

Basics of Visual Cues

Lesson flow:

- Sight Picture & the window

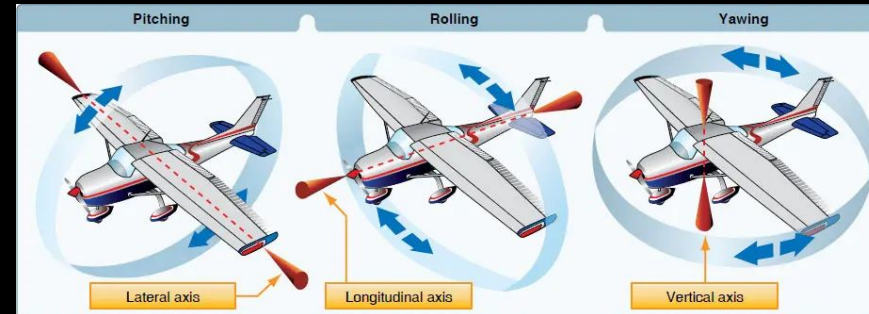
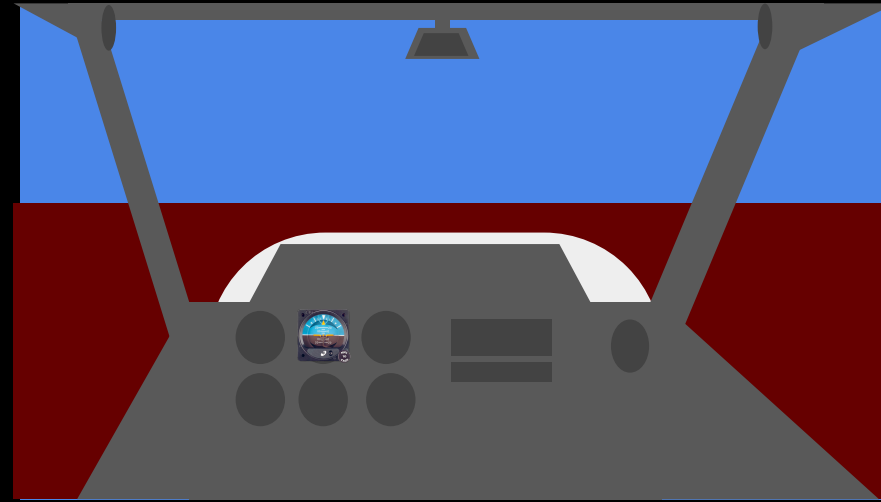
4 Fundamental Maneuvers:

- Level
- Turns
- Climbs
- Descents

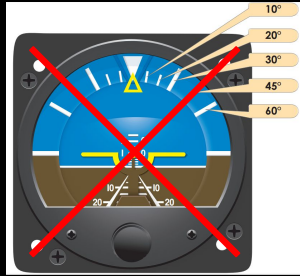
The window is the largest instrument

- Attitude Indicator is *very small*.
- Window is *very big*.

For VFR flying, you will primarily use the window to determine Pitch and Roll



Exercise - ROLL

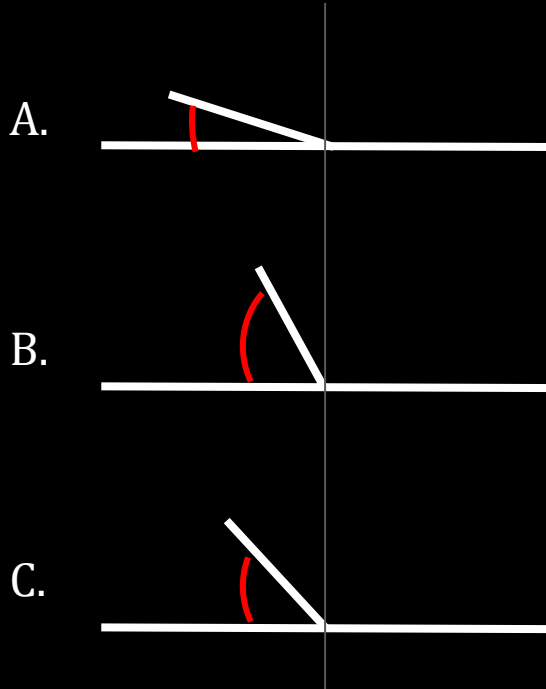


Instead of depending on an instrument: Look outside and compare the WHITE horizon to the RED airframe!



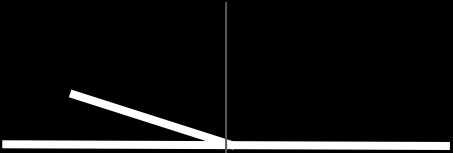
Exercise - ROLL


You don't need an attitude indicator to determine angles.
GUESS THE BANK ANGLE OF EACH LINE.

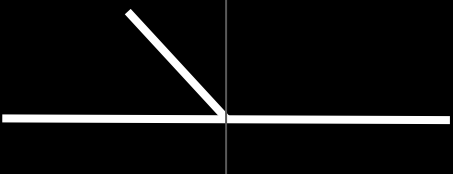


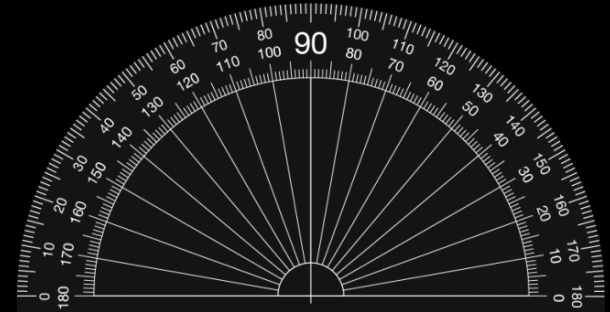
Exercise - ROLL

You don't need an attitude indicator to determine angles.
GUESS THE BANK ANGLE OF EACH LINE.

A.  A: 20 degrees

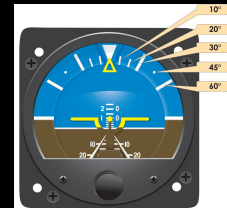
B.  B: 60 degrees

C.  C: 45 degrees



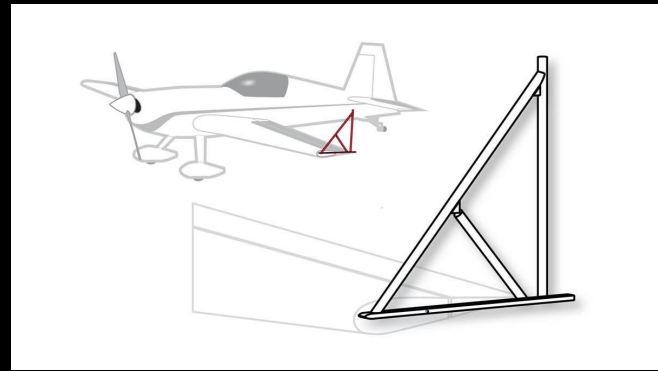
This example is *just like* what you'll do in the airplane to estimate your bank angle.

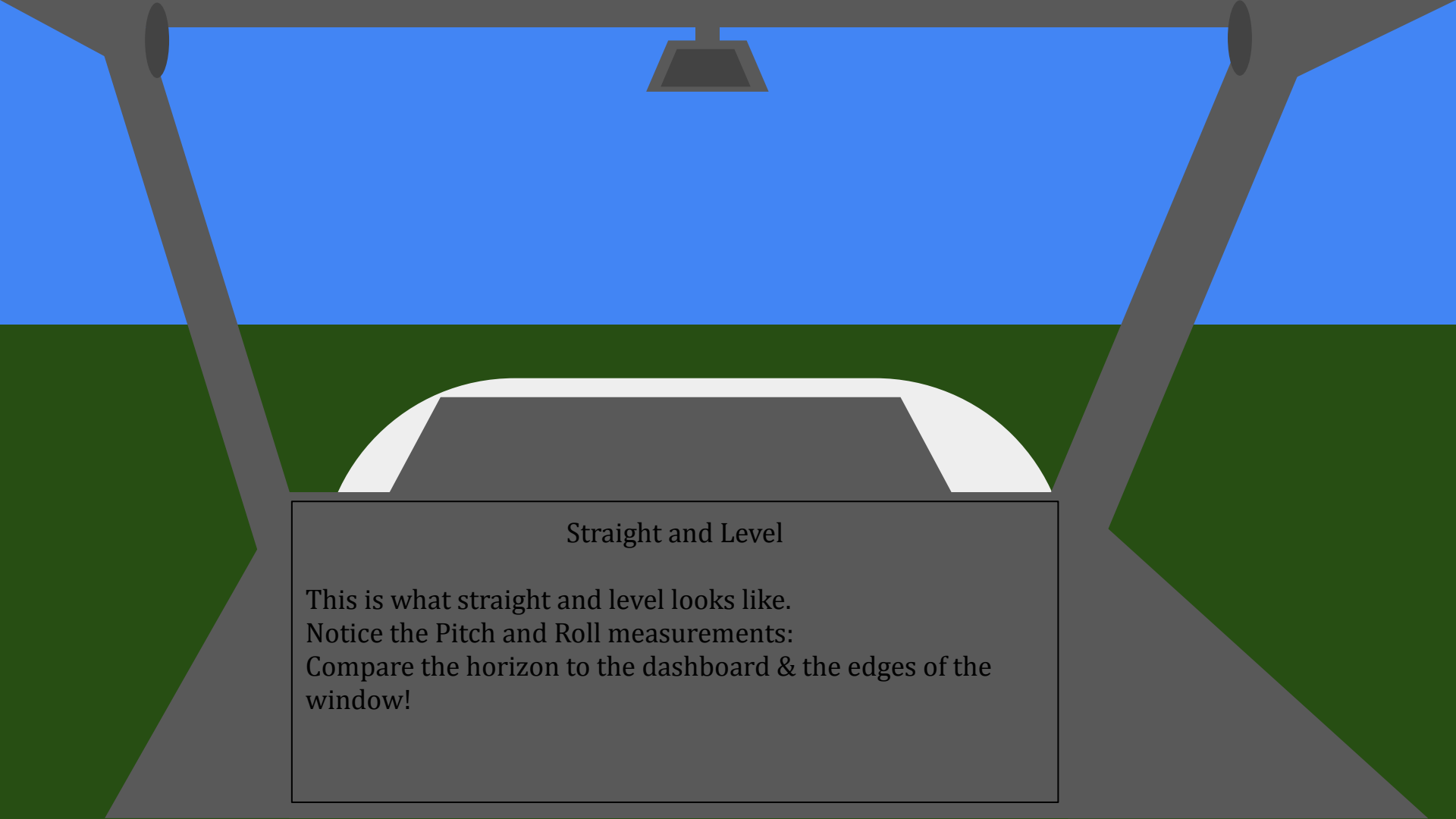
Of course in flight, you can verify with your attitude indicator, but PRIMARILY you will be looking outside.



