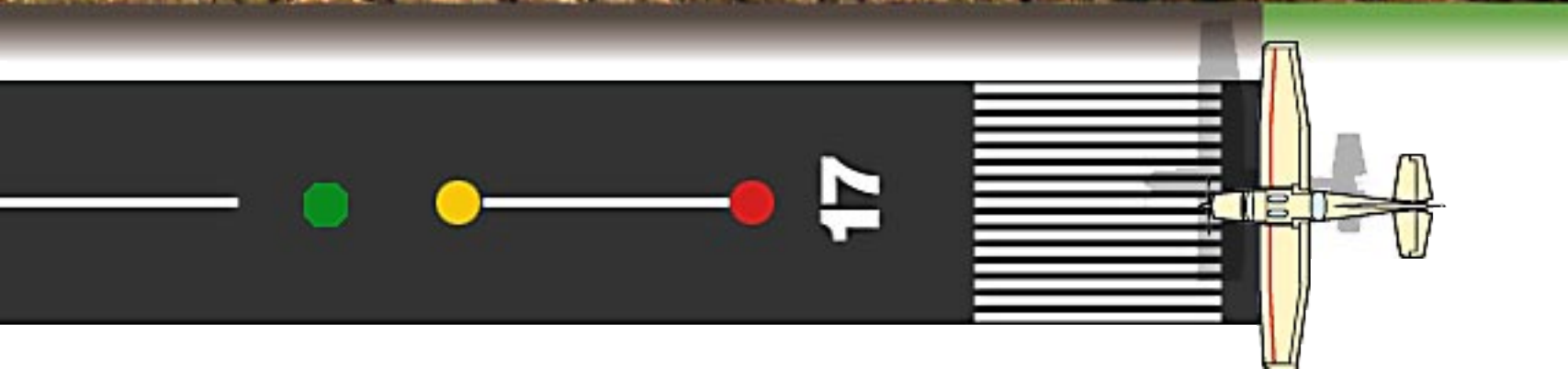


# Landing techniques:

Introducing the

# “Jacobson Flare”



**Existing techniques**

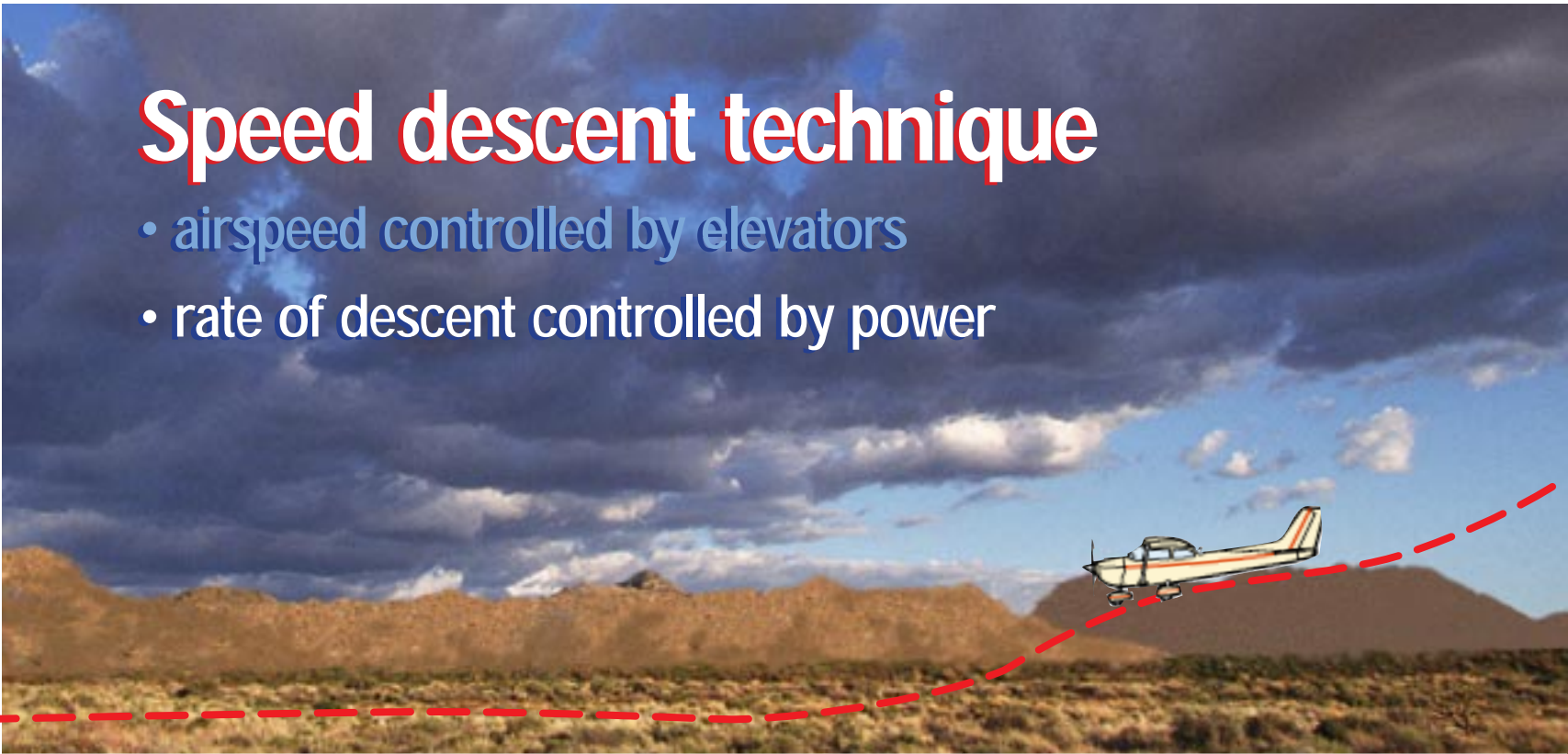
# Speed descent technique

- airspeed controlled by elevators



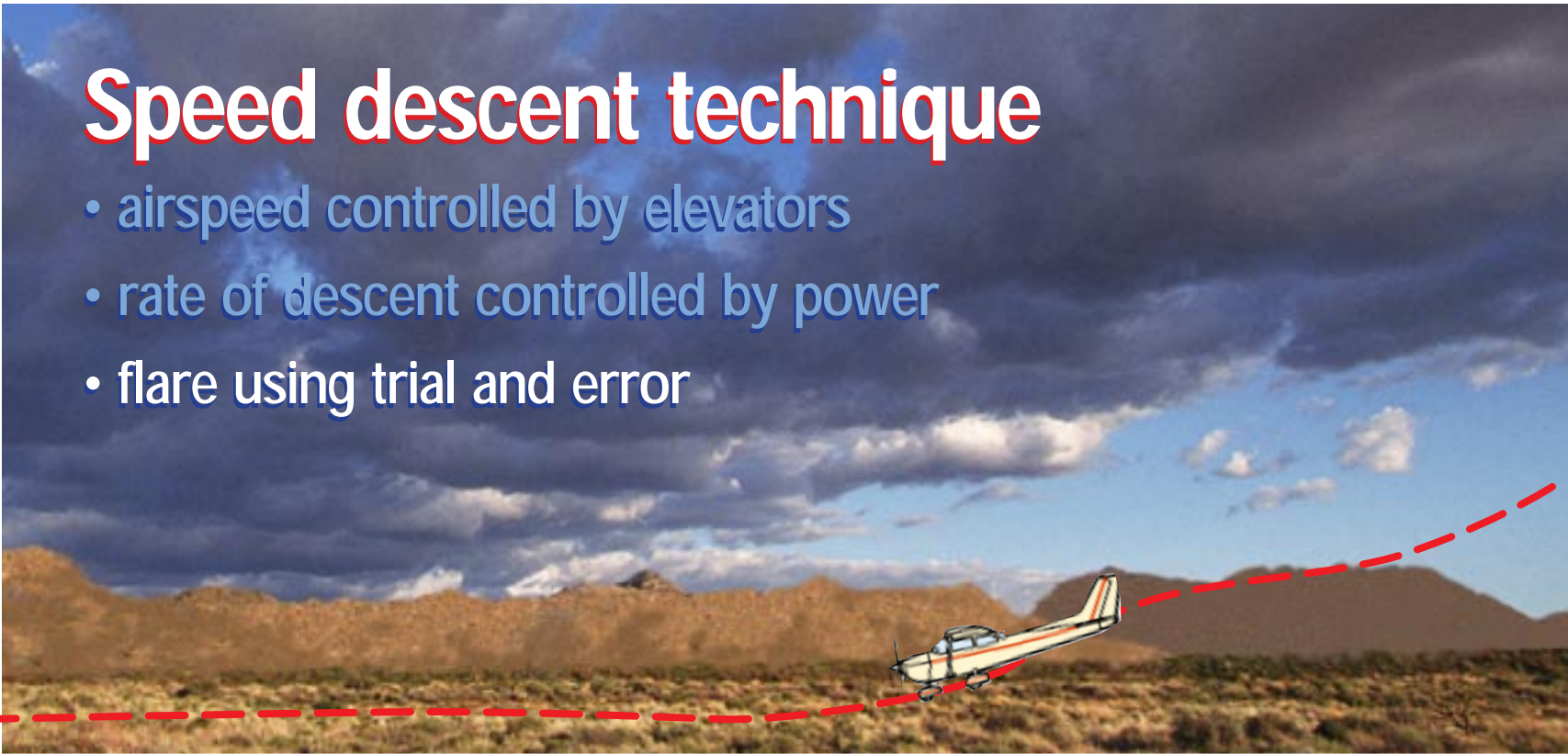
# Speed descent technique

- airspeed controlled by elevators
- rate of descent controlled by power



# Speed descent technique

- airspeed controlled by elevators
- rate of descent controlled by power
- flare using trial and error



# Speed descent technique

- airspeed controlled by elevators
- rate of descent controlled by power
- flare using trial and error

When? How much? How fast?





