

# ADVANCED LEARNING LABS

Collaboration between NC Department of Public Instruction and AIG Teachers across the state

TO ENGAGE, ACTIVATE, AND GROW OUR STUDENTS

GRADES  
10-12

## Systems



### ENGLISH LANGUAGE ARTS

Many poems, such as a lyric or ballad, follow an assigned structure, format, or “system”:

[Poetryfoundation.org](https://www.poetryfoundation.org) describes an ekphrastic poem as a “vivid description of a scene or, more commonly, a work of art. Through the imaginative act of narrating and reflecting on the ‘action’ of a painting or sculpture, the poet may amplify and expand its meaning.”

Choose a piece of art that interests you. Find something in your home or school to write about or use the link below to view art collections at the Metropolitan Museum of Art in New York City: <https://www.metmuseum.org/art/collection>

Using the piece of art for inspiration, tap into your imagination and create an original ekphrastic poem!



### SOCIAL STUDIES

The United States Supreme Court has a systematic process for deliberating and deciding the verdict for all cases. How do you feel about this school's decision to ban t-shirts? Watch the video at this link: <https://www.youtube.com/watch?v=2yhBduw2jQk>

Review the Jacobs v. Clark County School District case to learn more: <https://caselaw.findlaw.com/us-9th-circuit/1204345.html>

Create a multimedia presentation about the decision that was made in this case. Include answers to questions such as:

- Follow the system used to come to a decision. Was it fair and impartial?
- Should freedom of speech be absolute or should it be limited?
- How far should the government take censorships, and what are the limits?



### SCIENCE

There are 11 human body systems which work in conjunction with other systems to keep the body functioning in homeostasis. Learn more about body systems from Khan Academy: <https://bit.ly/2PvXYyQ>

Create a mind map using 5 of the body systems. Label the systems and their functions, as well as the organs that are a part of each system. For mind map information: <https://www.mindmapping.com/>

Now imagine that one of the organs from the 5 systems has gone missing in action (MIA). Design a missing poster for the public. Your poster should include:

- a picture of the organ
- its function and location in the body
- describe how your missing organ affects the 5 systems
- the reward if returned (be creative)
- bonus - if not returned, what happens to the body



### MINDFULNESS

High school is the perfect time to create a support system. A good support system consists of people you can trust and turn to for guidance, which may include your family, friends, teachers, classmates, and/or other professional people. Create your own personal support system.

- Who is a part of your support system and why?
- What role will the teacher and other school staff play?
- How will you communicate with them?
- What do you hope to achieve?
- How will you know if the support system is effective?

For more information and resources on developing your support system, visit the University of Buffalo social work site: <https://bit.ly/2OEKSbd>



## LOGIC PUZZLE

Cogwheels are gears that rotate together to create a turning system.

Consider the following:

- There are two cogwheels on a table.
- The bigger one has 10 teeth and is fixed to the table.
- The smaller one has 5 teeth and revolves around the bigger one.

If the smaller cogwheel makes one full rotation around the bigger cogwheel, how many rotations will it make with respect to the table?



## FIELD STUDIES

The earth's climate system has been greatly affected by the increasing amount of greenhouse gases, or global warming. COVID19 has caused the world to pause, which has led to less emissions from cars. Air pollution has dropped in many countries and the carbon footprint has been reduced. Even though this drastic change in lifestyle has affected the whole country, it has only put a small dent in global warming. Visit Global Climate Change with NASA to read more: [https://climate.nasa.gov/climate\\_resource\\_center/interactives](https://climate.nasa.gov/climate_resource_center/interactives)

At the NASA site, use the time machine to see how the climate has changed over the years. Use the Global Ice Viewer to see how ice is slowly melting. Finally, test your knowledge with the "It's a Gas" quiz on carbon dioxide and global warming.



## RESEARCH EXPLORATIONS

Every state is different, and every state is the same! How can that be? Follow this WebQuest to find out about your state, its government, and its relationship to the United States government: <https://tinyurl.com/y8awa9z9>

Use the answer sheet to record your information: [https://lakenokomis.mpls.k12.mn.us/uploads/states\\_rule\\_wq.pdf](https://lakenokomis.mpls.k12.mn.us/uploads/states_rule_wq.pdf)

Compare North Carolina to another state, possibly one in which you have previously resided or would like to live in one day. Create a tool that can help you see the differences and similarities in these states - you can choose a Venn Diagram, graphs, or a digital presentation.



## MATH

The United States government gathers information about American citizens through the Census Bureau. This system gathers data every decade. Research this NC Census data based on gender and location: <https://data.census.gov/cedsci/profile?q=0400000US37&q=North%20Carolina>

What are different ways to creatively display data, and when do we use them? In this lab you will create an infographic, a collection of graphic elements and text that provides an easy-to-understand overview of a topic.

Create your infographic, and be sure to include essential information:

- To what do you attribute the changes in population?
- Which race and ethnic groups seem to be growing and declining? Why do you think this is happening?
- How is level of educational attainment changing in NC?
- What other data points do you find interesting?



North Carolina Department of  
**PUBLIC INSTRUCTION**



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## Systems Reference Guide

For more information on creating infographics, visit this site: <https://www.canva.com/create/infographics/>

### **K-1 Logic Puzzle:**

Solution: Erasers=\$.25; Stickers= \$1.50, Peppermints= \$.50

### **6-7 Logic Puzzle:**

Solution: Adam must pull out 40 to guarantee he pulls out two black socks. He could pull out 21 blue plus 17 red plus 2 black.

### **8-9 Logic Puzzle:**

Solutions can be found at the Brainzilla site: <https://www.brainzilla.com/logic/logic-grid/>

### **10-12 Logic Puzzle:**

Solutions:

1. The answer is three rotations in total. Two because of the ratio 10:5, one more because of the movement of the smaller cogwheel. <https://www.puzzleprime.com/brain-teasers/insight/cogwheels/>

2. After 18 rotations of the smaller gear and 11 rotations of the bigger gear, the marked teeth will be together again. <https://aplusclick.org/t.htm?level=12;q=3938>

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## Systems NC Standards Alignment

Grade Span	English/ Language Arts	Social Studies	Science	Math
<b>K-1</b>	L.1.5	K.C&G.1.1 1.C&G.1 1.C&G.1.1 <b>K.C&amp;G.1</b> <b>1.C&amp;G.1.1</b>	1.E.1	NC.1.NBT.7
<b>2-3</b>	RI.3.5	3.C&G.1.3 <b>3.C&amp;G.1.1</b>	3.L.2.2	NC.3.NBT.2
<b>4-5</b>	L.5.4	5.E.1.2 <b>5.E.1.3</b>	5.L.1.2	NC.4.MD.1
<b>6-7</b>	W.6.2	6.C.1.3 <b>6.B.1.2</b>	7.L.1.4	NC.7.SP.3 NC.7.SP.4
<b>8-9</b>	RI.9-10.8	8.E.1.3 <b>EPF.MCM.1.1</b>	8.P.1	NC.M1.A-REI.6 NC.M1.A-REI.12
<b>10-12</b>	W.9-10.3 W.11-12.3	FPC&G.3.4	Phy.2.3.3	NC.M1.S-ID.1