in deciding, ‘This one isn’t going to work.’”

“So, Ray, does that mean I was just experienced?”

“Haha, just now you learned one ‘experienced judgment.’ That was an excellent first go-around.”

I smiled and nodded. It was the day I learned how to climb back up instead of giving up.

 Lesson 7 · At a Glance

- 1 If the approach is unstable (high, fast, or off the centerline), don't force it down: fly a **go-around**. A go-around isn't a failure; it's a standard flying maneuver.
- 2 The go-around beats: ① say "Going around!" out loud → ② throttle all the way in → ③ raise the nose and climb → ④ (if the flaps are down) once stable, bring them up one notch at a time → ⑤ fly the traffic pattern again.
- 3 A seasoned pilot is someone who lands well, and also someone who knows when to let a landing go.

▶ **Scene Videos · Lesson 7**

short scene clips

No.	Scene · Watch it when...	Code	QR
①	What is a go-around? When you wonder why go-arounds are needed	1-022	
②	The five-beat go-around, step by step When the order gets mixed up	1-023	

Reading on a phone? Tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

The Pilot in a Neck Brace

◆ 1. The Racehorse's Lament

"Ugh, this is so frustrating! Where's the runway?"

Back to practicing on the monitor, I muttered in a huff. With VR, all I had to do was turn my head to see to the side, but now that I was back to monitor flying, 'visibility' was a problem again. My plane was like a racehorse in blinders, only able to look straight ahead. To see whether the runway was beside me or behind me, I had to press keys on the keyboard. It was such a pain. "It's not like I'm wearing a neck brace, but I can't see sideways, so I can't fly."

VR is amazing, but strapping it on every time felt like it would make my eyes pop out (it's heavy and tiring), and as for the head-tracking gear I'd seen online that cost a small fortune, my heart (read: my wallet) just wouldn't allow it.

◆ 2. The Pilot's Neck (Hat Switch)

Just then, I heard Tutor Ray's voice.

"Kaya, have you practiced controlling the camera view?"

"Huh? The view?"

"That's why you're frustrated. The key to monitor flying is handling the 'virtual camera' well."

Tutor Ray pointed to the little cone-shaped button that moved in four directions on the stick Tita had lent me.

“That’s the ‘hat switch.’ Think of it as the pilot’s neck.” ▶①

“This button?”

“Yep. You watched the academy video lessons, right? The stick already has 3 camera view modes set up. Go on, give it a press.”

I carefully clicked the hat switch to the left. The screen swung—over to the cockpit’s left window.

“Okay, got camera 1, the cockpit camera? The pilot’s view is camera 1.”

“Yeah... so the hat switch turns the pilot’s head.”

“Now let’s check out camera 2, the ‘External View.’ Press the external camera button.”

Click.

“Now you’ll see the plane you’re flying from outside the plane. How’s that? Familiar, like the games you always play, and your favorite shot, right?”

“Whoa! Was my plane always this pretty? With the clouds around it, it looks like an actual painting!”

“And the most important one, camera 3, the ‘Target View.’ It shows you the airport, the runway, or wherever you want to look.”

◆ 3. Camera Walking & Composition

As I moved the hat switch this way and that, the scenery on screen danced freely. Even while flying and looking ahead, a flick of my thumb showed me the view past the wing, or even my plane’s belly. It seemed like a few rounds of practice would make it second nature.

“Kaya, adjusting the view isn’t just for sightseeing.”

Ray’s voice turned serious.

“The monitor is small, but the world changes depending on where you put your eyes. Front, back, left, right, up, down. You need to

be good at this ‘camera walking’ so you can picture in your head ‘where my plane is right now and what attitude it’s in.’”

“Ah... I think I get what you mean. You’re telling me to set up the composition, right?”

“There you go! You’re an illustrator, so you catch on fast. You fly the plane with your hands, but you read the situation through this ‘camera angle.’”

◆ 4. Magic for the Price of Two Coffees (Webcam Eye Tracker)

Just as I was getting used to whipping the view around with the hat switch, Ray passed along another great tip.

“Now that you’re used to turning with your thumb, how about one more bit of magic? You have a webcam at home, right?”

“Yeah, I have one I use for video calls.”

“With that and an ‘eye tracker’ app that reads your head movement through the webcam, you can fly even more comfortably. No expensive gear needed. It’s about the price of two coffees.” ▶②

I installed the app Ray told me about and turned on my webcam. Red dots began tracking my gaze, following the movements of my eyes and head.

“Huh? Whoa?!”

When I turned my head slightly to the right, the view on the monitor smoothly panned right too. When I looked at a corner of the screen, the camera view shifted its gaze over there as well.

“Whoa... this is so cool! I’m not wearing VR, but it feels like VR!”

“I recommend using the hat switch or the webcam for practice, and VR for experience flights or event flights.”

◆ 5. Ready, Action!

I was no longer a frustrated racehorse in blinders. I checked the runway at my ten o'clock with the hat switch, scanned the instrument panel naturally, and now and then popped out to the external view to admire a 'shot of a lifetime' of my plane glowing in the sunset.

"Ready... action!"

Muttering to myself, I carved a gentle 20-degree banked turn, just as I'd learned in Lesson 5. From now on, I could follow the academy video lessons easily. The plane moved wherever my eyes went, and my plane, once trapped inside the square frame of the monitor, and my once-dull palette were expanding into infinity.

I had become both a pilot and the film director shooting my own flight vlog.

View Control Tips

The Hat Switch's 3 Cameras

- Camera 1, Cockpit Camera: The pilot's view. Use the hat switch to turn your 'head' and look around.
- Camera 2, External View: A view of your plane from outside it.
- Camera 3, Target View: Shows the place you want to see, such as the airport or runway.
- Recommended: practice with the hat switch or a webcam (an eye-tracker app), and use VR for experience and event flights.

