Christina School District Assignment Board

Student's First & Last Name_____ Student ID/Lunch # _____ School _____ Grade_____

Grade Level: 9th

Week of May 11th, 2020

	Day 1	Day 2	Day 3	Day 4	Day 5
ELA	This week we will utilize your close reading and critical thinking skills to understand the informational text **Taking the Beef Out of Burgers.** ---------- Read the article on writer's moves. Put a check next to all of the ones that you remember from ELA class and that you understand. Complete the **Alternative Meats Are Having a Moment** sheet.	Read the article. As you read; **Write** questions that arise as you read. **Write** connections you have to the topic, text, or ideas. **Underline** words/ideas you don't understand. **Star** ideas you agree with. When done write for 2-3 minutes your initial reactions to the text. Choose one of the words/ideas that you do not understand. Ask another person or if able, look up the word you don't understand to find understanding.	Re-read the text and answer the following. 1. What surprised you as you read? 2. What did the author think you already knew? 3. What challenged, changed or confirmed what you knew? 4. What are your thoughts about taking the beef out of burgers? Explain. 5. Pick a word/line/passage from the article and respond to it.	Re-read the article a final time looking specifically for writer's craft. Make notes about the kinds of ideas covered in the text, the type of evidence the writer uses to support his ideas, how the piece is organized and presented, and how the writer uses language/words to add layers of meaning. Refer back to the writer's craft sheet to help you. After you identify some of the techniques choose one of focus. Quote the example from the text. Identify where in the text the author uses the technique in the text. How does the use of this technique support the main idea and	Write a 1-2 paragraph response to the article. Utilize 1-2 of the writer's techniques in addition to 2 of the vocabulary words in your response **OR** create a poster, cartoon, poem, song or rap that supports one of the burger options and critiques the other.

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				impact the reader? Explain in 1- 2 paragraphs.	
Math (IM1/ Algebra 1)	*Quadratic Formula* Answer "Which One Doesn't Belong?" and justify your choice. (attached) Read Concept Summary: Quadratic Formula and boxed notes on page 101. (attached) Complete Quadratic Formula WS 1 #1-3. (attached)	Read pages 101-104. (attached). Use the examples as a guide to complete p. 105 #1-6. (attached)	Complete p. 105 #7-12. Use the examples from p. 101-104 if needed. (attached)	Complete Quadratic Formula Worksheet 2 # 1-9. (attached) Review Concept Summary and notes from pages 101-104 if needed.	Complete Quadratic Formula Worksheet 2 # 10-14. (attached) Review Concept Summary and notes from pages 101-104 if needed.
Science	**Coronavirus: What's the Real Story?:** Watch a recent newscast or read a newspaper article about the coronavirus. Write down some "noticings" and/or thoughts about what the article or newscast is communicating. Write down your best answers to the following: a) What is your current understanding about the coronavirus? What are your feelings? What questions do you have about the coronavirus? Think about your previous learning in science in school. Write down any connections or possible connections you can think of between the coronavirus outbreak and what you have learned in this science class or previous science classes.	**How COVID-19 Spreads:** Read the article. Annotate. Create and complete a table on which you record connections to questions or ideas from the previous day, new ideas, and new questions.	**How To Protect Yourself & Others:** Read the article. Summarize the main idea(s) and continue to generate your list of connections, new ideas, and questions. Also remember to annotate.	**Coronavirus Mythbusters (part 1):** Read the 1st 2 pages of the article. Summarize the main idea(s) and continue to generate your list of connections, new ideas, and questions. Also remember to annotate.	**Coronavirus Mythbusters (part 2):** Read the 2nd 2 pages of the article. Summarize the main idea(s) and continue to generate your list of connections, new ideas, and questions. Also remember to annotate. Answer the following questions: Were there any noticeable patterns or repetitions in the articles you summarized so far? Why might this be? What questions that you posed earlier did this article possibly help to answer?
Social	Complete Activity 1 from	Complete Activity 2,	Complete Activity 2,	Complete Activity 2,	Complete Activity 2

