

## Glide Slopes

Larry Howell, CFIG & Mary Rust, CFIG (February 2006)

### Formulas Quiz Only! They don't include a Safety Factor

1. To find loss of altitude per mile.
  - a.  $5280 \div \text{Best L/D Glide Ratio} = \text{Loss/Statute Mile}$
  - b.  $6080 \div \text{Best L/D Glide Ratio} = \text{Loss/Nautical Mile}$
  
2. To find distance covered for each 1000' of altitude lost:
  - a.  $\text{GS} \div \text{AS} \times \text{Best L/D Glide Ratio} = \text{New Glide Ratio}$
  - b. Then...  $\text{New Glide Ratio} \div 5.28 = \text{Statute Miles covered per 1000' lost}$   
  
 $\text{OR new Glide Ratio} \div 6.08 = \text{Nautical Miles covered per 1000' lost}$
  
3. To find "how high you need to be to glide to spot or airport and still have 1000' altitude left for the pattern:
  - a. Miles to go =  $. \_\_\_\_ \times 5280' = \text{Altitude you will lose in that distance;}$   
or Glide Ratio (Statute)
  - b. Miles to go =  $. \_\_\_\_ \times 6080' = \text{Altitude you will lose in that distance;}$   
or Glide Ratio (Nautical)
  - c. Then add 1000' for Pattern.
  - d. Then add field elevation (Feet MSL)

Example: 20 SM to Go =  $.6666 \times 5280' = \mathbf{3519'}$  you will lose 30 (Glide Ratio)  
**+1000' pattern**  
**+ 800' Field elevation**  
**5319' MSL**

4. To find how high you must be to glide to an airport with 1000' left for pattern and with a headwind or tailwind:
  - a.  $\text{Ground speed} \times \text{Best L/D @ IAS} = \text{New Glide Ratio Indicated Air Speed}$
  - b.  $5280 \div \text{New Glide Ratio} = \text{Loss of altitude per statute mile;}$   
OR  $6080 \div \text{New Glide Ratio} = \text{Loss of altitude per nautical mile}$
  - c. Then multiply the answer times Miles to Go.
  - d. Then add 1000' Pattern
  - e. Then add  $\_\_? \_\_'$  Field Elevation

# Glide Slopes Quiz

Larry Howell, CFIG & Mary Rust, CFIG (February 2006)

## I. Glide Calculations – Practice Questions

- A. How many statute miles will a glider with a 28:1 glide ratio travel for each 1000 feet of altitude loss?
- B. How many statute miles will a glider with a 22:1 glide ratio travel for each 1000 feet of altitude loss?
- C. How many nautical miles will a glider with a 22:1 glide ratio travel for each 1000 feet of altitude loss?
- D. How many nautical miles will a glider with a 15:1 glide ratio travel for each 1000 feet of altitude loss?
- E. How many statute miles will a glider with a 30:1 glide ratio at 50 mph travel for each 1000 feet of altitude loss with a 20 mph **headwind**?
- F. How many nautical miles will a glider with a 26:1 glide ratio at 50 mph travel for each 1000 feet of altitude loss with a 10 mph **headwind**?
- G. How many statute miles will a glider with a 30:1 glide ratio at 50 mph travel for each 1000 feet of altitude loss with a 20 mph **tailwind**?
- H. How many nautical miles will a glider with a 28:1 glide ratio at 50 mph travel for each 1000 feet of altitude loss with a 30 mph **tailwind**?
- I. How much altitude will a glider with a 28:1 glide ratio lose while traveling one statute mile in still air?
- J. How much altitude will a glider with a 22:1 glide ratio lose while traveling one statute mile in still air?
- K. How much altitude will a glider with a 28:1 glide ratio lose while traveling one nautical mile in still air?
- L. How much altitude will a glider with a 22:1 glide ratio lose while traveling one nautical mile in still air?
- M. In calm winds, 15 statute miles from the airport, in a glider with a 30:1 glide ratio at 50 mph, how high do you need to be to arrive over the airport at 1000' AGL? Airport elevation is 1200' MSL. Assume no safety factor. Assume pilot flies 50 mph.
- N. With a 20 mph **headwind**, 25 statute miles from the airport, in a glider with a 28:1 glide ratio at 50 mph, how high do you need to be to arrive over the airport at 1000' AGL? Airport elevation is 900' MSL. Assume no safety factor. Assume pilot flies 50 mph.
- O. With a 15 mph **tailwind**, 20 nautical miles from the airport, in a glider with a 30:1 glide ratio at 50 mph, how high do you need to be to arrive over the airport at 1000' AGL? Airport elevation is 4200' MSL. Assume no safety factor. Assume pilot flies 50 mph.