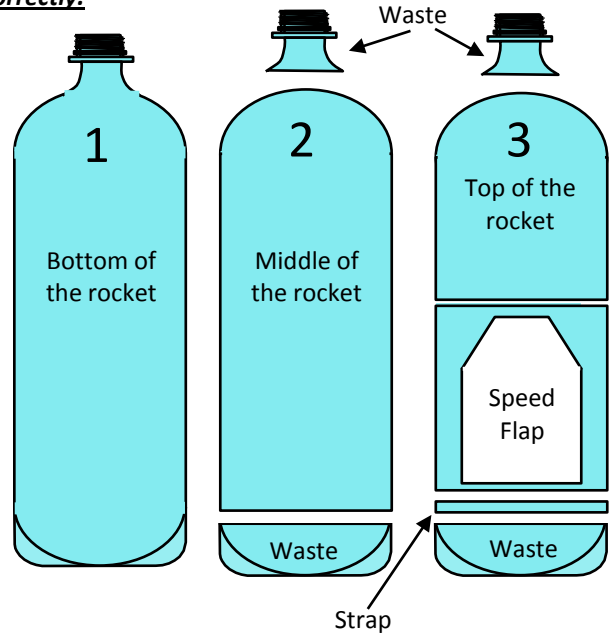


# Building a Rocket

*Before you build a rocket try the bottle on the launcher to test if it holds pressure and fits correctly.*

You Will Need	Tools
3X 2ltr Bottles	1X Hot Glue Gun
1X Glue/Double Sided Tape	1X Pair of Scissors
1X Cardboard	1X Fine Marker Pen
1X Bin Liner	
1X Roll of Sellotape	
Fishing Line or Thin String	
Sheets of Paper	

- The 1st bottle is kept the same, just remove any bits of plastic from the top, which are the same colour as the screw cap.
- The 2nd bottle is cut in to three pieces, remove the top and the base of the bottle to help reduce weight of the rocket.
- The 3rd bottle needs the top and bottom removed, just the top of your rocket comes from this bottle.



## Rocket Fins

The fins are made out of cardboard from a cereal packet. The fin is in two parts that are stuck or double sided sticky taped together. The two tabs are bent out along the dotted line after scoring with the back of a knife, the tabs are used to tape the fin to the rocket.

To make the fin water-proof use package tape on both sides, folding over the edges. The fins are then hot glue gunned in the corners of the tab and fin on each side (fig 5), this gives the fin more support.

Finally the fins are taped to the rocket using sellotape on each tab and then around the rocket to stop the tape peeling off. They should be arranged symmetrically around the rocket (every 120° if you have three fins or every 90° if you have four).

Use a sheet of paper to help mark the correct location for the fins. (fig 6). Wrap the paper around the rocket base and mark where the paper overlaps (Fig 6), then divide the paper (Fig 7) into three (or four if making four fins for your rocket). Put the paper back round the base of the rocket and mark where the fins are to go.

Take the paper off the rocket and put the marks up against a door frame (Fig 8) and draw a line down your rocket for the fin locations, you should get a straight line along the bottle (you don't want fins going in the wrong direction).

Put the fins where you have marked the base of the rocket, making sure you follow the lines you have drawn on the rocket body.