The  
"Jacobson Flare"

# Jacobson Flare

- Approach path controlled by pitch attitude



# Jacobson Flare

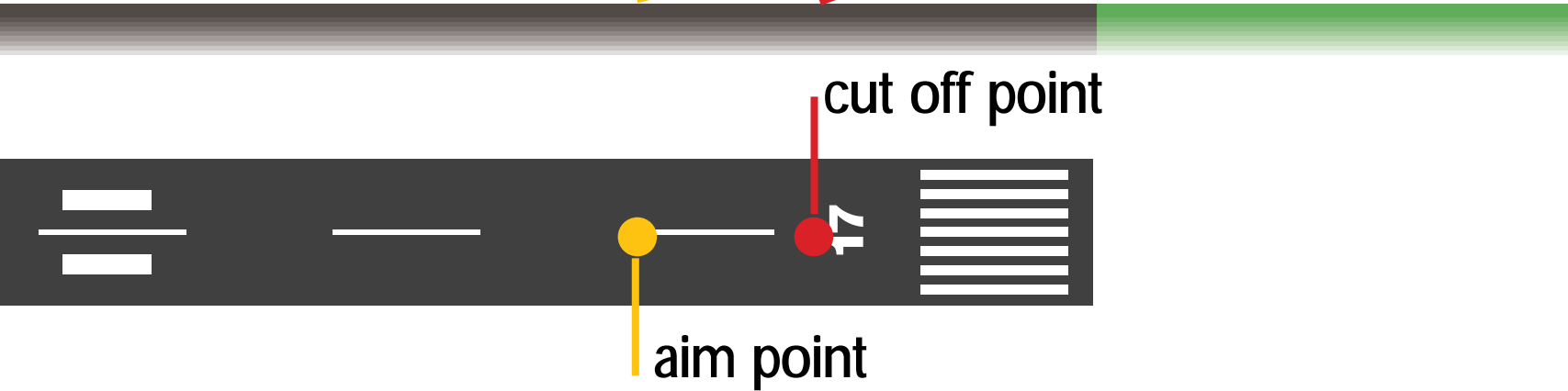
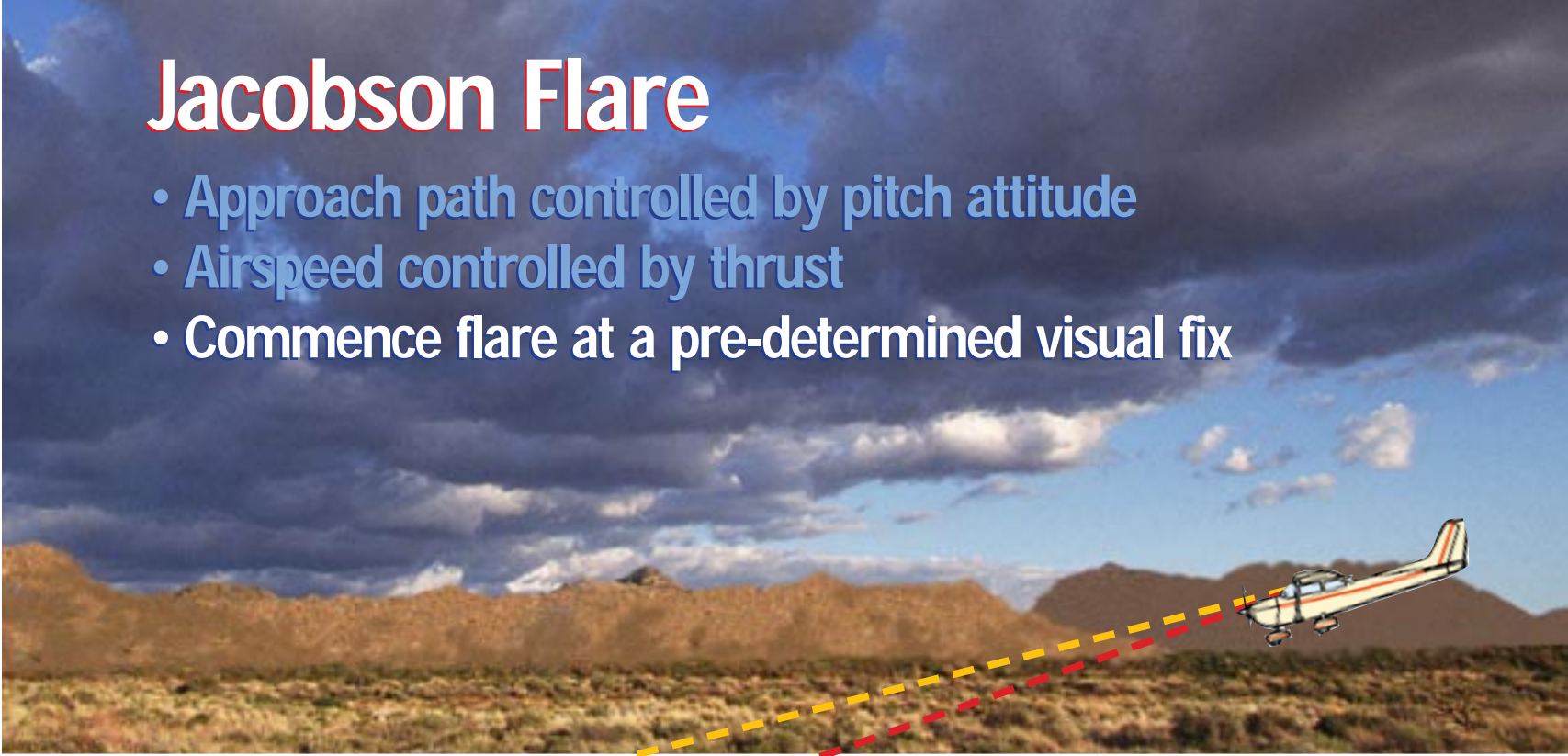
- Approach path controlled by pitch attitude
- Airspeed controlled by thrust



aim point

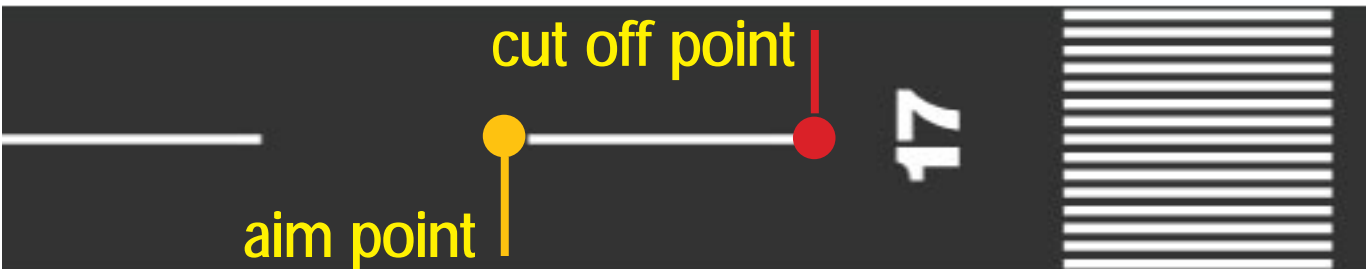
# Jacobson Flare

- Approach path controlled by pitch attitude
- Airspeed controlled by thrust
- Commence flare at a pre-determined visual fix



# Jacobson Flare

- Approach path controlled by pitch attitude
- Airspeed controlled by thrust
- Commence flare at a pre-determined visual fix
- Visual cues utilised through to touchdown







**1. Where to aim?**

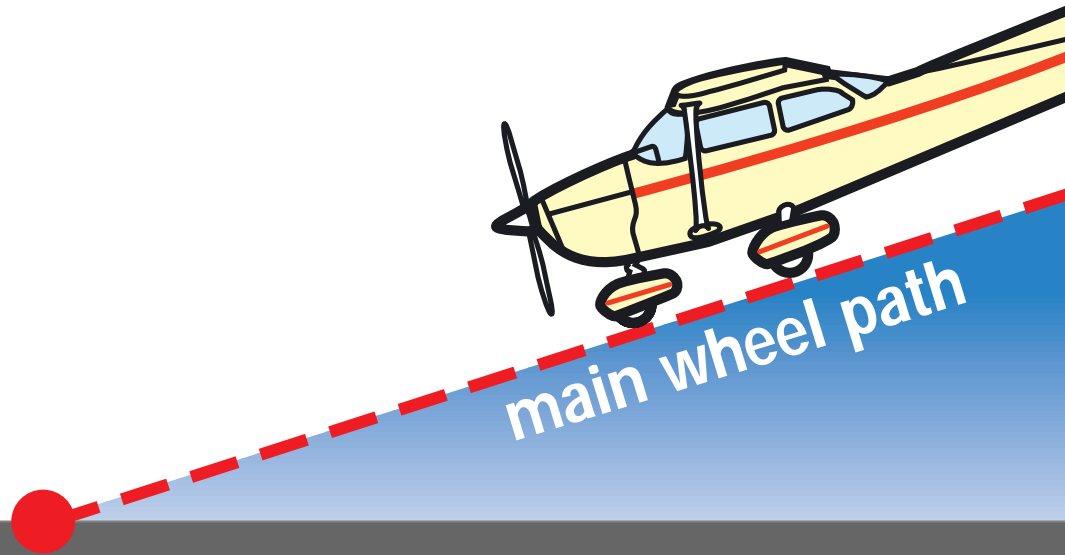
**2. When to flare?**

**3. How to flare?**

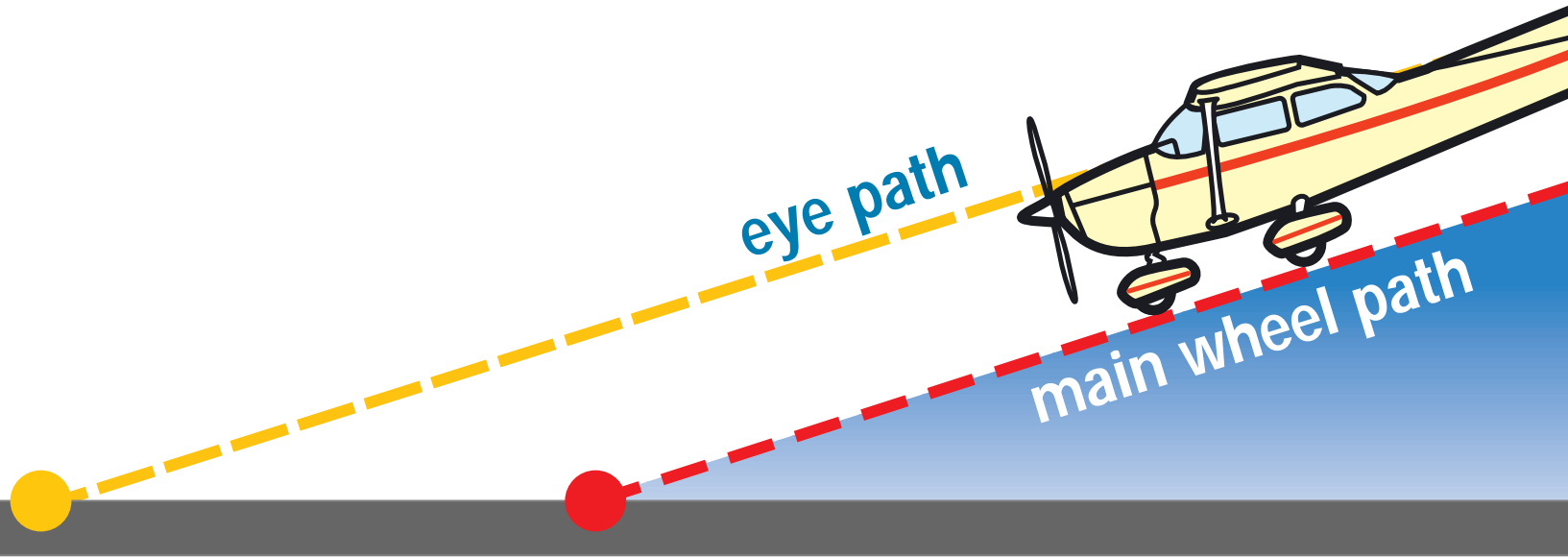
**1. Where to aim?**

The background of the slide is a photograph of a bright blue sky filled with large, white, puffy cumulus clouds. The clouds are concentrated in the lower half of the frame, with the sky being a deep, clear blue above them.

