

Adaptation

Grades K-1

English Language Arts

Fairy tales and folk tales are stories that are often told out loud from memory. Because they are told over time, the stories are often adapted, and different versions are told in different places. The adaptations often reflect the culture (customs, arts, achievements) of the people telling the story.

Listen to at least two of the adaptations of Little Red Riding Hood:

1. Pretty Salma-Africa: <https://bit.ly/2Ov9cMI>
 2. Lon Po Po- China: <https://bit.ly/2WjFPB2>
 3. Petite Rouge-Cajun: <https://bit.ly/38T0S2C>
- How are the adventures and experiences of the characters the same and different?
 - Which adaptation was your favorite? Why?

Write an adaptation of Little Red Riding Hood that reflects your culture and where you live.

Social Studies

To live in or explore a new environment, humans have to adapt to different conditions. Watch this video to learn how explorers have adapted to extreme places: <https://www.youtube.com/watch?v=Gx0sddiy91Y>

Pick a difficult place for humans to live. Examples include under the ocean, near the polar ice

caps, and on the Moon or Mars. Make a list of necessities for living in that place. Consider clothing, air, food, light, ability for movement, and anything else you consider important.

- Design a place for humans to live using these considerations.
- Draw and label your design.
- Include how humans could adapt to this extreme place.

Science

Humans protect our planet and improve conditions for plants and animals by adapting our behavior. A phrase used to remind us to be friendly to our environment is "reduce, reuse, and recycle." This video explains how trash is recycled: <https://thekidshouldseethis.com/post/recycle-video-for-kids>

How can you and your family adapt your behaviors to further reduce, reuse, and recycle in order to protect the environment? Look in your recycle bin or trash. Pick an item to upcycle into something you can use. For example, you might paint a used bottle and turn it into a vase. Be creative! How can you reduce your need for this item in the future?

Mindfulness

Experiencing gratitude is a calming strategy that can be adapted to any space. Simply close your eyes and picture something in your mind that brings you happiness. It might be a person, an experience, or a place. Take three long, deep breaths as you think about the thing that brings you joy.

Reflect on the following questions:

- How did your body feel before you focused on the thing you love?
- How does your body feel afterward?
- Is this a strategy you could use anywhere?

Logic Puzzle

How many numbers can you make using the digits 2, 4, and 6? Make a list. Use each number only once. You can create numbers with one, two, and three digits.

- How many numbers could you make if digits could be repeated?
- What strategy did you use to figure out this problem?
- Could it be done a different way?

Field Studies

Watch these videos about the adaptations of birds: Unusual beaks: <https://youtu.be/d86eS5nJikE> Bird Wings: <https://youtu.be/cDN9qqoQZr8>

Bird Feet: <https://youtu.be/izdoAhKuZ8E>

- In what other ways are various types of birds alike and different?
- What is true of all birds?

Go outside. Be quiet and still. Observe the birds around you. Make notes. You can draw and label a diagram, list the birds you see and tally how many you see of each type, or describe bird behavior.

- What statements can you make about birds?
- How do you think the birds where you live have adapted to their habitat?

Research Explorations

Birds have beaks that have adapted to their environment. Practice eating like a bird. For bird food use nuts, seeds, water, Swedish fish, gummy worms, and marshmallows. For beaks use toothpicks, spoons, straws, tweezers, and chopsticks.

1. Float the Swedish fish in a bowl of water.
2. Thread the marshmallows onto string.
3. Put the gummy worms, nuts, and seeds on a plate.

Try picking up each kind of food with each bird beak. Based on your observations, consider the following questions:

- Which combinations of beaks and food allow for successful eating?
- What birds have you seen with beaks similar to the types you tried?
- How do beak adaptations help birds?

Math

There are many ways money can be adapted or changed so that the same value is represented in multiple ways.

- How many pennies are in a nickel? dime? quarter?
- How many pennies are in one nickel and one dime together?
- Which has more pennies, 4 quarters or 10 dimes?

