

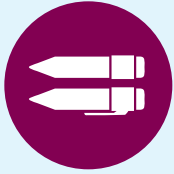
# ADVANCED LEARNING LABS

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

GRADES

K-1

## Lab 1 • Change



### ELA

What is the best thing to eat for breakfast?

Create a commercial describing why you like this food and why it is the best. Develop a funny phrase to convince people to eat this breakfast food.

Act your commercial with a friend or family member!



### SOCIAL STUDIES

A **need** is something we must have in order to live. A **want** is something we would like to have, but we could live without.

Throughout the day, write down all the needs you have met and all of the wants you ask for.

Create a chart to compare your needs and wants. Explain the differences you notice.



### SCIENCE

If you push a ball away from you, it travels in the direction you pushed it.

What would happen if the ball hit another ball as it rolled away from you?

Design a way to test this question.

How would your results be different if you used a heavier or lighter ball?

Perform another test and see what changes.



### MINDFULNESS

What do you do to relax when you cannot leave the house? This is a big change for many people.

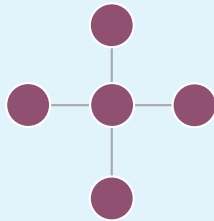
Create bookmarks or cards you can share with your friends and family describing 5 ways you can relax inside your own house.

Use illustrations that include pictures or symbols to show how people can relax during this change.



## LOGIC PUZZLE

Copy the image on a sheet of paper and write the numbers 1 to 5 in the circles so that each line has the same total. Try to do it as many ways as you can.



Note changes you make each time you complete this puzzle.



## FIELD STUDIES

Read about the amphibians, arthropods, birds, and fish at the San Diego Zoo.

As you read, think about the **NEWS**: what you **notice, enjoy, wonder** and is **surprising** about these animals.

Select one animal and create a new name for the animal using your **NEWS** observations as criteria for the name change.

Link: <https://kids.sandiegozoo.org/>

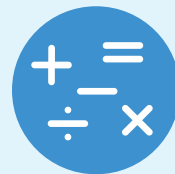


## RESEARCH EXPLORATIONS

Moving different ways can speed us up or slow us down.

Hop on two feet for 30 seconds and count how many times you hop. Hop on your left foot for 30 seconds and count how many times you hop. Hop on your right foot for 30 seconds and count how many times you hop.

Draw a picture of which way you hopped the greatest number of times. Why do you think that way sped you up?



## MATH

There are 30 students on the playground. Some students go back to the classroom, but there are 7 students still on the playground.

How many students went back to the classroom?

What are some different ways you can model this problem using objects? How can you model it with only numbers?

Solve the problem using each of your models and explain how you found the answer to a friend or family member.



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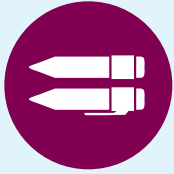
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GRADES

2–3

## Lab 1 • Change



### ELA

Read a story or think of a favorite fiction story.

- Who are the main characters?
- When did the story take place?
- Where did it take place?
- What are the key events in the story?
- How did key characters respond to major events?

Let's change the ending!

Write a story or illustrate a 7-panel story board with the same characters but a different ending.



### SOCIAL STUDIES

Interview your family and friends and ask each one who they think is the most important person in history.

Draw a chart with four columns, and record (1) the name of the person you asked (2) the person in history they named (3) what the person did that was important, (4) why it was important.

Put together a "Hall of Fame" gallery of pictures of these important people, and share the results with your family and friends.



### SCIENCE

A bowl of vanilla ice cream left on the counter at room temperature turns into a sticky liquid.

What caused the change to the ice cream? How is this process similar to ice melting? Can the sticky liquid be made into the same ice cream again?

Explain your answer.

How, if at all, would your answer change if the ice cream had contained ribbons of caramel?



### MINDFULNESS

Everyone is special! There are different things that make someone special. Spend time thinking about what makes you special.

What are your favorite things about yourself? Write a 5–7-line poem describing what makes you special. Begin with, "I am special because..." Illustrate your poem with a picture of yourself doing something that you love. Share your poem and illustration with a friend or family member.



## LOGIC PUZZLE

Comical Cryptograms:

Solve these cryptograms to learn what Waldorf and Statler have to say about Fozzie Bear's jokes.

Link: <https://tinyurl.com/ybenyvsh>



## FIELD STUDIES

Watch the video below to tour Dutch Hollow Farm in Schodack, New York.