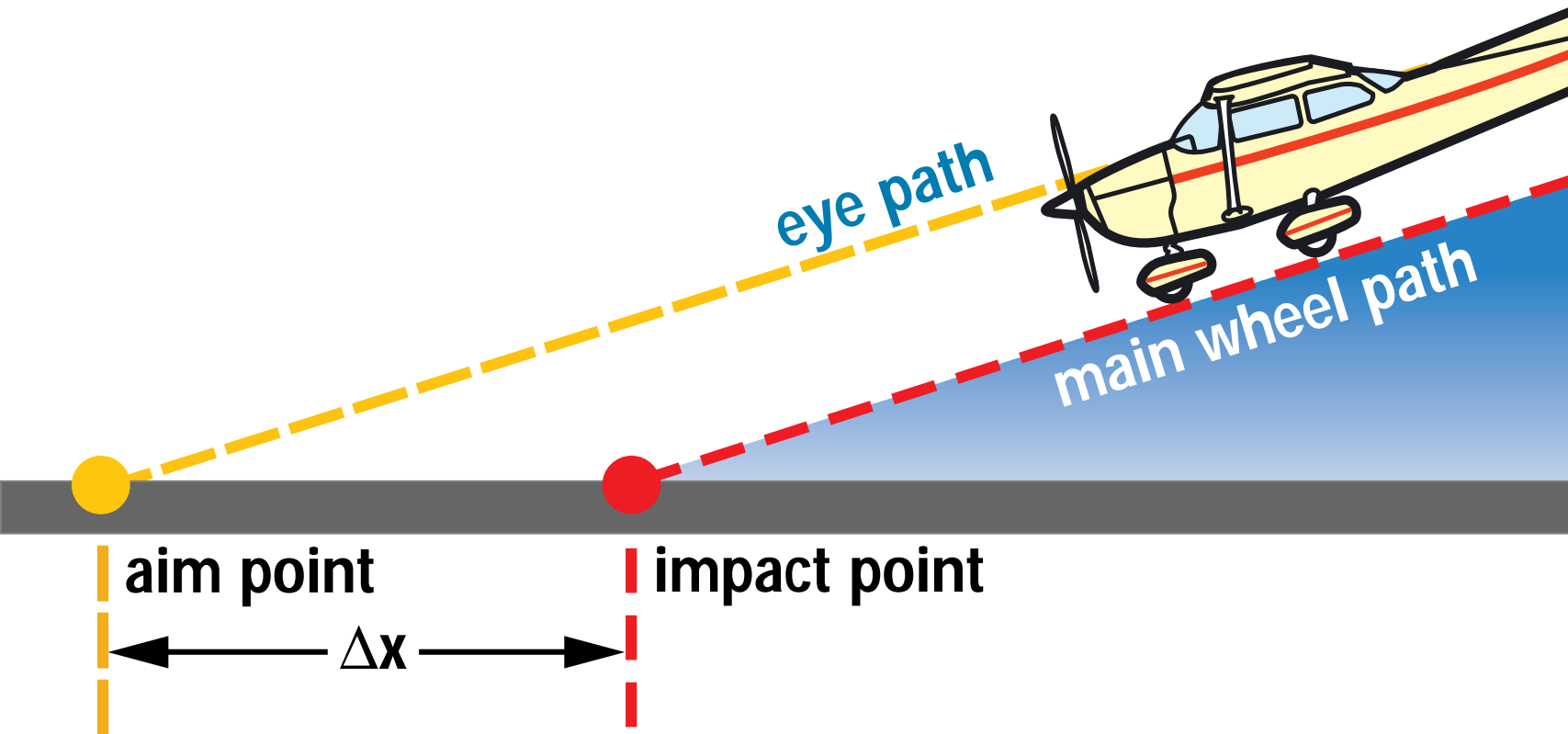
# Selecting an aim point



# Selecting an aim point

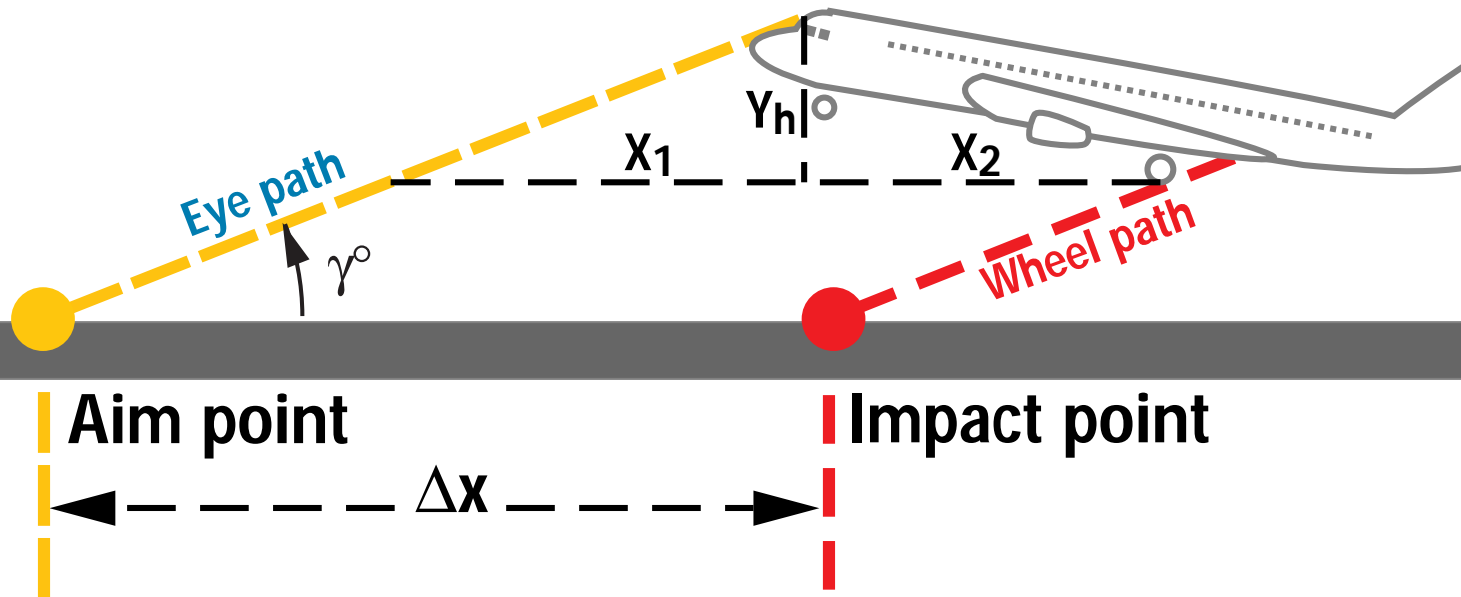


# Selecting an aim point



# The distance between Aim point and Impact point (simplified version)

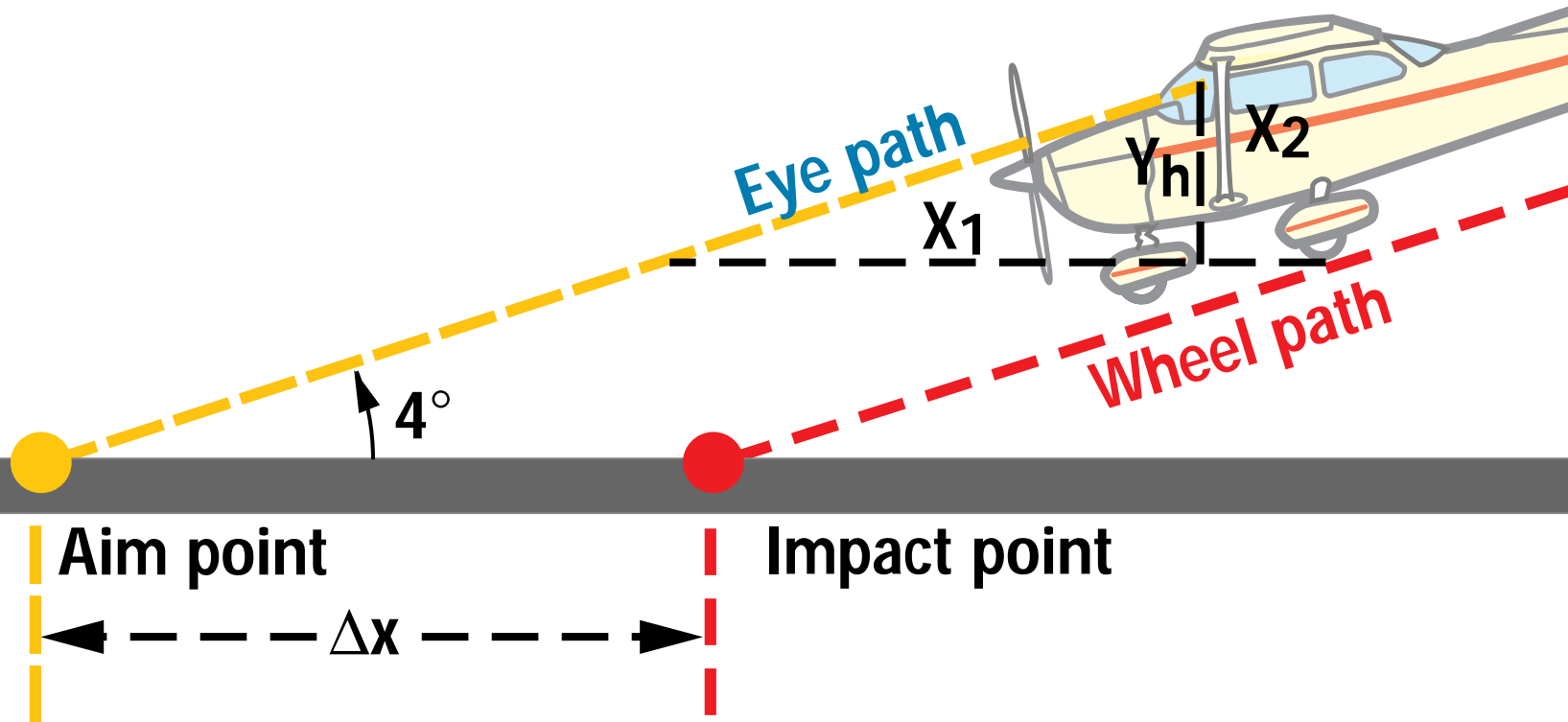
$$\Delta X \approx (Y_h \times 60/\gamma^\circ) + X_2$$



