

# The Moose is Stuck! The Duck is Stuck!

## Using a Growing Pattern to Solve a Problem

Patricia Turner
Published by *Oklahoma Young Scholars/Javits*

*This work is licensed under a Creative Commons CC BY-SA 4.0 License*

| | | | |
|---|---|---|---|
| **Grade Level** | 1st – Kindergarten Grade | **Time Frame** | 1-2 class periods |
| **Subject** | English/Language Arts, Mathematics | **Duration** | 40 minute sessions |

## Essential Question

Why should we compare numbers? How do we know if a number is greater than, less than, or equal to another number? What happens to numbers when one is added to it? How does this show a pattern? How does understanding patterns in math help us solve problems?

## Summary

Cumulative stories such as "One Duck Stuck" can illustrate mathematical growing patterns. In this lesson, the story shows how the number increases by one as animals come to help rescue the duck from the muck. As the growing pattern is revealed through the story, children get excited because they cannot always predict what kind of animal is going to come, but they can predict the number of animals. During the lesson, students participate in ordering, sequencing, and adding numbers. The lesson closes with students' showing their understanding of a growing pattern by creating their own book of animals or people coming to the rescue.

## Snapshot

### Engage

Students are asked, "How many people do you think it takes to get a moose out of a swimming pool?" Students write their predictions on sticky notes then line up in numerical order based on their prediction number and discuss their reasoning. Students then watch a YouTube video about a moose that was rescued from a swimming pool.

### Explore

Students listen to a reading of the book "One Duck Stuck" and create a class a chart that shows the number and sequence of animals helping to get the duck unstuck. Students then analyze a growing pattern based on the number of animals helping. Students explore, figure out, and show how many animals helped to get the duck out.

### Explain

Students present and explain their posters to the class. Students practice explaining and showing different mathematical strategies to the class.

### Extend

Students create class books that show growing patterns.

**Evaluate**

Using the book their group created, students will show the total number of animals it took to get the stuck animal unstuck. They should show or be able to explain how they solved the problem

## Standards

*Oklahoma Academic Standards for Mathematics (Grade 1)*

**1.N.1.8:** Use objects to represent and use words to describe the relative size of numbers, such as more than, less than, and equal to.
**1.A.1.1:** Identify, create, complete, and extend repeating, growing, and shrinking patterns with quantity, numbers, or shapes in a variety of real-world and mathematical contexts.

*Oklahoma Academic Standards for Mathematics (Grade 1)*

**K.N.1.2:** Recognize that a number can be used to represent how many objects are in a set up to 10.
**K.N.1.3:** Use ordinal numbers to represent the position of an object in a sequence up to 10.
**K.A.1.2:** Recognize, duplicate, complete, and extend repeating, shrinking and growing patterns involving shape, color, size, objects, sounds, movement, and other contexts.

## Attachments

- Animal-Cutouts-for-One-Duck-Stuck.docx
- Animal-Cutouts-for-One-Duck-Stuck.pdf
- Our-Group-Story-Outline.docx
- Our-Group-Story-Outline.pdf
- Teacher-Animal-Cut-Outs.docx
- Teacher-Animal-Cut-Outs.pdf

## Materials

- *One Duck Stuck* by Phyllis Root (The YouTube version is cited in the sources.)
- Teacher set of character cut outs from the story (attached)
- Packets of cutouts for each pair of students (attached)
- Group Story Outline (attached)
- Pocket chart
- Large drawing paper
- Supplies to create their posters such as scissors, crayons, markers, counters, and etc.

# Engage

Start by asking student this question: How many people do you think it takes to get a moose out of a swimming pool?

Students will write their prediction on a sticky note and keep the sticky note with them. Students then line up in numerical order based on their prediction number. Try not to help students too much as they locate their place in line. Encourage students to look at everyone's prediction and think about whether their number is larger or smaller than their neighbor's number and place themselves appropriately in the line. They should form a line from the smallest prediction number to the largest.

The next step will be to Fold the Line by having one end follow the student until they have reached the other end of the line and students are paired up with a partner that is facing them. Have students explain and give a reason for their prediction to the person they are paired with.

Sample response might be *I chose 20 because the moose is very strong.*

Now show the class the YouTube video https://youtu.be/4kwhukPpJWo.

After watching the video, have students think about their predictions by asking them to decide if their prediction was greater than, equal to, or less than the actual outcome. Students should discuss their thinking with an Elbow Partner.

# Explore

Show students the cover of the book *One Duck Stuck* and ask them to predict how many animals they think will take to get a *duck* out of the mud. Follow a similar pattern to the Engage by having students write their predictions on a sticky note. Students will have more prior knowledge since they watched the moose get unstuck, so their predictions should be more reasonable.