Exercise - PITCH

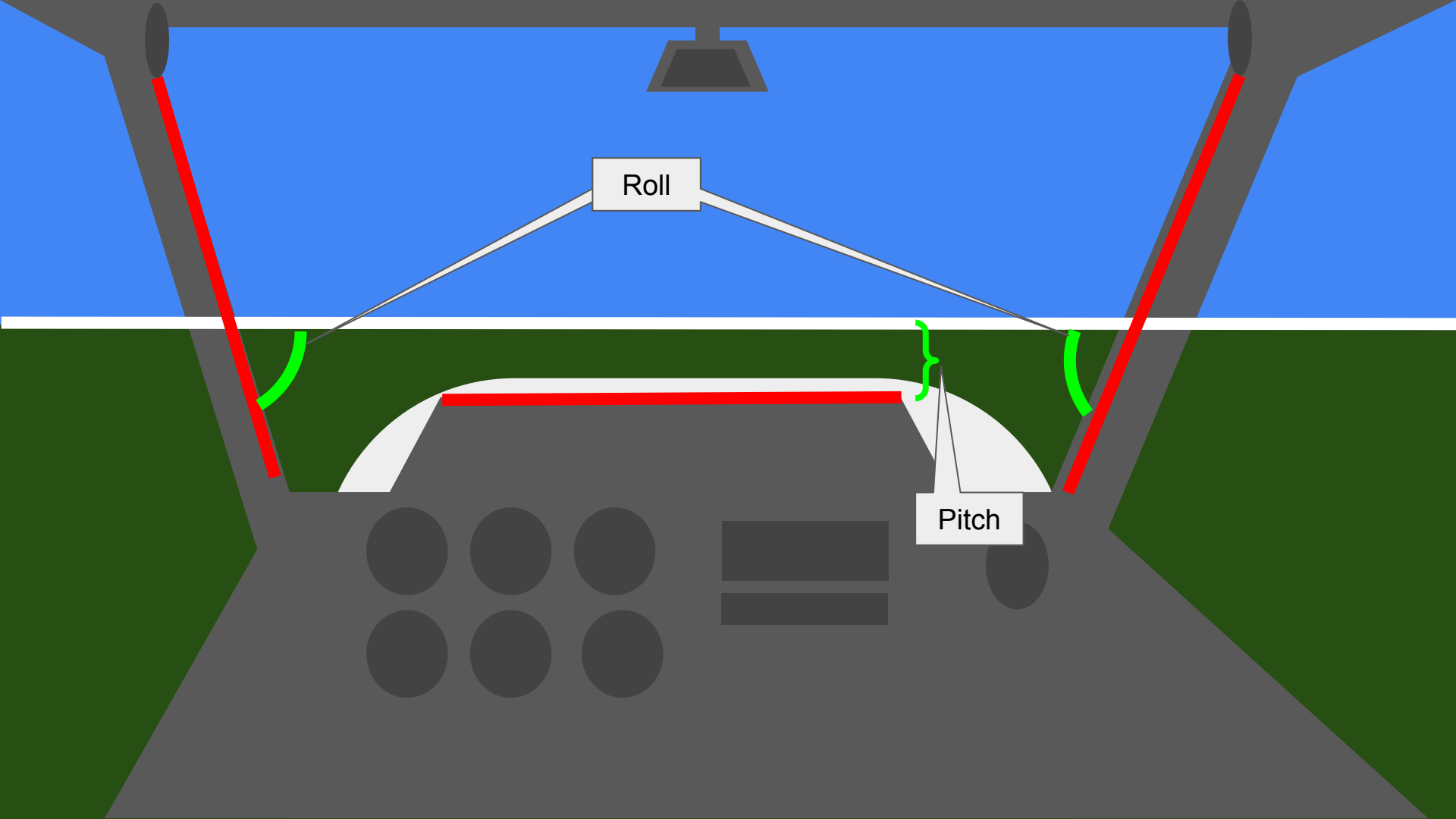
Aerobatic airplanes even have special little wires on their wings to help the pilot identify precise angles in unusual attitudes!





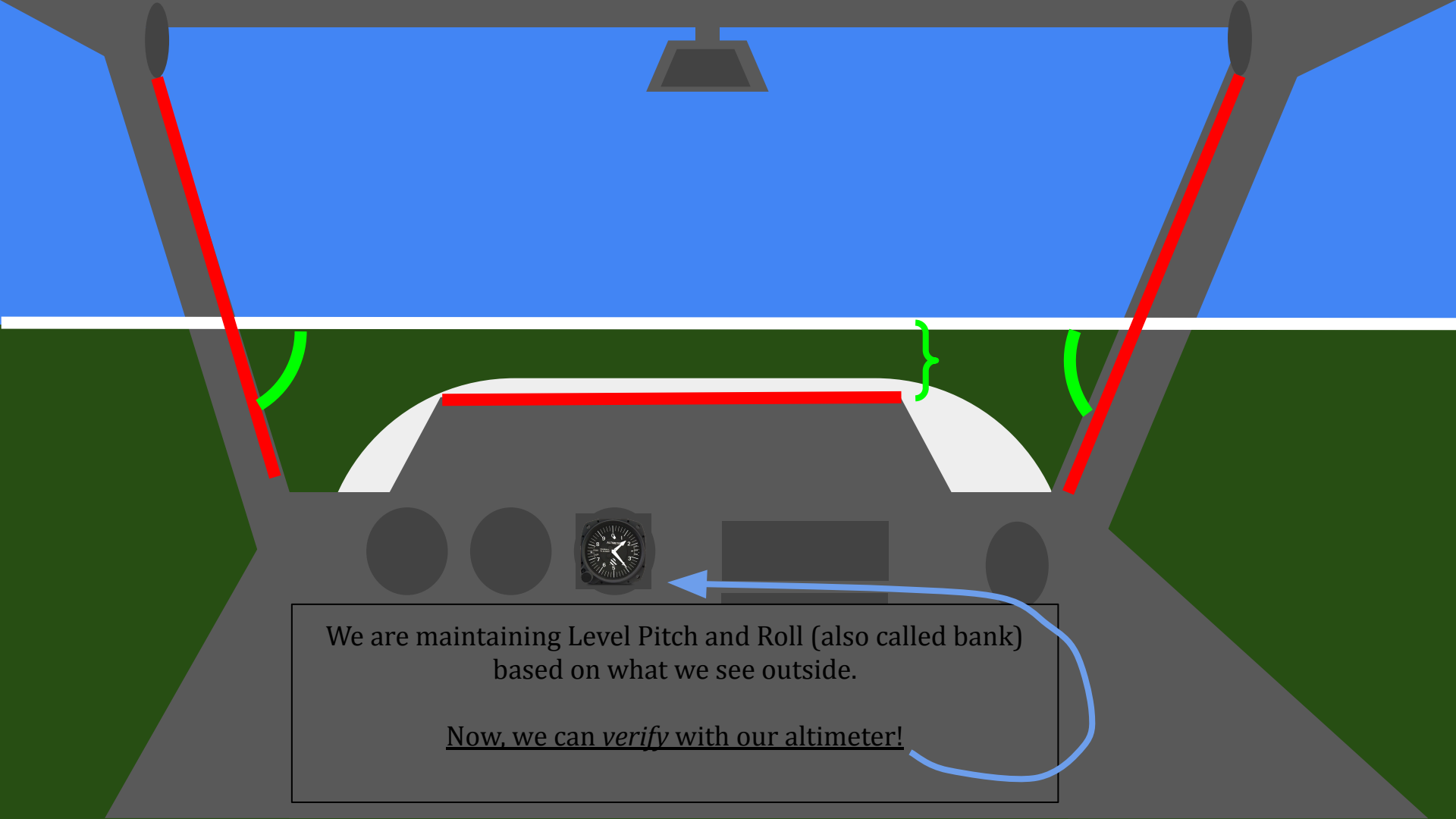
Straight and Level

This is what straight and level looks like.
Notice the Pitch and Roll measurements:
Compare the horizon to the dashboard & the edges of the
window!



