

# ADVANCED LEARNING LABS

A partnership between the North Carolina Department of Public Instruction and Duke TIP  
TO ENGAGE, ACTIVATE, AND GROW OUR STUDENTS

GRADES

2-3

## Lab 7 • Interactions



### ENGLISH LANGUAGE ARTS

“Sliding Door Moments” are seemingly inconsequential moments or interactions that end up having a much bigger impact than anticipated. For example, you choose one park to play in over another, and you end up meeting your new best friend at that park.

Illustrate two different seven-panel storyboards with the same beginning panel(s). Have the main character make a different decision at the “sliding door moment” and conclude each storyboard with a different ending.



### SOCIAL STUDIES

North Carolina has three distinct geographic regions: the coastal region, the piedmont region, and the mountains. People have to interact with their environment to be able to settle and live in an area.

Create a cartoon strip that illustrates how people interact with their regions. Write a two or three sentence caption for each cartoon illustration.

Use the following link as a resource on the three regions.

Link: [https://www.sosnc.gov/divisions/publications/kids\\_page\\_geography](https://www.sosnc.gov/divisions/publications/kids_page_geography)



### SCIENCE

Baking can be very similar to a science experiment! You have to monitor and adjust your ingredients based on how they may react while cooking. Cake batter recipes often include water or milk.

Explain what happens to the liquid when you bake the cake. Where did it go? Is it possible to cool the cake down and get the liquid back? Why or why not?

How could you test your prediction?



### MINDFULNESS

Because our interactions with others have been limited, spend some time this week thinking of ways that you can interact with others while continuing to abide by the rules in place.

A few examples might be:

- Write a letter to a loved one and mail it to them.
- Color a picture for a neighbor and place it in that person’s mailbox with a friendly note.
- Make an effort to be kind to the people with whom you live (ex: tell your sister that you like her hair, thank your mom for making dinner, offer to let your brother play with your toy, etc.).



## LOGIC PUZZLE

Polybius Square Cipher!

A Polybius Square was a method of encryption invented by the Ancient Greek historian Polybius.

See if you can uncover the hidden quote!

Link: <https://bit.ly/3cbhGSg>



## FIELD STUDIES

Historians and archaeologists work every day, so that we can interact with people of the past. Watch this video that explains what archaeology is:

Link: <https://www.youtube.com/watch?v=qMzpA5oCGNY>

Next, watch a short clip that explains how an archaeologist conducts a dig on a site: <https://www.youtube.com/watch?v=PcT1vGyJzyg>

What do you think we can learn about people from the past during a site excavation? Why do you think it's important to learn about people from the past?



## RESEARCH EXPLORATIONS

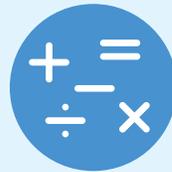
Sociologists study how people interact in groups. Click on this link to learn more about sociology.

Link: <https://kids.britannica.com/kids/article/sociology/433123>

How each person behaves can change how the group interacts. Each day for the next five days, perform a random act of kindness for someone in your home.

Observe how they interact with you after the random act of kindness and record it (with pictures or words).

After you changed your behavior by performing a random act of kindness for five days, did the family interactions change at all? If so, how?



## MATH

A fractal is an object made of smaller versions of itself - a pattern within a pattern. Interactions with nature reveal many fractals - snowflakes, lightning bolts, leaves, and more. Walk with an adult to collect leaves. Choose 1 leaf. Measure 4 fractal levels: stem, large veins branching off the stem, medium veins branching off the large, small veins branching off the medium. Order the measurements using  $>$ ,  $<$ , or  $=$ . Using fractions, describe how the level lengths compare. Using your measurements, draw the leaf showing all 4 levels. Repeat with another leaf. How do your measurements compare? What do you observe about leaf fractals?

Source: <http://mathengaged.org/resources/activities/art-projects/fractal-leaf-art/>



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# ADVANCED LEARNING LABS

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GRADES

4-5

## Lab 7 • Interactions



### ENGLISH LANGUAGE ARTS

“Sliding Door Moments” are seemingly inconsequential moments or interactions that end up having a much bigger impact than anticipated. For example, you choose one park to play in over another, and you end up meeting your new best friend at that park.

Write a short story that includes a “sliding door moment” showing how the main character makes a different choice at that moment. Include how the story ends in different ways, **OR** Include how the choice the character makes impacts the different endings of the story.