After watching, write a paragraph explaining how your daily life is impacted by farming. How would your life change without it?

Draw and color a picture of your favorite part of the virtual trip to Dutch Hollow Farm.

Link: <https://youtu.be/y-FQsNH0fXI>



## RESEARCH EXPLORATIONS

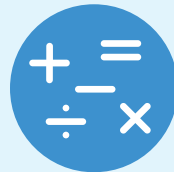
Practice can speed us up. Repetition can make us tired. Rest can keep us consistent.

Hop for 30 seconds and count how many times you hop.

Rest 2 minutes and then hop for another 30 seconds.

Rest 2 minutes and hop for 30 seconds once more.

How many times did you hop altogether? Did the number increase or decrease each time you hopped? What change could you make to increase or decrease the number?



## MATH

Triangle Tour! Set a timer for five minutes. Search around you for triangles:

- *Equilateral* – three equal sides
- *Isosceles* – two equal sides
- *Scalene* – no equal sides.

Count how many of each you find. When time's up, graph your results.

Next, ask someone else to search for 5 minutes.

Graph and compare their results to yours.

Which triangles were easiest and hardest to find?



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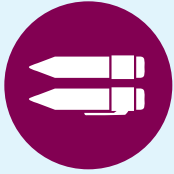
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GRADES

4-5

## Lab 1 • Change



### ELA

An acrostic poem is a poem where certain letters in each line spell out a word or phrase. Typically, the first letters of each line are used to spell a message.

Choose a character from your favorite fiction book. Create an acrostic poem using the character's name to explain the setting of the story, what motivated or changed that character throughout the story, and details about the character's actions. See the link below for an example.

**Link:** [poetry4kids.com/lessons/how-to-write-an-acrostic-poem](https://poetry4kids.com/lessons/how-to-write-an-acrostic-poem)



### SOCIAL STUDIES

Mount Rushmore, built 1927–1941, features the faces of four great American leaders. Your task is to design a new monument, choosing the historical figures who are models of American democracy.

Prepare a detailed drawing of your monument, name the Americans you will include, and design a memorial plaque with inscription to describe why you have chosen to include these Americans.

**Link:** [nps.gov/moru/learn/historyculture/why-these-four-presidents.htm](https://nps.gov/moru/learn/historyculture/why-these-four-presidents.htm)



### SCIENCE

In these times with people staying home there are many changes. Deer are exploring and walking into areas they normally don't go because fewer people are there. Additionally, more people are starting gardens.

How do these two phenomena impact each other?

What will be the impact once people begin moving around more?

Have a discussion about this topic with a friend or family member.



### MINDFULNESS

Create a sound map!

On a piece of paper, mark the center of it with a picture of something that represents you. Find a spot where you can sit comfortably. Close your eyes. Quietly focus on what you hear around you for 5 minutes. Draw, write, or color the sounds you can hear on the paper and where they are coming from. Create a sound map at a new location each day this week.

**Link:** [sensorytrust.org.uk/information/creative-activities/sound-maps.htm](https://sensorytrust.org.uk/information/creative-activities/sound-maps.htm)



## LOGIC PUZZLE

Quotable Cryptograms:

Solve these cryptograms to decipher these quotes from famous people in history.

Link: <https://tinyurl.com/ycqcm4g>



## FIELD STUDIES

Let's get dirty! Watch this video to learn about soil and why it is so important.

Link: <https://vimeo.com/77792712>

After watching, describe what soil means to each of these living things:

- Earthworms
- Farmers
- Children
- Engineers
- Home builders

What is one specific change you would suggest to make the soil near you (in your backyard or nearby park) healthier?



## RESEARCH EXPLORATIONS

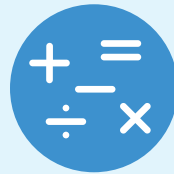
People are different heights and weights and have different physical abilities.

Hop for 30 seconds and record how many times you hop. Have 4 friends or family members hop for 30 seconds each.

Create a bar graph to show how many times each person hopped.

Why do you think the person who hopped the greatest number of times was able to do so?

What could you change to increase your hopping ability in the next month?



## MATH

Create a superhero story problem. Trapezium is your villain.

Choose another quadrilateral— Parallelogram, Rectangle, Rhombus, Square—as your hero.

Use properties of quadrilaterals' sides, angles, and diagonals to give readers six (or more) clues about your hero and villain.