Roll

Pitch



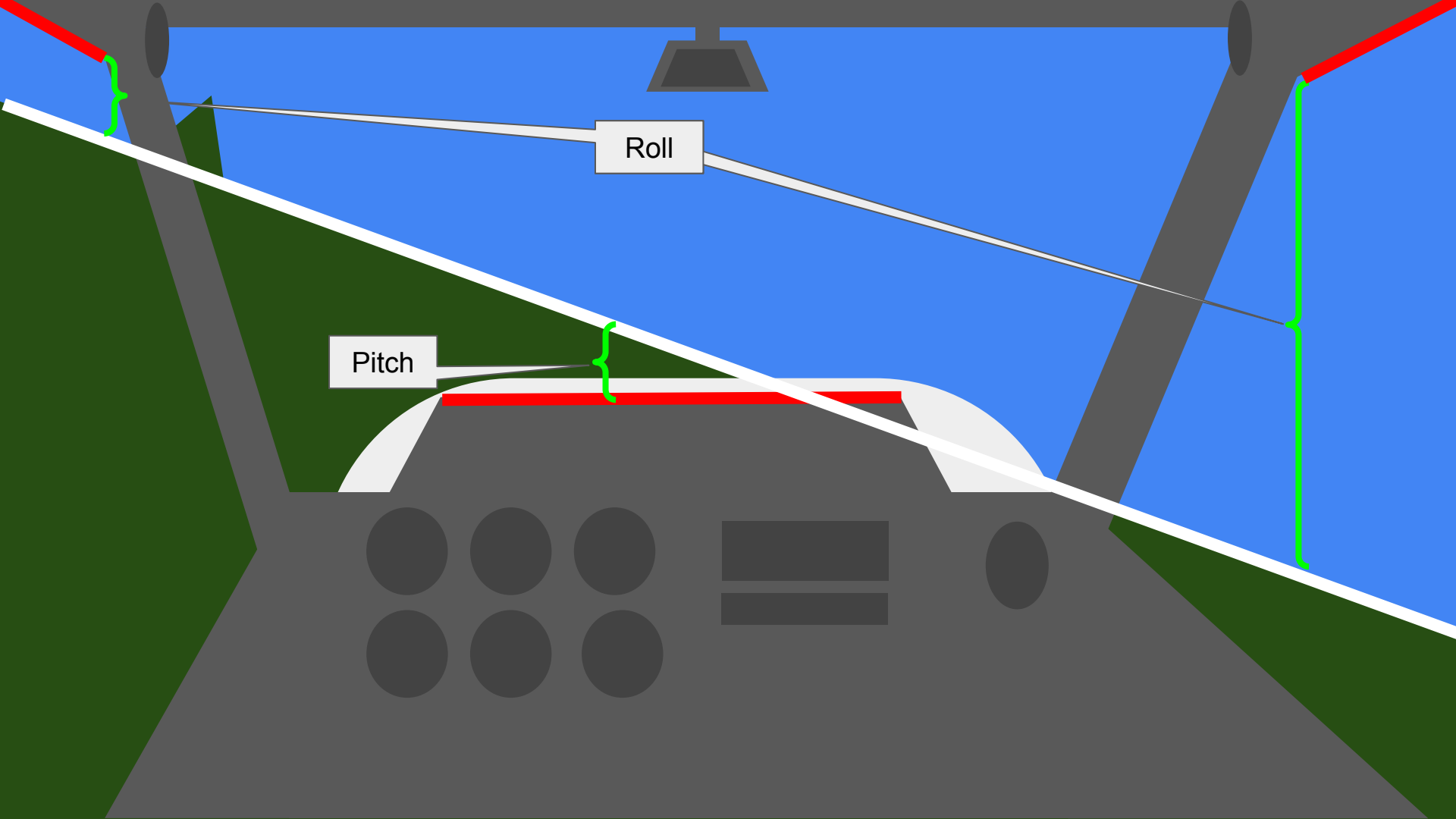
We are maintaining Level Pitch and Roll (also called bank)
based on what we see outside.

Now, we can verify with our altimeter!



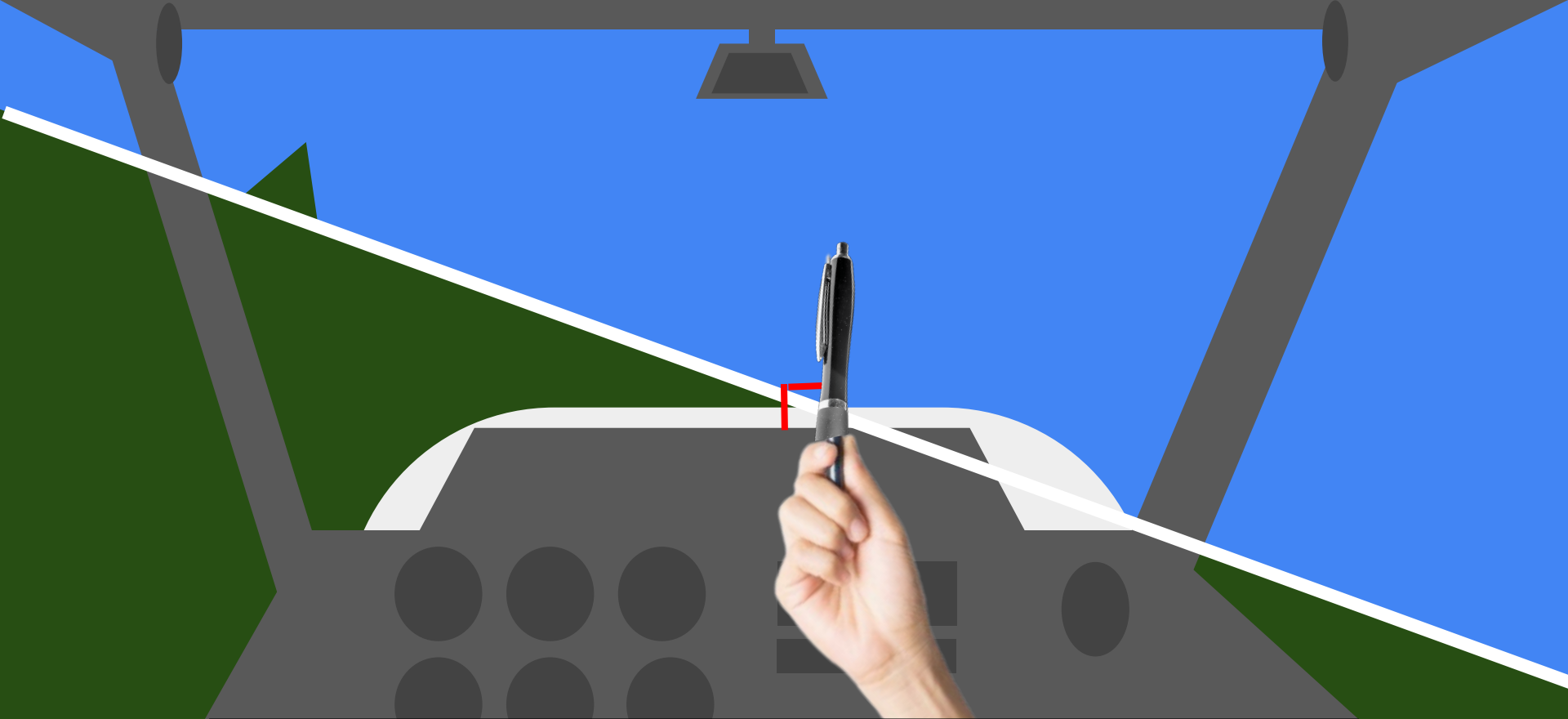
Now, let's TURN LEFT

This is a comfortable bank angle. Not too shallow, not too steep.



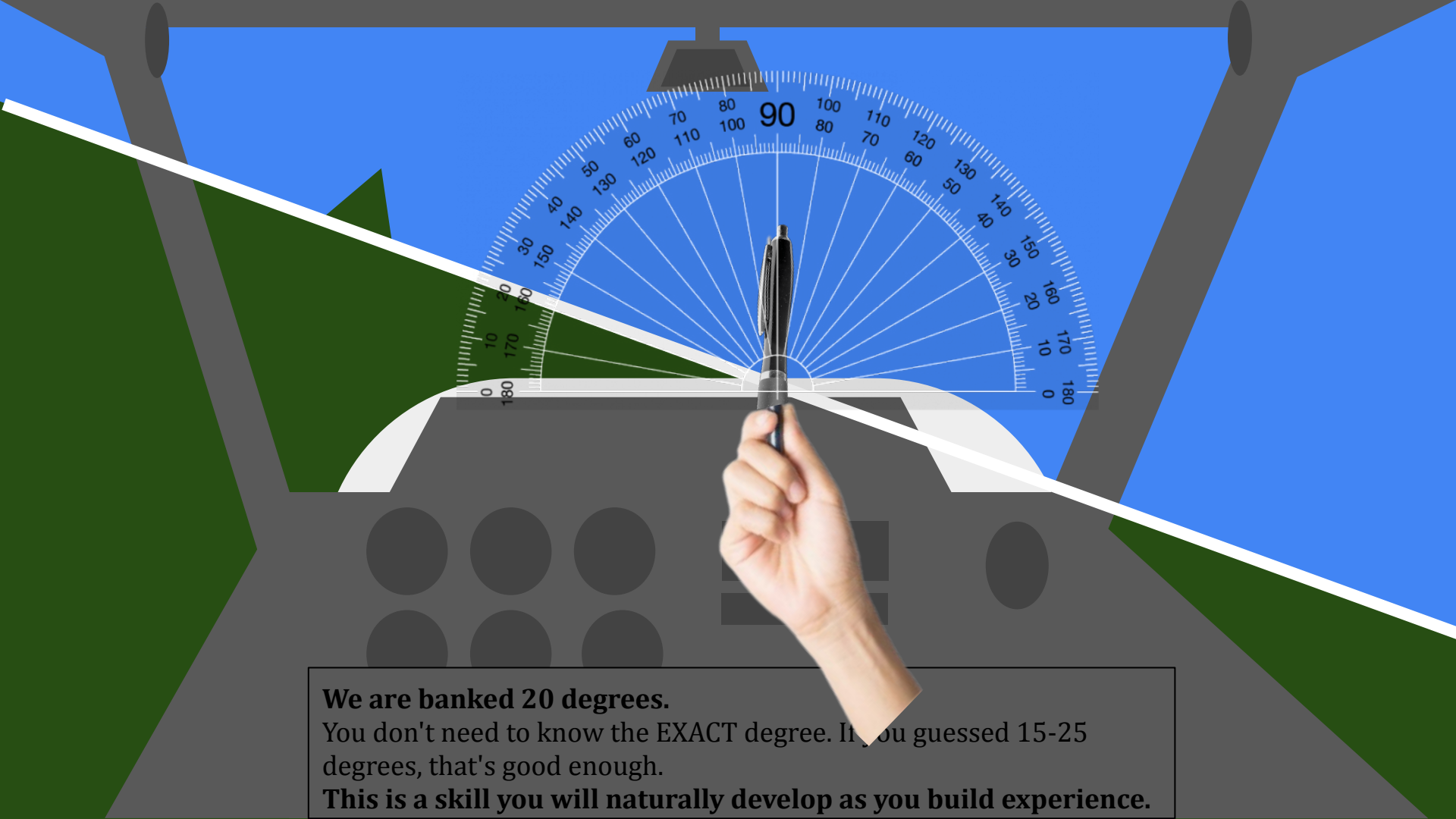
Roll

Pitch



WHAT IS OUR BANK ANGLE?