▶ Scene Videos · Chapter 9			short scene clips
No.	Scene · Watch it when...	Code	QR
①	The hat switch's 3 cameras When cockpit, external and target cameras confuse you	1-024	
②	Setting up a webcam eye tracker When you want to look around with your head, no VR needed	1-025	

Reading on a phone? Tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

LESSON 8

A Lost Child and a Compass

Dead Reckoning

◆ 1. Driving Without a GPS

After a successful round of takeoff and landing practice, we climbed back up to 3,000 feet.

“Kaya, can you find your way when you’re driving without looking at the GPS?”

“What? No way. I’m so bad with directions I get confused by ‘turn right in 300 m.’”

“Uh-oh. The Cessna 152 doesn’t have a moving-map GPS that draws your route on a screen. Today we’ll find our way using only the view out the window, a map, and a compass.”

“Seriously... how am I supposed to find anything in a sky as wide as the open ocean? That’s a perfect recipe for getting lost.”

“Don’t worry. Seen from the sky, the ground is one giant ‘map.’ Take a look down.”

◆ 2. The World’s Giant Lines (Pilotage)

I looked down below the wing. Winding rivers and gray roads were tangled together.

“When you draw illustrations, you set up ‘guidelines,’ right? Flying is the same. See that long highway stretching out over there? That’s our guideline.”

“Oh, like the guide lines under a sketch?”

“Exactly. We’re going to follow that road all the way. When the road curves right, we curve too, and when a river shows up, we follow the river. Navigating by reading landmarks like this is called ‘pilotage.’” ▶①

I banked the stick and flew right above the highway. I could see toy-like cars running in rows.

“Wow... the cars down there are totally jammed, but my road is wide open. This feels amazing!”

◆ 3. Calculating Time and Speed (Dead Reckoning)

“Don’t just look at the scenery. Start the stopwatch next to you.”

“Why the stopwatch?”

“We’re flying at 100 knots, right? At 100 knots you cover about 1.7 nautical miles a minute—about 17 nautical miles (31 km) in 10 minutes. Put a ruler on the map, find what lies 17 miles ahead, and predict, ‘In 10 minutes, that mountain should show up.’ That’s called ‘dead reckoning.’” ▶②

“Ugh... it’s math class. I’ve got a sudden headache.”

“Flying looks like a romantic landscape painting, but underneath it’s a ‘blueprint’ built on meticulous math. And if that mountain doesn’t show up in 10 minutes?”

“If it doesn’t?”

“It means the wind is pushing you somewhere you didn’t mean to go. That’s when you really start getting lost. Stay sharp!”

✈ Lesson 8 · At a Glance

- ① Pilotage: Navigating by following ground features like highways and rivers as your ‘guidelines.’
- ② Dead reckoning: Calculating distance from speed and time to predict ‘what should appear in so many minutes,’ and reading any mismatch as a sign the wind is pushing you off course. Example: at 100 knots, about 17 nautical miles in 10 minutes.

▶ Scene Videos · Lesson 8

short scene clips

No.	Scene · Watch it when...	Code	QR
①	Using a highway as your guideline When you wonder what pilotage is	1-026	
②	Estimating position from time and speed When dead-reckoning math feels hard	1-027	

Reading on a phone? Tap the **bold title**. If the QR won’t scan, enter the code at metapilots.kr/v.

LESSON 9

The Invisible Roads in the Sky

Traffic Pattern

◆ 1. Drawing a Rectangle

“Kaya, just because we’re back at the airport, can we fly straight at the runway and stick it in?”

“Hmm... if there are no other planes, wouldn’t that be okay?”

“Absolutely not. The sky has rules too, like an intersection with no traffic lights. There’s an agreed-upon path that circles around the airport, and it’s called the ‘traffic pattern.’” ▶^①

Ray drew a huge rectangle on the screen. It looked like a transparent track wrapped around the runway.

“The traffic pattern has five legs. Upwind, where you take off and climb straight out along the runway; Crosswind, where you turn 90 degrees; Downwind, where you fly parallel to the runway; Base, where you turn 90 degrees again; and Final, where you face the runway head-on. Think of it as drawing a giant rectangle in the sky, usually about 1,000 feet above the ground. Today we’re coming back from outside, so we’ll join at the downwind.”

◆ 2. The Downwind Leg

We flew parallel alongside the runway. Out the window, I could see the runway sliding past in the opposite direction from the way I was heading.

“Okay, you’re flying parallel to the runway now, right? You’ve got the wind at your back, so this is called the ‘downwind’ leg. You need to finish all your landing prep here.”

“Landing prep?”

“Yep. Slow down, lower the flaps one notch, and report to the tower, ‘I’m coming in to land.’ Hectic, right? Flaps lower the back of the wing so the plane keeps flying well even at low speed. On the Cessna, they keep going down as long as you hold the switch, and you check 10, 20, or 30 degrees on the indicator beside it.”

I fumbled to press the flap switch down to 10 degrees and checked the instrument panel.

“The runway’s getting farther behind us. When do I turn?”

“When the end of the runway is at a 45-degree angle behind your shoulder! That’s your turning point.”

◆ 3. Base & Final

“Now! Turn left 90 degrees! This is called the ‘base’ leg.” ▶②

I banked the stick. The plane began approaching at a right angle to the runway.

“Okay, now the last corner. Left 90 degrees again! This is ‘final.’”

After two turns, as if by magic, the runway appeared dead ahead at twelve o’clock.

“Wow... that’s amazing. Since you turn at set points instead of just going by feel, it lines up perfectly.”

“Right. Flying the pattern is like laying down invisible rails in the sky. Draw this rectangle well and you can land safely at any airport in the world.”

“By the way, Chief Instructor SeaGAL hates ‘turning by feel’ more than anything. Turning at set points—make sure you remember that.”