Have someone read your finished problem. Did they solve it? Which clues were helpful? Which made the puzzle too easy or hard?



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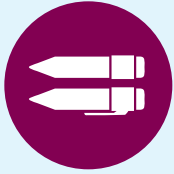
# ADVANCED LEARNING LABS

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GRADES

6-7

## Lab 1 • Change



### ELA

Select a grade-level complex literary text to read. As you read, trace the development of the theme (*how it is introduced and illustrated through details*).

Determine an alternate ending to the story. Think about how an alternate ending would require an alternate theme for the entire story. Determine that alternate theme.

Create a plot diagram or storyboard to model a revised series of events that develop your new theme and final outcome.



### SOCIAL STUDIES

Irrigation was an important innovation in Mesopotamia allowing for society to stay settled in one place.

What do you think has been the most important innovation for modern society in the last two hundred years?

Create a timeline on paper or using the link below to explain the development of at least five new innovations that will be important for our society between the years 2020-2040.

Link: <https://time.graphics/>



### SCIENCE

At present, some large cities/areas that usually have polluted air, are experiencing smog-free skies.

Explain why this change is happening right now.

Predict the impact on human health in the short term and long term.

How could we responsibly return to normal activities in the environment and continue to reduce environmental damage?



### MINDFULNESS

Start a journal: It may be created out of printer paper and a stapler, an old notebook in the back of the closet, or on your phone/computer. Decorate it to make it unique to you.

Create a different theme to journal about each day of the week. Journal topics for the week could include journaling about what makes you happy, your favorite song quote, or your greatest dream. At the end of the week, read your entries and see what changes took place during the week. Have fun creating new topics!



## LOGIC PUZZLE

Word Garden:

This isn't your typical word search!

Use deductive reasoning to uncover hidden phrases that will lead you to a mystery theme.

Link: <https://tinyurl.com/yb8eraqt>



## FIELD STUDIES

We have a consensus!

Watch the video, "Mission: Census, Virtual Field Trip to the Census Bureau" to learn more about something that only happens once every 10 years.

How does the census directly impact the community you live in and your school community?

What do you predict will be the effects of this year's census results 10 years from now?

Link: <https://youtu.be/1iMpVlvF4ao>



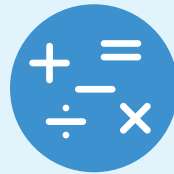
## RESEARCH EXPLORATIONS

Go for a 30-minute walk in your neighborhood, practicing good social distancing. Every 3 minutes, record how many parked cars you see.

Calculate the mean, median, and range for parked cars. What conclusions can you draw about your neighborhood based on your sample?

How do you think the data would have differed (a) if you walked 4 hours earlier or later (b) at the same time of day before the pandemic?

Talk about those changes with a friend.



## MATH

Searching for Shapes

How many triangles, rectangles, circles, pyramids, prisms, cubes, cones, cylinders, and spheres can you find in your house?

Gather 5–10 of your choosing to create at least three unique geometric designs.

Which design is the biggest? How do you know?

Use principles of measurement, area, surface area, and volume to make your argument.



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DUKE UNIVERSITY  
TALENT IDENTIFICATION PROGRAM



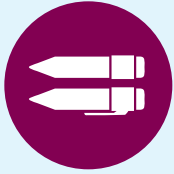
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GRADES

8–9

## Lab 1 • Change



### ELA

Select a grade-level complex literary text to read. As you read, trace the development of the theme, focusing on the point in the text where the author introduces the theme.

Identify a sentence, phrase, and word that the author uses to introduce the theme of the text. Write an objective summary of the story, including an analysis of the introduction to its primary theme.

Next, explain how each level of text—sentence, phrase, and word—conveys the depth of the theme to the audience.



### SOCIAL STUDIES

Explain how innovation in transportation has affected North Carolina after the Civil War. The Wheels Through Time Museum website may help you research unique transportation in the United States.

What do you think will be the next innovation in transportation? How would a new idea be beneficial for society? Create a timeline using Time Graphics to explain how long it will take to execute this creation for public consumption/use.

Link: [wheelsthroughtime.com/museum/#Exhibitarea](https://wheelsthroughtime.com/museum/#Exhibitarea)



### SCIENCE

With so many people remaining at home, fewer people are vacationing at the state's rivers, sound, or off the coast.

What might be the short-term impact on the different aquatic ecosystems?