Christina School District Assignment Board

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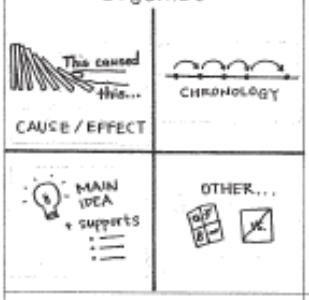
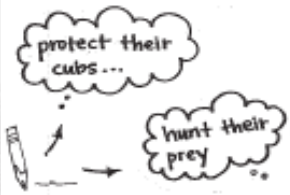
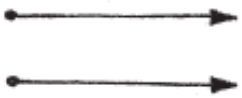
Studies	the document titled, "The Unique Nature of Places-Part 1"	Photography 1 from the document titled, "The Unique Nature of Places-Part 1"	Photograph 2 from the document titled, "The Unique Nature of Places-Part 1"	Photograph 3 from the document titled, "The Unique Nature of Places-Part 1"	Photograph 4 from the document titled, "The Unique Nature of Places-Part 1" NOTE: The rest of Activity 2, Activity 3 & Activity 4 will be on next week's CSD Assignment Board

Writers of Informational Texts Use Techniques Such As:

Organize 	Make a comparison 	Raise questions (and sometimes answer them) 
Give an example/anecdote 	Address the reader directly 	Quote an authority 
Provide a surprising fact or statistic 	Choose words/phrases that lead the reader to think one way or another 	Repeat Use parallelism 
Use text features and/or provide a visual 	Define key terms and use technical vocabulary 	Incorporate humor 

Alternative Meats Are Having a Moment

Look at the image and the chart below.

- Looking at the ingredients of the various burgers, which would you say is healthier?Explain.
- Based upon the chart which is better, meat or meatless burgers? Explain
- In your opinion which burger is better meat or meatless? Explain

	Impossible Burger	Beyond Burger	MorningStar Farms Veggie Burger	85% lean, 15% fat Beef Burger
Number of Ingredients	21	18	37	1
Calories	240	250	187	250
Fat (g)	14	18	8	17
Saturated Fat (g)	8	6	1	7
Carbohydrates (g)	9	3	15	0
Sodium (mg)	370	390	663	90
Protein (g)	19	20	19	21
Cholesterol (mg)	0	0	<5	85

Based on a 4 oz serving size; burger patty only.[2]

Vocabulary

1. **Beyond Burger**: a plant-based alternative that looks and cooks like beef, but does not contain heme or soy
2. **Impossible Burger**: a plant-based alternative to traditional beef burgers that contains heme and mimics the flavor, aroma, and texture of beef
3. **genetically engineered** (GE): the technical process of inserting or modifying a gene into an existing species, with the help of specific techniques, to enhance a receiving organism
4. **heme:** an iron-containing molecule found in every living plant and animal that looks and tastes like blood
5. **leghemoglobin:** an oxygen carrier and hemoprotein found in the nitrogen-fixing root nodules of leguminous plants
6. **alchemy:** the idea of transforming simple or lesser quality materials into high quality materials
7. **livestock:** farm animals
8. **yeast:** a microscopic fungus consisting of single oval cells that reproduce by budding, and are capable of converting sugar into alcohol and carbon dioxide
9. **consumer-** a person who purchases good and services for personal use

Background Connections

Plant-based protein is on the rise and alternative burgers are showing up on fast-food menus. As more and more meatless alternatives become available, consumers may be faced with various questions and concerns. What is a plant-based burger? How does the Impossible Burger compare to a Beyond Burger? Are meatless burgers a healthier alternative?

Many consumers have enjoyed plant-based proteins—like veggie burgers—for years, but why the sudden surge of popularity? Companies like Impossible Foods and Beyond Meat have revolutionized the plant-based industry by creating meatless burgers that actually look, cook, smell, and *taste* like beef. These taste- and lookalike burgers also come advertised as a more environmentally friendly protein alternative, and a possible solution to feeding our growing population.

Beef

Humans began eating beef (domesticated cattle) in 6,500 B.C. Beef cattle have since played an important role in agricultural production. Because of their ruminant digestive system, cows have the unique ability to upcycle human-inedible forages and byproducts. Feeds like grass, cottonseed meal, and distillers' grain are upcycled into high-quality cuts of protein, iron, and zinc. What most consumers don't realize is that all cattle spend the majority of their lives eating grass and forage products. Calves are raised with their mother on pasture or grass until they are between 6-12 months of age. After weaning, cattle are then fed grain and/or more forages to a finishing weight (1,200-1,400 pounds) for harvesting. A 1,200-pound steer will produce about 500 pounds of meat including steaks, roasts, and ground beef. The remaining byproducts from the beef carcass are used for common objects such as leather, pet foods, cosmetics, detergents, glue, and brake fluid.

