# Pilots' Rules of Thumb

Version 1.2

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# Rules of Thumb

**Headings and altitudes**

| Magnetic Heading | Altitude |
|---|---|
| 0 – 179 degrees | IFR – Odd thousdands of feet<br>VFR – Odd thousdands of feet plus 500 feet |
| 180 – 359 degrees | IFR – Even thousdands of feet<br>VFR – Even thousands of feet plus 500 feet |

**Minimum separation**

Horizontal separation for aircraft at the same altitude is 5 nm.
Vertical separation between aircraft is 1,000 feet

**Top of Descent (ToD) distance calculation**

On descent into an airport, the aim is be to be at 10,000, 30 nm out and at 250 knots maximum. Top of Descent (ToD) is the point in nautical miles from the airport (or your target altitude position) at which you commence your descent. Take your Current Altitude minus the Target Altitude and multiply by 3.

Example: FL350 to FL100: 35 – 10 x 3 = 75 nm.

OR

Take your altitude and multiply it by 3. That equals your distance in miles to begin your descent.

Example: 35 x 3 = 75 nm.

OR

Start descent when time to airport equals altitude to loose for 1,000 feet per minute descent.

Example: 10,000 feet to lose, start descent 10 minutes out at 1000 ft/min.

**Top of Descent time/distance calculation**

Divide the difference between Cruise Altitude and Target Altitude by the Rate of Descent. That value is your **Time to Descent**. Multiply this by your Groundspeed in Cruise and divide the result by 60. The result is the DME prior to which you need to begin your descent.

Example: FL360 to 6000' = 30,000 / 1500 fpm = 20 minutes. Now, (20 x 420 knots G/s) / 60 = 140 nm from the desired point.

**Rate of Descent (RoD) calculation**

To calculate RoD, halve your ground speed and add a 0 (or multiply by 10).

Example: GS 150 kts / 2 x 10 = 750 fpm

OR

ROD = Groundspeed (GS) x 5.

Example: GS 150 kts x 5 = 750 fpm

**Descent Rate (for 3° glide slope)**

To maintain a 3 degree glideslope for an ILS approach,
Divide Groundspeed by 2, then add a zero

Example: 120 knots / 2 = 60, add '0' = 600 fpm

OR

Multiply your Groundspeed by 5. The resulting number is your rate of descent
Example: Groundspeed = 110 knots x 5 = 550 fpm to maintain a 3 degree glideslope.

**True Air Speed (TAS)**
TAS = [(IAS x 2%) x (ALT/1,000 ft)] + IAS
Example: If IAS = 300 and ALT = 20,000: 300 x 0.02 X 20 + 300 = 420 KTAS

**Distance from threshold to start three degree glidepath**
Take your AGL height and divide it by 300.
Example: 600ft AGL / 300 = 2 nm.

**Altitude Check on Descent**
Desired Altitude = Glideslope Angle x 100 x Distance.
Example: 3.3% GS Angle, 5 NM away - you should be at 1650 ft MSL (3.3 x 100 x 5).

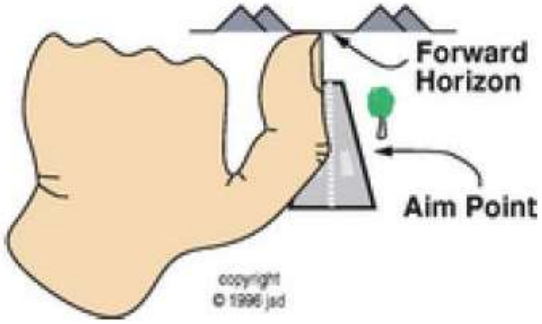
**Calculate Ground Speed by Timing**
To find ground speed note the time required to fly a published distance. Pick a number that when multiplied by the flight time yields approximately 60. To get that ground speed, multiply that number by the distance.
Example: 15 minutes id required to fly 30 nm (4 x 15 = 60). Ground speed equals 12o knots (4 x 30 = 120)
OR for fast aircraft (at least 250 knots) the quickest way of calculating Ground Speed using the DME (without G/S readout) is to note the distance travelled in 36 seconds. 36 seconds = 1% of onr hour.
Example: If you travel 3.25 nm your Ground Speed is 325 knots.

**Distance travelled based on ground speed**
Take your Ground Speed and divide by 10. That's the distance flown in 6 minutes.
Example: GS = 150 kts = 15 nm in 6 minutes (= 2.5 nm per minute)

**Bank Angle (BA)**
For standard turns for airliners: Plan bank angle (BA) to be maximum 25° for passenger comfort.

**Rollout Angle (RA)**
BA / 2
Example: If current heading is 090° and desired heading is 270° and BA is 20°
RA = 20 / 2 = 10, so start rollout at 260, i.e. 10° before the desired heading.

**Aiming point for landing**




Source: http://flightschoolretro.blogspot.com.au/2011_08_01_archive.html


Aussie Star Flight Simulation