 Lesson 9 · At a Glance

- 1 The traffic pattern is a rectangle in the sky surrounding the runway, made up of five legs: upwind (along the runway after takeoff) → crosswind (90-degree turn) → downwind (parallel to the runway) → base (90-degree turn) → final (another 90-degree turn). When coming back from outside, you usually join at the downwind. The pattern is usually flown about 1,000 feet above the ground.
- 2 Finish all your landing prep on the downwind: slow down, lower the flaps, and report your intention to land to the tower.
- 3 When the end of the runway appears 45 degrees behind your shoulder, that's the point to start your base turn.

 Scene Videos · Lesson 9

short scene clips

No.	Scene · Watch it when...	Code	QR
①	The five legs of the traffic pattern When the leg names from upwind to final get mixed up	1-028	
②	Where to start the base turn When you don't know when to turn	1-029	

Reading on a phone? Tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

LESSON 10

A Walk in the Clouds

Instrument Flying Basics · Advanced

◆ 1. The White Prison (Whiteout)

“Okay, now I’m inviting you into a situation where you can’t trust yourself, Kaya. I’m going to change the weather settings a bit.”

As Ray worked the menu, the clear sky turned ash-gray in an instant. We had flown into thick cloud.

“Whoa... I can’t see anything! The windows are all gray!”

Outside was like the inside of a can of white paint, with no telling up from down. The ground, the sky, the horizon—all gone.

“This is an ‘instrument flying’ situation. From now on, your eyes don’t belong outside the window, Kaya. They belong only on the instrument panel.”

◆ 2. Fake Signals from Your Body (Vertigo)

“Okay, hold level flight. Is the plane flying straight right now?”

“Yeah... I think so? It feels level.”

I answered confidently. But Ray’s voice was cold.

“Really? Look at the ‘attitude indicator’ again.”

I looked at the panel and nearly jumped out of my skin. The little plane in the artificial horizon was banked a steep 30 degrees to the right, and the altitude was dropping fast.

“Huh?! What’s going on? My butt definitely feels like it’s sitting up straight!”

“That’s ‘spatial disorientation (Vertigo).’ When the visible horizon disappears, your brain and inner ear (the vestibular system) start sending bogus signals. Your body feels upright, but in reality you’re going down.” ▶①

◆ 3. Trust the Machine

A cold sweat ran down my spine. My own senses were lying to me.

“Kaya. From now on, throw away your own senses. Even if your body screams ‘We’re turning left,’ if the instruments say ‘level,’ then it’s level.”

“Wings first. Ease the stick to the left until the little plane in the attitude indicator sits level with the horizon. Once the wings are level, raise the nose a little to win back your altitude.”

Gritting my teeth, I stared only at the attitude indicator and eased the stick to the left. When the little plane lined up with the horizon, I pulled back slightly. The altimeter needle, which had been dropping fast, stopped.

“Whoa... this is like a horror movie. I can’t trust my own body.”

“Keep your eyes fixed on the panel. Put the attitude indicator at the center: altimeter, back to the attitude indicator; airspeed, back to the attitude indicator. Keep cycling around it like the spokes of a wheel. That’s called a ‘scan.’” ▶②

I glared at the panel as if chanting a spell. Attitude, altitude, attitude again, speed, attitude again...

“You’re doing great. In the clouds, the only thing you can trust is the machine.”

✈ Lesson 10 · At a Glance

- ① When the horizon disappears, your body's senses send false signals (spatial disorientation, Vertigo). Trust the instruments, not your feelings.
- ② If you find yourself banked, level the wings first (line the little plane up with the horizon), then raise the nose a little to recover altitude.
- ③ Scan: Keep the attitude indicator at the center and cycle out to the altimeter and airspeed indicator and back, like the spokes of a wheel.

▶ Scene Videos · Lesson 10

short scene clips

No.	Scene · Watch it when...	Code	QR
①	Spatial illusions: why your senses lie When you wonder how your body gets fooled	1-030	
②	Scan practice: hub-and-spoke around the attitude indicator To see how to sweep the instruments	1-031	

Reading on a phone? Tap the **bold title**. If the QR won't scan, enter the code at metapilots.kr/v.

LESSON 11

Chasing the Green Needle

VOR Navigation · Advanced

◆ 1. An Invisible Lighthouse

“So, if we’re stuck in the clouds and can’t see outside, how do we find our way? We can’t see roads or rivers either.”

“Good question. Do we just go by the compass?”

“A compass only tells you direction; it doesn’t tell you whether you’re headed where you want to go. That’s why there are ‘radio lighthouses’ built on the ground. They’re called ‘VORs.’” ▶①

Ray pointed to an instrument on the right side of the panel that looked like a compass but had a ‘green bar (Needle)’ stuck through the middle.

“Tune the VOR receiver to the lighthouse’s frequency, then turn the course knob (OBS) on the instrument to pick the direction you want to go. If the little window shows ‘TO,’ that path leads toward the lighthouse. Out of all the laser-like beams the lighthouse sends in every direction, the one you picked is caught by the needle. We ride that beam.”

◆ 2. Follow the Needle

“Where’s the green needle right now?”

“It’s off to the right.”

“That means, ‘The path you need to be on is off to your right.’ Turn the plane toward the side the needle went.” ▶②

I banked the stick to the right. The needle, which had been off in the right corner, slowly began moving toward the center.

“Oh! The needle’s coming to the middle!”

“Stop! When the needle hits dead center, level the plane back out! Now we’re riding along an invisible radio road.”

◆ 3. A Maze Above the Clouds

“This is just like a game UI. As long as I line up the needle, there’s no way I can get lost.”

“Exactly. Pilots in the old days crossed whole continents and flew through the night sky relying on this needle, hopping from one lighthouse to the next. No matter how pitch-black it is outside, as long as you keep this green needle tied to the center, your destination airport will always show up.”