Then have students find their place in line by moving up or down the line. Remind them to look at everyone's prediction and form a line from the smallest prediction number to the largest. Quickly, have the students fold the line and explain their reasoning to the person they are paired with.

Sample student response:

- I chose 1 because if it was the skunk trying to help out, then all of the other animals would leave.
- I think it will take 2 because the duck is much smaller than a moose.

Now read the entire book " One Duck Stuck" to the class. Stop as you read and ask students the following questions:

**Questions to ask students**

- How do you think the duck is going to get stuck?
- How do you think the animals might help the duck?
- Where does this story take place? What is muck?
- Who are the characters in the book? What are they doing?
- How did the duck get unstuck?
- Have you ever gotten stuck somewhere? How did you get out?
- Extension Question: Did you see or hear any words that rhymed.

After reading the story, ask students to think about the animals in the story.

Have students popcorn call out one character at a time that appear in the story. As they do this, place a picture cutout of each animal in a pocket chart. (See attached character set.) Avoid placing the animals in the order they were mentioned in the story.

Next, give each pair of students a packet of the characters that were in the story. Students will place the animals on their desks in the sequence the animals come to help the duck. As a class, agree on the correct order and numbers for the specific animals.

Students may use the book to verify order and number. Have students come to the pocket chart and rearrange the order and the number of the animals in the pocket chart to match what the class agreed upon.

Say to students the following:

"Now that you know the order and the number of animals, what else do you notice when looking at the chart?"

"Are there any patterns?"

"What happens to the number of the animals as the story goes on?"

Give students time to study and think about the chart and what they see before calling on students to respond.

**Sample Student responses:**

- I notice that each group gets one bigger.
- I see that there are a lot more snakes and frogs than fish
- The duck is helped by two fish, three moose, four crickets, five frogs... up to ten dragonflies.
- Some students may tell you about the assorted noises and actions it took to finally get the duck unstuck.

Students now are ready to explore, figure out, and show **How many animals helped to get the duck out.**

Students will work with a partner to create a poster that shows by drawing, writing equations/number sentences, and writing a statement explaining the number of animals it took to help the duck out of the mud. They need to explain what they are thinking and show the strategy they used to find their answer. You will need to have counters, paper, crayons, markers, etc. available for students to use.

# Explain

Students present their posters to the class. While sharing their posters, students will show and justify how they came up with their answers. Make sure to help students understand that there are many ways or strategies to solve a problem.

**Sample Student Responses:**

- We counted the moose as helping, so we had one more animal than the rest of the class.
- We glued down one picture for each animal. We put them in the order they came in the book. Then we put a tally mark next to each animal to show how many of them came to help out.
- Then we counted the groups of 5 from the tally marks for all the animals and then added the tally marks that were not part of groups of _____.

# Extend

Students will create class books that show growing patterns.

Start by having each group decide on an animal that is going to get stuck. Use the **Group Story Outline Sheet (**attached) to help the group make decisions about their stories. They will write on their outline page the type of animal, how, where, and what the animal is stuck in. They will also decide who or what is coming to the rescue.

Group members should divide the number of book pages to be drawn equally among their group. They should each have around 2 pages to create.

Students will illustrate and write a sentence on each page telling what is happening. The last page will show how their stuck animal got unstuck. Collect all the pages for each book and bind the book together.

# Evaluate

Option #1: Using their group's newly-created book and the last part of the outline sheet (or plain notebook paper), have students show the total number of animals it took to get the stuck animal unstuck. They should show or be able to explain how they solved the problem.

Option #2: Using a different group's book, students will show the total number of animals it took to get the stuck animal unstuck and be able to explain how they solved the problem

**Extension for Gifted Learners:**

Pose this problem to your students:

A total of 12 animals showed up at my door during the week. All of the animals came only once. Six were cats, five were dogs, and one was a duck. How many animals showed up on each day of the week? There is more than one right answer.

## Resources


- Creative Commons Clip Art.
- Keuhner, Denise. (2020). One Duck Stuck. [Video Read Aloud]. YouTube. https://youtu.be/wKiTASVQ0xs
- K20 Center. (n.d.). Fold the line. Strategies. https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f5079658
- K20 Center. (n.d.). Elbow partners. Strategies. https://learn.k20center.ou.edu/strategy/ccc07ea2d6099763c2dbc9d05b00c4b4
- Root, Phyllis and Jane Chapman. (1998). One Duck Stuck. Candlewick Press.
- WMUR-TV. Moose in the Swimming Pool. News report. [Video]. YouTube. https://youtu.be/4kwhukPpJWo