The Beyond Burger

Beyond Meat began in 2009 and their plant-based "Beyond Burger" debuted in 2016. The protein in a Beyond Burger comes from a combination of pea, mung bean, and rice protein. The red color of the meat—to resemble beef—comes from beets. Other ingredients in this popular patty include water, expeller-pressed canola oil, refined coconut oil, natural flavors, cocoa butter, methylcellulose, potato starch, apple extract, salt, potassium chloride, vinegar, lemon juice concentrate, sunflower lecithin, and pomegranate fruit powder. Beyond Meat advertises a plant-based protein that is soy, gluten, and GMO free.

The Impossible Burger

Impossible Foods was founded in 2011 and their plant-based "Impossible Burger" first hit fast-food menus in 2019. The Impossible Burger is a stand-out from other plant-based burgers because the burger patty "bleeds" like a regular beef burger. This is done using an iron-containing molecule found in every living plant and animal known as heme. Scientists discovered that heme is what gives meat its aroma and flavor. It is also what humans crave when eating meat. Soy leghemoglobin (legume hemoglobin) is a protein found in plants that carries heme. In the past, researchers at Impossible Foods harvested leghemoglobin directly from the roots of soy plants; however, they soon realized they could produce much more leghemoglobin using fermentation. Leghemoglobin is now harvested using a yeast engineered with the gene for soy leghemoglobin. The genetically engineered yeast ferments and multiplies, creating large amounts of soy leghemoglobin which contains heme. The heme is then isolated from the yeast and mixed with other ingredients to create the meaty flavor in the Impossible Burger. This process of using genetically engineered yeast allows Impossible Foods to produce heme on a large scale without digging up soy roots, promoting soil erosion, and releasing carbon from the soil.[11]

Other ingredients mixed with the soy leghemoglobin (heme) include: water, soy protein concentrate, coconut oil, sunflower oil, natural flavors, 2% or less of: potato protein, methylcellulose, yeast extract, cultured dextrose, food starch modified, salt, soy protein isolate, mixed tocopherols (Vitamin E), zinc gluconate, thiamine hydrochloride (Vitamin B1), sodium ascorbate (Vitamin C), niacin, pyridoxine hydrochloride (Vitamin B6), riboflavin (Vitamin B2), Vitamin B12.

Are plant-based burgers a healthier alternative?

There are many burger options available to consumers whether they are plant-based or made from beef. While plant-based and meatless burgers are a good alternative, they might not meet the same amino acid, vitamin, mineral and antioxidant levels that are found in an eight-ounce piece of red meat. Consumers can get 100% of the daily intake of vitamin B12 from one serving of red meat, while a Beyond Burger will account for 20% of the daily intake of B12. The sodium content of each burger varies as well. A Beyond Burger contains 380 milligrams (mg) of sodium, the Impossible Burger contains 370 mg of sodium, and a freshly ground beef burger (85% lean) contains 90 mg of sodium. Plant-based burger patties, however, contain significantly less cholesterol when compared to a beef patty. Consumers should be aware of the production and processing methods of each burger, as well as ingredients and nutrient content so they can select a burger that fits their dietary needs and preferences. Those who are allergic to soy should avoid eating plant-based products that contain soy leghemoglobin.

Text-Based Questions

1. What makes meatless burgers different from veggie burgers?
   _____
   _____

2. What reasons does the text state for consumers are seeking alternatives to meat burgers?
   _____
   _____

3. What is the difference between the Beyond Burger and the Impossible Burger?
   _____
   _____

Taking the Beef Out of Burgers
Source: TheWeek.com, January 12, 2020

Sales are booming for alternative meats. Are plant-based burgers just a fad? Here's everything you need to know:

Why are meatless burgers so popular?
Food scientists believe they've achieved a kind of alchemy, making plants look and taste like meat. Global sales suggest they've largely succeeded. All-plant burgers, nuggets, meatballs, and sausage patties exploded in popularity last year, driven by California-based Beyond Meat and Impossible Foods. Beyond had 2019's most successful IPO and gained a presence in 20,000 U.S. grocery stores plus 53,000 fast-food restaurants such as Dunkin' Donuts and Carl's Jr., while McDonald's is testing a Beyond Burger in Canada. Burger King's Impossible Whopper and White Castle's Impossible Sliders were almost *too* successful, causing a supply crisis. Overall U.S. restaurant sales of plant-based meat grew by 400 percent last year; combine those with supermarket sales, and consumers spent nearly $1 billion on these products in 2019. Plant-based burgers attract eaters who are health conscious and/or environmentally concerned but aren't willing to give up familiar tastes and textures for quinoa and seitan. Ninety-five percent of Impossible's customers eat meat; in taste tests, half of them can't tell Impossible Burgers from the real thing.