Extension: Using quarters, dimes, nickels, and/or pennies, how many ways can you make 75 cents? How many ways are there to make \$1.00? Design a recording sheet to keep track of your thinking.

Grades 2-3

English Language Arts

To adapt is to make fit or modify. Choosing the right word to accurately fit or describe a situation involves understanding different shades of meaning among related words.

Choose at least three words you found in your reading that describe how a character is feeling. Create a graphic organizer that lists the words, what you think they mean and any synonyms you already know for the words. Use a thesaurus to find synonyms for the words you chose.

Choose one of your original words, look at all the synonyms for it and put them in order from "least to greatest" in terms of the power of their meaning. For example: smart, knowledgeable, brilliant, etc.

Social Studies

You are moving to a new place. Choose one of the following locations:

- 10 acres of forest about 40 minutes outside a large city
- 10 acres of farmland out in the country
- A small 10-acre island just off the coast.

You will need shelter, food, water and transportation and will have to adapt the environment to meet these needs.

- How will you do this and at the same time protect and take care of the environment?
- How will you have to adapt when living in this new environment?

Create a map of the space (your new home) as well as a flow chart of how you will utilize and adapt the environment to meet your needs, and how you will adapt and give back to the environment, as well.

Science

How do plants adapt to their surroundings? Their genes! Yes, plants have genes. Some plants can go for months, or even years, without water and then come back to life. Read more about how certain plants can survive with little water: <https://kids.frontiersin.org/article/10.3389/frym.2017.00058>

Once you have read more about plant adaptations to lack of water, plan an "Adaptable Garden." In the plan for your garden, include only plants that can survive without a lot of rain or water. Gardens often have names, and plants are arranged in creative ways. Use your imagination! You can use drawings or pictures found online.

For inspiration: <https://www.countryliving.com/gardening/garden-ideas/advice/g746/garden-plans/?slide=1>

Mindfulness

Draw a perfect flower. Then ask your friends and family to draw a perfect flower. How does your drawing compare? How do you feel about your drawing? A fixed mindset is the belief that there is one right way to do things and that our abilities are fixed and cannot change. Watch or read *Ish* by Peter Reynolds: <https://yhoo.it/2Oq9W5v>

Now create something "flowerish."

- How did you adapt your drawing of a flower?
- How did adapting your thinking to "ish" impact how you felt about the task and about your drawing?

This adaptive thinking is a characteristic of growth mindset; it focuses on effort and flexible thinking.

Logic Puzzle

The Six-Toothpicks Problem

Emerson formed an equilateral triangle with three toothpicks.

How can she add three more toothpicks to make a total of four equilateral triangles all the same size as the first one?

Field Studies

To adapt means to modify according to changing circumstances. To improvise means to compose, recite, play or sing in the spur of the moment.

How are these ideas alike? Different?

Find pictures of people in magazines, ads, etc. With your friends and family, each choose a picture; don't show it to anyone. You must adapt, or become, that person. Think about and create their personality, their story.

In three minutes, you will all meet at a "party" as the persons in the pictures you chose, telling your story and getting to know the stories of others.

After the "party," post the pictures and guess who each person was; talk about how you had to adapt throughout this improv exercise.

Research Explorations

Clothing designers often have to adapt to the changing fashion trends, but they also have to consider their customers and adapt to their needs.

The Special Kids Company makes clothing for kids who have special needs. They have clothing that allows access to feeding tubes, larger leg openings to go over foot braces, wheelchair covers, and much more. (<https://specialkids.company/>)

Think about a need you might have that you wish a clothing designer might take into consideration. Maybe it's a physical need, or maybe you just wish there were accessories you could add to your favorite clothes to make them adaptable for all types of weather. Design a line of adaptable clothing and have a fashion show for others to see your ideas.

Math

How are things we use every day adapted for our bodies? Measure and graph, in inches, the height of all the humans in your house. If you don't have a ruler, use the length of a teaspoon as a non-standard form of measurement. Now measure and graph the height of 5 different items you sit on in your house (chair, couch, bed). Measure the height from the seat to the floor. According to the *Guinness Book of World Records*, the shortest woman is 2ft tall (about 4 teaspoons), and the tallest woman is 7ft 7in (about 15 teaspoons).

