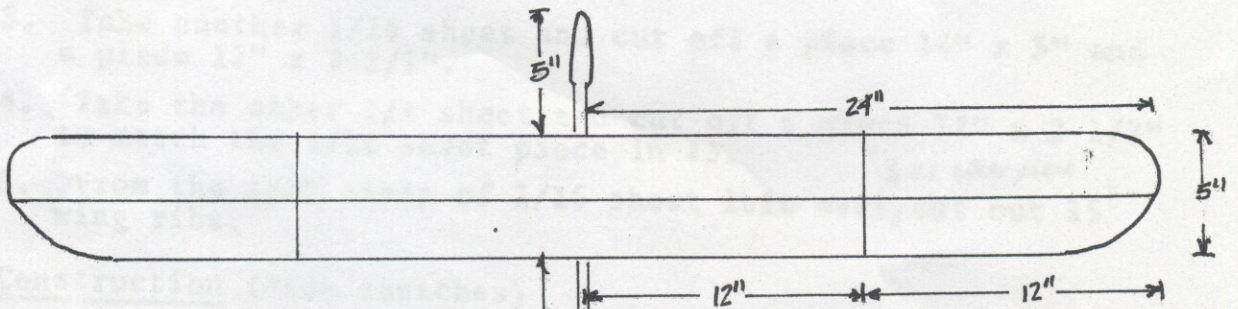
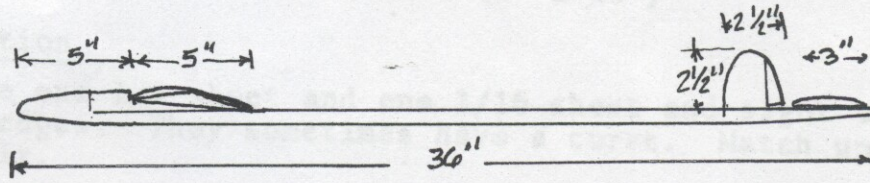
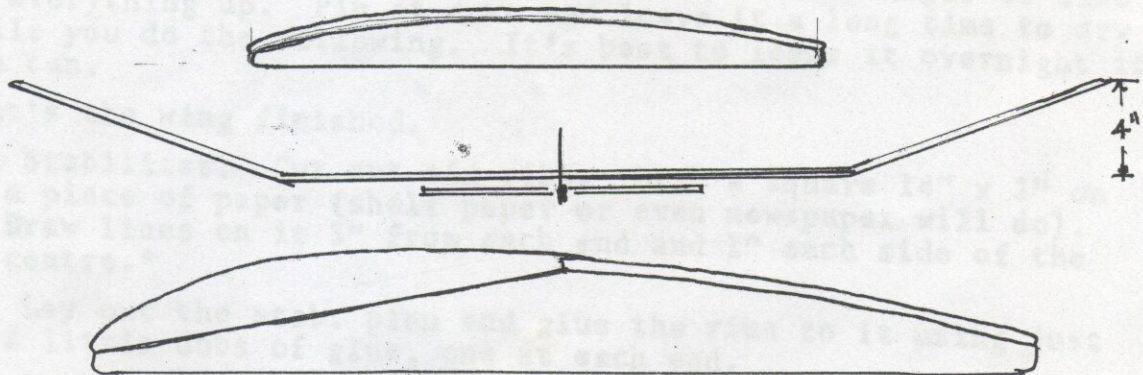
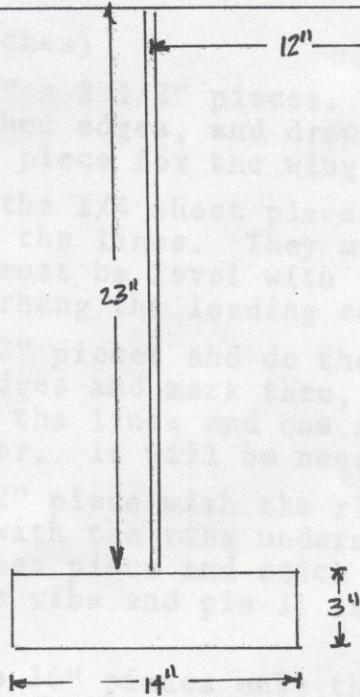


CHEAPSKATE (48" SPAN A-1 GLIDER) DESIGNED BY JOHN CLEAR



- WING = 1/16" SHEET & 1/4" SHEET
- FUS = 1/4" SHEET x 1/2"
- STAB = 1/16" SHEET
- FIN = 1/16" SHEET



Chasapokate (48" span A-1 glider) designed by John Clear

- A. Materials 2 pieces 1/4" sheet (3" x 36") [for 2 models you only need 3 pieces]
3 pieces 1/16" sheet (3" x 36")

B. Preparation

1. Take one 1/4 sheet and one 1/16 sheet and sight them along the edges. They sometimes have a curve. Match up and mark a pair.
2. Cut this matched pair 2 1/2" wide (cut off the unmatched edges).
3. Take another 1/16 sheet and cut off a piece 14" x 3" and a piece 12" x 2 1/2".
4. Take the other 1/4 sheet and cut off a piece 12" x 2 1/2" to match the 1/16 sheet piece in #3.
5. From the 1/2" strip of 1/16 sheet left over, ^{& the other piece} cut out 15" wing ribs.