What might be the short-term impact on humans? Consider both positive and negative factors.

How would you test whether you are correct about the impact? Predict what happens when humans return.



### MINDFULNESS

The Five Senses

Sit down and take a break from your daily activities and observe your surroundings.

What are 5 things you can see, 4 things you can touch, 3 things you can hear, 2 things you can smell, and 1 thing you can taste?

Breathe deeply as you notice the things around you.



## LOGIC PUZZLE

Word Garden:

This isn't your typical word search! Use deductive reasoning to uncover hidden phrases that will lead you to a mystery theme.

Link: <https://tinyurl.com/yd5zw3d9>



## FIELD STUDIES

Robots to the rescue!

Join an interactive experience and learn how robotic technology helps to respond to natural hazards.

Design an original form of robotic technology or build on a type of robotic technology you saw in the simulation to address a natural hazard of your choice.

Link: <https://tgreduexplore.org/sites/default/files/robots-to-the-rescue/natural-hazards.html>

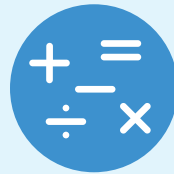


## RESEARCH EXPLORATIONS

Heart rate (HR) is a measure of physical fitness. Different exercises require different levels of physical fitness.

Run for 60 seconds, then measure your HR. Rest for a minute. Repeat for a total of 10 HR measurements. Next, skip for 60 seconds, then measure your HR. Repeat for a total of 10 HR measurements.

Calculate the median, mean, interquartile range, and standard deviation for the two sets of data and compare the center and spread of your heart rate running versus skipping.



## MATH

Choose a random geometric shape in your house and sketch it on a piece of paper.

Design a series of art pieces using translations, reflections, rotations, and dilations.

Host an art walk with your family and describe your art creations and your mathematical inspiration!



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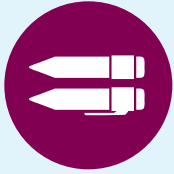


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GRADES  
**10-12**

## Lab 1 • Change



### ELA

Choose a text written before 1960 by an American author. As you read, annotate for the major theme. Consider if there is a secondary theme presented in the text. If there is an additional theme, analyze how the author interweaves the development of these themes in order to build conflict between characters.

Write a letter to the author that expresses your analysis of the development of the theme(s) and how it impacted you as the reader.



### SOCIAL STUDIES

There have been numerous innovations in technology since 1900 that have changed people's daily lives across the world.

Choose two technology advances:

- one that you think has had the most positive influence on society
- one that you think has had a negative influence on society.

Create a comparison chart to explain your answers using historical events.



### SCIENCE

At present, with much of the world at a stop, some large cities/areas of the planet that usually have polluted air, are experiencing smog-free skies.

Explain the science behind this change.

What might be the short-term impact on the local and surrounding ecosystems?

Design a way to test/measure that impact. Predict what happens when the area opens up again and people go back to work.



### MINDFULNESS

Choose five friends at random and leave them unsolicited, positive messages through notes or a video using your favorite social media platform or via a message to their phone.

Focus on sharing your favorite characteristics and memories of that person.



## LOGIC PUZZLE

Word Garden:

This isn't your typical word search!

Use deductive reasoning to uncover hidden phrases that will lead you to a mystery theme.

Link: <https://tinyurl.com/yamgg24n>



## FIELD STUDIES

Enjoy a virtual trip with TGR Foundation and Discovery Education to the Facebook Headquarters.

Consider how your interests and talents align to the careers described in the virtual tour.

What would be the next three steps you would take to learn more about that career?

Find a professional in that career you can contact for more information. See link below.

Link: <https://tgreduexplore.org/careerconnections>

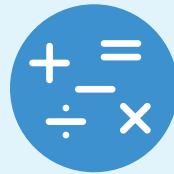


## RESEARCH EXPLORATIONS

Go for a 30-minute walk, practicing good social distancing. Every 3 minutes, record how many people and how many dogs you see during that block of time.

Using the data, construct a 2-way frequency table and calculate the conditional, joint, and marginal probabilities. Are the events independent? How do you think the data would have differed:

- (a) if you walked 4 hours earlier or later
- (b) at the same time of day before the pandemic



## MATH

Redesign a space where you live to work for you better!

How would you optimize the current space given the size constraints to meet both your current and ideal needs?

Create a design proposal that includes all the relevant measurements and geometric concepts.

Helpful hint: Use or make grid paper to help you with scale.



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