# The distance between Aim point and Impact point (for example a typical single engine light aircraft)

$$\Delta X \approx (6' \times 60/4) + 2'$$

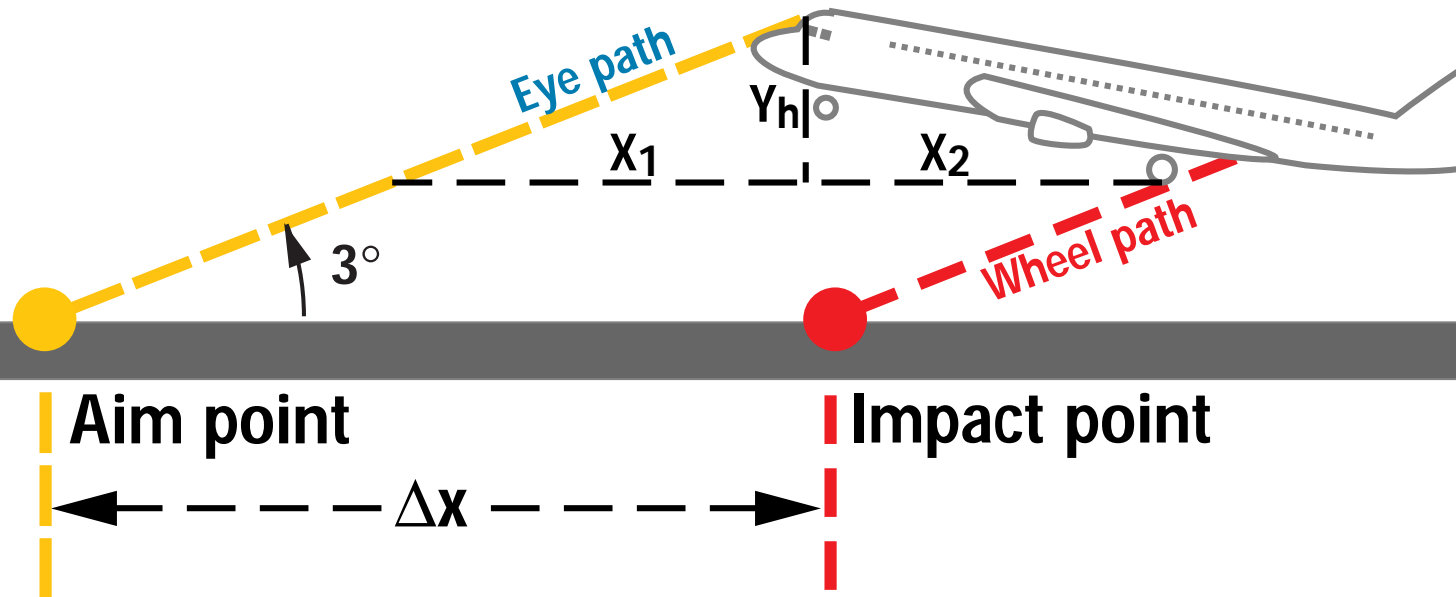
$$\Delta X \approx 92'$$



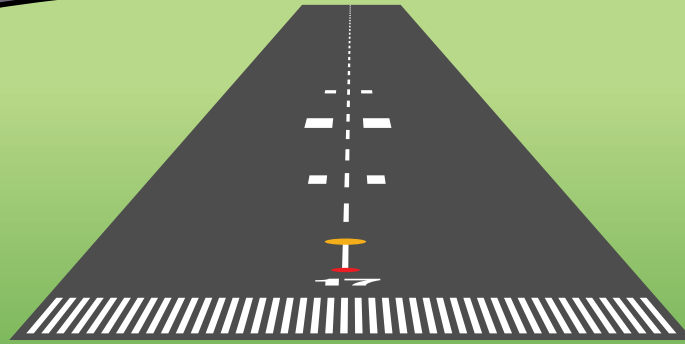
# The distance between Aim point and Impact point (for example a typical wide-bodied twin)

$$\Delta X \approx (32' \times 60/3) + 80'$$

$$\Delta X \approx 720'$$



# Flying a constant angle path



Glareshield

---

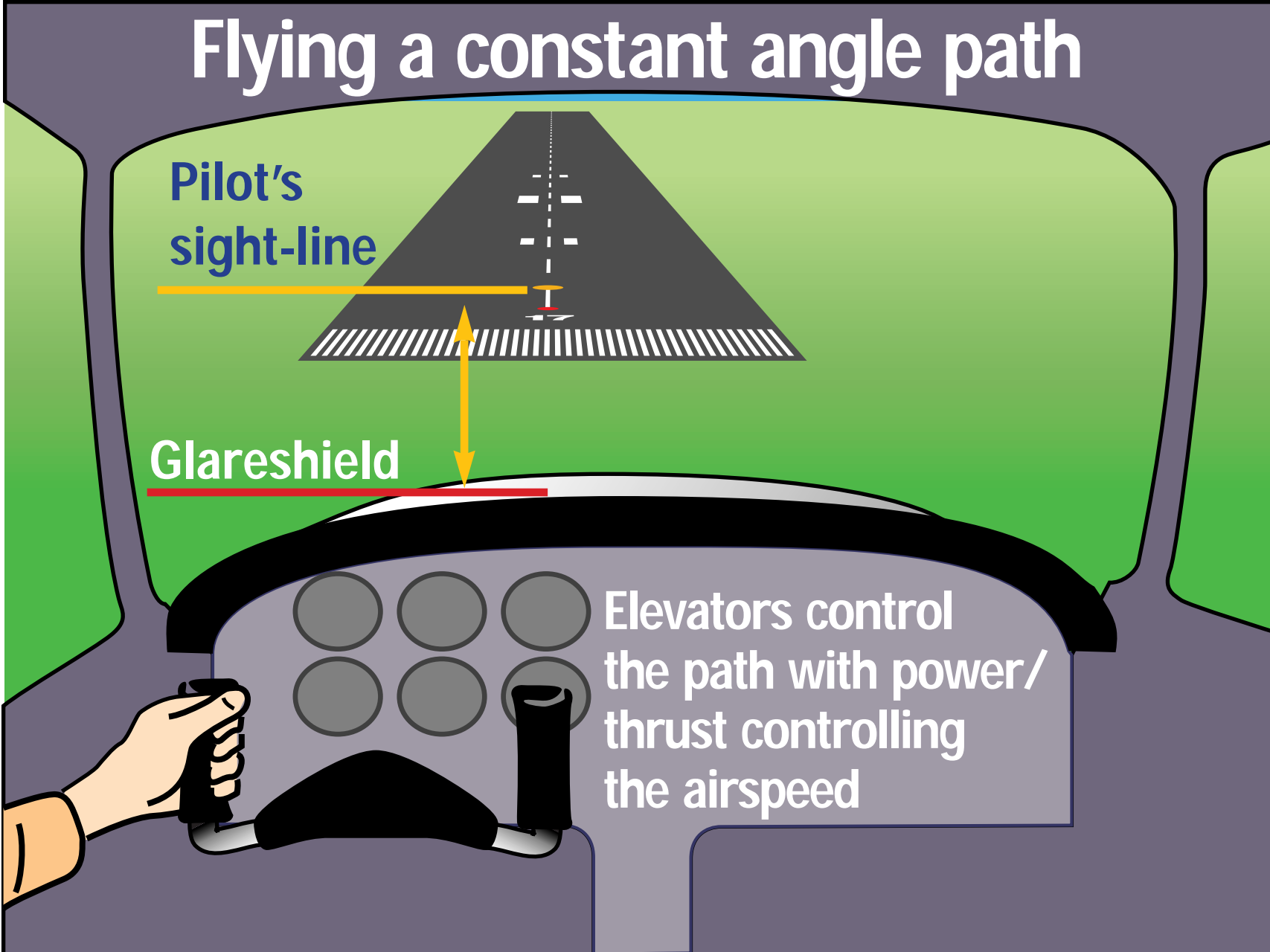
Elevators control the path with power/thrust controlling the airspeed