C. Construction (*see sketches)

1. Take the pair of 12" x 2 1/2" pieces. Lay them on the board, mark the matched edges, and draw two lines 4" from each end on the 1/4" piece for the wing ribs.*
2. Stick on 4 ribs on the 1/4 sheet piece—one at each end, two in the middle on the lines. They must be dead square, the peak of the rib must be level with the matched edge and the point should overhang the leading edge.*
3. Take the 36" x 2 1/2" pieces and do the same as for stages 1 and 2: match the edges and mark them, lines on the 1/4" piece, stick ribs on the lines and one at each end. One spare rib is left over. It will be needed later.
4. Now turn over the 12" piece with the ribs stuck to it. Pin it to the board with the ribs underneath.* Sand an angle on the 1/16 sheet piece and stick it to the edge of the 1/4 sheet and the ribs and pin it in place.* Ribs stick out at each end.
5. Do the same with the 36" pieces only this time use a slow drying white glue (Elmer's) because it takes longer to line everything up. Pin it down and leave it a long time to dry while you do the following. It's best to leave it overnight if you can.

That's the wing finished.

6. Stabilizer. Cut out six ribs. Draw a square 14" x 3" on a piece of paper (shelf paper or even newspaper will do). Draw lines on it 3" from each end and 1" each side of the centre.*
7. Lay out the stab. plan and glue the ribs to it using just 2 little dabs of glue, one at each end.
8. While the stab. ribs are drying, cut out the fin from 1/16 sheet 3" x 2 1/2" with the ~~same~~ ^{same} ~~width~~ ^{width}

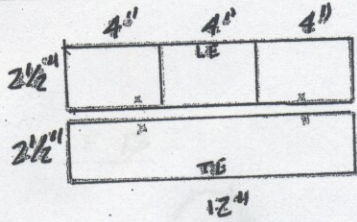
9. Stick the stab. on the ribs (slow drying white glue). If the wood is stiff moisten the top with a wet sponge to help it curve over the ribs. Pin it down and leave it to dry.
10. Now for the fuselage. There are two pieces of $1/4" \times 1/2"$ left over. Stick the 12" piece on top of the 36" piece at one end.* Cut a wedge from the top for the wing angle of incidence as shown on the sketch and stick this wedge on the top." Pin it all together to dry.
That's everything finished, except for the fiddly bits.
11. Unpin the 12" wing piece. Its ready to be sanded to shape. You can plane off the corners with a razor plane or just do it all with rough sandpaper. Sand it as near as possible to the section shown on the plan. Start with rough sandpaper, sanding across the grain, and finish off with fine. Use sanding blocks—a bit of tree wood about $3/4"$ thick and $2 \ 1/2" \times 4 \ 1/2"$ or thereabouts is a good size. Wrap the sandpaper right around and put a couple of thumb-tacks in the side to hold it tight. Do all the sanding outside the house. It makes an awful mess. Leave the main part of the wing and the stab. pinned down to dry while you do stages 12 - 15.
12. Shape and sand the fuselage.* Don't round the corners yet. By laying the nose sideways across a piece of $1/16$ sheet cut out two side cheeks so that the grain will be vertical. Cut out the weight compartment (save the piece you cut out). Stick on one side cheek only. The other side goes on when everything is finished and the model balanced with lead.
13. Cut off the rudder ($3/4"$ wide). Round all the edges, and fit paper hinges (silkspar, thin cotton from your shirt tail, or even writing paper will do).* Add a $1/16" \times 1/8"$ strengthening strip to the bottom of the rudder (grain lengthwise to cross the grain of the rudder), then stick and pin the fin to the left side of the fuselage so that the back of the rudder is about $1/2"$ ahead of where the stab. will go. Leave the rudder free to swing $1/16"$ over the fuselage.
14. Wing and stab. saddles are made from $1/16$ plywood or from a popsicle stick. $2"$ by about $1/2"$ for the wing, $1 \ 3/4"$ for the stab. Put two strips of $1/16$ by $1/8$ one on top of the other to form a strip of $1/8$ square along the front edge of the stab. saddle and stick them in place with lots of goo. To make the wing saddle firmer cut two triangle pieces from $1/4$ sheet to go under each side against the fuselage. Make them oversize and trim off the edges when the cement has set.
15. Make two bent pin hooks as in the diagram and stick them one on each side of the rudder. Put a cement fillet on top to hold them firm. Make six staples (from pins with the heads off) ready for the auto rudder gadget.
16. The stab. should be dry by now. Unpin it, tear off the paper, and sand it all over gently with medium and fine sandpaper. Round off the edges. Cut a wooden matchstick about $7/8"$ long and stick it in the middle of the trailing edge so that it projects $3/8"$,* With a good cement fillet

