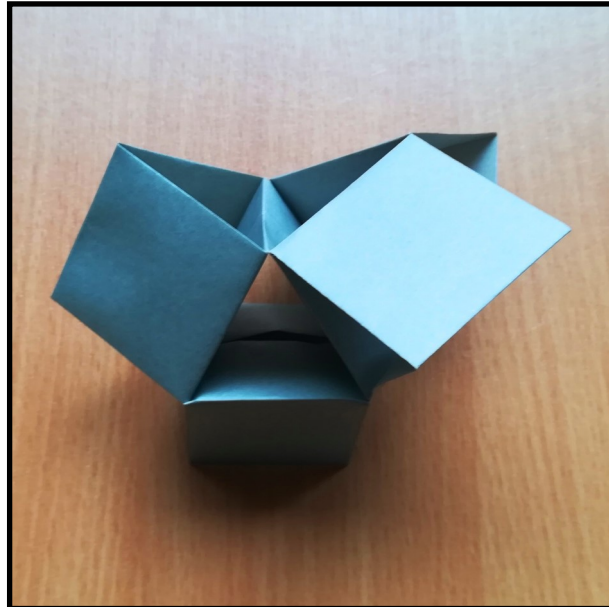


Rock and Roll

Designed by David Mitchell

Rock and Roll is an odd looking passive play design made by connecting six open equilateral prisms. If placed on a gently inclined ramp it will rock and roll its way down the slope. A video showing the effect can be found [here](#).

These diagrams show you three different versions of the Rock and Roll form. The first is made from six 2x1 rectangles of paper using the



modular origami technique, the second from six 3x1 rectangles of card and the third is developed from a classic cut, fold and paste polyhedral net. In each case the finished form is the same. All three designs work equally well.

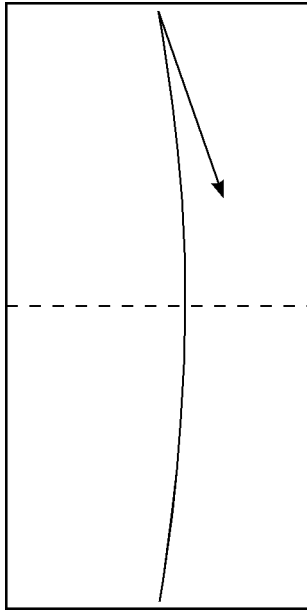
I discovered Rock and Roll in 2020 when exploring the possibilities offered by the twin open equilateral prism form.

The Modular Origami Method

You will need six 2x1 rectangles. For clarity the diagrams are drawn so that one side of the paper is white and the other shaded. The modules forming the core twin equilateral open prism around which the form is built are shaded green and the other modules are shaded blue. However you can use any kind of paper and there is no reason why, in practice, all the modules should not be folded from paper of the same colour.

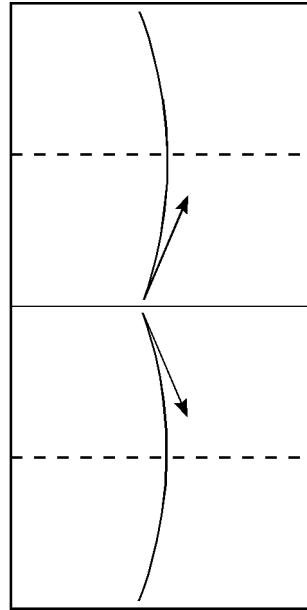
The easiest way to create a 2x1 rectangle is to fold a square in half edge to edge and cut along the crease.

1



1. Fold in half upwards, then unfold.

2



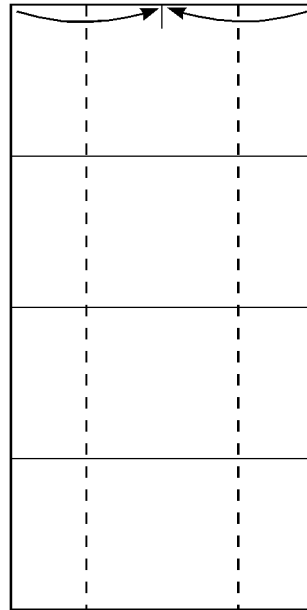
2. Fold both the top and bottom edges onto the central crease, then unfold.