# Flying a constant angle path

Pilot's  
sight-line

Glareshield

Elevators control  
the path with power/  
thrust controlling  
the airspeed



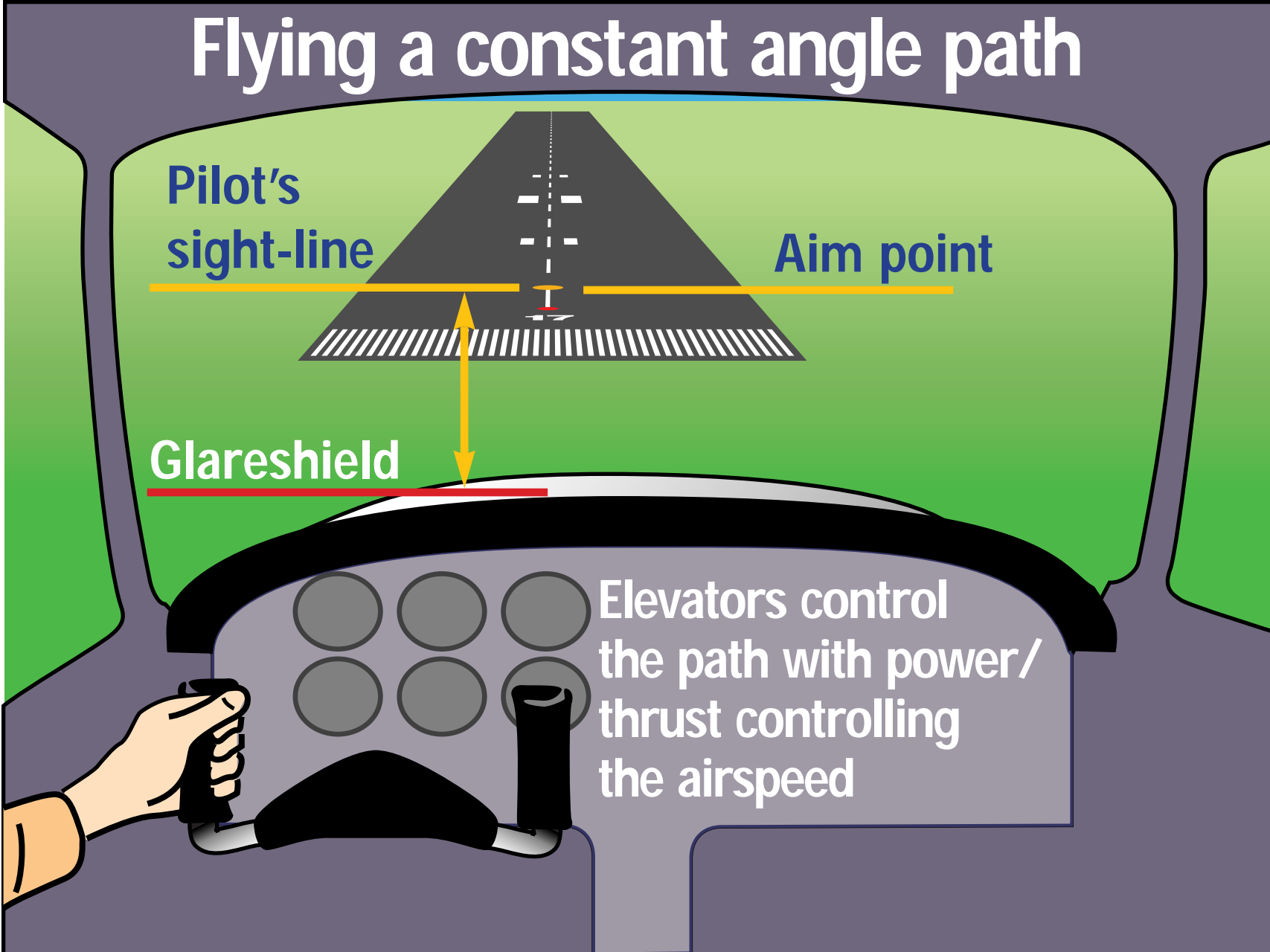
# Flying a constant angle path

Pilot's  
sight-line

Aim point

Glareshield

Elevators control  
the path with power/  
thrust controlling  
the airspeed



# Flying a constant angle path

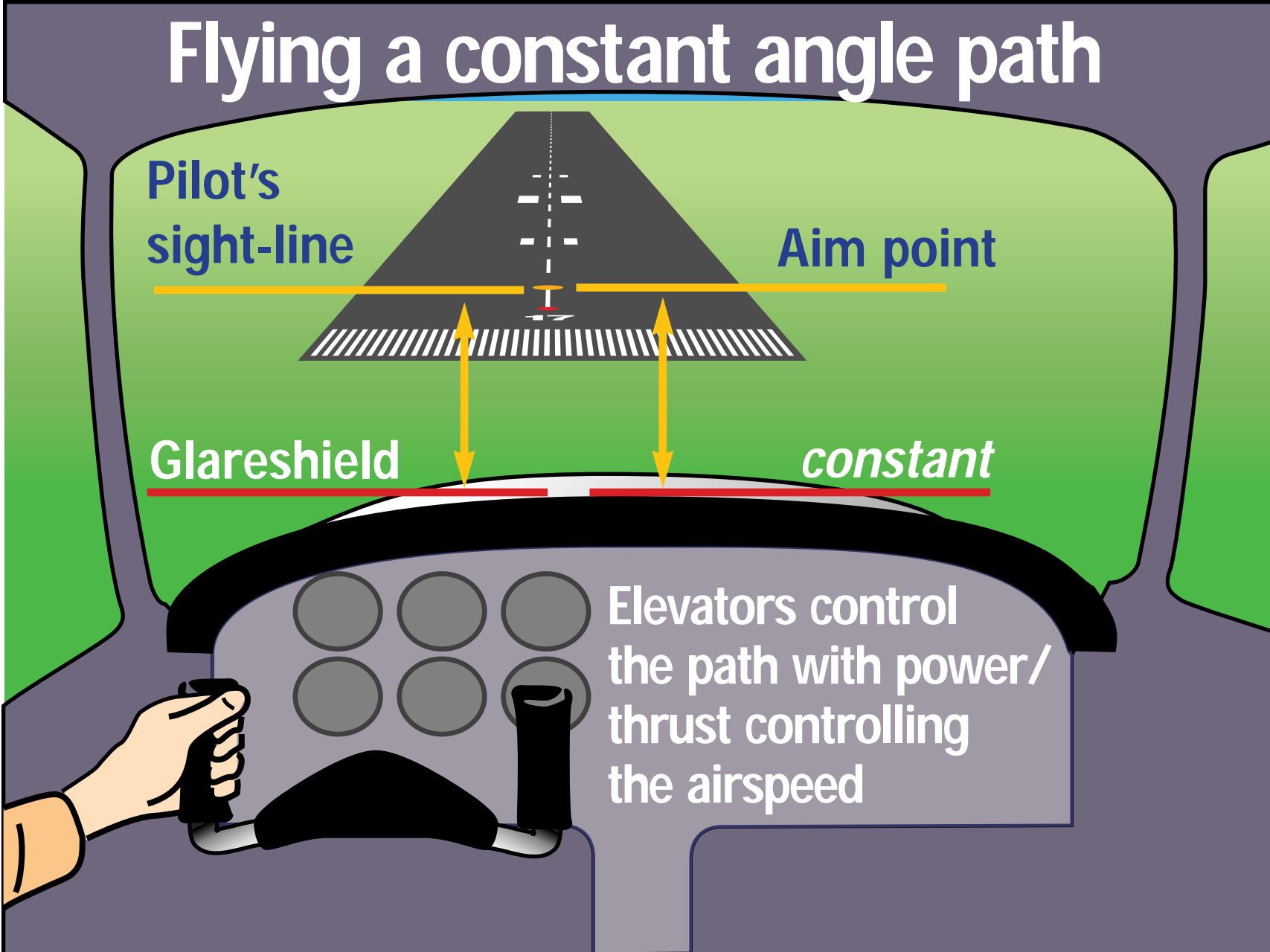
Pilot's  
sight-line

Aim point

Glareshield

*constant*

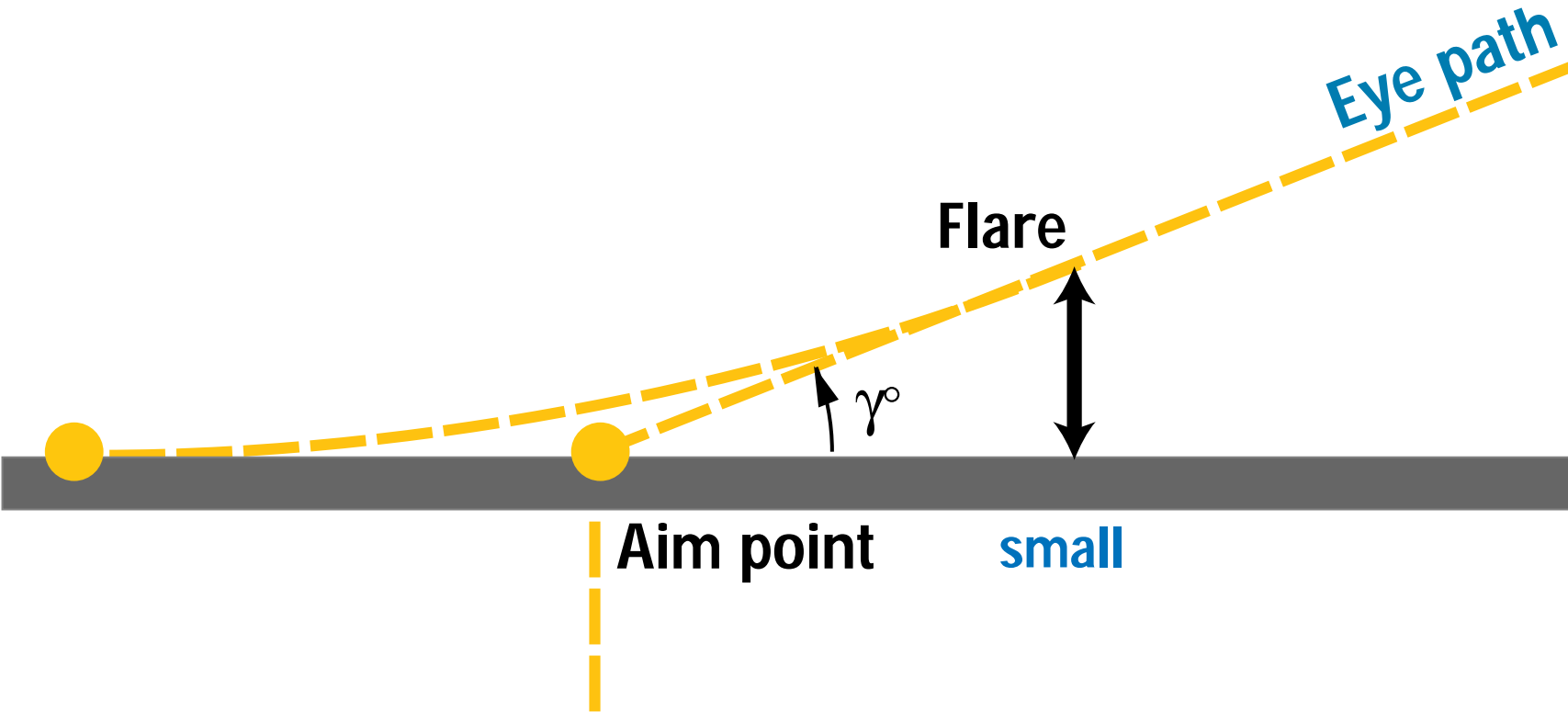
Elevators control  
the path with power/  
thrust controlling  
the airspeed