What's their secret?
"Meat analogues" such as tofu go back 2,000 years, but these are not your father's frozen veggie burgers. The new faux burgers are engineered to imitate the way ground meat sizzles on the grill, bleeds in the middle, and crumbles in your mouth. That's no small feat, considering cooked beef contains 4,000 different molecules, about 100 of which create its smell and umami-rich flavor. Impossible Foods simulates that pinkish color and savory flavor with heme, the iron-carrying molecule in blood and some plant roots. The heme is created by genetically modifying yeast with soy DNA in gigantic tanks.

What else are they made of?
The new burgers vary in composition, but are largely made of plant proteins — usually soy, but sometimes pea, bean, or wheat — and plant fats. These ingredients are cooked in big pressure cookers, which use low heat and compression to replicate the fibrous texture of meat. The first challenge in creating a plant-based burger is to make a tasteless patty, getting rid of so-called off-flavors. (Pea protein is said to taste of urine.) "Once we cracked the code on meat flavor," said Impossible Foods scientist Laura Kliman, "if you change a few of the ratios and ingredients, it's not that hard to get fish or pork or chicken." Impossible Burgers have 21 ingredients — mostly soy and potato proteins, plus coconut and sunflower oils. Beyond Burgers have 18 ingredients, a mixture of isolated pea protein, mung bean, and rice proteins. Beetroot juice provides the "bleeding" effect. The thickener methylcellulose, potato starch for texture, and the salt substitute potassium chloride are also used. Beyond Burgers get the marbled look of ground beef from coconut oil and cocoa butter whipped into tiny globules of fat.

Is that healthier than meat?
Yes and no. Consuming meat is believed to increase the risk of cardiovascular disease and colorectal cancer, and humans can develop unsafe resistance to antibiotics by eating animals fed those drugs. Commercial beef, pork, and poultry often carry bacteria and viruses from fecal matter and cause illness if not properly cooked or handled. Critics of alternative meat, however, say that companies are exploiting the healthy sound of "plant-based" while providing heavily engineered products. Whole Foods CEO John Mackey, for example, has warned customers that these burgers "are super, highly processed foods." Meatless burgers are cholesterol free and contain about the same calorie count as hamburgers but have more sodium: The Impossible Whopper has 1,240 milligrams of sodium, 260 more than the beef version. Coconut oil gives Beyond and Impossible Burgers saturated fat levels similar to beef, and their proteins are considered less nutritious. Impossible's recipe depends on soy, which can mimic estrogen in the body, but food scientists say it's safe to consume in moderate quantities.

Is the meat industry alarmed?
Stanford University biochemist Patrick Brown, who founded Impossible Foods/';, says it should be. "We plan to take a double-digit portion of the beef market within five years," he said, "and then we can push that industry, which is fragile and has low margins, into a death spiral." That's unlikely. Americans on average eat three hamburgers a week, and the combined annual revenue of the three largest U.S. meatpacking companies is about $200 billion. Still, the meat industry clearly feels threatened: Lobbyists convinced 12 state legislatures last year to ban products from using words such as "burger" and "meat" if they don't come from animals. But to hedge their bets and to take advantage of the boom, Perdue, Nestlé, Kellogg, and meat giant Tyson Foods are developing their own plant-based or hybrid burgers. As Tyson's former CEO Tom Hayes said, "If you can't beat 'em, join 'em, right?"

The environmental impact of livestock
Environmentalists estimate that eating 4 pounds of beef contributes as much to global warming as flying from New York to London, and the average American eats more than that each month. There are many ways of producing meat, but it's clear that the annual farming and slaughter of 50 billion animals for meat worldwide leaves a massive footprint in terms of land use, crop consumption, emissions, and water pollution. In the past 25 years, an area larger than South America has been razed for cattle grazing, and cows releasing methane from digesting grains and grass — mostly through burps — causes two-thirds of the livestock sector's greenhouse gas emissions. A landmark report in *Science* found that avoiding meat and dairy is the "single biggest way" to reduce one's environmental impact. A recent University of Michigan study found that a plant-based burger generates 90 percent less greenhouse gas, requires 46 percent less energy, and has 99 percent less impact on water scarcity than a quarter pound of U.S. beef. CEO Pat Brown says that's Impossible Foods' primary purpose. "We see our mission as the last chance to save the planet from environmental catastrophe," he says.

IM1/Algebra 2 – Week of May 11th

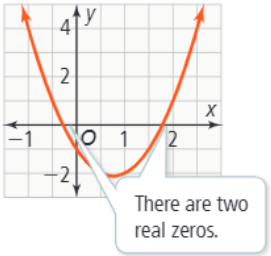
Quadratic Formula

Which One Doesn't Belong? Why?

