The paper tube in the figure above is to be cut along the dotted line and opened up. What will be the shape of the flattened piece of paper?

Answer: _____

Scoring Guide

Solution:

Rectangle or drawing of a rectangle.

Score & Description
Correct #1 Correct response
Correct #2 Square or drawing of a square
Incorrect Any incorrect response

*The use of more than one correct category in this question enabled NAEP to gather data on different ways in which students responded correctly to this question. Any response that fell into one of these correct categories earned full credit.

Correct #1 - Student Response

The paper tube in the figure above is to be cut along the dotted line and opened up. What will be the shape of the flattened piece of paper?

rectangle

Scorer Comments:
The student correctly determined the shape of the tube to be a rectangle when flattened.

Correct #2 - Student Response

The paper tube in the figure above is to be cut along the dotted line and opened up. What will be the shape of the flattened piece of paper?

square

Scorer Comments:
In this paper, the student put square for their answer instead of rectangle. This particular response was coded to gather data on a different way that students could answer the question and still receive full credit.

Incorrect - Student Response

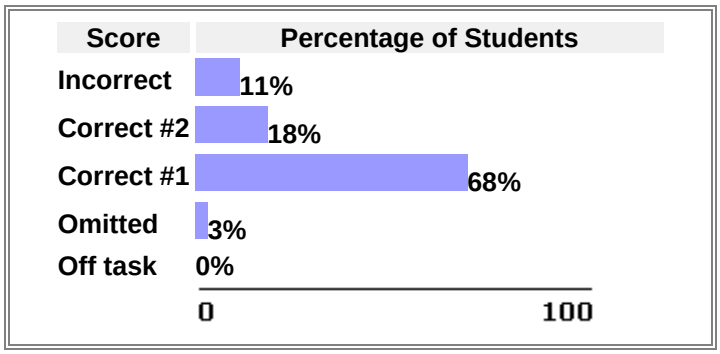
The paper tube in the figure above is to be cut along the dotted line and opened up. What will be the shape of the flattened piece of paper?

cylinder

Scorer Comments:
This paper received no credit because the student did not put rectangle or

square for their answer.

2005 National Performance Results



Note:

- These results are for public and nonpublic school students.
- Percentages may not add to 100 due to rounding.

Mathematical Content Area: *Geometry* (Sub content classification:)
Mathematical Complexity: *Low Complexity*

Mathematical Content Area

Geometry

This content area focuses on identification of geometric shapes into transformations and combinations of those shapes. By grade 4, students are expected to be familiar with simple plane figures such as lines, circles, triangles, and rectangles, as well as solid figures such as cubes, spheres, and cylinders. They are also expected to be able to recognize examples of parallel and perpendicular lines. As students move to middle school and beyond, increased understanding should deepen of two- and three-dimensional figures, especially parallelism, perpendicularity, angle relations in polygons, congruence, similarity, and the Pythagorean theorem. Students at all grades are expected to show knowledge of symmetry and transformations of shapes and to identify images resulting from flips, rotations, or turns. Justifications and reasoning in both formal and informal settings are expected at grades 8 and 12.

Mathematical Complexity

Low Complexity

This category relies heavily on the recall and recognition of previously learned concepts and principles. Items typically specify what the student is to do, which is often to carry out some procedure that can be performed mechanically. It is not left to the student to come up with an original method or solution.

Description	Grade	Type	Difficulty
Identify plane figure that results from opening a tube	8th	Short Constructed Response	Easy