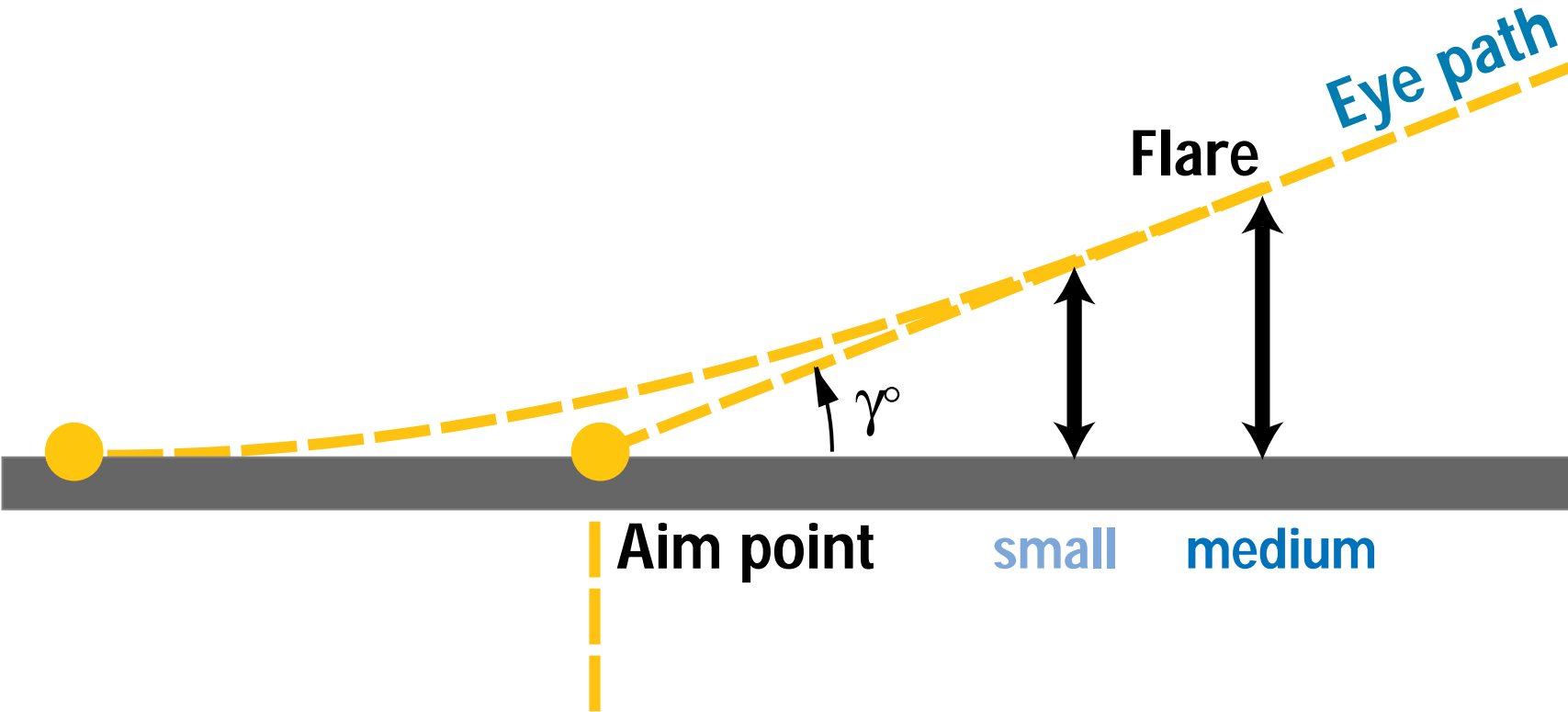
# 2. When to flare?



