Mobiüs band and surfaces

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1. Cut a band of paper along its center line. How many pieces do you get?

2. Take a strip of paper, draw the center line on both sides and form a **Mobiüs** band by taping the ends together with a half twist. How many pieces do you get if you cut this figure in half along the center line? How many half twists does each piece contain?

3. Cut a band with two half twists along the center line. How many pieces do you get? How many half twists does each piece contain?

4. Cut a band with three half twists along the center line. How many pieces do you get? How many half twists does each piece contain?

5. Can you predict a general answer a band with n half twists?

6. Cut a Mobiüs band along the $\frac{1}{3}$ line. How many pieces do you get? How many half twists does each piece contain?

7. Cut a band with five half twists into fifths. How many pieces do you get? How many half twists does each piece contain?

8. Take two strips of paper on top of one another. Simultaneously give them a half twist, and tape their respective ends together. What happens if we cut along its center line?

9. Cut a piece of paper into an X shape to construct two bands of equal length and width attached perpendicularly to one another. What happens when each is cut along its center line?

10. Glue a band and a Mobiüs band perpendicular to one another. What happens when each is cut along its center line?

11. Glue the top edge to the bottom edge of a square, and the left edge to the right edge. What shape do you get?

12. What surface do you get if you glue the opposite edges of a regular hexagon?

13. What is the boundary edge of a Mobiüs band like?

14. If you sew a Mobiüs band and a disk together along their boundaries, what do you get?

15. If you sew two Mobiüs bands together along their boundaries, what do you get?