We can estimate our bank angle. We're definitely not banked 90 degrees like our pen. We're not even banked half-that-much (so, we are banked less that 45 degrees). Please make a guess as to the bank angle.



We are banked 20 degrees.

You don't need to know the EXACT degree. If you guessed 15-25 degrees, that's good enough.

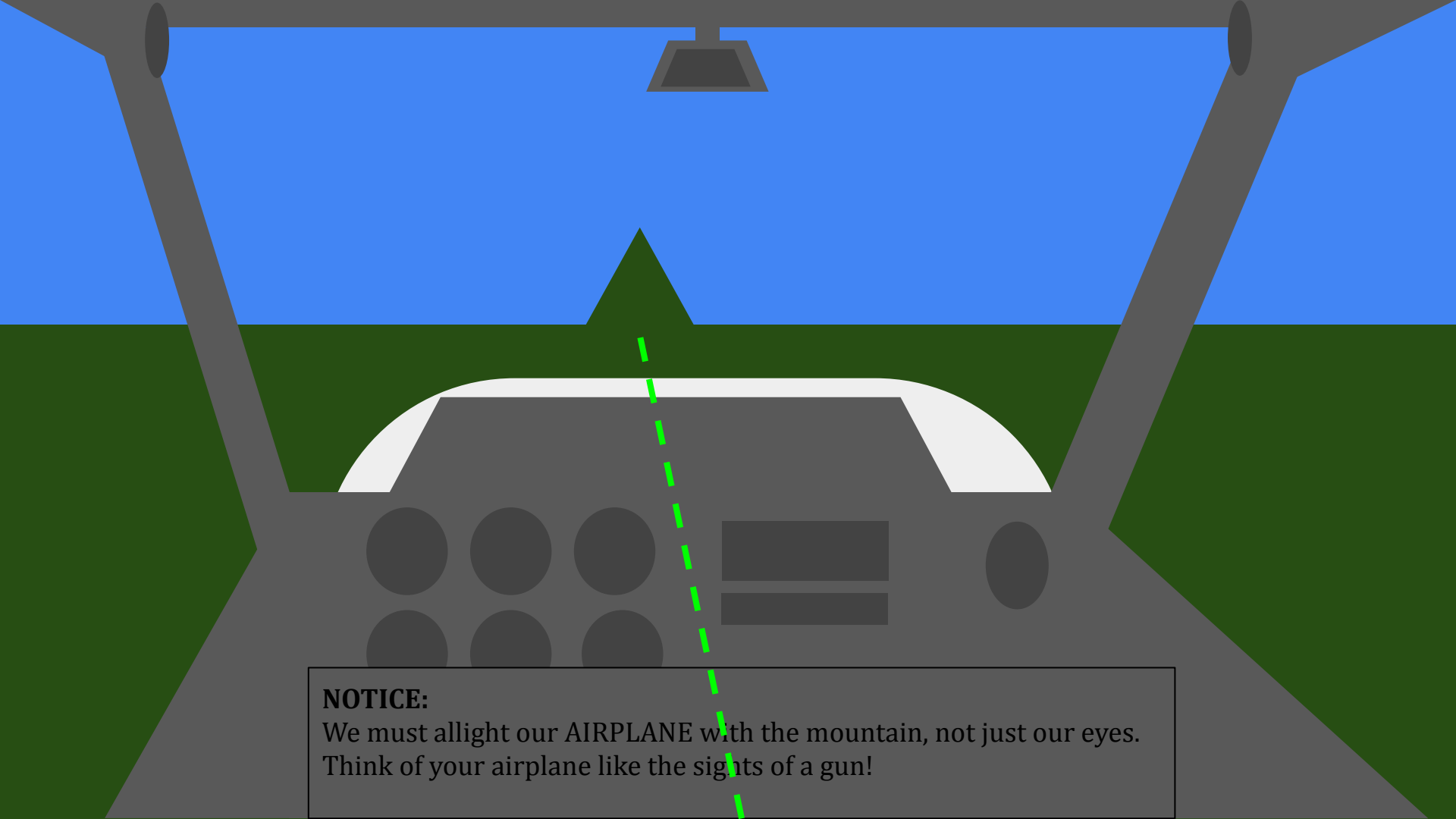
This is a skill you will naturally develop as you build experience.



Let's continue the turn and point towards that mountain!



Let's continue the turn and point towards that mountain!

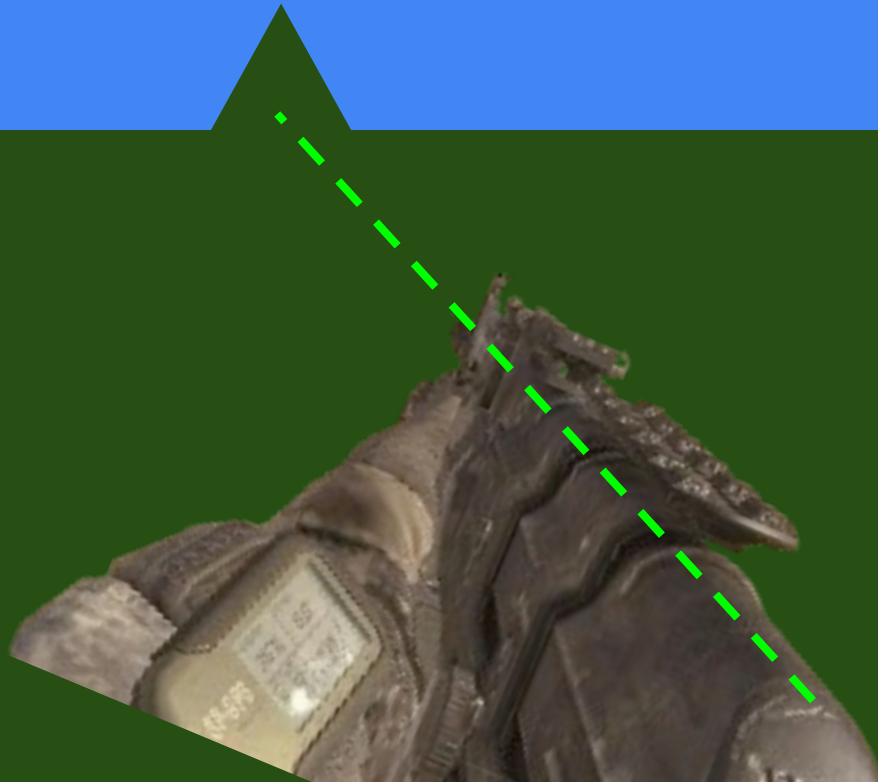


NOTICE:

We must allight our AIRPLANE with the mountain, not just our eyes.
Think of your airplane like the sights of a gun!

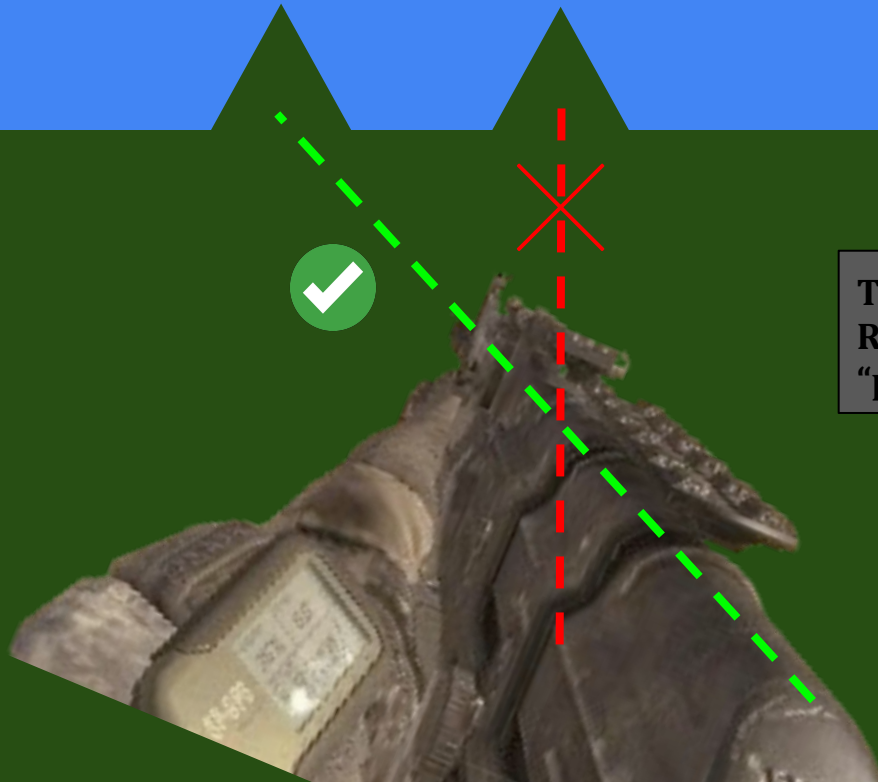
NOTICE:

Imagine you are lining up the sights of a gun. This is correct!