Look back at the measurements. Which member of your family fits best in each seat? What would need to be adapted for taller or shorter people to fit more comfortably?

Estimate the heights of seats the shortest vs tallest woman would need to have a good fit. Create a diagram of pictures to show your findings.

Grades 4-5

English Language Arts

To adapt is to make fit or modify. Choosing the right word to accurately fit or describe something involves understanding figurative language.

Go on a figurative language "hunt for the senses" in your home. Find items that you feel represent each of the five senses: touch, sight, taste, smell, sound. Take a picture of each item and create figurative language labels to describe them. Include similes, metaphors, hyperbole, personification and onomatopoeia in your labels.

Create a minimum of two labels for each item. For example, you might find a fuzzy sweater and put Sense of Touch at the top and under the photo write, "soft as a kitten" (simile) and "a warm hug for the body" (metaphor).

Social Studies

Adaptation takes time. Take a picture of your phone, computer or television, the vehicle you ride in daily or the food in your fridge or pantry. Now, working backwards in time, research the "relatives" of the past for the item you chose. Create a timeline to show the item's history.

Questions to consider:

- How have the technological advances in communication, transportation and agriculture impacted our world both positively and negatively?
- What impact have they had on people regardless of geographic locations?

Take it a step further, and predict how you think technological advances in communication, transportation and agriculture will continue to be adapted in the future.

Science

Humans and animals have to adapt to their environments. How have you adapted over the past year? How did COVID-19 change your/your family's behavior? What behaviors did you notice that changed in our society?

Discuss with your family what adaptations you've made over time. Are there any you think you/ society will keep even after things are "normal"? Create a COVID-19 Behavior time capsule. Write down your observations and answers to these questions on small strips of paper. Put the papers in the box or jar, label it (so you don't forget what it is) and store it away to be opened in 5 years, then again in 10 years. It will be interesting to see what life is like in the future and remember the changes in the past.

Mindfulness

Write the word YET, with your non-dominant hand and your eyes closed. Open your eyes and look at what you wrote. Reflect on how it looks and whether it looks like how it's "supposed" to look. A fixed mindset is the belief that there is one right way to do things and that our abilities are fixed and cannot change. Now adapt or change the drawing into something else entirely (ex. - a picture, a different word, abstract art, etc.).

- How did you adapt your 'yet'?
- How did adapting your 'yet' impact how you felt about the task and about your 'yet' creation?

This flexible, adaptive thinking is a characteristic of growth mindset; it focuses on effort and flexible thinking.

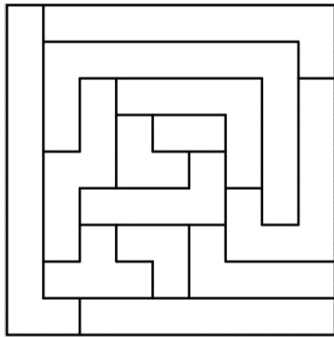
Logic Puzzle

The Four Color Theorem states that it is not necessary to use more than 4 colors to color regions of a map so that no two regions of the same color are touching.

Try only using 4 colors to complete this "map". Remember, no two touching regions can have the same color.

Or, complete the puzzle electronically here: <https://www.geogebra.org/m/pjPgJdhV>

(Hint: There is more than one way to solve this puzzle!)



Field Studies

To adapt means to modify according to changing circumstances. To improvise means to compose, recite, play or sing in the spur of the moment.

Watch a Second City Kids improv show: <https://yhoo.it/3etTdsD>

Pretend you are a film critic. As you watch the show, notice how the actors adapt to the demands of the audience, the other actors and the directors. Pay attention to their ability to ask and answer questions quickly while in character, their body language, voice, eye contact, etc.

How do they respond both physically and mentally to the tasks asked of them? Dictate your notes regarding the show for your "review" and crown one actor the "Most Adaptable."