around it. Lay the stab aside on a flat surface with a couple of paperback books on top to prevent warping. Always store the stab, like this. It's flimsy and warps easily.

17. Is the wing set by now? (6 - 8 hours) Unpin it and sand it the same as in stage 11.
18. Now for the dihedral. Turn the wing over and cut off a 12" length along the outside of the 4th rib. Stick the spare rib on the loose end. Now you have a 24" flat center section and two 12" pieces to stick on either end at an angle. Shape the tips. To get the right dihedral angle (4" at the tip) block up a 12" piece 2" (two inches only) with the end to be angled flush with the edge of the bench.* Sand it square. Do the same with the other 12" piece. Block up the center section 1" (one inch) at the end and sand the joints the same way. Try the joints for fit. You should have about 4" at the tips. Rub cement into the end of the grain at the joint. Leave it to dry while you get a couple of strips of waxed paper (newspaper will do but is harder to unstick later).
Now pin the center section flat and stick on the tips, blocking them up and pinning them in place at the proper angle.
19. Bend the towhook from a stiff piece of wire, and the auto rudder hook from a paper clip.*
20. Stick a matchstick or piece of popsicle stick underneath the tail end of the fuselage, projecting about 3/8" for the tail hold down.
21. Hold the fuselage upside down and sight along it from nose to tail. Is it straight? Mine curves a little to the left. If yours does too that means a left turn in flight and you'll need right rudder for a straight tow. So push in the 3 staples in the right side of the fuselage— one 6" ahead of the rudder, another 6" ahead of that, and the third 6" ahead of that, ready for the auto rudder line. If it curves to the right (when you hold it upside down looking from nose to tail), or is a straight one, put the staples on the left side. In other words, if it curves put the staples on the outside of the curve, if it is straight put them on the left.
22. Make another bent pin (like the two on the rudder) and stick it in the opposite side to the staples about 1" ahead of the one on the rudder so that a small rubber band will stretch between them. Put a cement fillet over it to hold it fast.
23. Find a piece of 1/8" hardwood dowel, a meat skewer or something like it. Cut two lengths 1" each. Make a hole in the fuselage just ahead of where the wing will go and one just behind and push the dowels through, don't stick them in yet.

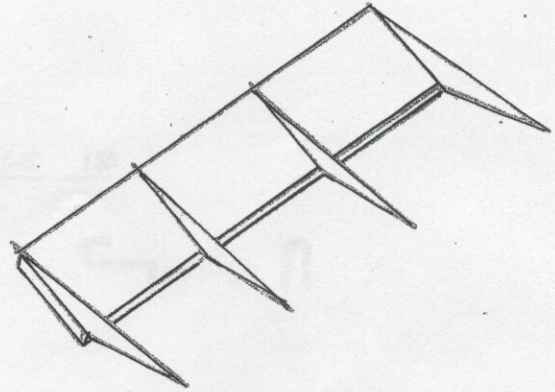
24. Now you can gently unpin the wing. Strap it lightly on the wing saddle with rubber bands over the wing between the dowels. Slip a rubber band over the tail end of the fuselage, put the stab on and pull the band right over, hooking it under hold-down peg on the fuselage.
- Doesn't that look nice?
25. Where's that lead? Fill up the hole in the nose with something heavy: BB shot, modelling clay, or slabs of sheet lead cut with scissors to the shape of the piece of wood that you cut out of the hole. Put on the side cheek over the hole, tie it in place with a rubber band and try the model for balance. It should balance on your finger and thumb under the centre of the wing—no further forward and no more than 3/4" behind the middle of the wing chord. Add or subtract the weight till it balances. Then stick on the side cheek lightly with a few dabs of cement.
26. Now everything is ready for doping. Once over with fine sandpaper. Leave the nose unfinished. Dope everything with two coats of dope and thinners mixed 50/50, sanding lightly after each coat. Put on your name and address and other marks and give it a final coat of dope.
27. Now you can finish the nose. Strap the wings and stab on, and check the balance once more. If it is right splash cement all over the weight compartment and stick on the side cheek holding it in place with pins and rubber bands.
28. Cut two pieces of 1/16" sheet 2" x 3/4" grain lengthwise to fit under the centre section of the stab. to strengthen the leading and trailing edges. Stick them in so that they project a little—they can be trimmed off later when the cement dries.
29. Cut out 2 more wing ribs and trim off the bottom on a line between the LE and TE. Stick them on either side of the wing centre rib 3/4" away from it. Trim the centre rib to the same size and cover all three front to back with 1/16 sheet with grain spanwise for a nice strong centre section.
30. The towhook should be about 3/4" ahead of the point of balance. Force it in but don't stick it yet. Fix in the auto-rudder hook with three staples so that it can slide backwards and forwards, about 1/4" each way, under the towhook. Now stick in the towhook and wrap a piece of gauze or thin cotton over it soaked with cement. Tie a thread to the auto-rudder hook, thread it through the staples and tie it to the hook on the rudder so that the auto rudder pulls it straight and the rubber band pulls a turn when the auto rudder is released (or the opposite if your fuselage has a bend in it).
31. Sand and shape the nose, round off the corners, give it a coat of clear dope and two coats of your favourite rainbow colour, or two more coats of clear.
32. For a towline use 20 lb test nylon fishing line and a curtain ring — one 100 yard reel will do. The experts use 164 ft. of braided dacron ("Gudebrod" brand, 17 lb) It doesn't stretch, but wears out and breaks
- 3/11/50