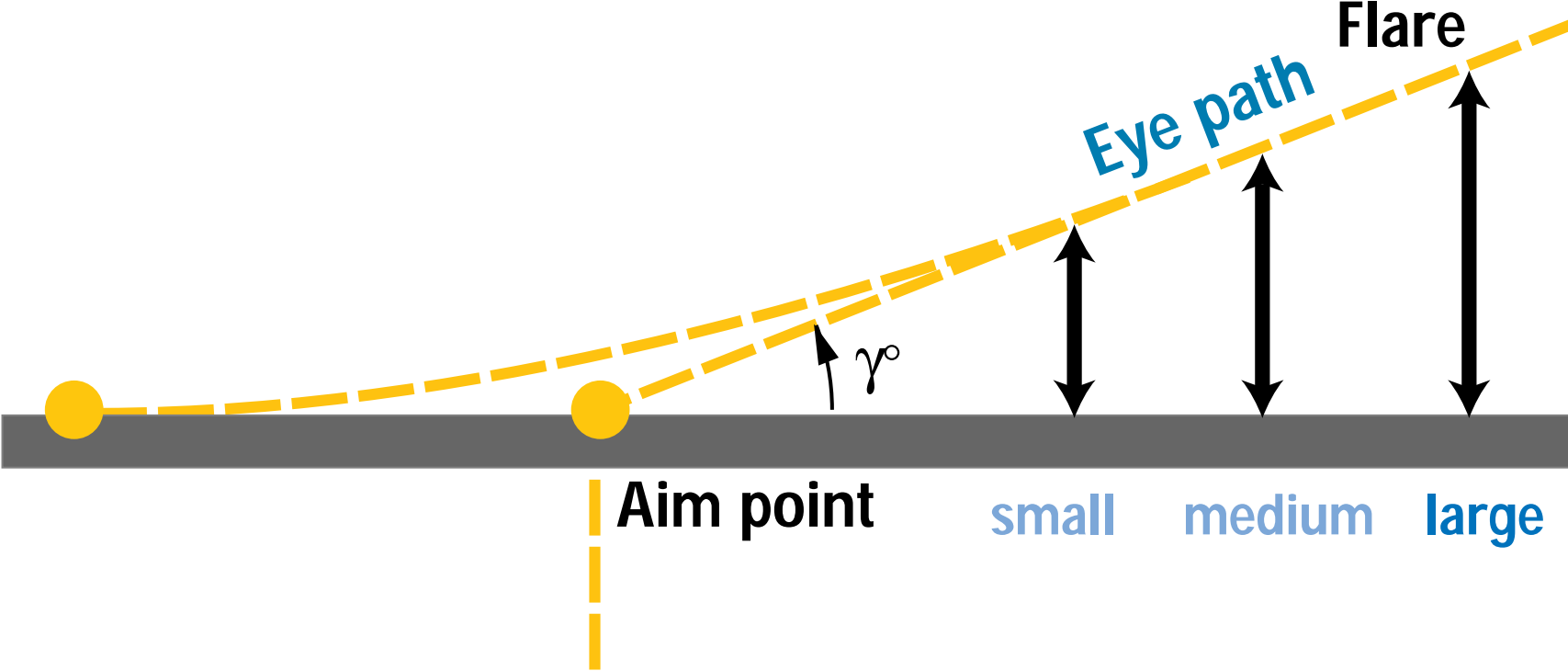
# Vertical perception of flare height



# Vertical perception of flare height



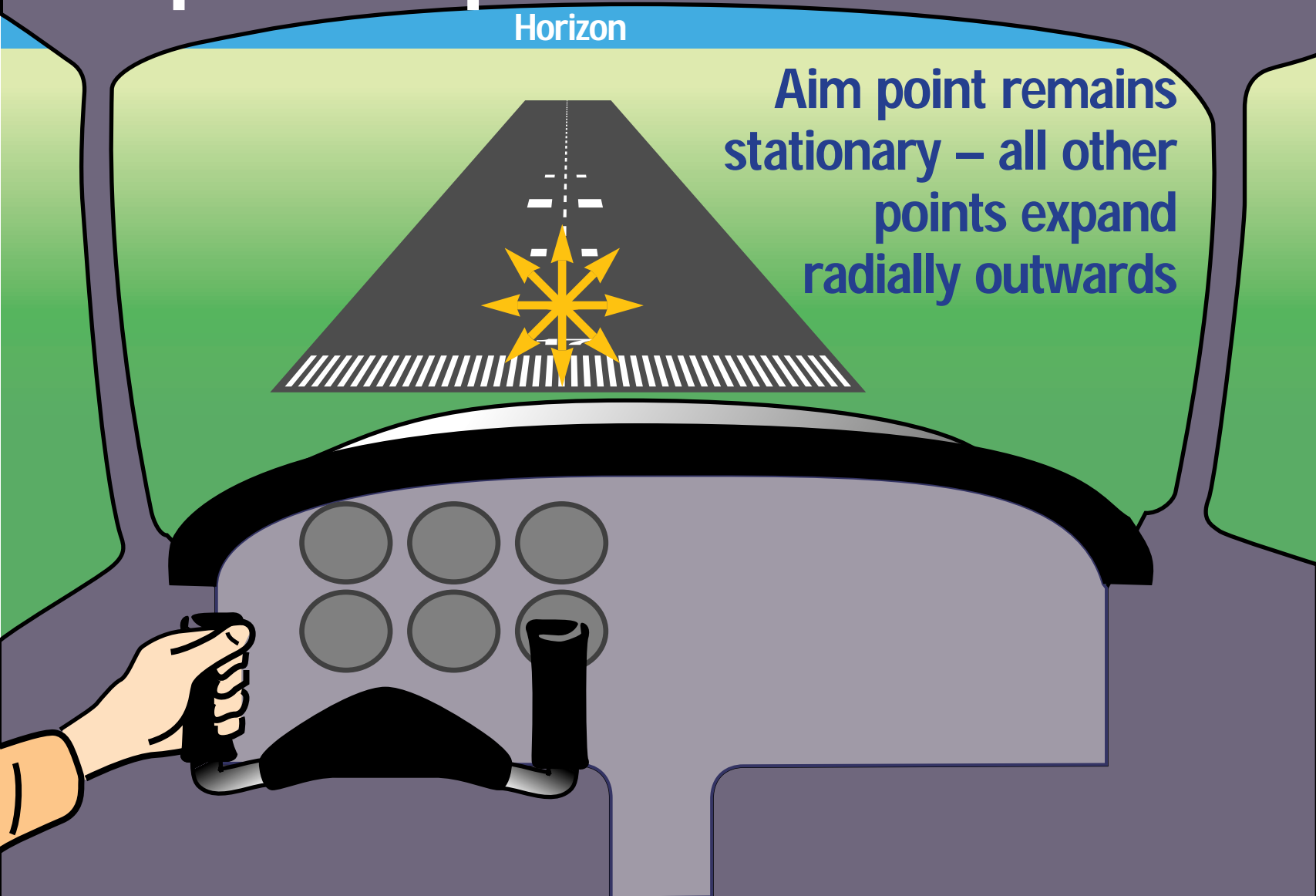
# Vertical perception of flare height



# Expansion pattern as cue to flare

Horizon

Aim point remains stationary – all other points expand radially outwards



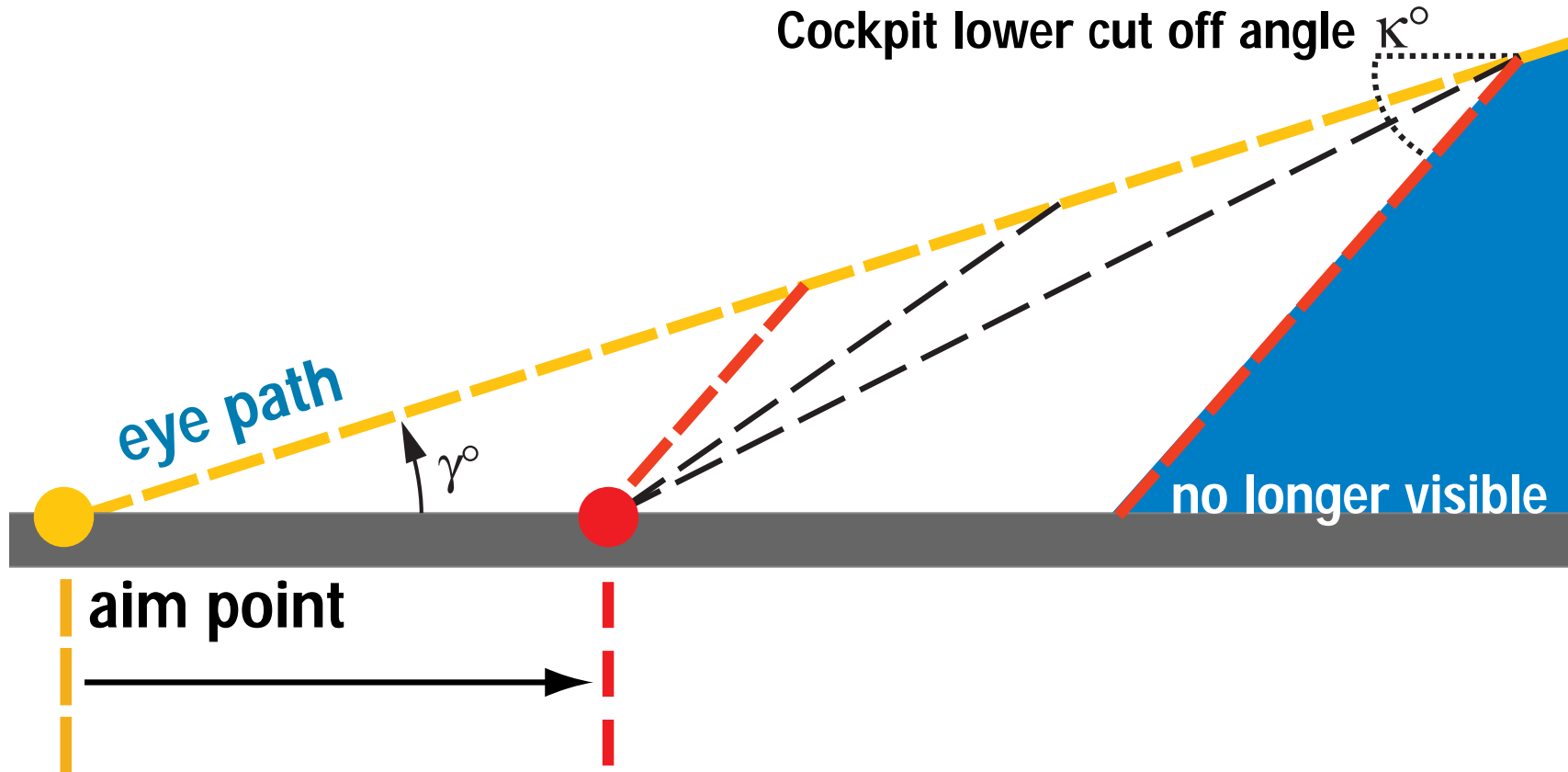
# Expansion pattern as cue to flare

Horizon

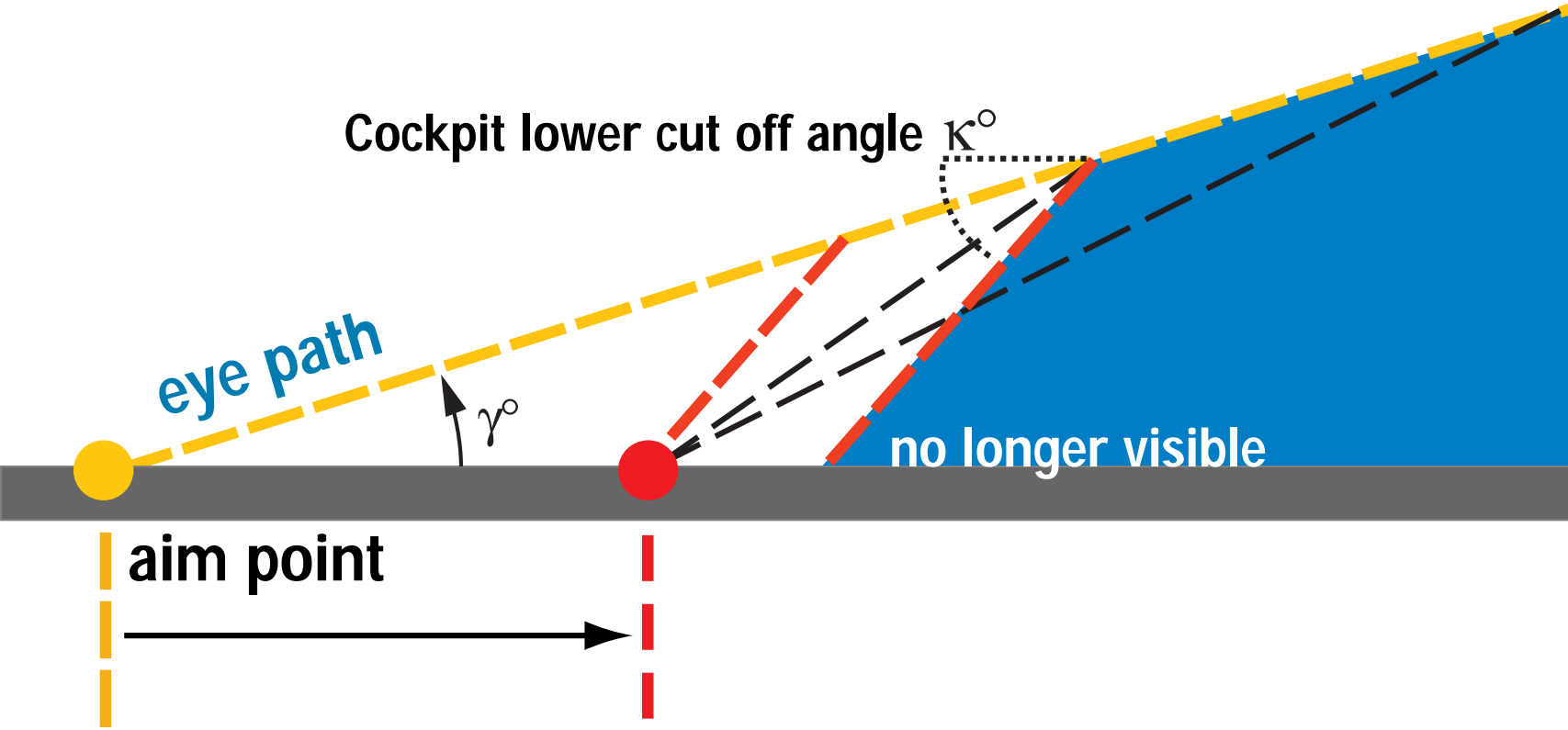
Runway short of  
aim point expands  
out of view  
under aircraft