### SOCIAL STUDIES

Cultural diffusion is the spread of culture. We can see cultural diffusion happen as different societies and groups of people interact with each other. What is an example of cultural diffusion that influenced a commonly celebrated holiday?

Create a 5-8 panel storyboard depicting how that tradition spread as different groups of people interacted with another culture.

For more information and examples of cultural diffusion, visit <http://wvmsred6.weebly.com/uploads/8/6/9/3/8693332/culturaldiffusionexamples.pdf>



### SCIENCE

Baking can be very similar to a science experiment! You have to monitor and adjust your ingredients based on how they may react while cooking. Put room temperature cake batter in the oven to bake at 350 degrees.

How does the heat get transferred to the batter? In what ways would increasing the oven temperature by 100 degrees bake the cake faster? Would you want to eat that cake? Explain your reasoning.

Design a way to test your predictions.



### MINDFULNESS

Host your own dance party!

Have you ever noticed how your favorite songs can change your mood or how good you feel after dancing?

You're not alone! Science has proven that the interaction of music and dance can improve brain health. Click this link to read about it:

**Link:** <https://health.clevelandclinic.org/dancing-good-kid-infographic/>

Today, take time to arrange a playlist with 5-10 of your favorite songs. Then, find a space to move freely and get your groove on! This may be a good opportunity to spend some time with yourself, or feel free to invite someone to join you, even virtually (family, friends, pets, etc.).



## LOGIC PUZZLE

Polybius Square Cipher!

A Polybius Square was a method of encryption invented by the Ancient Greek historian Polybius.

See if you can uncover the hidden quote!

Link to Week 7 Puzzle: <https://bit.ly/3d9HpvR>



## FIELD STUDIES

Historians and Archaeologists work every day so that we are able to interact with societies of the past. This week you'll watch a video to explain how archaeologists excavate a site to learn about civilizations and people of the past: <https://www.youtube.com/watch?v=qMzpA5oCGNY>

Watch this video that shows some of the notable discoveries from 2019: <https://www.youtube.com/watch?v=PcT1vGyJzyg>

Which discovery do you think is the most important? Do you think it's important to examine how people lived in the past? Explain why or why not.



## RESEARCH EXPLORATIONS

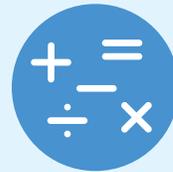
Sociologists study how people interact in groups. How each person behaves can change how the group interacts. Read more about sociology here:

**Link:** <https://kids.kiddle.co/Sociology>

Each day for four days, choose a one-hour block of time and tally every time someone says something kind to someone else in your family. Then, for the next four days, do a random act of kindness for someone in your home. For the hour after your random act of kindness, tally every time someone says something kind to someone.

How did your family interactions change when you added a random act of kindness to your day?

**Link:** <https://kids.kiddle.co/Sociology>



## MATH

Interacting with nature, you can observe fractals. A fractal is an object made of smaller versions of itself - a pattern within a pattern, like a snowflake or lightning bolt. With an adult's help, collect 3 leaves. For each leaf:

- Measure 4 fractal levels: stem, large veins branching from stem, medium veins branching from large, small veins branching from medium.
- Describe the relationships between fractal levels using fractions, ratios, or proportions. What do you observe about leaf fractals?
- Calculate measurements for smaller and larger sized leaf fractals. Describe the strategies you used.
- Use your original and new measurements to create fractal leaf art.



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6-7

## Lab 7 • Interactions



### ENGLISH LANGUAGE ARTS

Choose a member of your house to participate.

Draw a triangle, a circle, and a line on a piece of paper. Consider what attributes you would give each shape. Each of you picks which shape best fits the personality of the other person. Plan your explanation by creating a graphic organizer in order to determine, organize, and make connections between the attributes of the shape and those of the person.

Write down three to five attributes on the paper and why they fit that person. Write a cohesive paragraph explaining what attributes the person and that shape have in common. Be sure to include relevant facts, concrete details or quotations from the person in your explanation. Read your paragraphs to each other.



### SOCIAL STUDIES

Throughout history as technology has advanced different countries and societies have begun to interact and share ideas more frequently.

Watch the video linked below to review Globalization and some of the positives and negatives associated with the increased interactions between societies. **Link:** <https://www.youtube.com/watch?v=JJ0nFD19eT8>

What role do you think everyday citizens have in mitigating the effects of globalization? As groups of people look towards more socially conscious brands how do you think that will affect large corporations?

Write an op-ed article using evidence to support your opinion to explain your answer.