Outside, it was still gray cloud where I couldn’t see an inch ahead, but the green needle on the panel stood straight and true, showing me the way.

“How about it? Now you can draw even a world you can’t see, right?”

✈ Lesson 11 · At a Glance

- ① A VOR is a ‘radio lighthouse’ built on the ground. Tune its frequency, pick your course with the OBS knob, and check the ‘TO’ flag—then you can follow that path with the needle.
- ② Turn the plane toward the side the green needle is off to, and when the needle reaches dead center, return to level.

▶ Scene Videos · Lesson 11			short scene clips
No.	Scene · Watch it when...	Code	QR
①	Reading the VOR needle When you don't know what the green needle means	1-032	
②	Until the needle centers To see how to turn and follow the needle	1-033	
Reading on a phone? Tap the bold title . If the QR won't scan, enter the code at metapilots.kr/v .			

LESSON 12

The Divine Brushstroke: ILS

Instrument Landing System · Advanced

◆ 1. Follow the Cross

“Okay, this is the final gate of your training. The VOR got us near the airport, but the clouds are sitting all the way down on the ground, so we can't see the runway. How do we land?”

“Do I pray? Please, please let the runway show up?”

“Pretty close. We're about to put our faith in ‘the cross’ and head down.”

Ray tuned in the runway's ILS frequency and pointed to the VOR instrument. Earlier it had only a single vertical green needle, but now a horizontal needle had come alive too, forming a ‘cross (+)’ shape.

“This is the ‘ILS (Instrument Landing System).’ The vertical needle (Localizer) tells you left and right, and the horizontal needle (Glideslope) tells you up and down.” ►①

“A cross... So I just have to make those two needles overlap in a perfect cross, right?”

“Right. You fly into the very center of the ‘guidance signal’ the runway sends out. It’s like riding down an invisible tube slide.”

◆ 2. Don’t Chase the Needle

“Okay, the horizontal needle is up high. What does that mean?”

“Um... the slide is above my head?”

“Correct! It means you’re flying too low. Stay calm and raise the nose just a little. Until the needle comes down.”

I pulled the stick back. The horizontal needle slowly came down to the center. But this time the vertical needle ran off to the left.

“Aaagh! It’s going left! I have to catch it!”

I hurriedly cranked the controls to the left. Then the needle shot off to the right.

“Whoa, whoa! Calm down! Don’t chase the needle! The needle is very sensitive. Move the stick literally 1 mm at a time and ‘wait.’” ►②

“Ugh, this is so hard! The cross keeps falling apart!”

“Control your breathing. Feel the wind, and make tiny, tiny movements... Don’t let your brush tip shake.”

◆ 3. Minimums

A cold sweat broke out. Outside there was still nothing but gray cloud, yet the altimeter was dropping frighteningly: 1,000 feet, 800 feet...

“Stay focused. Keep the needles centered. Speed 65 knots. We’re not diving into the ground right now. We’re following the path the runway is calling us down.”

Altitude 500 feet.

“Almost there. Look only at the instruments. If you look outside, you’ll get dizzy.”

Altitude 200 feet (about 60 m). We were down to the height of a 20-story apartment building, and I still couldn’t see the ground.

“Okay, that’s the ‘decision altitude (Minimums)’! Now look up and outside!”

◆ 4. Light in the Fog

I took my eyes off the panel and looked out the window. Just as the thick fog seemed to lift, an unbelievable sight appeared before my eyes.

“Huh? Whoa?!”

The clouds split apart like a sheet of gray drawing paper tearing open, and through the gap the brilliant glow of the ‘**runway lights**’ was sparkling. The runway was perfectly lined up dead ahead of my plane, waiting for me.

“Runway in sight!”

“Whoa... no way... it’s right in front of me! It’s like magic!”

“That thrill is why pilots fly instruments. That moment when you break out of the darkness where you couldn’t see a thing, and the runway lights are there to welcome you.”

Screech— The plane settled gently onto the fog-soaked runway.

“Congratulations, Kaya. Now, clear skies or cloudy, you’re a real pilot who can always make it back home.”

 Lesson 12 · At a Glance

- 1 The ILS is a ‘cross’ made by two needles. The vertical needle (Localizer) shows left and right; the horizontal needle (Glideslope) shows up and down.
- 2 Don’t chase the needle. Move the stick only 1 mm at a time, and wait.
- 3 When you reach decision altitude (200 feet), look up and check for the runway. It’s the line where you continue if you see the runway, and give up the landing if you don’t.

▶ Scene Videos · Lesson 12			short scene clips
No.	Scene · Watch it when...	Code	QR
①	The localizer and the glideslope When the two needles confuse you	1-034	
②	Don’t chase the needles When the crosshair keeps falling apart	1-035	
Reading on a phone? Tap the bold title . If the QR won’t scan, enter the code at metapilots.kr/v .			

Season 1 · MetaPilot Academy: Cessna 152 Training Course —
The End

Part 3



Flying with My Own Hands

Checkride — The Skies of Bora Bora

The Checklist the Night Before

◆ 1. The Order That Wouldn't Stick

D-1. Tomorrow was finally my checkride. My desk was plastered with sticky notes, and I was muttering to myself.

Master Switch ON, Fuel Valve ON, Mixture Rich, Throttle 1/4...

"What comes after the master switch? Fuel valve first? Or mixture?"

The moment I memorized the third item, the first one vanished. I buried my face in the pile of sticky notes. Then my phone rang. It was Ray.

"Kaya, how's the prep for tomorrow's checkride going?"

"Ray... I can't memorize the start-up order. At this rate I won't even get the engine running on test day. I'll just be sitting there on the ground."

Ray burst out laughing on the other end of the line. Then he said something I didn't expect.

"Then go see our academy's 'secret coach.' The lights will still be on, even at this hour."

