Towel Origami

Have you ever wanted to fold a towel or napkin into an animal to impress your friends? Create a paper crane as you discover the math behind origami. Elaborate on your origami skills to make a towel swan and compare the scaling between the two.

TEKS:

MATH 6.1A: The student is expected to apply mathematics to problems arising in everyday life, society, and the workplace.
MATH 6.1C: The student is expected to select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.
MATH 7.1F: The student is expected to analyze mathematical relationships to connect and communicate mathematical ideas.
MATH 7.5C: The student is expected to solve mathematical and real-world problems involving similar shape and scale drawings.
MATH 8.3A: The student is expected to generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation.

Materials:

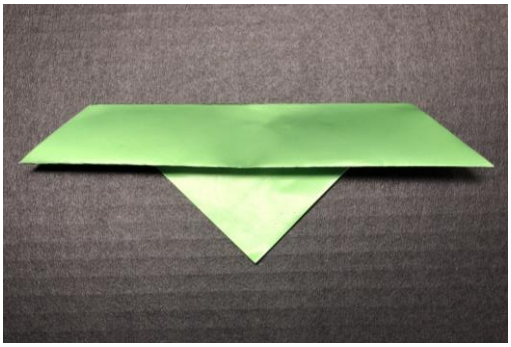
- Bath towel (same color as hand towel)
- Hand towel (same color as bath towel)
- Origami or square paper – can be purchased here
- Ruler

How To:

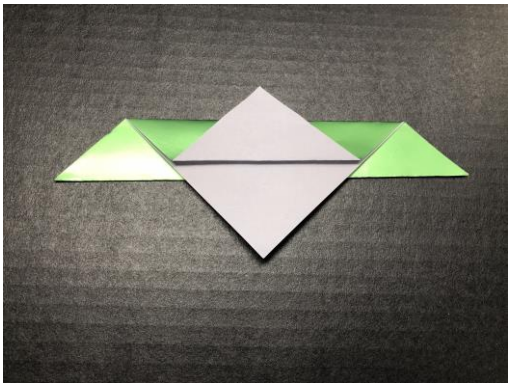
Making a paper crane

1. Start with a square piece of origami paper.
2. Fold your origami paper in half by folding the top corner to the bottom corner. This should look like an upside-down triangle.

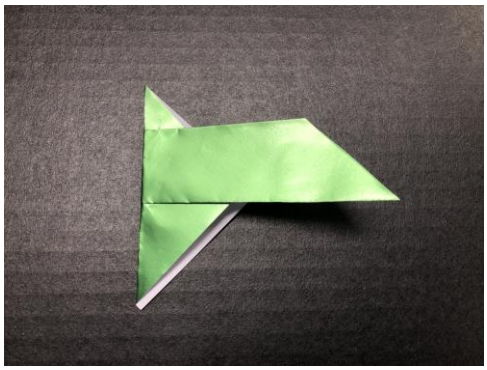
3. Fold the top portion of the paper down so that the edge reaches the halfway point in the triangle. Don't make the flap too thin because this will become the wings of your crane.



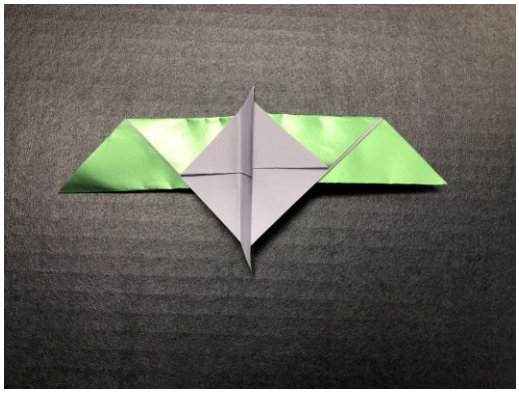
4. Turn the paper over (flip it horizontally) and take the bottom corner of the top layer and fold it up. This should make a diamond shape.



5. Fold the figure in half by folding the left side over to the right.



6. Fold about 2/3 of that same flap back to make one of the wings. You should see the diamond shape again. Do the same to the other flap to make the second wing.



7. The top point of your origami will become the crane's head. Push the center of the head in and flatten it to create a reverse fold. This should look like a head with a small beak.

8. Enjoy your paper crane!

Making a towel swan

1. Spread the bath towel horizontally so that one of the long sides is facing you.
2. Start rolling the left and right sides of the towel diagonally towards the midpoint of the towel. Be sure to roll the towel rolls very tight!


3. Keep rolling until you reach the middle of your towel and it looks like an airplane. Rotate your shape 90°.
4. The point becomes the beak of the swan. Gently shape the towel back on itself to make a swan shape.
5. Roll the hand towel tightly lengthwise. Fold it in half and put it on top of the body of the swan as the wings. This provides the support needed to prop up the neck of your swan.


STEM Explanation:

Use the ruler to measure the height and width of the origami crane and the towel swan. Do you notice a pattern in the amount it gets bigger? When a shape or model reduces or increases at a proportional rate, this is called scaling. This is how people can make drawings or small-sized models into large, full-sized projects. They can also go in the opposite direction and make small-sized models of large objects or areas. Other examples of projects that are made from scaled models are buildings, cars, and maps.

Career Connection:

Mathematicians do research to develop mathematical principles. They are concerned with data, quantity, structure, space, models, and change. They analyze all those measurements and types of data and use mathematical techniques to help solve problems in the world.

Resources:

https://origami.lovetoknow.com/Instructions_for_Folded_Towel_Animals
https://www.educationworld.com/a_lesson/01-1/lp235_03.shtml
https://www.origamiway.com/easy-origami-bird.shtml
https://www.amazon.com/Origami-Paper-Double-Sided-Color/dp/B06XW45PMR/ref=sr_1_3?ie=UTF8&qid=1537556532&sr=8-3&keywords=origami+paper