### SCIENCE

Baking can be very similar to a science experiment! You have to monitor and adjust your ingredients based on how they may react while cooking, just like materials used in a science experiment.

Many families have been baking more bread in the past two months. While the ingredients go into the oven a goopy mixture, the baked bread has a larger volume and a solid structure with air holes inside. Identify what is happening to the molecules to give rise to the larger volume and the air holes. Explain your reasoning.

Predict the possible different sources for the gases inside the bread. How do you think you could increase or decrease the volume of the bread?



### MINDFULNESS

Choreograph a signature dance! Science has proven that the interaction of music and dance can improve health.

This week:

1. Decide on a motivating song.
2. Write down 3 inspiration sources (other dances, nature, etc).
3. Find a space to move freely.
4. Start moving! Get warmed up by trying different steps.
5. Piece moves together and don't be afraid to get silly!

Make this dance something you can do together and build on for years to come!

**Link:** <https://www.healthline.com/health/fitness-exercise/benefits-of-dance>



## LOGIC PUZZLE

I Scream, You Scream, We All Scream...for Logic Puzzles!

Place the Ben & Jerry offerings in the grid to solve the puzzle. Share with a friend or family member and see if they solve the puzzle quicker than you!

Link: <https://bit.ly/3gf8yPV>



## FIELD STUDIES

This week you'll look at how we interact with space by doing a virtual tour of NASA's Simulated Lunar Operations Laboratory.

Link: <https://www.nasa.gov/specials/slope360/>

What part of space do you think NASA should explore next? How can non-space related businesses support and engage in space exploration?

Explain why interacting with space is important.



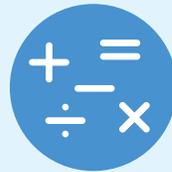
## RESEARCH EXPLORATIONS

Sociologists study how people interact in groups. How each person behaves can change how the group interacts. Each day for four days, choose a one-hour block of time and tally every time someone gives a compliment to someone else in your family. Then, read how to give and receive compliments at this link:

Link: <https://www.psychologytoday.com/us/articles/200403/the-art-the-compliment>

For two days, be intentional about giving as many genuine compliments as possible. Then, each day for four days, choose an hour and tally every time someone gives a compliment to someone else in your family.

How did your family interactions change after you gave a concentrated dose of compliments?



## MATH

If you've interacted with nature, you've probably noticed some patterns! Much of nature is built by the Fibonacci sequence. Watch the video (part 2) for a look into how math and nature interact (watch part 1 if you don't know Fibonacci numbers). At the end of the video, what anomaly does she discover? Watch part 3 to learn more about other patterns in nature. What patterns can you find in nature? Can you find any anomalies? If a plant started with 4, 9, or 15 leaves how would you expect patterns to develop? How would they be alike and different?

Links:

Part 1: <https://youtu.be/ahXIMUkSXX0>

Part 2: [https://youtu.be/IOIP\\_Z\\_-0Hs](https://youtu.be/IOIP_Z_-0Hs)

Part 3: <https://youtu.be/14-NdQwKz9w>



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8-9

## Lab 7 • Interactions



### ENGLISH LANGUAGE ARTS

Writers often use specific writing styles to create clever interactions between the text and audience. Choose a technique below to use in a narrative text you create (poem, short story, monologue, etc.)

- **Full Circle Ending** - The first sentence must also be the last sentence of the paragraph. Come "full circle" at the ending.
- **Repetition for Effect** - Choose a specific word or phrase to repeat to stress an idea. Ex. *She knows* I'm only allowed to drive on Sundays. *She knows* I'll have to pay for gas.
- **Hyphenated modifier** - Use a hyphenated adjective to add emphasis to your descriptions. Ex: When I saw the look on my mom's face, I had one of those *this-is-the-last-moment-of-your-life* feelings.



### SOCIAL STUDIES

The Founding Fathers created a system of federalism through the Constitution. The United States has shared powers between the federal, state, and local governments.

This week you'll look at how these groups interact and impact the daily lives of citizens. Watch the video that is linked below to review the basics of federalism. Link: <https://constitutioncenter.org/learn/hall-pass/federalism>

Think about the ways each level of government affects educational policies. How do you think federal, state, and local government should interact regarding education policy?



### SCIENCE

Baking can be very similar to a science experiment! You have to monitor and adjust your ingredients based on how they may react while cooking, just like materials used in a science experiment.

Lots of people are baking more in the past two months. In baking cakes, there are many changes from raw ingredients to the final baked product.