◆ 2. Tita's Laminated Card

The 'secret coach' was Tita. The clock said ten at night, but the <TITAN> sign was still glowing blue. Clutching my bundle of sticky notes, I pushed open the door of the PC café.

"Oh, my regular. What brings you here at this hour?"

Behind the counter, Tita looked up at me with a screwdriver between her teeth. Looking like I was about to cry, I held out my sticky notes.

"The start-up order... I just can't memorize it."

Tita skimmed the sticky notes for a long moment, then snorted a little laugh. She reached under the counter and pulled out a pilot card — a sturdy card she'd printed out and laminated.

"Don't memorize it. Read it."

"Sorry?"

"Real pilots 'read' their checklists. Going by memory and skipping one item in front of the airplane is worse than reading and checking things off one by one. Reading isn't weak — it's the proper way."

The start-up order was written on the card in big, neat letters. At the very bottom, there was one more line in handwriting.

'RPM 1,000 / oil pressure in the green — never skip these.'

I hugged the card to my chest. Somehow it got me right in the heart.

"And about your stick."

Tita pointed at the stick poking out of the shopping bag I'd brought.

"Is the color still that drab?"

"...I did want to paint it pink. Ever since I first got it."

"When you graduate, I'll paint it whatever color you want. But only if you pass tomorrow."

Tita swiveled away as if she couldn't care less, but the corners of her mouth were turned up.

◆ 3. Easy Mode, Real Mode

On my way home, I called Ray again.

“Ray, which mode should I use to start the engine on the check-ride? Real Mode? Or Easy Mode?”

“Either one is fine. You can use Real Mode, like you learned in Lesson 3, or you can use Easy Mode with the square switch on your stick.”

“Didn't you say Easy Mode is only for people who already know the order?”

“Right. And that's why you've already earned it. Tonight, just run through Real Mode once with the card in front of you, then go to sleep. And whichever mode you use, always check this.”

Ray lowered his voice.

“Once the engine starts, look at just two things. Is the RPM steady around 1,000? Is the oil pressure needle inside the green range? Those two are the ‘health checkup’ that keeps your engine from quitting in the sky.”

“RPM 1,000, oil pressure in the green. Got it!”

◆ 4. The Late-Night Start

That night, I sat at my desk with the laminated card in front of me and started the engine. Master Switch ON, Fuel Valve ON, Mixture Rich, Throttle 1/4, and then the key.

Brrrrum—!

The propeller blurred into a transparent disc. RPM 1,000. Oil pressure, in the green. I looked down at the card and smiled to

myself. I hadn't started it from memory — I'd started it by reading and checking.

'Easy Mode is nice, but Real Mode feels like saying hello to the airplane for the first time.'

I turned off the light and lay down in bed. The echo of the propeller lingered on the ceiling for a long time. Tomorrow, the skies of Bora Bora would be waiting for me.

Engine Start Tips

Two Ways to Start and Two Things to Always Check

Real Mode: The full start-up procedure (Master Switch → Fuel Valve → Mixture Rich → Throttle 1/4 ... key). The proper way is to 'read' the checklist and confirm each item one at a time.

Easy Mode: The square switch on your stick (auto-start). A convenience feature to use once you know the order.

Either way, after start-up check that ① the RPM is steady around 1,000 and ② the oil pressure needle is inside the green range.

The Checkride over Bora Bora

◆ 1. D-Day: Logging In

“Whew...”

I took a deep breath with my VR headset on. My palms were sweating, and worried the stick would slip, I wiped them on my pajamas. Today was finally the day of my checkride for the basic course.

The academy app chimed.

[Notice] Checkride begins in 10 minutes. All trainees, join the Bora Bora training session.

Four trainees in total were taking this checkride, me included. The instructor handed out call signs at random.

“Trainee Kaya, your position is ‘Flight 3.’ Pay attention to your spacing front and back.”

I was number 3. Not the leader, but not the comfy last spot either. Being sandwiched in the middle made me even more nervous.

◆ 2. Ten Seconds Apart

When the simulation finished loading, the view in front of me was breathtakingly beautiful. Bora Bora’s airport, floating in the middle of the emerald Pacific. But I had no time to admire it. To my left, two identical Cessna 152s sat waiting with their propellers

spinning, and there was one more on my right. We lined up side by side on the taxiway to the runway.

“All right. Today’s checkride mission is a ‘Traffic Pattern’ flight and a ‘formation rotation.’ You’ll take off at 10-second intervals. Flight 1, line up.”

The roar of engines filled the runway. Flight 1 pushed its throttle and charged down the runway. I counted down in my head. One, two... eight, nine, ten!

Flight 2 went, and then another 10 seconds. My turn.
“Flight 3, rolling.”

When I pushed the throttle all the way in, I felt myself sink back into the seat (all in my head, of course). As the airspeed indicator passed 55 knots, I pulled back on the stick. Whoosh— that floating feeling the moment the wheels leave the ground. An amazing gift from VR simulation.

Flight 2 looked small up ahead. I couldn’t get too close or fall too far behind. Just as Tutor Ray had taught me, I kept my spacing by glancing back and forth between the instrument panel and the view outside.

◆ 3. Reporting in the Sky

“Flight 3, entering crosswind.”

“Flight 3, entering downwind.”

I reported my position on each leg and flew parallel to the runway. The sea of Bora Bora below sparkled like jewels, but all my attention was locked on the tail of the plane ahead. As I reached the end of the runway, the instructor’s order came.

“Flight 1, touch and go and check turn. Move to the rear.”

Flight 1, the first to land, bounced its wheels on the ground and took off again. Then it swung around in a wide right turn and

dropped to the very back of the line, behind Flight 4. Now Flight 2 was in the lead. And after that... me.

◆ 4. The Moment I Became the Leader

Flight 2 dropped back, and suddenly there was nothing in front of me but wide-open sky. Now I was in front — the Leader.

