

Illustrative Mathematics

5.NF Origami Stars

Alignments to Content Standards

- [Alignment: 5.NF.B.7.b](#)

Tags

- *This task is not yet tagged.*

Avery and Megan are cutting paper to make origami stars. They need $\frac{1}{5}$ of a sheet of paper in order to make each star. If they have 6 sheets of paper, how many stars can they make? Explain your work and draw a picture to support your reasoning.

Commentary

The purpose of this task is to present students with a situation in which they need to divide a whole number by a unit fraction in order to find a solution. Calculating the number of origami stars that Avery and Megan can make illustrates students' understanding of the process of dividing a whole number by a unit fraction.

This task is more concrete than some of the other division problems: note that the picture drawn reflects the situation very literally: the rectangles in the picture represent rectangular pieces of paper. Compare this with the solutions for [5.NF Banana Pudding](#) where the rectangles in the picture represent cups or [5.NF Dividing by \$\frac{1}{2}\$](#) where the rectangles in the picture represent sandwiches, quarts of soup, or pounds of gold.

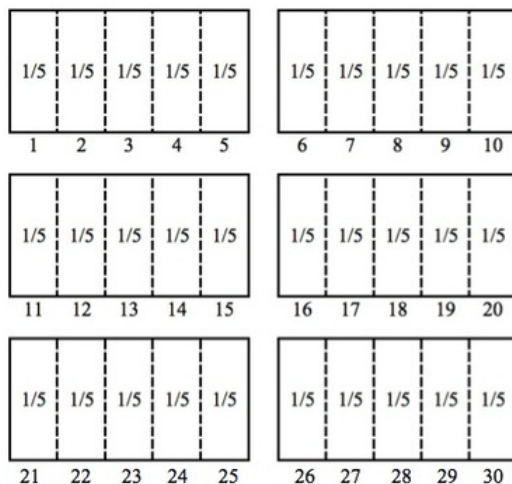
Solutions

Solution: 1

In order to find out how many origami stars Avery and Megan can make, we need to find out how many pieces equivalent to $\frac{1}{5}$ of a sheet of paper we can divide the 6 pieces of paper into. This means that the answer to this question will be the solution to the following division problem:

$$6 \div \frac{1}{5} = ?$$

Based on our understanding of fractions, we know that there are 5 pieces of that are equivalent to $\frac{1}{5}$ of a sheet in each sheet of paper. This means that there are $6 \times 5 = 30$ pieces of paper with size $\frac{1}{5}$ of a sheet in the 6 sheets of paper that Avery and Megan have to make their stars. We know that this is true because $30 \times \frac{1}{5} = 6$. Based on our understanding of the relationship between multiplication and division, this tells us that $6 \div \frac{1}{5} = 30$. Thus, Avery and Megan can make 30 origami stars. The picture below shows that this is correct:



The picture above shows that there are 30 pieces of paper with size $\frac{1}{5}$ of a sheet in the 6 sheets of paper that Avery and Megan have to make their stars. This supports our reasoning and shows that Avery and Megan can make 30 origami stars.



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