

ADVANCED LEARNING LABS

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

TO ENGAGE, ACTIVATE, AND GROW OUR STUDENTS

GRADES

6-7

Structure



ENGLISH LANGUAGE ARTS

In 1865, the American author Samuel Clemens, under his pen name Mark Twain, published the short story "Jim Smiley and His Jumping Frog," which became his first success as a writer. One of the features that make this story so fascinating is how Twain structured the story. It may even take several readings to completely understand what is happening in the story.

Follow the link to read the story, which is also called "The Celebrated Jumping Frog of Calaveras County:" <https://twain.lib.virginia.edu/projects/price/frog.htm>

Create a diagram of the text's plot structure and annotate the diagram. How does the structure contribute to its meaning? If the author had used a more linear structure, how would its meaning change?



SOCIAL STUDIES

In 1776, when the United States was formed, its Founders relied heavily on past democracies to structure the government for this new nation.

Using the links provided, and other available sources, compare and contrast the structure of the U.S. government with the structure of the government of Ancient Greece.

<https://www.nationalgeographic.org/encyclopedia/democracy-ancient-greece/>

<https://bit.ly/2CUnJPu>

- Under each government, who was considered a citizen?
- What obligations did citizens have in each structure?
- How were decisions made in each?

Present the information you have collected about the structures of these governments in a visual representation of your choice.



SCIENCE

The first skyscrapers were built in the late 1800s using structural steel, but how is it made? The process creates a mixture of iron and carbon fused together with one or more other metals or nonmetals to create a substance that is 1000 times stronger than the element iron.

Read about the different chemical compositions of structural steel today to determine how different elements impact the structure of the new mixture, steel: <http://web.mit.edu/1.51/www/pdf/chemical.pdf>

Take the time to look up the meanings of any new vocabulary words.

Create an easy to read chart that lists each element that can be added to iron to create steel, their physical properties, and what the benefits are of its use.



MINDFULNESS

According to brain imaging research, practicing mindfulness can alter brain structure that improves reaction to stress. Thickening of the cerebral cortex, which is responsible for perception and reasoning, and blood flow to the brain are both physical changes that occur. Read more about the impact of mindfulness on the structure of the brain: <https://mindworks.org/blog/how-meditation-changes-the-brain/>

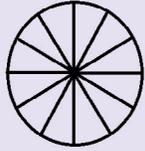
Your school is considering implementing mindfulness lessons. Create an infographic to inform school administrators about the benefits of learning mindfulness strategies.

Consider using the link on piktocharts to help create the infographic: <https://piktochart.com/blog/how-to-create-an-infographic-and-other-visual-projects-in-5-minutes/>



LOGIC PUZZLE

The Wheel of Math has twelve sections. Ten sections contain a different number from 1 to 10 and two sections contain stars. From the clues below, determine what is in each section of the wheel.



WHEEL OF MATH

1. The five even numbers appear in order counterclockwise but not necessarily in consecutive sections.
2. The numbers 1 and 3 are adjacent to the section that is directly opposite from the number 2. The number 7 is directly between two sections with numbers totaling seven.
3. Two numbers are adjacent to, in a clockwise direction, their respective square roots (if the number is in one section, you go clockwise to get its square root).
4. No two adjacent sections have numbers totaling more than twelve.



FIELD STUDIES

The United States Geological Survey (USGS) was created by Congress in 1879 to study and monitor all public lands, minerals, and resources in the country. With approximately 10,000 scientists and other staff, the USGS is structured around four areas of science: biology, geography, geology, and hydrology.

For an overview of how the USGS is structured, read the National Geographic article: <https://bit.ly/308nhoL>. Then check out the USGS website for even more specific details: <https://www.usgs.gov/>

As you read about the many different career opportunities with the USGS, pick one or two that interest you. Research them to discover the educational requirements for the career(s).



RESEARCH EXPLORATIONS

Foundation type can determine the ability of a structure to withstand different types of loads. Use playdough or clay to create a foundation for toothpicks to hold up a stack of books.

1. Flatten the clay to a depth of 1 cm.
2. Stand 10 toothpicks vertically in the clay.
3. Place a book on top of the toothpicks, then place some type of weight such as coins or metal washers on top.

How much weight did the structure hold? Now repeat the steps, but make the clay 2 cm deep. What did you observe? What could you do to make your structure more stable?

Try your skills building bridges by playing the Cargo Bridge game: http://www.engineering.com/content/g12/cargo_bridge.html



MATH

The structure of a math expression can help us better understand the meaning of the expression. The expression $x + 0.6x$ is equivalent to $1.6x$. The first expression is structured to show that we are adding 60% of a number back to the original number. Create a problem using taxes that might be better understood by using the first expression.

The structure of the expression $3(r+t) - \frac{1}{2}(r+t) - 2.5(r+t)$ allowed Jenna to quickly determine that the expression is equivalent to zero.

- Is Jenna correct?
- How did the structure of the expression help Jenna?
- Can you write some expressions that are equivalent, but would not help Jenna?



North Carolina Department of
PUBLIC INSTRUCTION



ADVANCED LEARNING LABS

Collaboration between NC Department of Public Instruction and AIG Teachers across the state
TO ENGAGE, ACTIVATE, AND GROW OUR STUDENTS

GRADES
K-12

Structure Reference Guide

K-1 Logic Puzzle:

Solution: Kayla 56, Matt 43, Maria 12, Theo 90

2-3 Logic Puzzle:

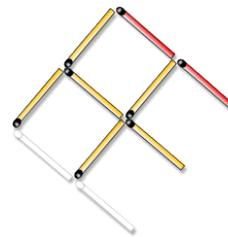
Watch the video for a solution: <https://mindyourdecisions.com/blog/2018/08/27/can-you-solve-these-matchstick-puzzles/>

4-5 Logic Puzzle:

Turn the fish with 3 matches:

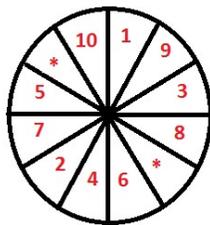


Turn the fish with 2 matches:



6-7 Logic Puzzle:

Solution:



WHEEL OF MATH

8-9 Science:

Infographic Resource link: <https://piktochart.com/blog/how-to-create-an-infographic-and-other-visual-projects-in-5-minutes/>

8-9 Logic Puzzle:

Solution: 4

10-12 Logic Puzzle:

Solution: 24

ADVANCED LEARNING LABS

Collaboration between NC Department of Public Instruction and AIG Teachers across the state
TO ENGAGE, ACTIVATE, AND GROW OUR STUDENTS

GRADES
K-12

Structure NC Standards Alignment

Grade Span	English/ Language Arts	Social Studies	Science	Math
K-1	RL.1.3	K.C&G.1.2 1.C&G.1.2 K.C&G.1.1 1.C&G.1.4	1.E.2.2	NC.1.NBT.3 NC.1.NBT.4
2-3	RL.3.5	3.E.1.2 3.E.1.2	3.L.2.2	NC.3.OA.8
4-5	L.5.5	5.G.1.1 5.G.1.1 5.G.1.4	5.P.3.2	NC.4.OA.1
6-7	RL.7.5	6.C&G.3 6.C&G.1.1	6.P.2	NC.6.EE.2 NC.6.EE.3 NC.6.EE.4 NC.7.EE.2 NC.7.EE.3
8-9	RL.9-10.5	F.P.C&G.2.1 CL.C&G.4.1	8.E.1.4	NC.M1.A-CED.2
10-12	RI.11-12.5	F.P.C&G.1	P.Sc.3.1	NC.M3.G-MG.1