All at once, the responsibility weighed on my shoulders. If I couldn't hold my speed, Flight 4, Flight 1 and Flight 2 behind me would all get tangled up, one after another.

"Kaya, don't chicken out. Just draw the picture in your head. You're drawing a line across the sky."

I muttered to myself. Calmly, I turned the nose toward the runway. Final. The runway grew bigger and bigger. I kept the center-line running under my right leg.

...But the runway was growing strangely fast. The airspeed needle was hanging high in the green arc, and the aiming point was sliding down below my eye level. The rest of the formation was lined up right on my tail.

'Too high. Too fast. If I land like this, I'll bounce.'

If the leader panics, everyone behind her gets tangled up. In that instant, Ray's voice from Lesson 7 came back to me. It's not giving up. It's a decision.

"Flight 3, going around!"

Throttle all the way in, nose up, back into the sky. Only after I was climbing steadily did I retract the flaps one notch at a time. For a moment, the radio went silent. Then came Instructor SeaGAL's gruff voice.

"Flight 3, go-around confirmed. Not a bad call. Fly the pattern again."

Not bad. In Instructor SeaGAL's dictionary, 'not bad' might actually be a compliment.

My second final. This time I pulled the throttle back earlier. The aiming point settled neatly at eye level.

Screech— a soft landing with the squeal of tires. Without slowing down, I raised the flaps again and pushed the throttle. Back into the air.

“Flight 3, nice touch. Turn right and join at the rear.”

At Instructor SeaGAL’s short praise (well, she didn’t criticize my go-around, so it counts as praise), my heart pounded like it was about to burst.

◆ 5. Full Stop

I was so focused on flying that I lost count of how many laps we’d done. When Flight 4 took the lead, the final order came.

“All aircraft, full stop.”

I turned my head to check where the runway was and got ready for the final landing procedure (Final Approach). The runway grew bigger and bigger as it came toward me.

‘Speed’s good, approach angle’s good... stay calm. Like a brush-stroke, just like Ray said...’

The moment the runway surface was right under my nose—
‘Now — flare!’

I held my breath and gently pulled back on the stick. The nose lifted slightly and the plane rode a cushion of air. Like a stone skipping across calm water, the plane glided onto the runway with no jolt at all.

Screech— a crisp squeal of tires. It was a perfect landing.

“Flight 3, that was an excellent landing.”

A single line from Instructor SeaGAL — gruff, but sincere.

One by one the other planes touched down behind me, and we taxied in a line onto the Bora Bora parking ramp. As the engines

shut down and the propellers stopped, sighs of relief burst out across the academy voice channel.

“Wow... my hands were shaking so hard I thought I was going to die.”

“Flight 2, when you got bounced around by that gust earlier, I nearly had a heart attack too!”

We didn’t even know each other’s faces, but just the fact that we’d flown the sky together gave us a strange sense of camaraderie, like comrades-in-arms.

“Good work, everyone. Save the flight video you each recorded together with your ‘replay file’ and submit them. Final evaluations will be sent by email after we analyze the videos and logs. Dismissed.”

◆ 6. V-LOG: My First Flight Log

The checkride was over, but my own work was just beginning. Besides the video for submission, I loaded the scenery I’d seen and the movements of our formation into my editing program. Time to put my illustrator’s instincts to work. I laid background music under the engine sound and added subtitles for the tense radio calls. Four planes flying in a line against the Bora Bora sunset — it looked like a scene straight out of a movie.

[Video title: An Illustrator Pilot Flies the Pacific (MetaPilot Class 3 Graduation Flight)]

The moment I posted the video to the ‘MetaPilot Community,’ the comments started rolling in.

“Wait, this is a game? I thought it was a real flight...”

“That Flight 3 landing is so smooth.”

“I’m off to sign up for the training too.”

◆ 7. Illustrator Pilot (The Beginning)

Even before my certificate of completion arrived, I already knew. I was no longer a tech-clumsy illustrator hiding in her room.

Now, I'm an illustrator pilot.

“You Passed, Pilot Kaya”

◆ 1. Refresh

They said the results would come out in three days. Even while drawing my deadline illustrations, I refreshed my inbox every few minutes.

‘I did one go-around... What if that costs me points?’

On the evening of the third day, the notification finally chimed.

[MetaPilot Academy: Congratulations on completing the basic course. You have passed.]

In the evaluator’s comments box, there was exactly one line.

[Flight 3. Go-around decision appropriate. Landing stable. — Chief Instructor SeaGAL]

◆ 2. The Birth of an Illustrator Pilot

I jumped up from my chair and threw my arms in the air.

“I did it! I actually did it!”

My phone buzzed again and again. [Kaya!!! Congrats on passing!!! That go-around call was the BEST!!!!] It was Ray. Under the graduation flight video I’d posted to the community, trainees from my class were piling on congratulations too.

My tiny studio (about 20 m²). The space that used to be all gray was now glowing in the many colors of accomplishment. A tech-clumsy illustrator's reckless challenge — my flying had finally earned the sky's approval.

EPILOGUE

A Blue Sky on a Gray Wall, and...

◆ 1. Creator Pilot Kaya

A few days later, my little rented room looked a bit different. It was still tiny, and illustrations with looming deadlines were still piled on my desk, but a new frame now hung on the wall above my monitor.



Sipping instant coffee, I gazed at the frame with pride. Me — tech-clumsy, an illustrator who'd been running from her own work — had seen something impossible through to the end. That

certificate wasn't just a scrap of paper. It was the 'credential' that had turned up the **Saturation** of my life.

On my laptop, an unread email was waiting. It was from an old client.

[Hi, the main character's expression looks way too gloomy this time. Could you bump up the saturation a bit? Oh, and you know the deadline's tomorrow morning, right?]

A few days ago, an email like that would have made me sigh before anything else. I just smiled and wrote back.

