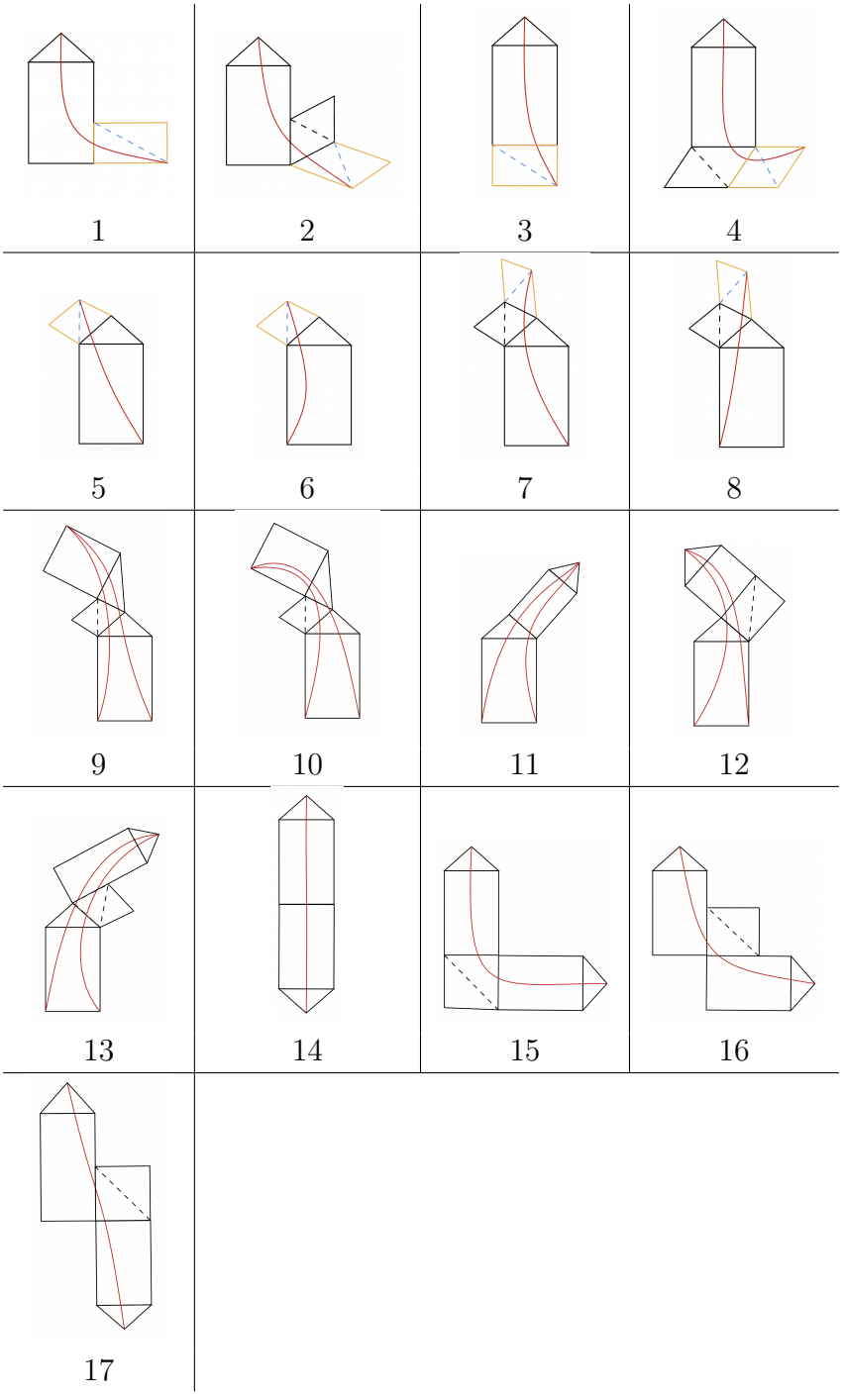
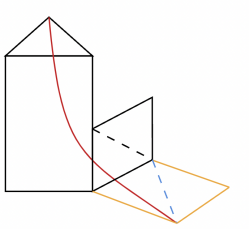
A Basic triangles with tower arcs

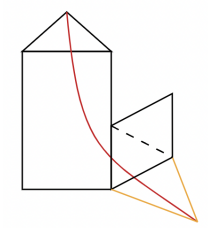
Here we show all options for how an arc in a type three dissection can form a triangle with either two tower arcs or a tower arc and a boundary arc. In each diagram, each tower is allowed to be any size such that the configuration is possible. For example, the left tower in Diagram 17 must be at least a 1-tower.



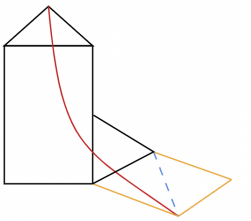
Note that each yellow quadrilateral denotes a quadrilateral whose boundary is used to form a triangle with the new arc. The dotted lines denote replacing the quadrilateral with a triangle to produce a distinct case.



For example, in Picture 2 (also shown below), we have one quadrilateral colored in yellow, and inside the yellow quadrilateral, there is blue dotted line. The blue dotted line denotes that the quadrilateral can be replaced by a triangle, which gives us another new arc as shown below.



Picture 2 also has a black dotted line in the black quadrilateral, which means that a triangle can replace the black quadrilateral, and the resulting new arc is a new case as shown below.



Therefore, Picture 2 encapsulates four distinct cases of a new arc produced by a tower arc and a subpolygon in total, even though Picture 2 only contains one figure. This explains why the 17 figures capture all 40 possibilities.

As was described in Lemma 7, the only arcs from this table which would have unit weight are entry 2 where both optional shapes are triangles, entry 3 when the optional shape is a quadrilateral and entry 17 when the optional shape is a triangle.