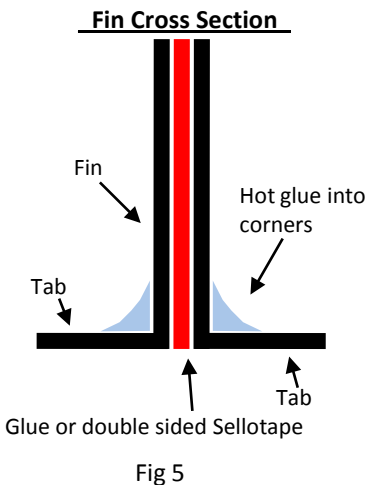


Fig 5

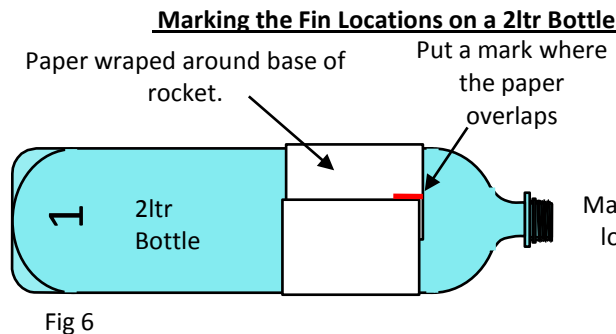


Fig 6

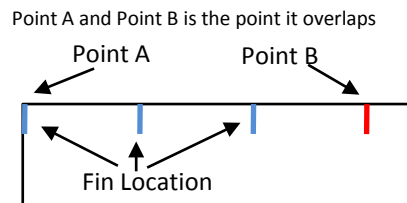


Fig 7

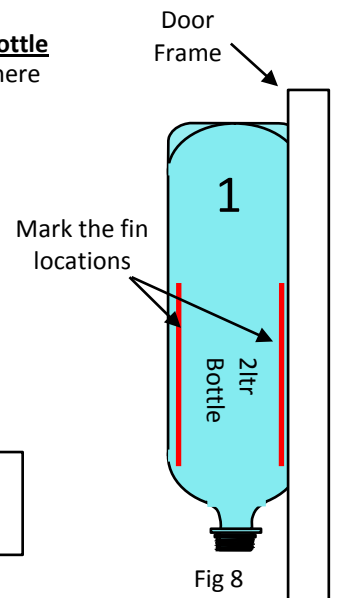
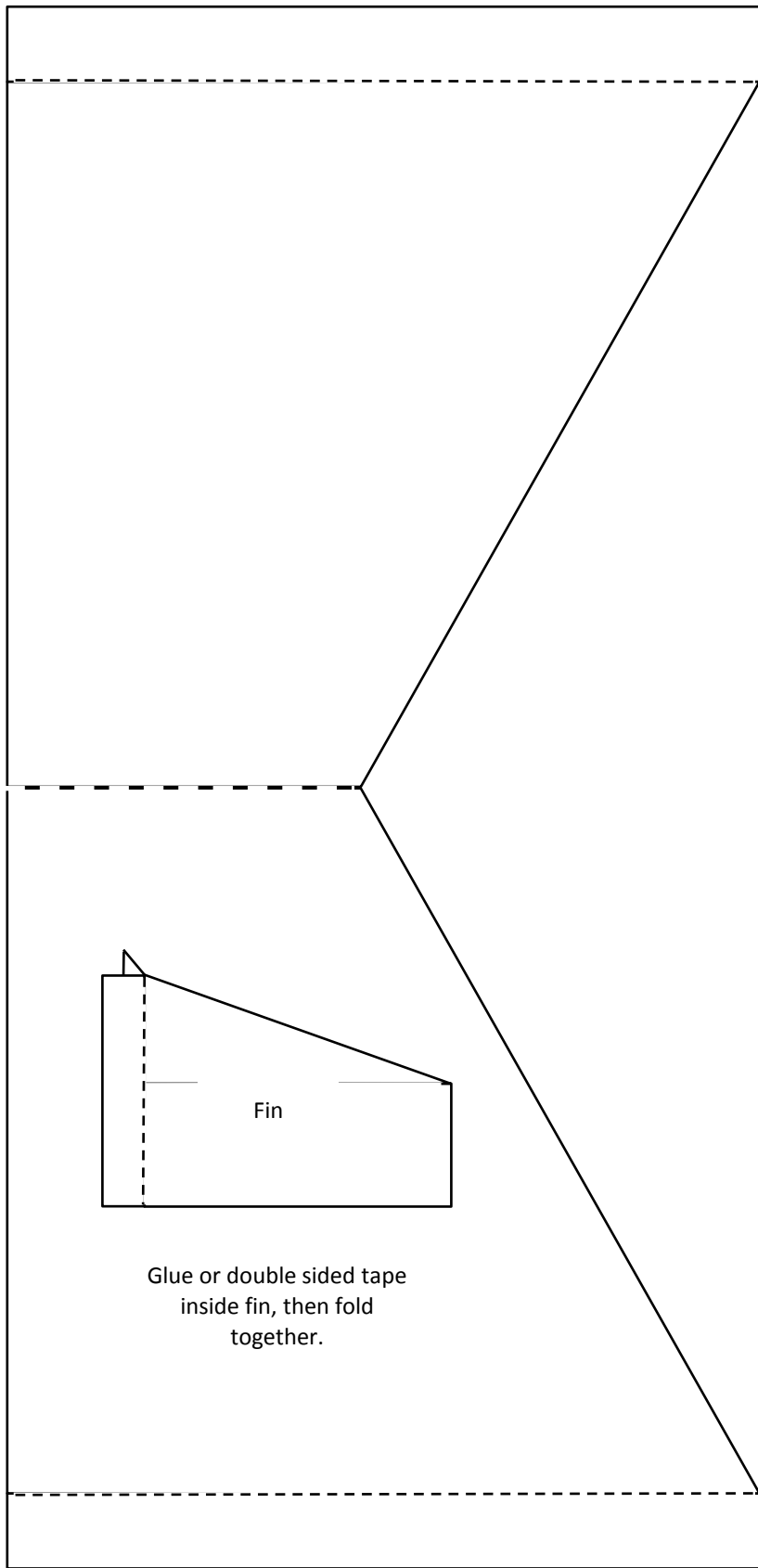


Fig 8



## Fin Template

← Tab

Strap

The strap is made from the bottom part of the 3rd bottle. It is fixed at one end to bottle 2 and a hook at the other to attach the rubber band.

Top of the rocket

The rocket top sits on the Sellotape, round 3 or more times to make ledge.