[I picked up some new paint recently. Blue. You'll have it by tomorrow morning.]

That night, for the first time in ages, I switched on my drawing tablet. A little airplane flying above the clouds, and a child sitting by its window. A picture where blue and sunset orange bled into each other. When I sent the finished piece, the client wrote back. [That's it — that color!]

And one more thing. I gathered my flight videos and started a small channel. I named it 'MetaPilot Kaya.' I had three subscribers (one of them was my mom), but I was proud of the title of my very first video: 'An Illustrator Took to the Sky.'

◆ 2. A New Delivery Box

Just then, the doorbell rang.

"Delivery!"

"Huh? I didn't order anything."

When I opened the door, there was a box from Tita. On the outside, someone had roughly scrawled **[Season 2. Supplies]**. A sense of foreboding and a flutter of excitement hit me at the same time.

When I opened the box, inside were a book with a rugged cover, nothing like the Cessna manual, a new stick module (grip), and a heavy new set of fighter-style rudder pedals. The cover showed a propeller fighter plane roaring and spitting fire.

『The Battlefield Invites You』

And sitting on the very top of the box was my own stick, back home first — the one Tita had taken for a ‘checkup’ the day after the graduation ceremony. The drab black grip had been painted a shiny pink. A note was stuck to it.

‘Pink, as promised. Congrats on passing. —T’

◆ 3. The Peace Is Over

Tucked between the pages of the book was a note in Ray’s handwriting.

“Kaya! Great job getting through the basics. But your peaceful sightseeing flights are over now.”

“Season 2 is World War II. Flying well isn’t enough anymore. You have to chase down the enemy’s tail and shoot them down to survive. Haha.”

“Ready? The next airplane we’ll be flying is the BF-109 G2.”

I looked at the ‘peaceful certificate’ in its frame, then at the ‘ferocious fighter plane’ on the cover in the box, back and forth. I’d only just learned how to fly a Cessna. I was planning to tour the skies over the world’s heritage sites... and now the battlefields of history are waiting for me?

“Why me, of all people?”

A grim, determined smile spread across my face. I took out the fighter stick module Tita had sent and fitted it onto my pink stick. Clack— a heavy click echoed through the room, like a round being

chambered. Then I put my feet on the new rudder pedals and gave them a try.

“All right. This time, how about becoming an ace and going for ten million subscribers?”

I put my VR headset back on. This time, it isn’t a blue sky. The ash-gray sky of a battlefield, filled with flak, is waiting for me.

Season 1 · The Guide — The End

APPENDIX A

Gear Checklist

The “setup guide” note Tita tucked into the shopping bag, laid out at a glance.

Gear	Quick tip	
Stick + throttle	Start with an entry-level flight controller. Flying with a keyboard is like “playing the piano with a mouse.”	Must
Rudder pedals	Your feet steer on the ground (taxiing) and on takeoff and landing. No pedals? Assign rudder to a stick twist or buttons, or use your app’s auto-rudder feature.	Good
PC with a graphics card	A gaming PC is best. On a laptop, first check that it runs on its dedicated graphics (power setting: high performance); compromise on graphics settings and you may not need a new computer.	Must

Gear	Quick tip	
Flight simulator app	Any app that has the Cessna 152 (Appendix D). Most are sold on PC game stores. Some installs exceed 100 GB, so check your storage first.	Must
VR headset	Great for learning to judge distance on landing. No need to buy one up front: borrow one first and decide later.	Optional
Webcam + eye-tracker app	For the price of two coffees, monitor flying feels like VR (e.g., Beam Eye Tracker).	Optional
Desk fan	A breeze on your face calms VR motion sickness.	Optional

APPENDIX B

Cessna 152 Key Numbers

Only the numbers Ray taught in the story. They are reference values for simulator training, set for this book's course and separate from real-world operating limits.

Situation	Number to remember
Start-up order (Real Mode)	Master switch → check fuel valve → mixture all the way in → throttle about 1/4 inch → key
After start-up	About 1,000 RPM / oil pressure in the green
Takeoff rotation speed	Gently pull the stick at 55 knots
Climb speed	Hold 67 knots (the Cessna's most efficient climb)
Level-flight practice altitude	1,000 feet (about 300 m)
Cruise power	About 2,300 RPM (ease the throttle back once level)
Bank for turns	About 20 degrees (level the wings 10 degrees early)

Situation	Number to remember
Pilotage practice altitude	3,000 feet
Traffic pattern altitude	Usually 1,000 feet above the ground
Landing approach power	1,500 RPM
Landing approach speed	65 knots
Start the flare at	About 10 feet (about 3 m): throttle to idle, eyes on the far end of the runway
Go-around (when the landing feels wrong)	Throttle all the way in → raise the nose and climb → (if the flaps are down) once stable, retract them one notch at a time → back into the pattern
ILS approach speed	65 knots
Decision altitude	200 feet (about 60 m)

APPENDIX C

Flight Glossary

In alphabetical order.

Aileron

The surfaces on the trailing edge of the wings. Moving the stick left or right works them and banks the plane (roll).

Aiming Point

One spot on the runway you keep fixed in your view on landing, so it neither rises nor sinks.

Altimeter

The instrument that shows your altitude. The long needle counts hundreds of feet, the short one thousands.

Attitude Indicator

An artificial horizon that shows the plane's bank and nose position in blue (sky) and brown (ground).

Cockpit

The pilot's seat and controls.

Dead Reckoning

Navigating by working out your position from speed and time.

Decision Altitude (Minimums)

The height during an instrument landing at which you must look outside. See the runway: continue. Don't: abandon the landing.

Elevator

The movable surface on the tail. Moving the stick forward or back works it and raises or lowers the nose (pitch).

Flap

A surface that lowers from the back of the wing. It gives extra lift at low speed and helps you land.