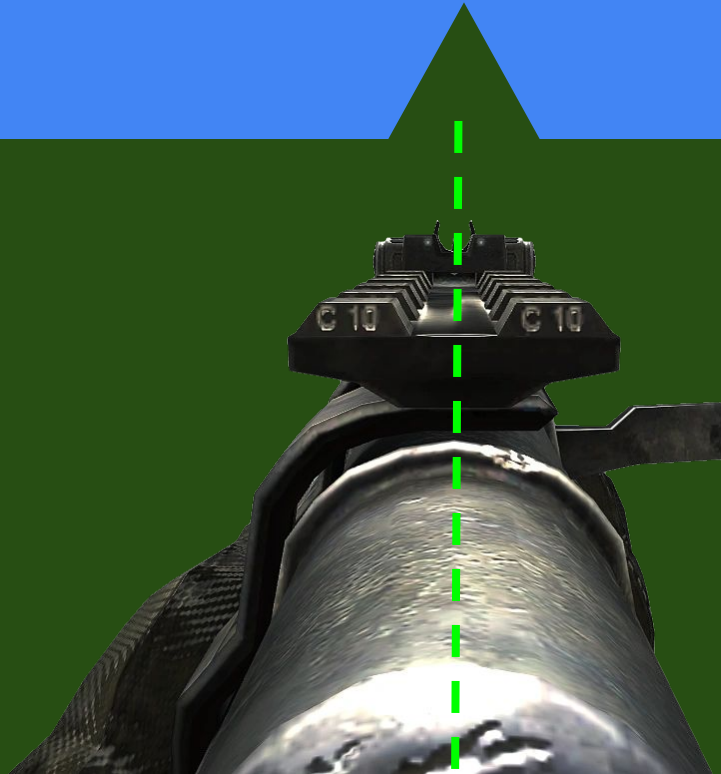
NOTICE:

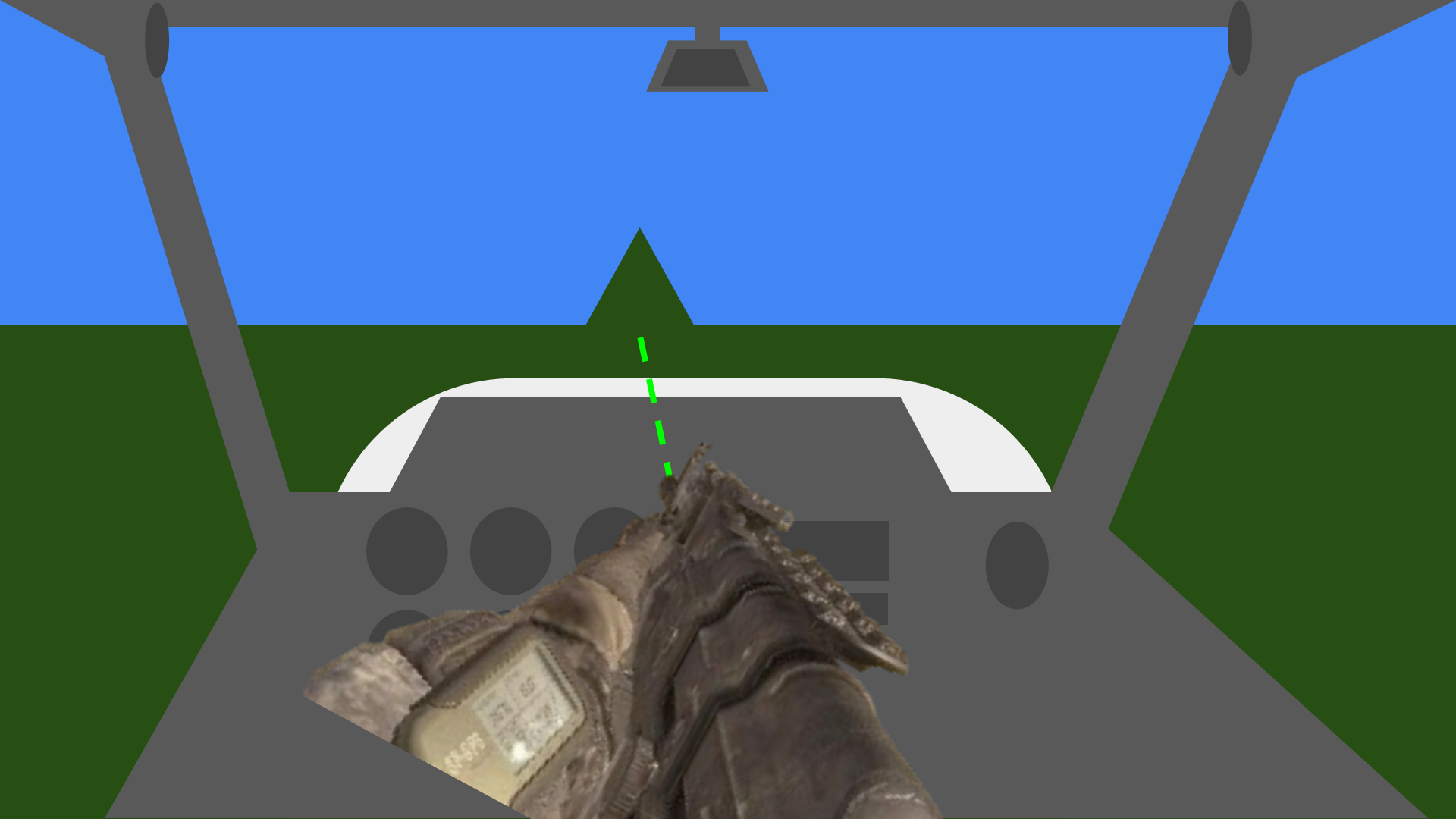
Imagine you are lining up the sights of a gun.
The GREEN line shows proper alignment. Just because the mountain
is straight, doesn't mean we're pointing at it!



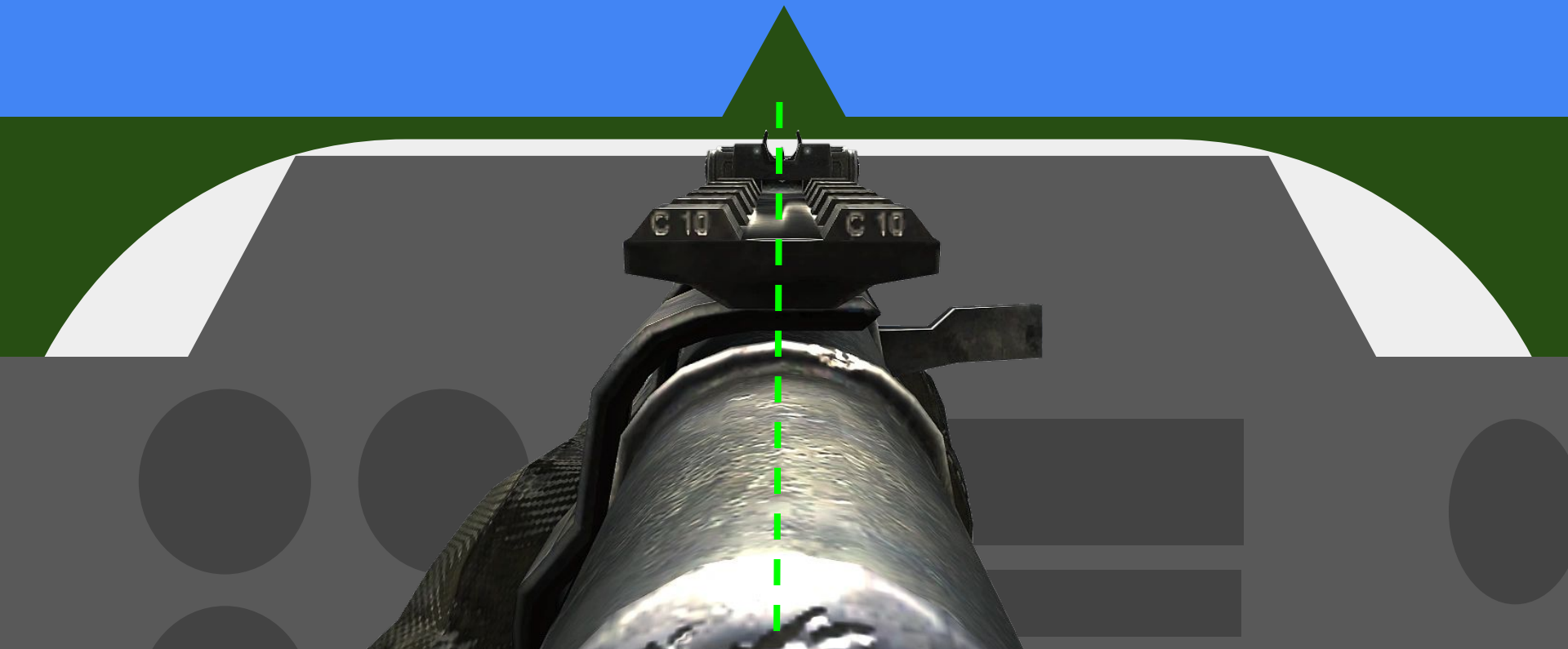
This visual difference between
Red and Green is called
“parallax”