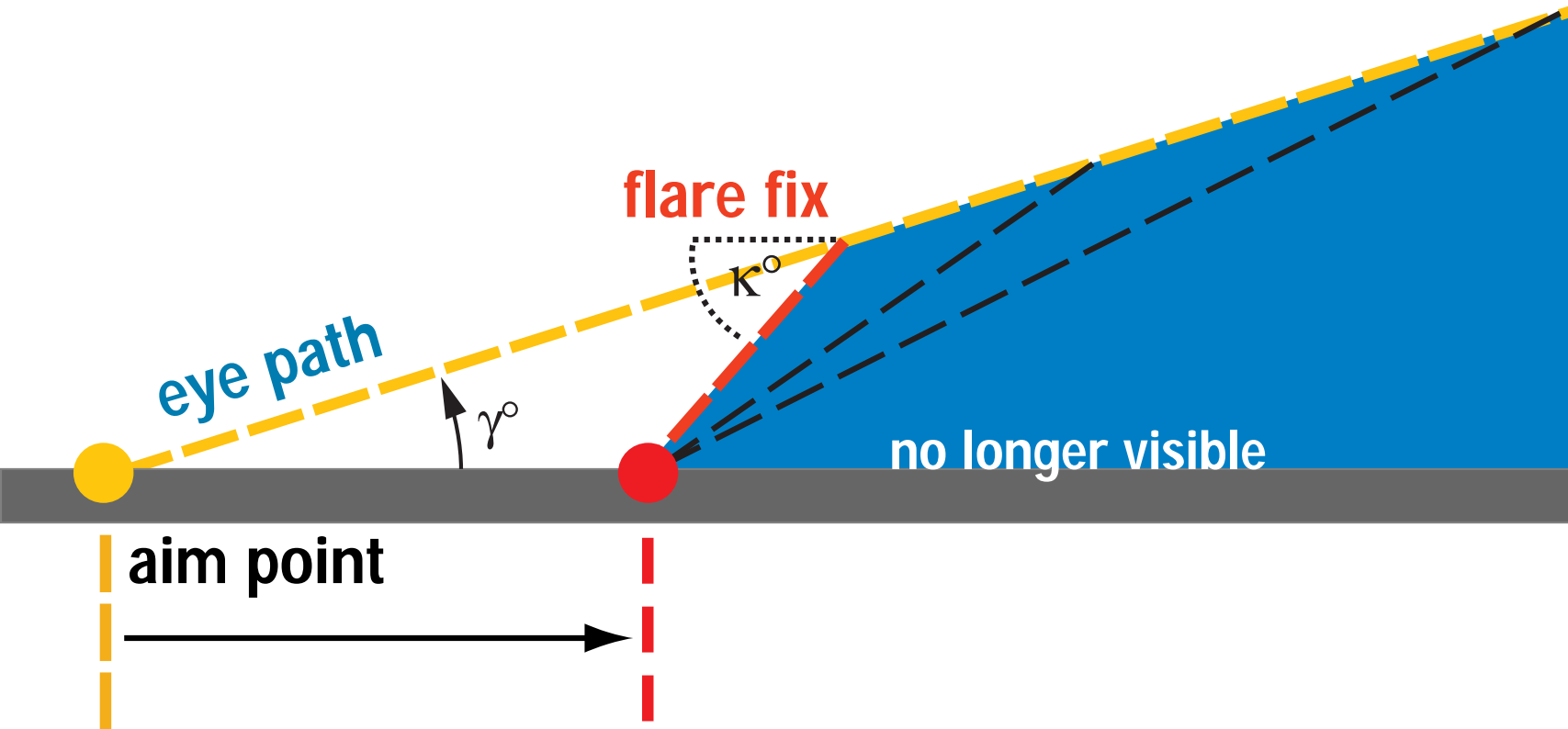
# Cut-off angle as a flare fix



# Cut-off angle as a flare fix

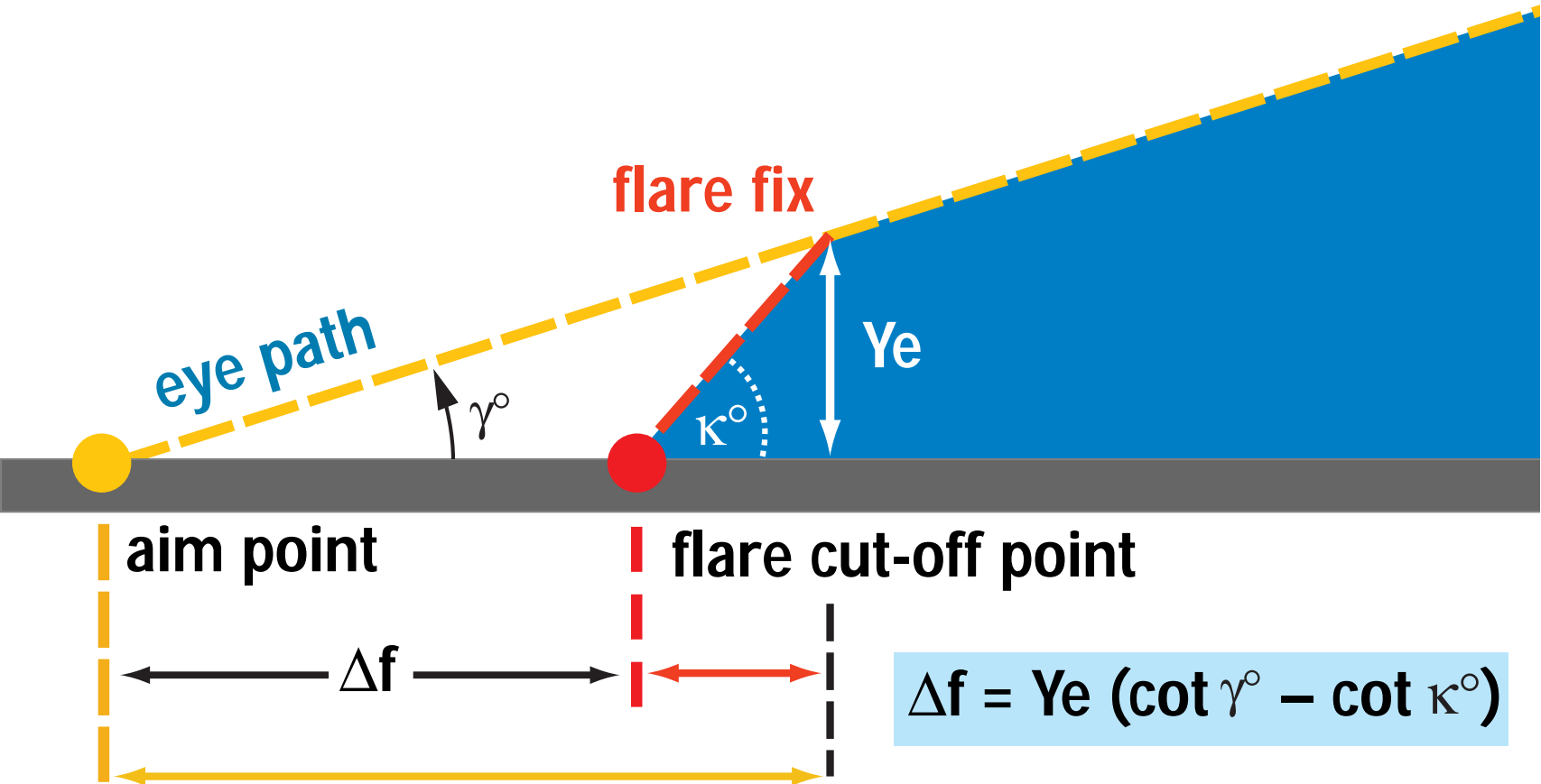


# Cut-off angle as a flare fix



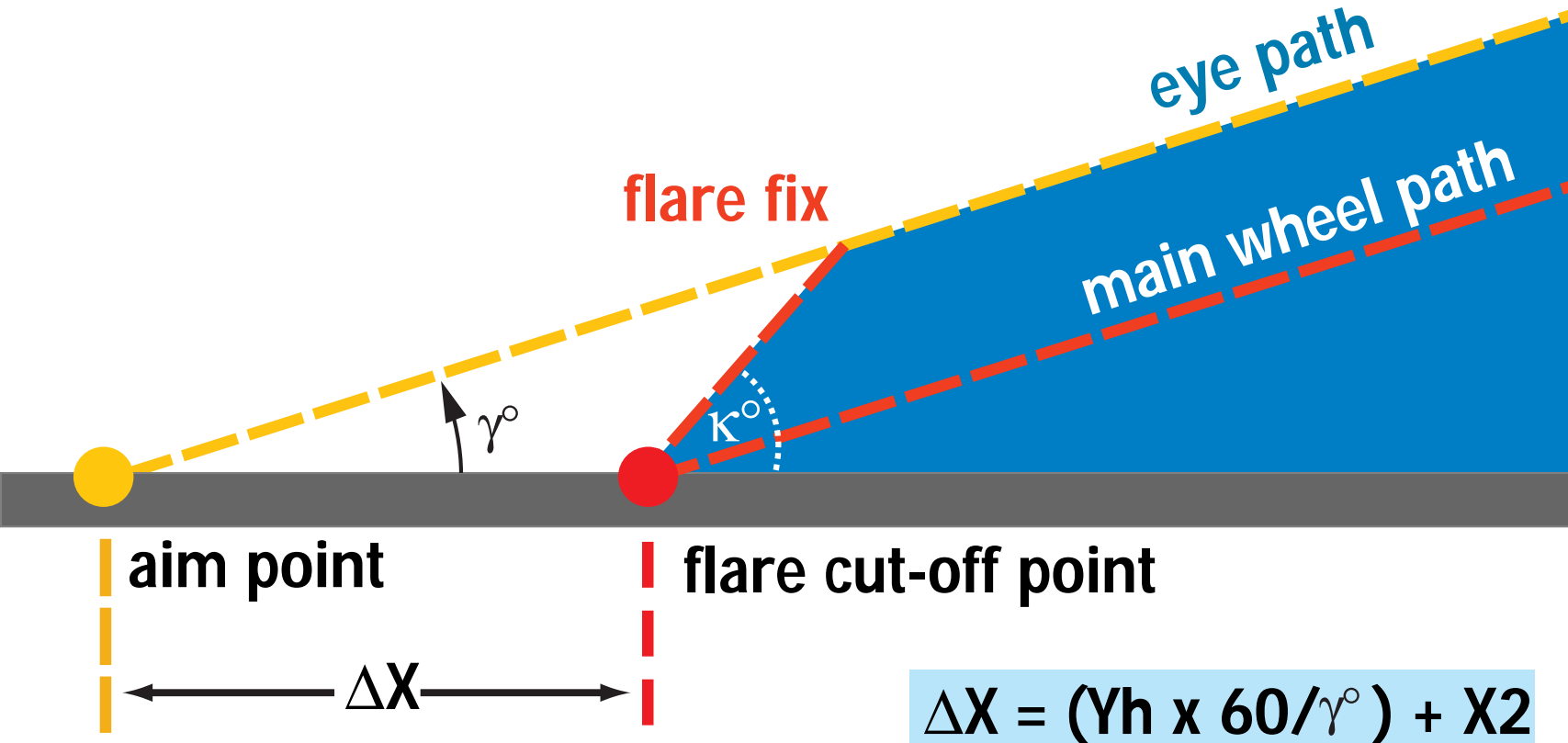
# Cut-off angle as a flare fix

where flare height ( $Y_e$ ) is known



# Cut-off angle as a flare fix

where flare height ( $Y_e$ ) is not known



**AIM 1**



**AIM 1**

**CUT-OFF**

**90 feet**



**COMMENCE  
FLARE**

**AIM 2**

**AIM 1**

**CUT-OFF**



# 3. How to flare?

The Robson  
“gentle touch”


**COMMENCE  
FLARE**

**AIM 2**

**AIM 1**

**CUT-OFF**



A wide-angle photograph of an asphalt runway stretching into the distance under a cloudy sky. A yellow circular marker is positioned on the runway's centerline. The text 'AIM 2' is overlaid in yellow with a black underline. A dark, curved object is visible in the lower-left foreground.

**AIM 2**

AIM 2



# Finally, a flare for landing:

- Hold an accurate eye path



# Finally, a flare for landing:

- Hold an accurate eye path
- Commence flare at cut-off point

# Finally, a flare for landing:

- Hold an accurate eye path
- Commence flare at cut-off point
- Reduce thrust and fly the eyes progressively towards runway end until touchdown

# Pilot's eye view







# Summary

# The traditional art of landing

- Does not explain how to land
- Costs time, money and stress
- Relies on experience & judgement
- Subject to too many "intangibles"
- Remains unpredictable

# The Jacobson Flare

- Explains how to land
- Faster to learn
- Completely visible
- Transferable to any aircraft
- Extremely tolerant of variables
- Predictable, therefore much safer