3



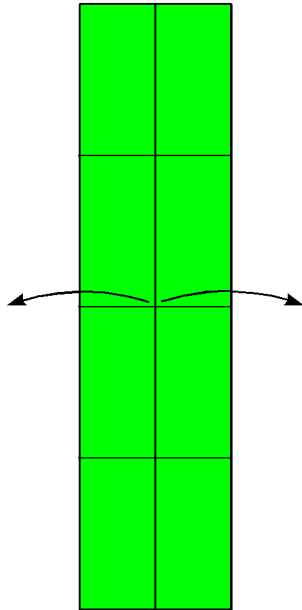
3. Make a tiny crease in the centre of the top edge.

4



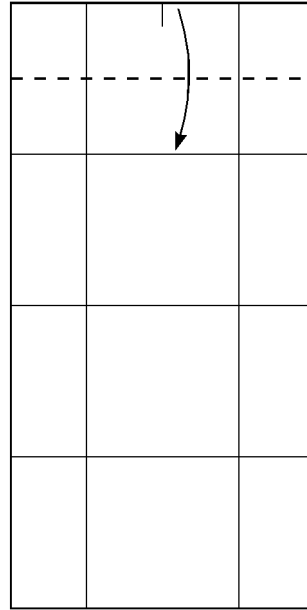
4. Fold both outside edges into the centre.

5



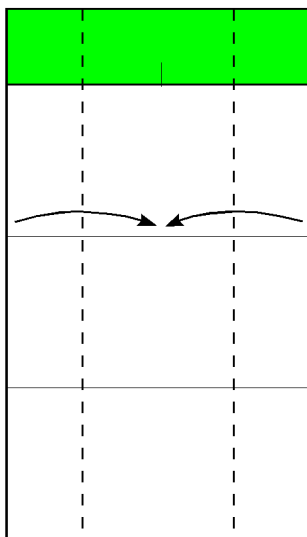
5. Open out.

6



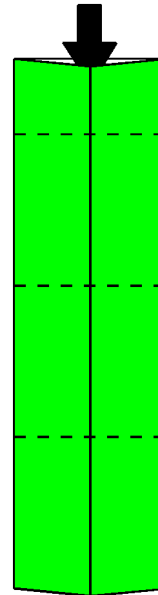
6. Fold the top edge downwards to the quarter way crease.

7



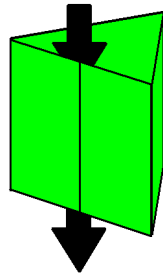
7. Fold both outside edges inwards using the existing creases.

8



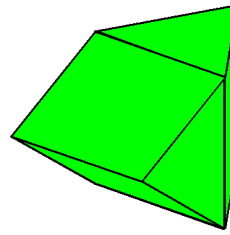
8. Form into an open equilateral prism by inserting the bottom edge into the pocket at the top.

9



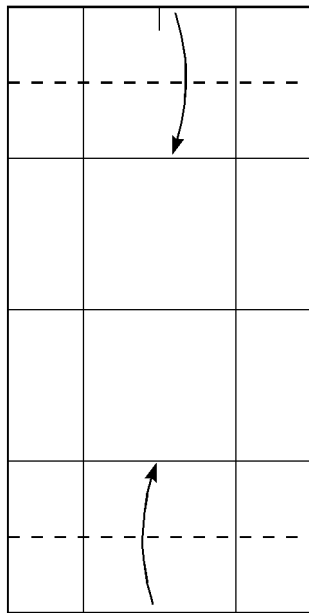
9. Fold a second identical module and insert it through the centre of the first like this.

