The VFR Flight Planning Process

Choose a route
- Consider terrain, winds/weather, airspace, TFR's, and checkpoint availability.

Plot the course on your sectional
- Use pencil so you can easily correct mistakes.
- Your route should first take you to an on course checkpoint. An on course checkpoint is an easily identifiable checkpoint, usually within 5 nautical miles of the airport, used to fly directly to once clear of the traffic pattern.

Choose checkpoints and input on the Navigation Log
- Good checkpoints should be easily identifiable. Examples of good checkpoints: airports, bodies of water, towns, mountains significantly higher than the surrounding terrain.
- Examples of bad checkpoints: dirt runways/roads, mines, ranches, mountains not significantly higher than the surrounding terrain.

Calculate a top of climb
- Use the Time, Fuel, and Distance to Climb chart in Section 5 of the POH to calculate top of climb.
- Determine the Time, Fuel, and Distance numbers for the desired cruise AND departure airport pressure altitudes.
- Subtract the Time, Fuel, and Distance numbers for the departure airport from the Time, Fuel, and Distance numbers for the desired cruise altitude.
- Use Note 3 on the Time, Fuel, and Distance to Climb chart to compensate for non-standard temperature.
- Add 1.4 gallons of fuel to your total climb fuel, referencing Note 1 on the Time, Fuel, and Distance to Climb chart.
- Include the top of climb as a checkpoint on your Navigation Log.
- Calculate True Airspeed (TAS) in the climb with the E6B. Find distance on the outer scale and rotate the inner scale to put time under distance. The arrow points at the TAS. Input TAS onto the Navigation Log for the climb segment.

Calculate a top of descent
- Subtract the landing field elevation from the selected cruise altitude. Divide that number by 500 (for a 500 foot per minute descent) or 1000 (for a 1000 foot per minute descent).
- Example: Cruise altitude 9,500 feet, traffic pattern altitude is 2,500 feet. 7,000 feet of altitude to lose at 500 feet per minute is 14 minutes of descending. If we are descending at approximately 120 knots, the top of descent will be 28 miles from the arrival airport. Include the top of descent as a checkpoint onto the Navigation Log.

Measure distances between checkpoints
- Input the distances onto the Navigation Log.

Measure the true course between checkpoints
- Using the plotter, input each True Course in the Navigation Log.

Choose a cruise altitude
- Input on the Navigation Log. Reference FAR 91.159 and consider terrain clearance, winds aloft, airspace, and TFRs.

Calculate winds and temperature aloft
- Climb Winds: Determine the altitude 2/3 of the way between the takeoff altitude and cruise altitude. Use the wind forecast for this altitude as winds for the entire climb segment. This is because the airplane climbs slower as altitude increases. The first 2/3 of the climb takes the same amount of time as the last 1/3.
- Climb Temperature: Enter the temperature at the 2/3 altitude figured in the previous step.
- Cruise Winds: Enter the winds from the Winds Aloft report for your cruise altitude. Interpolate between two altitudes if necessary. Use the forecast from the nearest reporting station.
- Cruise Temperature: Enter the temperature at the cruise altitude from the nearest reporting station.
- Descent Winds: Determine the altitude half way between the cruise altitude and the arrival airport traffic pattern altitude. Find the winds aloft for that altitude. Interpolate if necessary. Use these winds for the entire descent.
- Descent Temperature: Enter the temperature at the halfway altitude determined in the previous step.

Determining cruise data
- Select a cruise power setting from the Cruise Performance chart in Section 5 of the POH.
- Using the Cruise Performance chart, determine True Airspeed (TAS) and fuel flow for the desired RPM setting at cruise altitude. Ensure you use the proper temperature column for the forecast temperature aloft.
- Input Cruise TAS, fuel flow, and RPM setting onto the Navigation Log.

Determining true heading (TH) and groundspeed (GS)
- Using the forecast wind aloft, true airspeed, and true course for each leg, calculate the wind correction angle and add or subtract as appropriate to determine true heading (TH). Enter onto the Navigation Log.
- Read groundspeed (GS) on the E6B (under the center grommet) and enter onto the Navigation Log.

Determining magnetic heading (MH)
- Use the Isogonic lines on the sectional chart to determine the appropriate magnetic variation for each leg. Add/subtract magnetic variation (add west, subtract east) from the true heading to get the magnetic heading and enter onto the Navigation Log.

Determining calibrated heading (CH)
- Reference the compass deviation card in the aircraft to add/subtract compass deviation as appropriate. Note: each aircraft will have a unique compass deviation.

Determining estimated time en-route (ETE)
- The time for the climb segment should be entered directly from the Time, Fuel, and Distance to climb calculations.
- Use the E6B to determine ETE (estimated time enroute) between each checkpoint. Place the arrow on the calculated groundspeed. Find the distance on the outer scale. Read time on the inner scale. Enter ETE onto the Navigation Log.

Determining fuel burn
- The fuel for the climb segment should be entered directly from the Time, Fuel, and Distance to climb calcuations.
- Use the E6B to determine fuel burn between each checkpoint. Place the arrow on the calculated cruise fuel burn. Find the time on the inner scale. Read fuel burn (in gallons) on the outer scale. Enter fuel burn onto the Navigation Log.

Totals
- Find the sum of the distances, ETE's, and fuel burns. Enter the totals onto the bottom of the Navigation Log.
- Determine the distance remaining at each checkpoint and enter onto the Navigation Log.
- Determine the fuel remaining at each checkpoint and enter onto the Navigation Log.

Runway sketch
- Draw a sketch of the runways on the top of the Navigation Log. Include traffic pattern directions, runway numbers, lengths, widths, and traffic pattern altitudes.

Departure and destination frequencies
- Locate and enter onto the Navigation Log the frequencies for the departure and destination airports.