Describe the changes that have occurred, identifying them as chemical or physical. Identify the ingredients that you think are vital to those changes and what would happen if the amounts of those ingredients were increased, decreased, or even left out.

Design a way to test your predictions.



### MINDFULNESS

Find a positive way to interact with your teachers this week. Send a message of appreciation for their hard work during these uncertain times.

Get creative and get your classmates involved, like combining video messages. Coordinate with classmates and before a remote class is over everyone holds up paper with hearts drawn on them and tell your teacher "Thank You!"

Let's give our teachers some positive interaction as the school year ends.



## LOGIC PUZZLE

I Scream, You Scream, We All Scream...for Logic Puzzles!

Place the Ben & Jerry offerings in the grid to solve the puzzle. Share with a friend or family member and see if they solve the puzzle quicker than you!

Link: <https://bit.ly/3gf8yPV>



## FIELD STUDIES

This week you'll look at how we interact with space, by doing a virtual tour of NASA's Electric Propulsion and Power Laboratory and the Simulated Lunar Operations Laboratory at the following links:

<https://www.nasa.gov/specials/epl360/>

<https://www.nasa.gov/specials/slope360/>

Click on the tags in the tour to learn more about the features in the lab. What did you notice and wonder about the equipment you saw?

What role do you think the US should have in continued space exploration? Explain why we should or should not justify the expense in today's time.

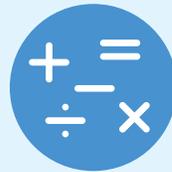


## RESEARCH EXPLORATIONS

How we interact with one another matters. Researchers found that receiving compliments can cause people to perform better. Read about one such experiment at this Link:

<https://www.medicaldaily.com/science-explains-why-compliments-feel-so-good-243457>

Design your own experiment with family members or people you know to test the effects of receiving compliments. Use that study as inspiration, but do not replicate it. Be sure to include a control and experimental condition. The larger your sample size, the more reliable your results, so try to include several people in your experiment. Based on your results, what were the effects of receiving compliments? How might you change your interactions as a result?



## MATH

Is beauty really in the eye of the beholder? Mathematics would argue no, saying that *phi* is the beauty indicator that shows up in our interactions with nature and humans. Explore the links listed on this website to learn more about the Golden Ratio.

Link: <https://www.beautyanalysis.com/research/our-research/>

On the Beauty Code page, use the information to gather data from your environment in search of the beautiful *phi*. How do the things you consider beautiful align with the mathematics of the Golden Ratio? What unique creation can you make that displays math's definition of beauty?

Have your thoughts changed regarding the question: Is beauty really in the eye of the beholder?



North Carolina Department of  
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DUKE UNIVERSITY  
TALENT IDENTIFICATION PROGRAM

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2-9

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### Works Cited and Answers

#### **Works Cited- Math:**

2-3 and 4-5 activity based on Fractal Leaf Art from Math Engaged -  
<http://mathengaged.org/resources/activities/art-projects/fractal-leaf-art/>

#### **Field Studies:**

For more information about the future of spaceflight, read “Future of Spaceflight and NASA Missions Information” <https://www.nationalgeographic.com/science/space/space-exploration/future-spaceflight/>

#### **English Language Arts:**

- 8-9 May serve as mentor texts:
- “Did I Miss Anything?” by T. Wayman
  - A&P by J. Updike

#### **Logic Puzzle**

6-9 Solution: <https://bit.ly/2ZuCpht>

#### **Advanced Learning Lab 7**

NC Standards Alignment

Math	
K-1	N/A for Lab 7
2-3	NC.2.MD.1, NC.2.MD.4; NC.3.MD.2, NC.3.NF.4
4-5	NC.4.NF.2, NC.4.NF.3, NC.5.NF.1, NC.5.NF.4
6-7	NC.6.RP.1
8-9	Not aligned to a specific NCSCOS standard
10-12	N/A for Lab 7
English Language Arts	
K-1	N/A for Lab 7
2-3	W.3.3
4-5	W.5.3
6-7	W.7.2.c.
8-9	W.9-10.3d W.9-10.3e
10-12	N/A for Lab 7
Science	
K-1	N/A for Lab 7
2-3	3.P.2
4-5	5.P.3
6-7	6.P.2, 6.P.2.2
8-9	8.P.1
10-12	N/A for Lab 7
Social Studies	
K-1	N/A for Lab 7
2-3	3.G.1.3
4-5	5.C.1.2
6-7	7.H.2.3
8-9	8.C&G.1.1
10-12	N/A for Lab 7