Research Explorations

The Bajau people of Indonesia are examples of how humans can genetically adapt to an activity. Traditionally they dive to spear fish, and this means they must hold their breath for long periods of time. Read more here: <https://phys.org/news/2018-04-genetic-humans.html>

Explore extreme environments (the arctic, desert, Mars, deep sea etc) or living circumstances-such as spear fish diving.

- What would it take for a human to adapt to those places?
- Which adaptations seem appealing to you?
- Which environment would require adaptations that you are unwilling to make?

Discuss with your family. Do you have similar ideas?

Math

"Make a Buck"

Need: A full deck of playing cards

Object: Be the first person to collect 10 cards that equal exactly \$1.00

Card Values: Ace=\$0.01, Two=\$0.02, and so on with King=\$0.13

Directions:

1. Deal each player 10 cards.
2. Players take turns drawing and discarding one card each turn, until they have exactly

\$1.00 in their hand.

How would you adapt the game for fractions? Explore other games you have access to at school or home. What types of math are involved in those games? How could you modify them to include decimals and/or fractions?

Grades 6-7

English Language Arts

Select a book to read that also has a film adaptation. After reading the book, watch the film. How are the movie and book similar? How is the movie different from the book? Take note of the creative choices that were made by the director or screenwriter. Keep the following in mind:

- Analyze why these choices may have been made.
- How might the budget have impacted these creative choices?
- How was the film adapted to make the story move more quickly?
- Were scenes simply removed or were important parts of the plotline changed?
- How did the decisions that were made impact the story?

Send an email to the movie's screenwriter and/or the book's author to share your observations and ask for insight into the adaptation process.

Social Studies

Throughout history humans have made adaptations to weapons to meet their ever changing needs.

Watch this video about the history of weapons:

<https://youtu.be/chWOqVgQTa0>

Choose three of the weapons to research in more detail. Consider the following questions:

- What weapons were used prior to the development of each weapon?
- How did the weapon change warfare?
- Did the weapon change society? If so, how?
- Has war adapted because of the weapon? Explain.
- Is the weapon still used today? If so, how? If not, why not?
- What are your thoughts on adapting weapons for modern warfare?

Create a presentation to share your findings.

Science

Some diseases are linked to environmental factors. In some cases, lifestyle choices, such as a choice to use tobacco products are what create these environmental factors. In these cases, individuals can make adaptations to their lifestyles in order to prevent or reduce the likelihood of developing the disease.

Check out the National Institute of Environmental Health's document about environmental diseases:

<https://bit.ly/2CzU1in>

As you read about the diseases, create a chart with a column listing each disease, possible factors leading to it, and then a third column with suggestions for prevention. Consider if there are any lifestyle choices you can make changes as

to while you are young which will help you stay healthy for a long time.

Mindfulness

During the Covid-19 pandemic, many of us had to adapt to a new learning environment. What are some things you had to change due to remote learning?

Spend at least three minutes brainstorming the ways remote learning was different from learning at school. Be sure to include benefits as well as drawbacks. Read the article to see how different students adapted to remote learning: [https:// www.edutopia.org/article/why-are-some-kids- thriving-during-remote-learning](https://www.edutopia.org/article/why-are-some-kids-thriving-during-remote-learning)

What can we learn from the experience? Write a letter to your school board members suggesting changes to how schools teach based on what you have learned.

Logic Puzzle

1. Write the numbers 1 to 6 in a horizontal row. You will play the Big Bad Wolf.
2. Every time it is your turn, take any number in the list, as long as at least one factor of that number is also in the list.
3. You get your number and the Big Bad Wolf gets all of the factors of that number that are on the list. If you take a 4, the Big Bad Wolf would get 1 and 2.
4. The Big Bad Wolf must get something every time. You cannot choose a number if no factors of the number remain in the list.
5. When no number in the list has any factors, the game is over and the Big Bad Wolf gets all the numbers that are left in the list.
6. Whoever has the highest sum is the winner.

Can you devise a winning strategy? Try the game with the numbers 1-10 or 1-12. Can you win for any string of numbers? Explain.