10



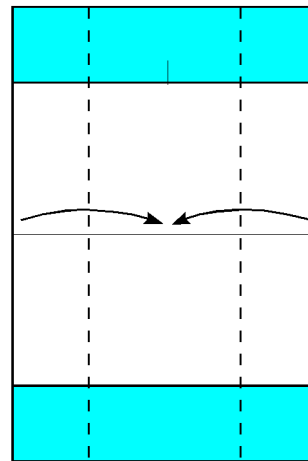
10. Form the second module into a similar open equilateral prism and rotate it so that the join is concealed inside the first prism. The core of the design is finished.

11



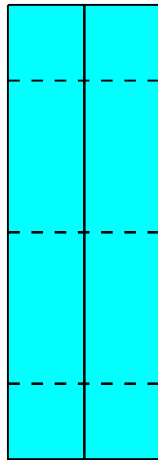
11. Fold four more modules to step 6 but this time fold in both the top and bottom edges.

12



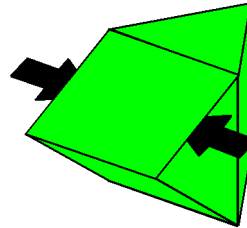
12. Fold both outside edges into the centre using the existing creases.

13



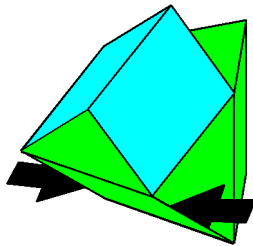
13. Reinforce the direction of all the creases shown here through all the layers.

14



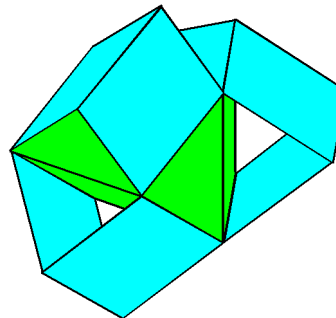
14. Add a third module to the core by tucking both ends inside one face of one of the core prisms as shown.

15



15. Add a further module to the other face of the same core prism in a similar way.

16



16. Add the other two modules to the faces of the second core prism in the same way. Rock and Roll is finished.

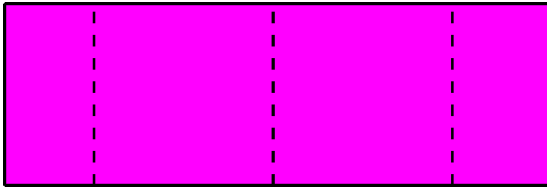
Construct a gently sloping ramp and place Rock and Roll at the higher end. Give the top a slight push. It will rock and roll its way down the slope. Repeat ad infinitum.

Rock and Roll will head straight down the ramp if placed in the correct position.

The Cardboard Modelling Method

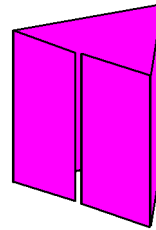
You will need six 3x1 rectangles of light card.

17



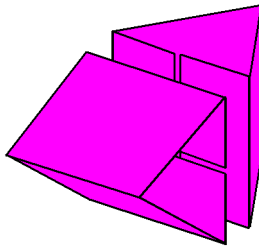
17. Crease or score each piece of card in the way shown here.

18



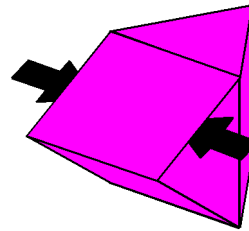
18. Fold each piece of card to look like this.

19



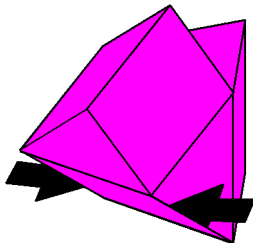
19. Arrange two pieces like this. Interweave the ends and glue together to form a solid core in the form of an open equilateral prism.

20



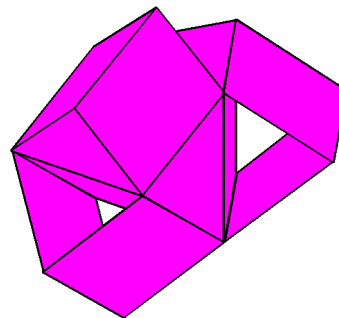
20. Add a third piece to the core by tucking both ends inside one face of one of the core prisms as shown.