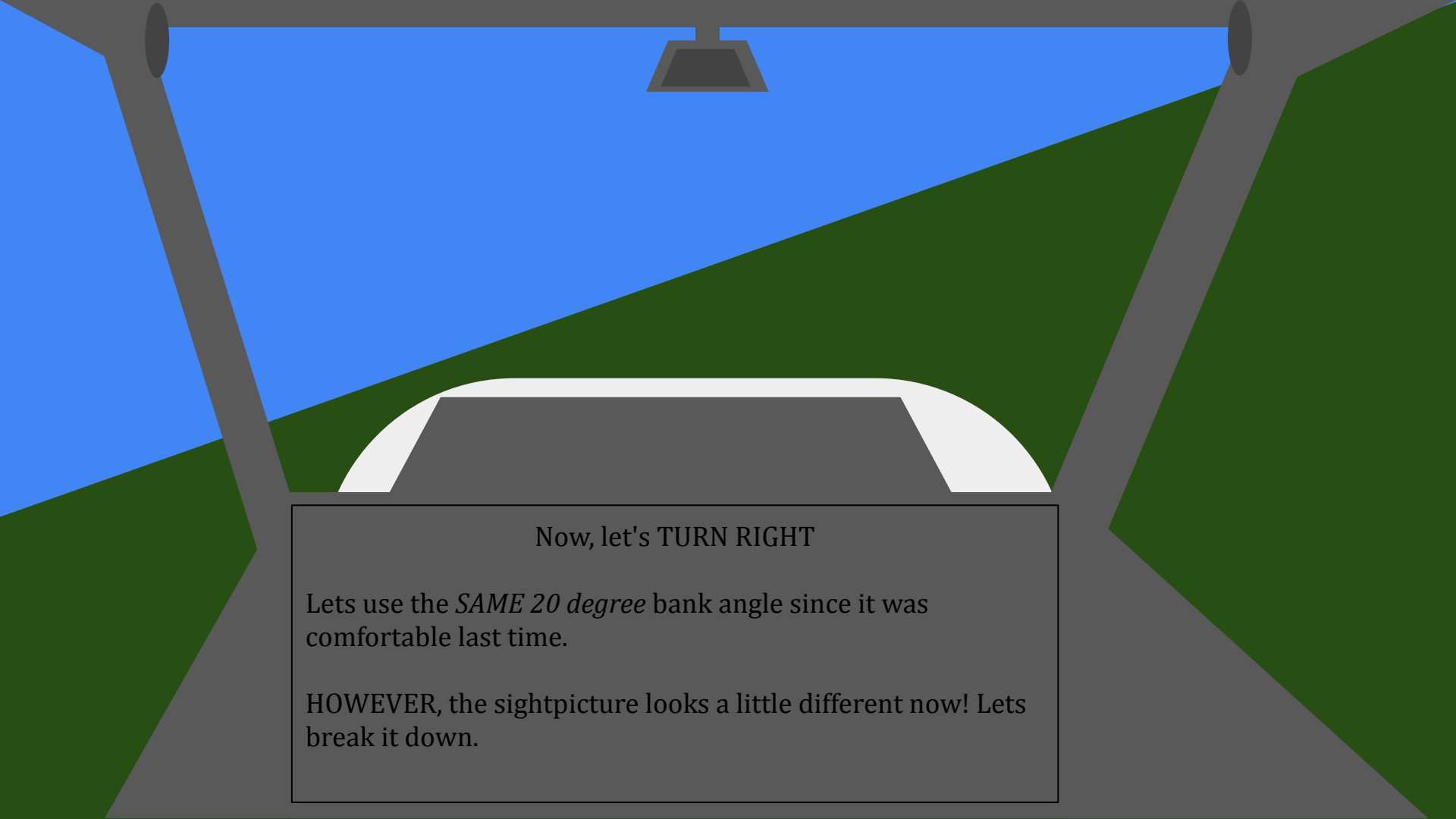
It is OK to move your head in the airplane to check if you're aligned





TRY IT in flight! Move your head to the middle of the cockpit to see the difference!

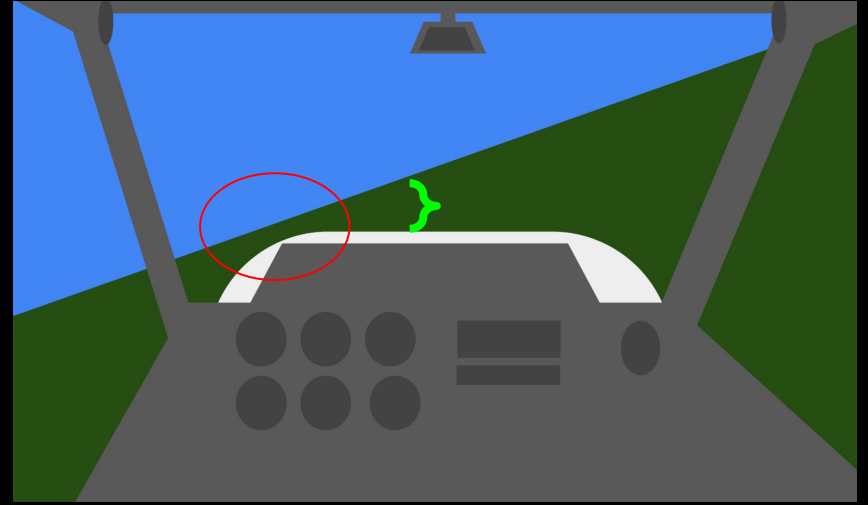
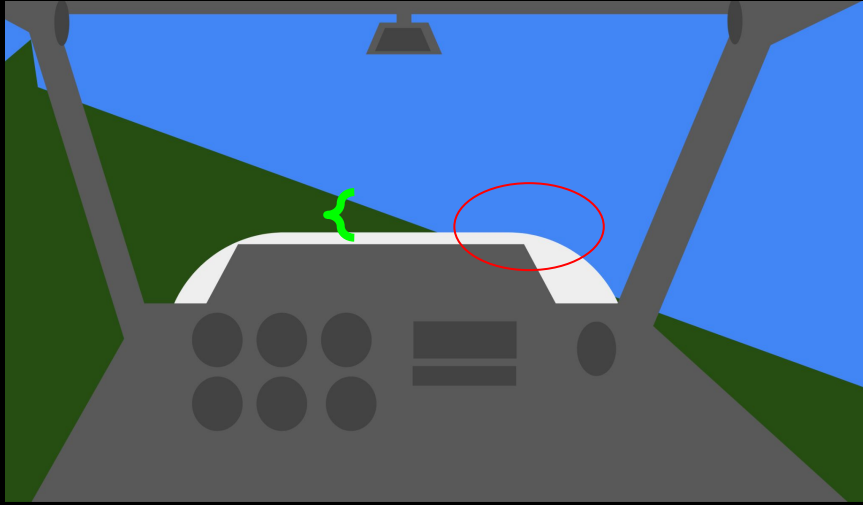




Now, let's TURN RIGHT

Lets use the *SAME 20 degree* bank angle since it was comfortable last time.

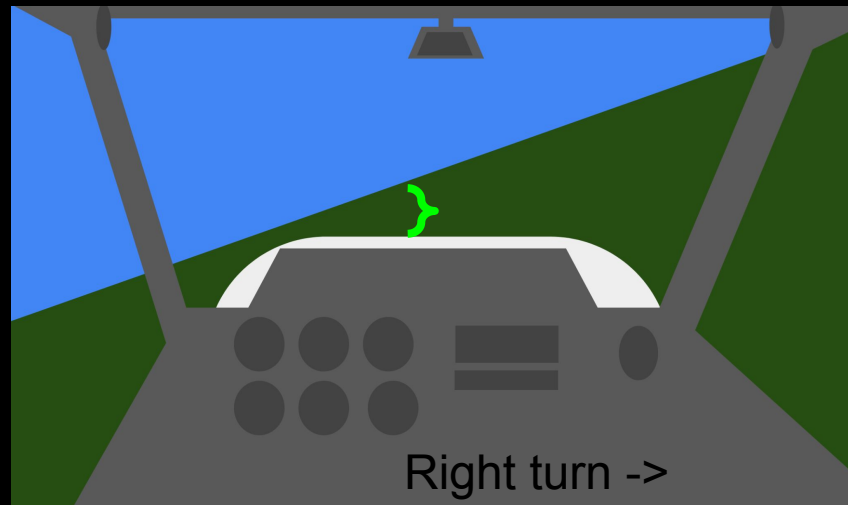
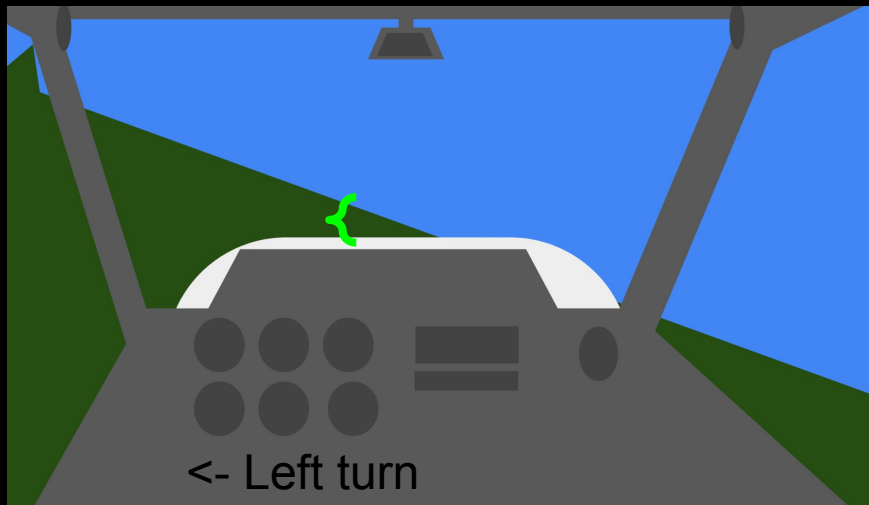
HOWEVER, the sightpicture looks a little different now! Lets break it down.



BOTH of these pictures *are* LEVEL turns!