Field Studies

The Americans with Disabilities Act (ADA) became law in 1990. It is a civil rights law that prohibits discrimination against individuals with disabilities in all areas of public life. This means that while a

public school must be ADA compliant, someone's personal home does not. In most cases, buildings that were built before 1990 have to be adapted in order to be compliant.

Imagine you have bought a 1925 home and you would like to open it as a venue space. Assume that it has no ADA compliant features. Use the ADA Design Standards for Existing Facilities (link below) to list the changes that must be made before your business can open. Make a drawing of the changes.

<https://www.adachecklist.org/doc/fullchecklist/ada-checklist.pdf>

Research Explorations

Humans often take advantage of nature's ability to adapt to its changing environment. For examples of engineering solutions from nature read the article: <https://news.mongabay.com/2005/07/biomimetics-technology-that-mimcs-nature/>

Research how the feathers of several types of birds have changed to become better at flying, using the links below. What has this taught scientists and engineers as they develop airplanes and other flying aircraft?

- <https://bit.ly/2OOACxd>
- <https://bit.ly/3hsLI9>
- <https://cnet.co/2OM3cz4>

Draw an illustration of a species of bird and an aircraft. Label their similarities emphasizing how engineers utilized the adaptation from the bird to the object.

Math

Industrial melanism is the term used to describe the adaptation of an organism due to industrial pollution. Before the Industrial Revolution, the trees around Manchester, England were a light grayish-green due to the lichen that grew on its bark. As the revolution progressed the trunks became dark. To complete the task below, use this data table: <https://bit.ly/2CwvQlr>

Create scatter plots comparing the numbers of each variety of Peppered moths. Use color to represent each type of moth.

- What does your data suggest?
- As fewer light moths were captured what happens to the number of dark moths captured?
- What do you believe would happen if the data was recorded for 20 years?

Explain your thinking.

Grades 8-9

English Language Arts

Shakespeare has often been considered the greatest writer in the English language and is known best for his plays and sonnets. While you may not think that you are familiar with Shakespeare's stories, many of them have been adapted over and over again. *The Lion King*, for example, is loosely an adaptation of *Hamlet*.

Select a Shakespeare play to read. Then find one or two film adaptations to watch. Use this link to help you get started: <https://bit.ly/3j9P40K>

- How faithfully do they stay to the script?
- What choices did the director or actor make that have impacted the story?

Create a video analysis where you share what you have learned.

Social Studies

Humans have always adapted to their environment. The Ancestral Puebloans who lived in the Four Corners Region of the United States from 600-1300

C.E. made the cliffs of Mesa Verde their home. Read about their civilization:

https://www.nps.gov/meve/learn/education/upload/ancestral_puebloans.pdf

After reading about the Ancestral Puebloans, create a visual to show how they adapted to their environment.

- How did they adapt to the physical features?
- How did they use the materials that were available to sustain their society?
- How did their lifestyle change over time?
- What other examples can you think of where humans have adapted to their environment?

To learn more about Mesa Verde: <https://www.nps.gov/meve/index.htm>

Science

Imagine you are a green bug in the forest. Because of your color, you are able to blend in and hide from your predators. Over the generations, your offspring will also be able to survive. This is an adaptation based on genetic variation. The original gene variety allowed your species to adapt and survive to your surroundings. Read more about adaptation: <https://www.nationalgeographic.org/encyclopedia/adaptation/>

Think about species that are endangered. Create scenarios where things in their environment change so that they are now uniquely qualified to not only survive but to flourish in this new

situation. Select two or more of these species and write a story where they adapt to the changes in their environment and begin to thrive. Make sure that key understandings about genetic variation and adaptation are evident to your reader.

Mindfulness

Setbacks, problems, and failures are a part of life. As you get older, the importance of these setbacks may seem even more significant. Brain research supports the idea that failure allows us time to learn, adapt, and grow. Scientists have studied the brain waves of people as they fail and note that there is more focus when critiquing their own mistakes.

Think about a time when you failed. How did you feel? What was your reaction? What did you learn? How did you adapt?

