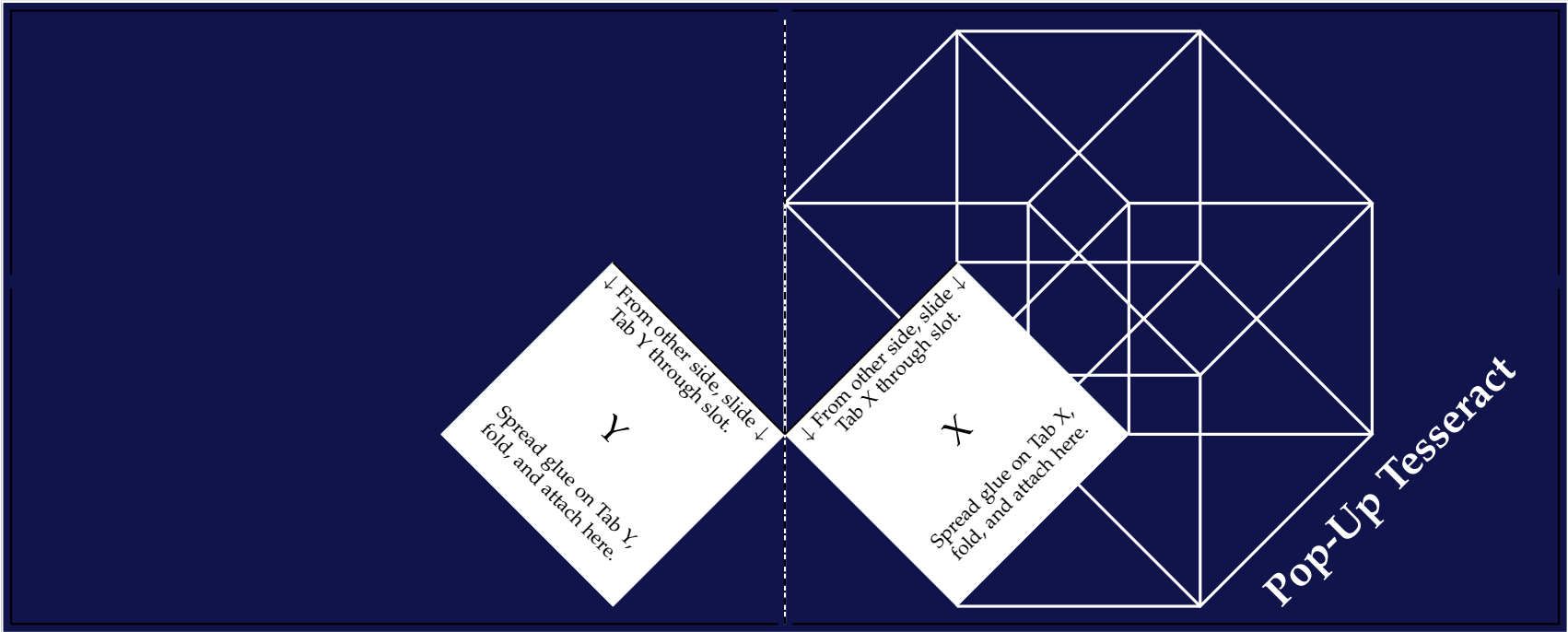


LT

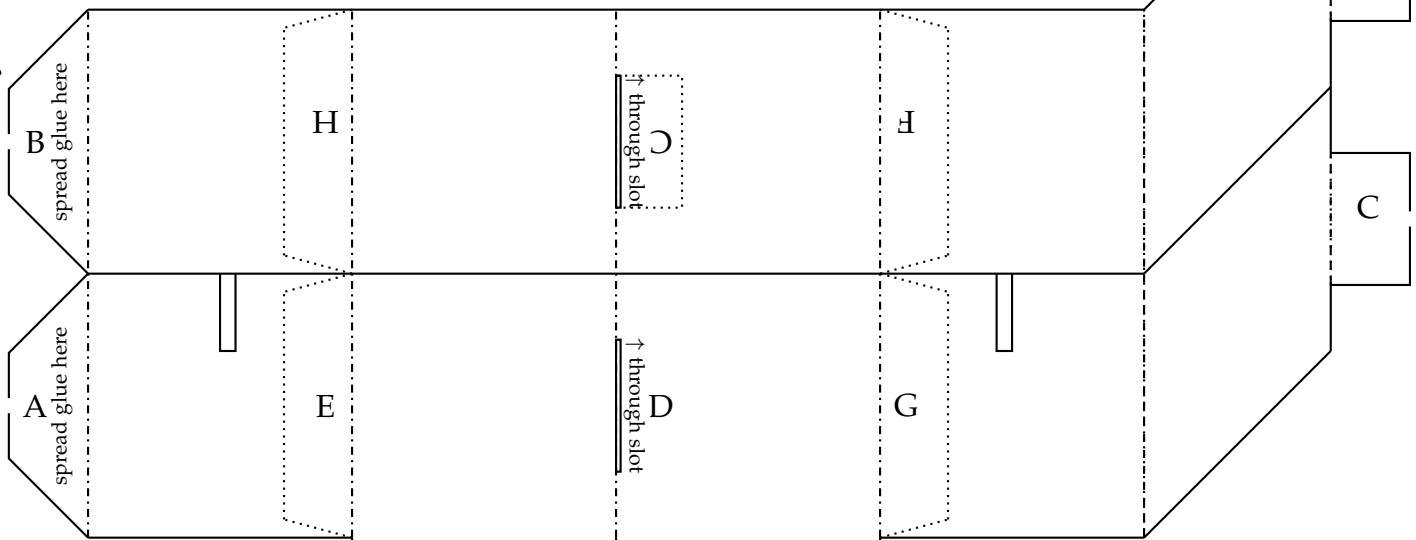
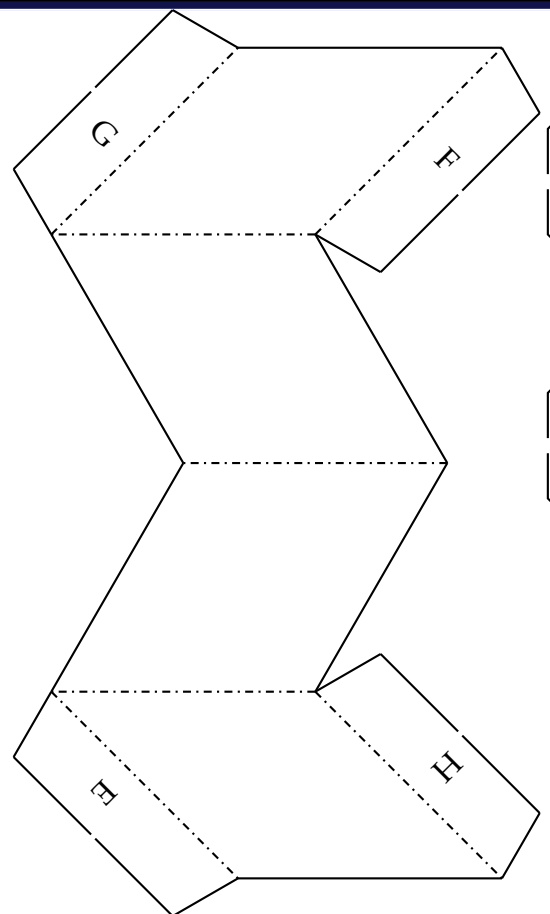
RT



↓ From other side, slide ↓  
Tab Y through slot.  
**Y**  
Spread glue on Tab Y,  
fold, and attach here.

↓ From other side, slide ↓  
Tab X through slot.  
**X**  
Spread glue on Tab X,  
fold, and attach here.

**Pop-Up Tesseract**



**Tab X**  
(spread glue here)

**Tab Y**  
(spread glue here)

**Legend**

- Mountain fold -----
- Valley fold - - - - -
- Tab guide ..... (dotted line)

LB

RB

To draw a 2D picture of a 3D cube, start with a square. Pick a direction (up) to represent the 3rd dimension. Then draw another square one unit above the first one (in the direction of the 3rd dimension). Connect corresponding vertices.

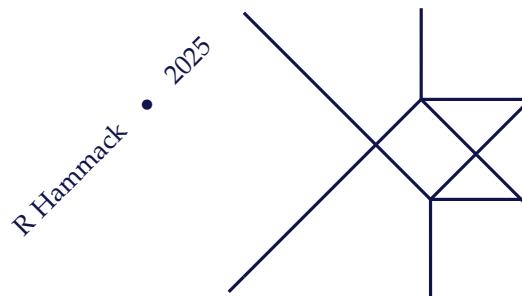


In drawing a cube, distortions are inevitable. Here the top square overlaps the bottom one, and the vertical faces appear as rhombs, not squares.

The exact same procedure, one dimension higher, produces a 3D model of 4D cube, or *tesseract*.

To make this model, start with a 3D cube (the one sitting on the base of this card). Pick a direction (up & back) to represent the 4th dimension. Make a copy of the cube, moved one unit in this direction, and connect corresponding vertices. In this model, the top cube overlaps the bottom cube, just as the top face of the drawing of the cube overlaps the bottom face. And the faces aligned with the 4th dimension appear as rhombs.

This model uses only 14 of the tesseract's 24 square faces. Ten are omitted to better reveal the structure, but the missing faces are implied by their perimeters.



## **Temporary page!**

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If you rerun the document (without altering it) this surplus page will go away, because  $\text{\LaTeX}$  now knows how many pages to expect for this document.