

Paper Engineering Techniques & Terms

Vocabulary:

- Acute angle: angle less than 90 degrees
- Base: double page on which pop-ups are built
- Gluing tab: the small flap on which glue is spread
- Gully or Gutter: a fold line that closes (or flattens out) as the base is closed
- Mountain-fold: a crease that comes forward towards the viewer
- Obtuse angle: angle greater than 90 degrees
- Parallel-fold: all the creases are parallel to the spine
- Plane: flat surface of a piece or card
- Right angle: 90-degree angle
- Spine-fold: central crease down the middle of the base card
- Spread: double page with a pop-up built onto it
- Valley-fold: a crease that goes back, away from the viewer
- V-fold: all the creases converge at the same point on the spine

Simple Rules:

- Every pop-up must span a gully.
- Pop-ups must be balanced on each side of the gully.

Techniques:

- Folding- always crease every fold very thoroughly: fold, crimp, fold the crease back on itself, then crimp again.
- Gluing tabs – should be at least 3/8” (1 cm) wide, to avoid pulling off, and can point forwards or backwards, be hidden or part of the design.
- Gluing – smear Elmer’s Extra Strength glue on the tabs, NOT on the surface the tabs will be glued to, right up to the edge of the crease. After sticking each piece in place, shut the base card and then press firmly, to ensure that the tab holds. (see *Gluing* instructions)
- Primary foundation shapes - the basic forms are the V-fold and the Parallel-fold, which each have just 2 planes and 3 creases: two where the tabs are attached to the page, and one above the spine.
- V-folds – all the creases converge at the same point on the gully (see illustrations of acute angle, right angle, obtuse angle, and pointed V-folds on *The Underlying Pop-Up Structures*).
- Parallel-folds – all the creases are parallel to the gully. (see illustrations of symmetrical and asymmetrical parallel-folds on *The Underlying Pop-Up Structures*).

Gluing

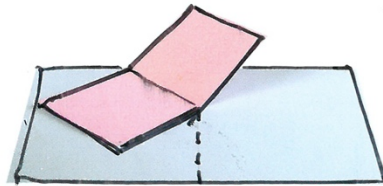
Smear glue on the tabs – not on the surface the tabs will be glued to – right up to the edge of the crease: use a small piece of card or a finger for this – the little finger is good as it tends not to be used for picking other things up, so is less messy. After sticking each piece in place,

shut the base and then press firmly. This will ensure that the structure is sound at every step of the construction.

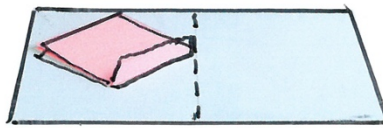
Gluing method

The gluing method used throughout this book ensures that gluing-tabs are stuck down symmetrically on the base. This symmetry is very important.

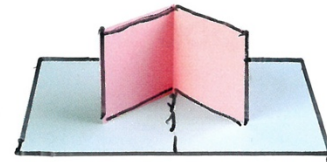
Gluing V-folds



1 Put glue on one tab and stick it to the page. Ensure the pop-up's central crease is touching the central gully of the page.

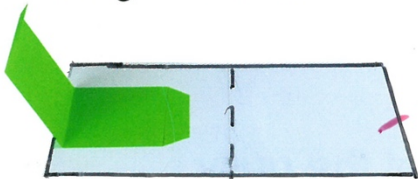


2 Fold the pop-up piece into its closed position. Put glue on the other gluing-tab.

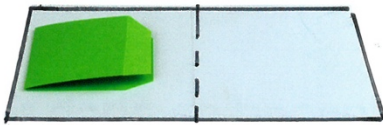


3 Close the page and press firmly, then open out to check the pop-up.

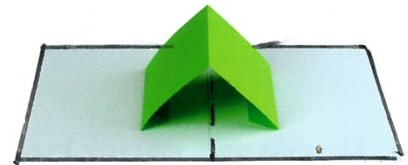
Gluing Parallel-folds



1 Put glue on one tab and stick it to the page, making sure the pop-up's creases are parallel to the central gully of the page.



2 Fold the pop-up piece into its closed position. Put glue on the other gluing-tab.

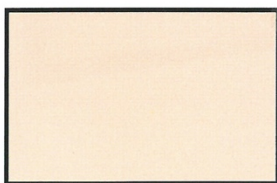


3 Close the page and press firmly, then open out to check the pop-up.

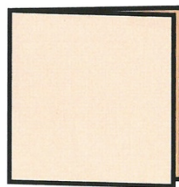
Base-cards

Every model in this book is built on a base.

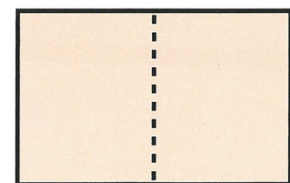
Making a base-card



1 Take a sheet of A4 card.



2 Fold it in half and crease very thoroughly.



3 Open the card to form the base, with central crease.