The speed flap is cut from bottle 3 and placed on bottle 2 as shown

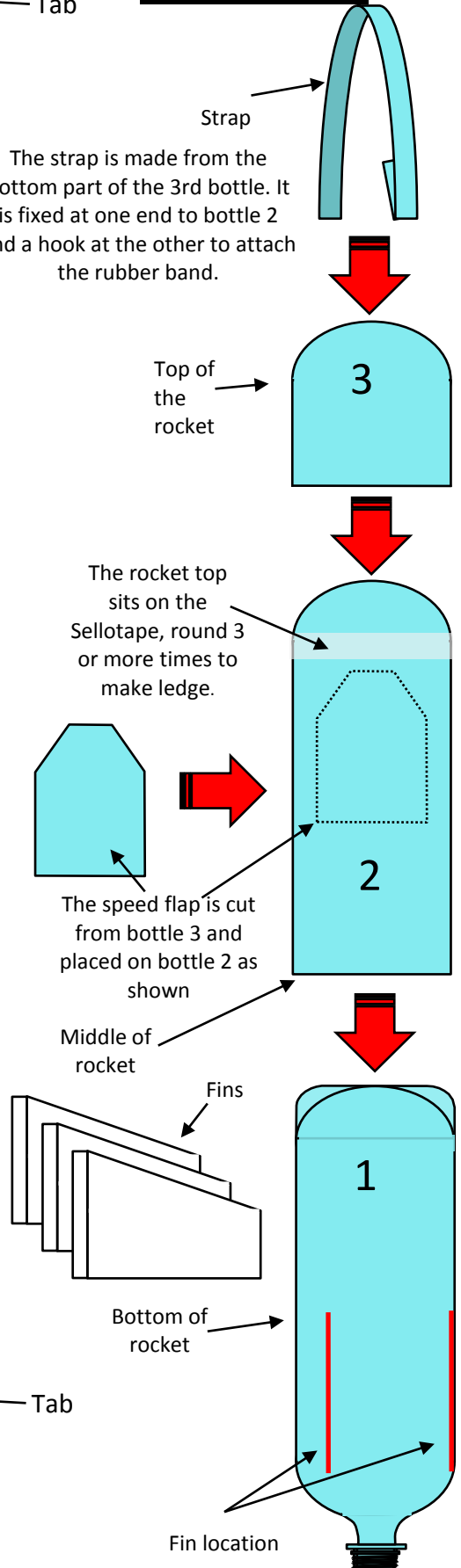
Middle of rocket

Fins

Bottom of rocket

← Tab

Fin location

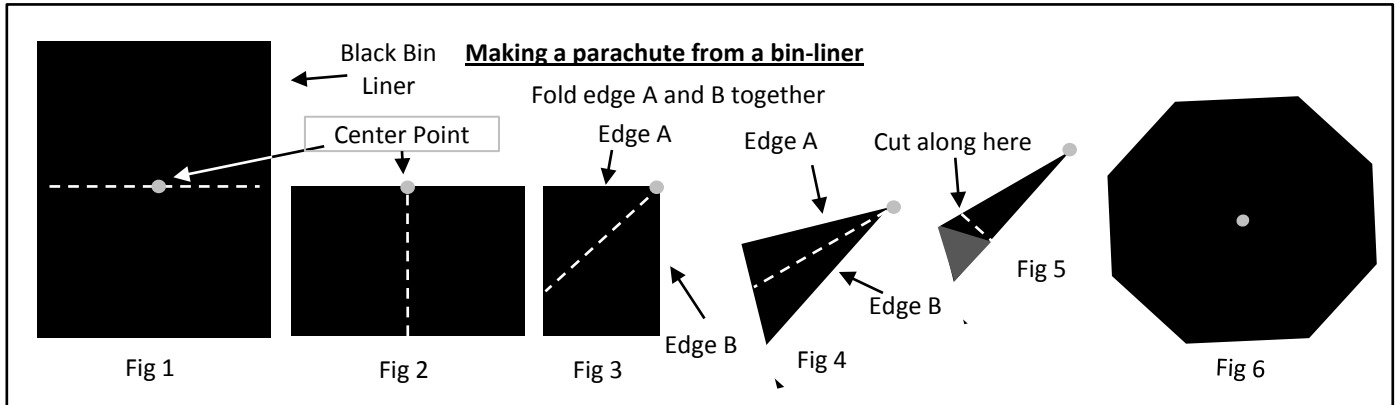


## Building a Rocket Continued ...

- The parachute is made out of a bin liner (any colour will do). Fold the bin liner in half (Fig 1) then in half the other way (Fig 2), then fold the two edges A and B together (Fig 3), and then fold the two edges A and B together again (Fig 4).

- Cut from one corner to the opposite side (Fig 5), now open out and you should have a two circles (Fig 6).

- Using the fishing line make four lengths of about 150cm. Holding all four lengths, bring the ends together and tie a knot in the middle (where the line bends back) making a loop about 2cm from the end. This is used to tie it to the rocket.



- Sellotape the ends of each line to the circle made out of the bin liner (all eight ends) first tape the ends in from the edge of the circle then bend it back over the tape and tape again to lock the line in position. Or you can tape both sides of the bin liner where you are going to put the line and use a hole punch to make a hole, then tie the line through the hole.



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