Flare

Gently raising the nose just before touchdown to soften the descent.

Glideslope

The horizontal needle of the ILS. It shows your up-and-down path toward the runway.

Go-Around

Abandoning a landing, climbing away and coming around again. Not a failure, but a proper piloting skill.

Guideline

A landmark on the ground, such as a highway or a river, that shows you the way in pilotage.

Hat Switch

The four-way button on top of the stick. In monitor flying it turns your view like a “pilot’s neck.”

Heading Indicator / VSI / Turn Coordinator

The other three instruments of the six pack. They show which way the nose points, how fast you climb or sink, and how fast you turn.

ILS (Instrument Landing System)

A system of guidance signals from the runway that lets you land even in fog or cloud.

Instrument Flying

Flying with nothing visible outside, trusting only the instruments.

Knot

The unit of airplane speed: one nautical mile (about 1.85 km) per hour.

Lift

The force the wings create as they slice through the air, holding the airplane up.

Localizer

The vertical needle of the ILS. It shows your left-right position relative to the runway centerline.

Mixture

The lever that sets the fuel-to-air ratio going into the engine. For start-up, push it all the way in to feed fuel.

Pilotage

Finding your way by reading landmarks out the window, such as roads and rivers.

Roll / Pitch / Yaw

The airplane's three rotations: tilting left and right (roll), nose up and down (pitch), nose left and right (yaw).

Rudder

The vertical control surface on the tail. You move it with the pedals to swing the nose left or right (yaw).

Scan

The habit, when flying in cloud, of keeping the attitude indicator at the center and checking the altimeter and airspeed indicator out and back, like the spokes of a wheel.

Sensory Conflict

When the motion your eyes see and the motion your inner ear feels don't match. The cause of VR motion sickness.

Six Pack

The six basic instruments right in front of the pilot. The first panel every pilot learns.

Stall

When the wings can no longer make enough lift. The “too slow” limit on the airspeed indicator.

Taxiing

Moving the airplane on the ground to the runway. You steer with your feet (the rudder pedals).

Throttle

The lever that controls engine power. All the way in for takeoff, pulled back for landing.

Traffic Pattern

The agreed rectangular route in the sky around an airport.

Trim

The device that balances the airplane so it holds its attitude without pressure on the stick.

Turn

Changing direction by banking the airplane with the stick. Bank about 20 degrees → pull back slightly to hold altitude → level the wings about 10 degrees before the heading you want.

Upwind / Crosswind / Downwind / Base / Final

The five legs of the traffic pattern. Climb out along the runway (upwind), turn 90 degrees (crosswind), fly parallel to the runway (downwind), turn 90 degrees toward it (base), then line up with it (final).

VOR

A “radio lighthouse” on the ground. The green needle on the instrument shows you the way.

Flight Simulator Apps

An aircraft's numbers and the way you fly it are the same in any simulator, so the story never names an app. Below are examples as of October 2026; they may change, so check before you buy.

◆ Tita's Three Rules for Picking an App

1. **Does it have your aircraft?** — Included, or a separate add-on?
2. **Will it run on your PC?** — Some installs exceed 100 GB. Check storage and graphics card first.
3. **Where to buy?** — Most are sold on PC game stores such as Steam. One account keeps your apps for every season in one place. Watch for sales.

◆ App Examples by Aircraft in This Series

Aircraft	Book	App examples
Cessna 152	Book 1	Microsoft Flight Simulator (2020 · 2024): included aircraft X-Plane 12: add-on aircraft (e.g., Just Flight C152)
Bf 109 G-2 · IL-2 Sturmovik · He 111	Book 2	IL-2 Sturmovik: Great Battles series Also older titles (IL-2 Sturmovik: 1946, etc.) or newer WWII flight simulators
F-16C Fighting Falcon	Book 3	DCS World: F-16C module Falcon BMS: free add-on (requires Falcon 4.0)

The MetaPilot stick (Book 4) is a USB controller that most apps recognize. The first time, check that its axes and buttons respond.

APPENDIX E

Video Index

Every scene video in one place. Each one is a short looping clip showing a single control move. Reading on a phone? Tap the title. If the QR won't scan, enter the code at **metapilots.kr/v**. Scenes not yet produced show "Coming soon"; the address never changes, so check back later.

Where	Scene	Code	QR
Gear & Setup ①	Connecting the stick and throttle to your PC	1-001	
Gear & Setup ②	Tuning graphics settings instead of buying a new PC	1-002	
Gear & Setup ③	Installing a flight app from a PC game store	1-003	
Chapter 8 ①	Why do I get sick? Sensory conflict	1-004	
Chapter 8 ②	Try the fan trick	1-005	
Lesson 1 ①	Ailerons and roll	1-006	

Where	Scene	Code	QR
Lesson 1 ②	The elevator and pitch	1-007	
Lesson 1 ③	The rudder and yaw	1-008	
Lesson 2 ①	Reading the attitude indicator	1-009	
Lesson 2 ②	Reading the altimeter needles	1-010	
Lesson 3 ①	The start-up order, and where the mixture is	1-011	
Lesson 3 ②	Easy Mode vs. Real Mode	1-012	
Lesson 3 ③	Taxiing with your feet	1-013	
Lesson 4 ①	Raising the nose at 55 knots	1-014	
Lesson 4 ②	Holding 67 knots in the climb	1-015	
Lesson 5 ①	Where the trim wheel is and how to turn it	1-016	

Where	Scene	Code	QR
Lesson 5 ②	What “trimming” really means	1-017	
Lesson 5 ③	Relaxing your grip on the stick	1-018	
Lesson 5 ④	Bank, pull, release: a gentle turn	1-036	
Lesson 6 ①	Locking in the aiming point	1-019	
Lesson 6 ②	Timing the flare	1-020	
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NEXT SEASON

Season 2

The Battlefield Awaits

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