Social media posts tend to show the best in people. Posts include great vacations, awards and celebrations, or a great selfie (after taking 32 bad selfies). Create a social media post that focuses on a failure and how the failure created a change. Be sure to include a great hashtag.

Logic Puzzle

Adapted from a classic Sudoku puzzle, Jigsaw Sudoku turns the three by three square into any shape. There will always be nine squares but they can take any shape.

Watch this video for the rules of Jigsaw Sudoku: <https://www.youtube.com/watch?v=aa6XtPxX7Ls>

Now try some puzzles on your own at this site: <https://icosahedral.net/sudoku/index.php?s=9&d=0&n=20943>

Field Studies

Code-switching means shifting between two or more languages in a conversation, but it does not necessarily mean that you speak two different languages like German and Spanish.

As a teenager, you may speak one way around your friends, another way to your teacher, and an even different way to your grandmother. Whether it involves using different words, grammatical structures, or speech patterns, code-switching is an important skill.

Read Eric Deggans' article: <https://www.commonlit.org/en/texts/learning-how-to-code-switch-humbling-but-necessary>

Take notes as you read, then think about your own communication style to find ways that you may code-switch. Write in your journal as you reflect.

Research Explorations

Exploring space has inspired dreams of living in an extraterrestrial environment, but how does the human body adapt to the new environment? Fortunately, we have data from the astronauts who have visited the International Space Center for extended periods of time.

Research the effects of space on the human body: <https://www.nasa.gov/hrp/bodyinspace>
<https://abcn.ws/3evleyX>

Pick one system of the human body and report on how the influences in space affect the system. How will the body need to adapt? How will that adaptation physically manifest itself? Draw a diagram to show what the human body system might look like after 1,000 years of adapting in space.

Math

Biological adaptation is usually viewed as a good thing, but some are harmful to humans. Bacteria have been able to adapt, making them resistant to antibiotics. Learn more by watching the video:

<https://www.youtube.com/watch?v=fyRyZ1zKtyA>

Review the data table: <https://bit.ly/3eTuP3O>

Finish the table by finding the % of resistant bacteria for each age group.

- Is there a correlation between age group and the number of antibiotic-resistant strains found?

- How would you determine a correlation?
- If you determined a correlation what type of correlation is it?

Write a function to model the correlation. If you determined that there is not a correlation, use probability to explain.

Grades 10-12

English Language Arts

Students all over the world have had to adapt to remote learning due to COVID19. It is a new experience that many teachers and students were unprepared to handle.

Create a "How to Adapt to Remote Learning" newsletter for other students at your school. The sections may include:

- School information and contacts for parents
- Tips from teachers and students
- Resources for students and parents
- Coping skills/mindfulness moment

Survey classmates and friends to gather information on their experiences about learning at home. Make the newsletter available online or print.

Social Studies

According to the Americans with Disabilities Act, employers must provide reasonable accommodations *"enabling a qualified individual with a disability to perform the essential functions of a job."* Review the case of Manderson v. NYC Department of Education (DOE): <https://bit.ly/3jBh0uk>

1. How is the law limited in protecting Ms. Manderson's rights as well the DOE?
2. Should the ADA laws be amended to address future cases?
3. What do you think will be a reasonable outcome?
4. Would you support the teacher or the DOE?

Write a closing argument defending your stance using this example: <https://bit.ly/2OPoETR> Share your results. Follow the trial to see if your predicted outcome was accurate.

Science

Adaptation is achieved when an organism finds ways to survive in conditions that are gradually or suddenly different from pre-existing conditions.

Adaptation occurs in three forms:

- structural - developing wings for flight
- behavioral - changing from solo to pack hunting

- physiological - presence of toxin in plant leaves to repel herbivores

Create and illustrate a new ecosystem. Explain what characteristics are unique to your ecosystem. Select 5 animals from different habitats that will relocate to the new ecosystem.

- How will the ecosystem survive over time?
- What major adaptations will need to occur for each species to survive?
- How will your ecosystem affect future offspring?