21



21. Add a further piece to the other face of the same core prism in a similar way.

22

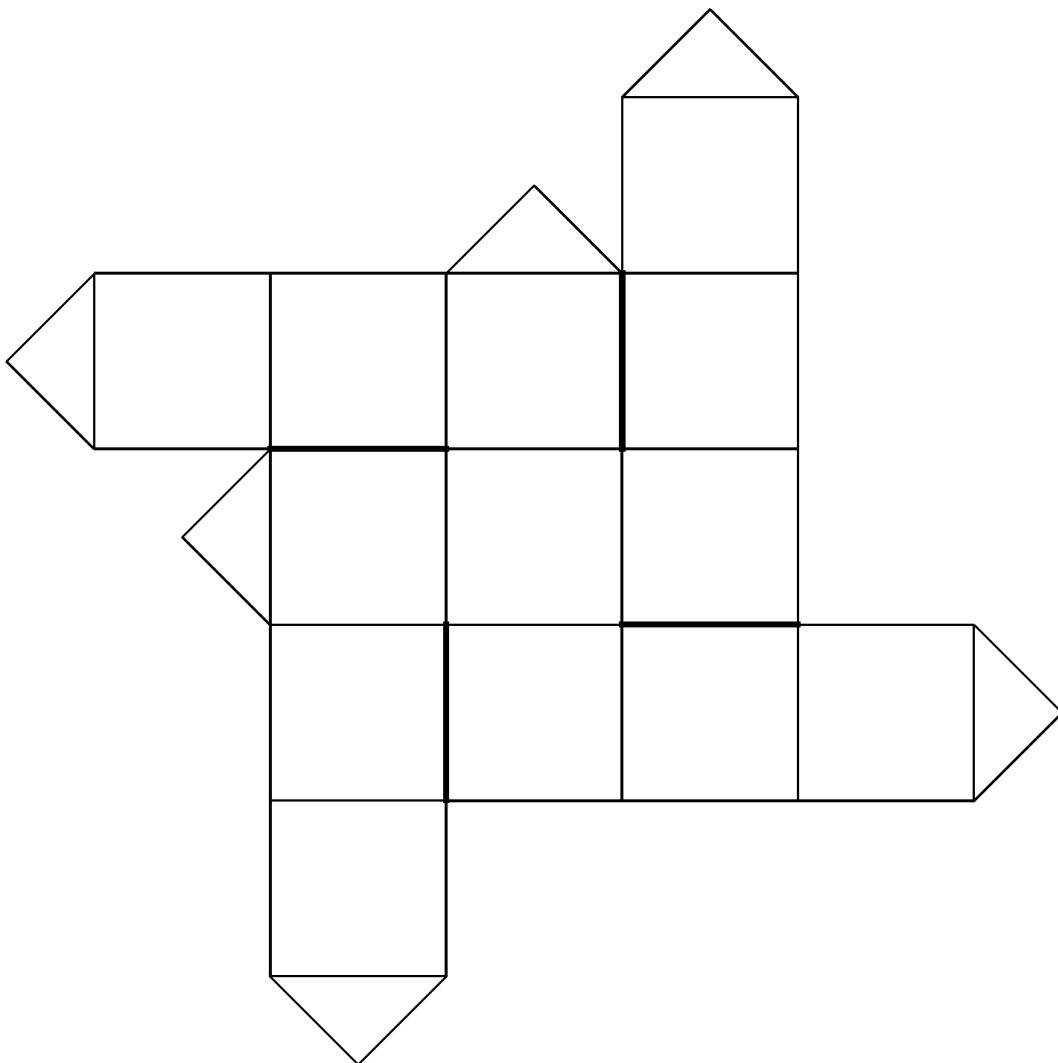


22. Add the other two modules to the faces of the second core prism in the same way. Rock and roll is finished.

The Polyhedral Net Method

Prepare a net on light card to the design shown below. Cut along the wider black lines to separate some of the squares from their neighbours. Crease along all the thinner black lines so that they act as hinges.

Construction of the design is not difficult and I leave it to you to puzzle out.



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