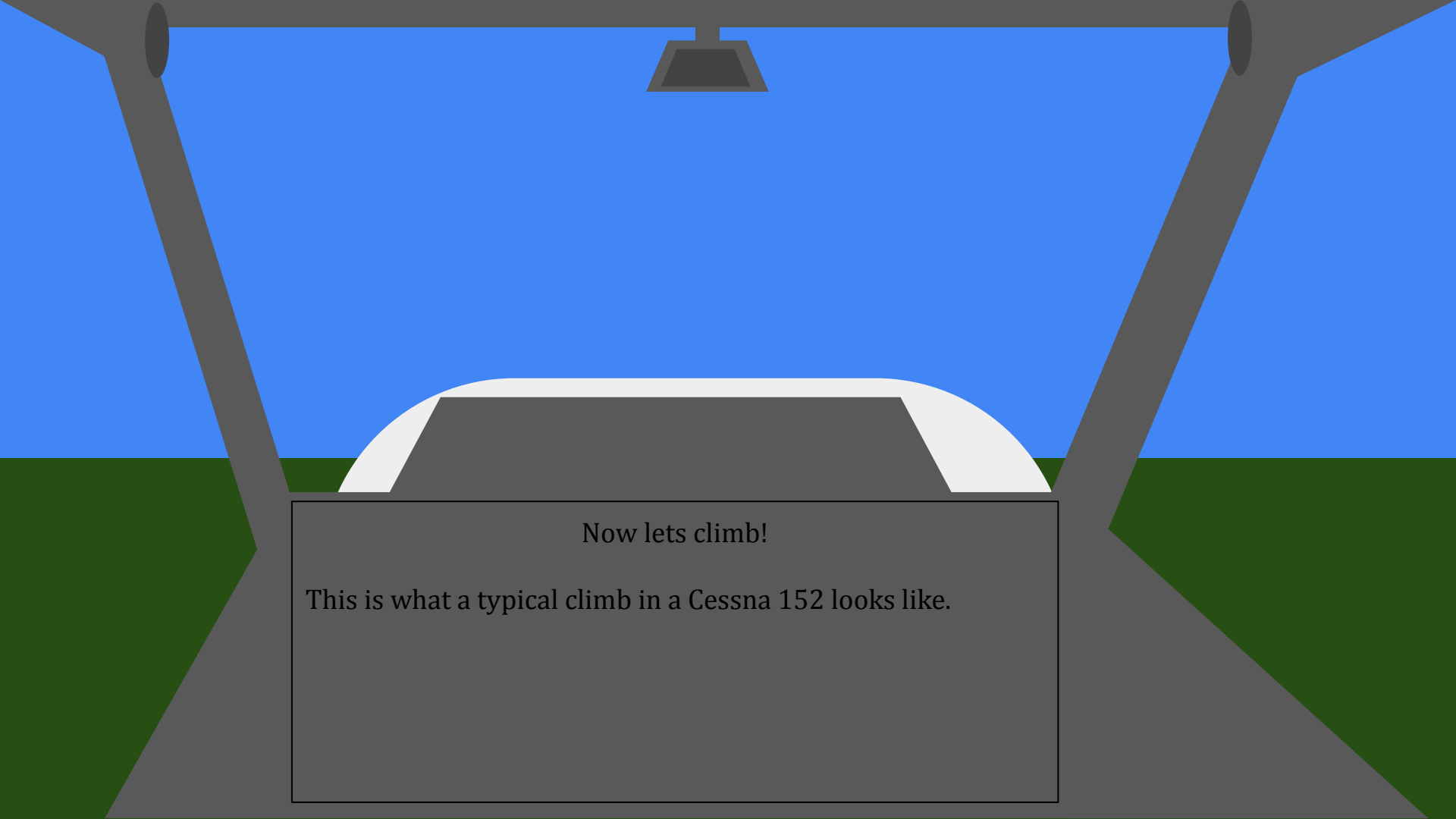
The reason it appears different is because YOU are sitting on the LEFT SEAT!

If you sit on the right seat, the same thing will happen, except in the right turn the nose will go up, and left the nose will go down!



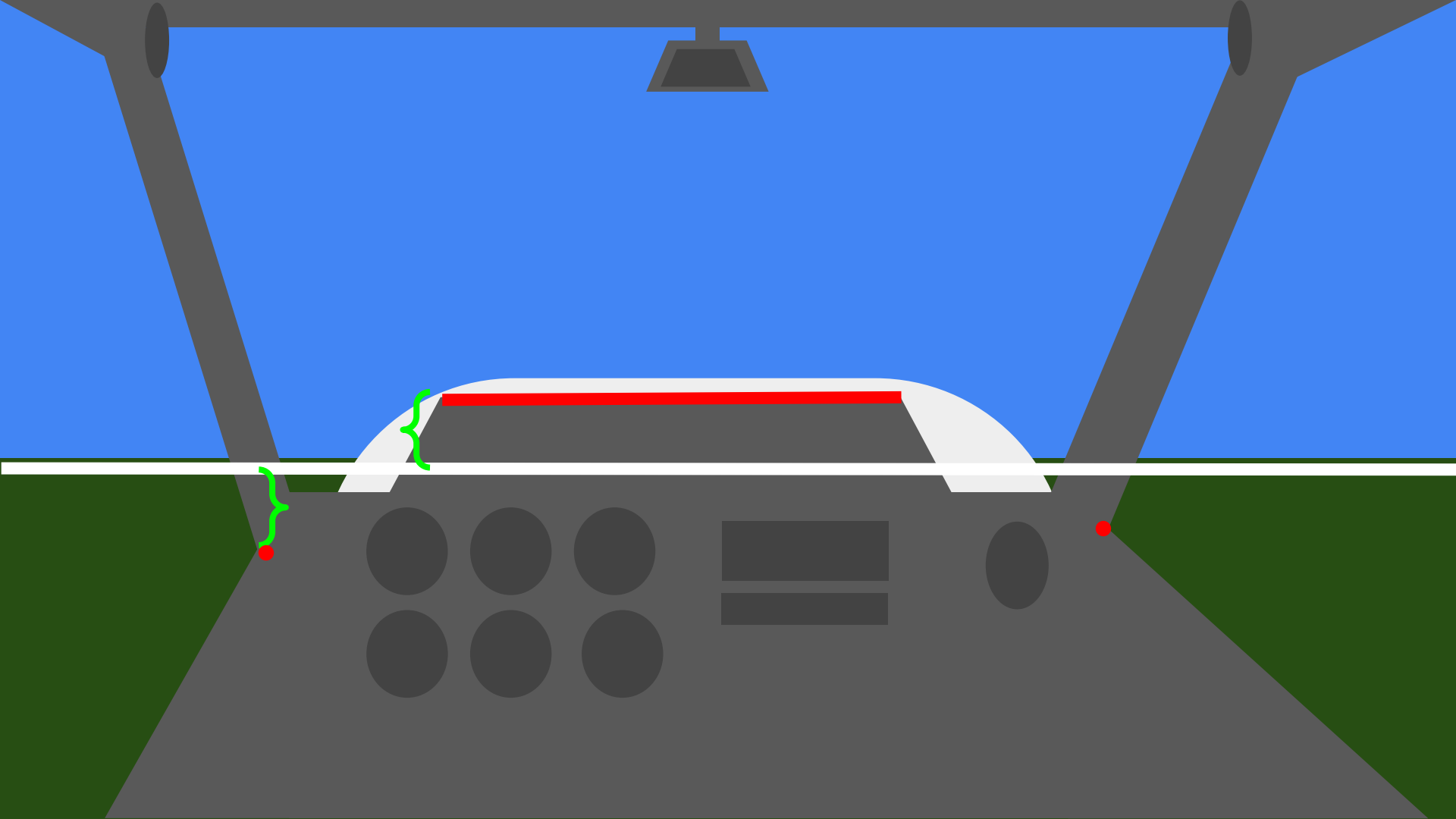
The differences may create an **illusion of climbing or descending.**

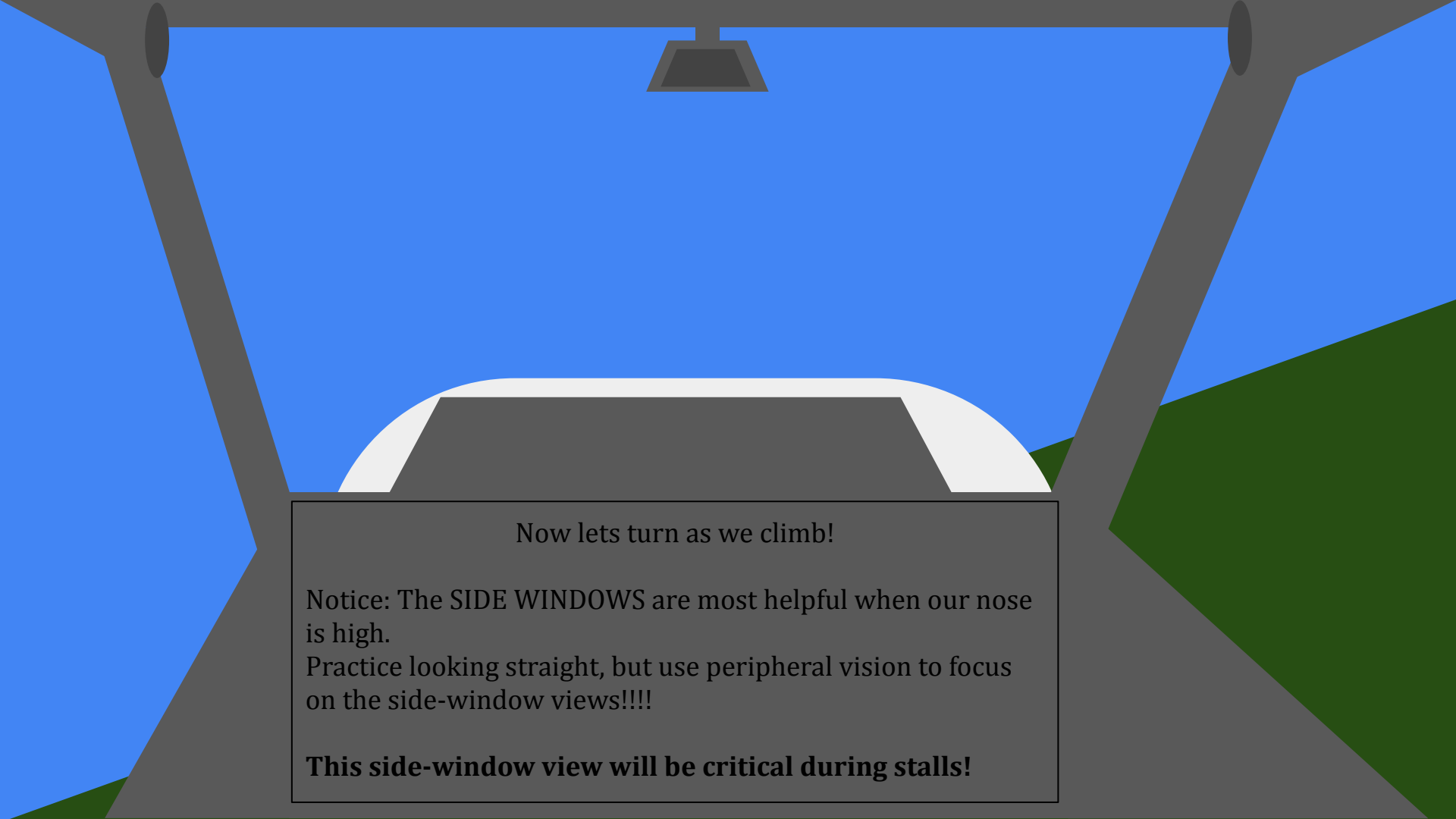
So practice 'measuring the distance' between cowling and horizon & verify altimeter.