Mindfulness

The world has changed and everyone has learned to adapt to a new way of living. Adaptation is not always easy and can often have detrimental effects on students. COVID19 has rerouted your course and many students will need someone to talk to, and preferably someone who can empathize with what they are feeling.

Create a virtual group for classmates to meet and discuss what they are going through. Take into consideration the following:

- How often will you need to meet?
- Who will moderate the group? A teacher? A counselor?
- How will you structure rules to share and discuss how group members are feeling?
- How will you provide support to group members? Through encouraging words? Through mindfulness strategies?

Logic Puzzle

Survival of the Sheep

There is an island filled with grass and trees and plants. The only inhabitants are 100 lions and 1 sheep.

The lions are special:

1. They are infinitely logical, smart, and completely aware of their surroundings.
2. They can survive by just eating grass (and there is an infinite amount of grass on the island).
3. They prefer of course to eat sheep.
4. Their only food options are grass or sheep.
5. If a lion eats a sheep he TURNS into a sheep (and could then be eaten by other lions).
6. A lion would rather eat grass all his life than be eaten by another lion (after he turned into a sheep).

Will the original sheep get eaten? Why or why not?

Field Studies

As the world adapts to its new reality, people are finding ways to “leave the house” while staying at home. One solution is virtual reality. Virtual reality (VR) has become one of the greatest inventions for entertainment. The very first VR headset was created by Ivan Sutherland in 1968. <https://virtualspeech.com/blog/history-of-vr>.

With today's technology, you can create your own virtual reality tour from your computer. Using the website below, create your own virtual tour. Create a walking tour of your neighborhood, or a tour of another place of interest for family members who are isolated.

1. Visit the website: <https://arvr.google.com/tourcreator/>
2. Select the pictures you want to use and upload them to the site.
3. Add additional scenes, name your tour, and then click publish.

Research Explorations

The Global Center on Adaptation is a solutions broker who works to address obstacles that prevent adaptation. Many countries, like Indonesia and Nova Scotia, are now seeking ideas to adapt and survive on Earth. They are incorporating innovative, forward-thinking solutions to persevere and adapt in a changing world.

Visit the Global Center on Adaptation to learn about additional ways countries are adapting: <https://bit.ly/3fVX2IL>

- Which one of the solutions would be beneficial for North Carolina in adapting to climate change?
- What changes can you make to live a sustainable lifestyle now and in the future?

Design a presentation of your choice to share your ideas with local government officials.

Math

Math can be adapted to solve many problems, even in real life situations. Lana and Vance are playing against each other on their new gaming system. They decided to keep track of their wins and losses to see who is the better player. They are one month into their competition, and Lana has won 18 out of 30 games.

- How many games will Lana have to win back-to-back to achieve a 90% winning record?
- Could Lana reach a 100% winning record? Explain why or why not using your mathematical reasoning.
- Suppose after achieving a 90% winning record, Lana hits a losing streak. How many games in a row would she have to lose to drop down to a winning record below 55%?
- Compare your mathematical approaches in solving these questions.

Reference Guide

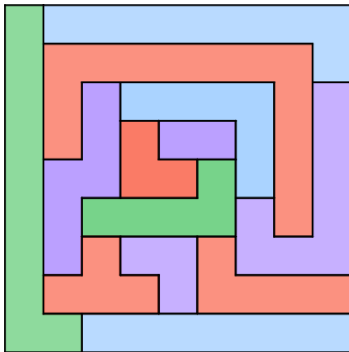
2-3 Logic Puzzle:

Six Toothpicks problem:

Source: <https://www.1001mathproblems.com/p/spatial-puzzles-3d.html>

4-5 Logic Puzzle:

Solution:



10-12 Logic Puzzle:

Solution: The sheep would remain untouched.

In fact, the sheep would remain untouched if there is an even number of lions on the island and would be eaten immediately if there is an odd number of lions on the island.

Further details can be found:

<https://www.braingle.com/brainteasers/teaser.php?op=2&id=9026&comm=0>