STAGE 1.



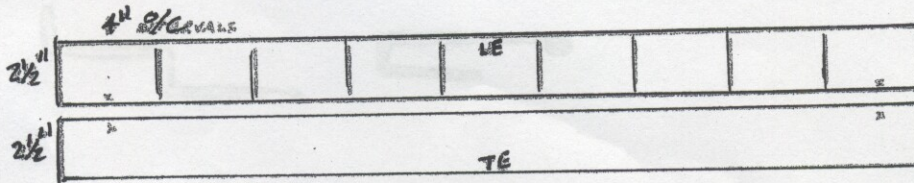
1/4" SHEET

1/4" SHEET



STAGE 2

STAGE 3

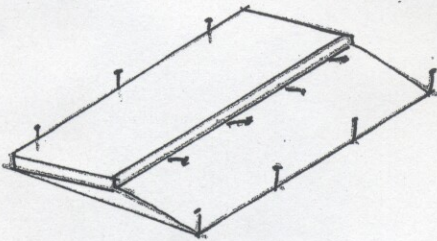


1/4" SHEET

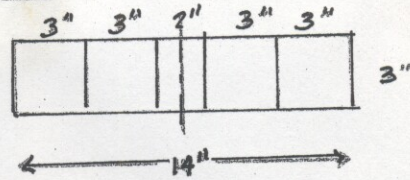
1/4" SHEET

36"

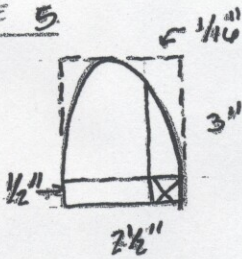
STAGE 4



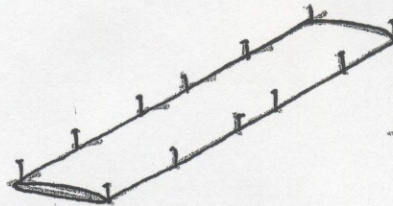
STAGE 6



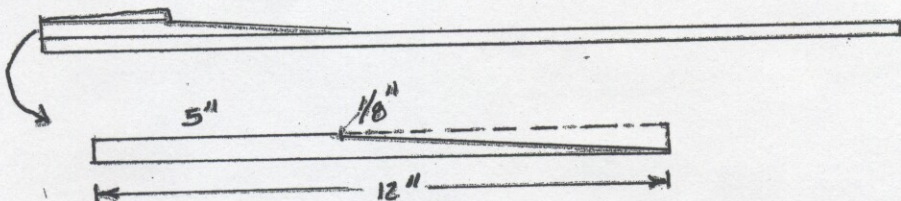
STAGE 5



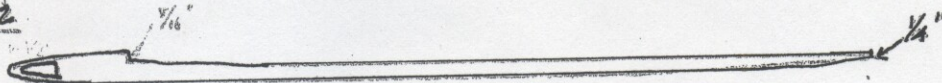
STAGE 9



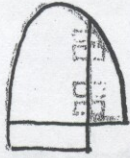
STAGE 10



STAGE 12



STAGE 13



STAGE 15



STAGE 19