Now lets climb!

This is what a typical climb in a Cessna 152 looks like.





Now lets turn as we climb!

Notice: The SIDE WINDOWS are most helpful when our nose is high.

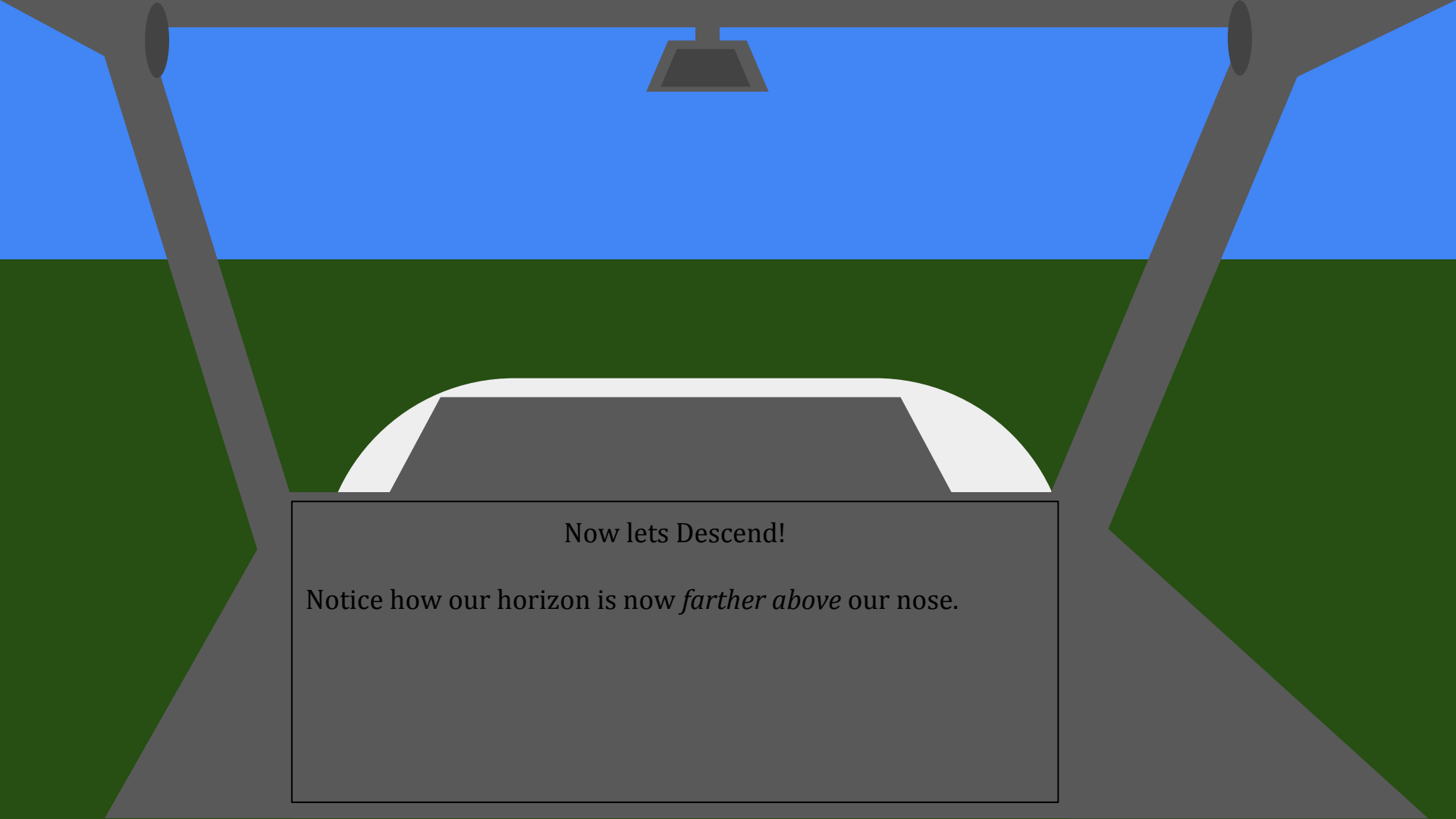
Practice looking straight, but use peripheral vision to focus on the side-window views!!!!

This side-window view will be critical during stalls!

A diagram showing a top-down view of a vehicle's interior from the side window. The vehicle is dark grey with a white roof. A red horizontal line is drawn across the side window area. A white callout box with the word "Roll" is connected to the right end of the red line. A green bracket on the left side of the vehicle's interior is connected to a callout box containing the text "This side-window view will be very helpful during stalls!". A white diagonal line runs from the bottom left towards the top right, passing through the side window area. The background is blue, and the ground is green.

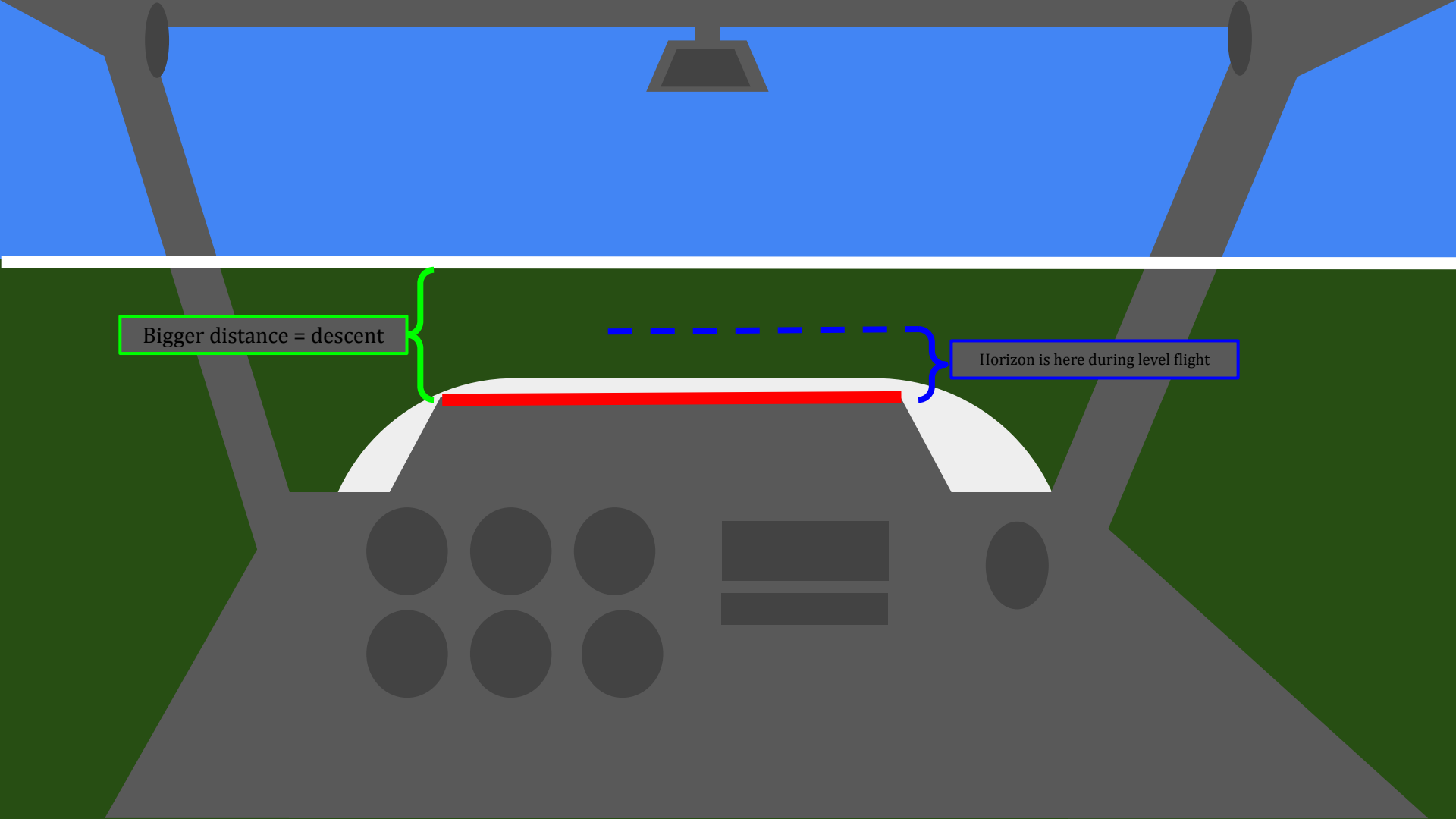
Roll

This side-window view will be very helpful during stalls!



Now lets Descend!

Notice how our horizon is now *farther above* our nose.



Bigger distance = descent

Horizon is here during level flight

To try it hands-on, you can play around with this GitHub Project:

This flight sim. Is not made by me. All credit to the creators!

Web-based flight simulator

<https://s-macke.github.io/FSHistory/>