$(2x + 1)(x + 5)$	$(x^2 + 1)(x + 5)$
$(t + 1)(t + 5)$	$x(x+5)$

Concept Summary Assess

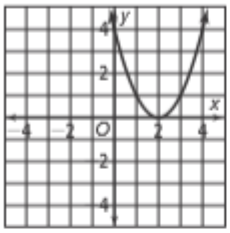
CONCEPT SUMMARY Using the Quadratic Formula

	Equation	Quadratic Formula	Discriminant
ALGEBRA	$ax^2 + bx + c = 0$	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	$b^2 - 4ac$
NUMBERS	$2x^2 - 3x - 1 = 0$	$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(2)(-1)}}{2(2)}$ $x = \frac{3 + \sqrt{17}}{4} \approx 1.78$ and $x = \frac{3 - \sqrt{17}}{4} \approx -0.28$	$(-3)^2 - 4(2)(-1) = 17$ $17 > 0$, two real solutions
	Related Function		
GRAPH	$y = 2x^2 - 3x - 1$ 		The discriminant of the related equation is > 0.

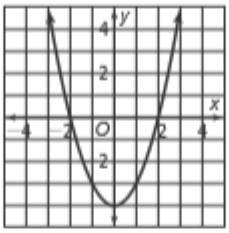
Quadratic Formula Worksheet 1

1. Fill in the blanks to complete the statements.

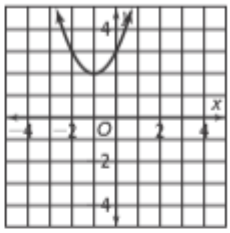
For a quadratic equation $ax^2 + bx + c = 0$, the quadratic formula gives the solutions of the equation as $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. The discriminant is _____.



When the discriminant is _____, there is one real root.



When the discriminant is _____, there are two real roots.



When the discriminant is _____, there are no real roots.

2. Fill in the blanks with numbers to find the solutions of $x^2 - 5 = 3x$ using the quadratic formula.

Step 1 Write the equation in standard form and identify a, b, and c.

$x^2 - 3x - 5 =$ _____

$a =$ _____, $b =$ _____, $c =$ _____

Step 2 Substitute the values for a, b, and c into the quadratic formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(\quad) \pm \sqrt{(\quad)^2 - 4(1)(\quad)}}{2(\quad)}$$

Step 3 Simplify.

$$x = \frac{\pm \sqrt{\quad}}{\quad}$$

$$x = \frac{+\sqrt{\quad}}{\quad} \approx \_\_\_\_\_ \text{ or } x = \frac{-\sqrt{\quad}}{\quad} \approx \_\_\_\_\_$$

The solutions of $x^2 - 5 = 3x$ are $x \approx$ _____ and $x \approx$ _____.

3. A student says that she can use the discriminant to find the solutions of an equation. Explain the error the student made.

USING THE QUADRATIC FORMULA 9.1.2 and 9.1.3

When a quadratic equation is not factorable, another method is needed to solve for x. The Quadratic Formula can be used to calculate the roots of a quadratic function, that is, the x-intercepts of the parabola. The Quadratic Formula can be used with any quadratic equation, factorable or not. There may be two, one, or no solutions, depending on whether the parabola intersects the x-axis twice, once, or not at all.
The solution(s) to any quadratic equation $ax^2 + bx + c = 0$ are:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

The $\pm$ symbol is read as "plus or minus." It is shorthand notation that tells you to calculate the formula twice, once with + and again with – to get both x-values.

To use the formula, the quadratic equation must be written in *standard form*: $ax^2 + bx + c = 0$. This is necessary to correctly identify the values of a, b, and c. Once the equation is in standard form and equal to 0, a is the coefficient of the x^2-term, b is the coefficient of the x-term and c is the constant term.

For additional information, see the Math Notes boxes in Lessons 9.1.1 through 9.1.4 and 10.2.4.

Example 1

Solve $2x^2 - 5x - 3 = 0$.

Identify a, b, and c. Watch your signs carefully.	$a = 2, b = -5, c = -3$
Write the Quadratic Formula.	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Substitute a, b, and c into the formula and do the initial calculations.	$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(2)(-3)}}{2(2)}$
	$x = \frac{5 \pm \sqrt{25 - (-24)}}{4}$
Simplify the $\sqrt{\ }$.	$x = \frac{5 \pm \sqrt{49}}{4}$
Calculate both values of x.	$x = \frac{5+7}{4} = \frac{12}{4} = 3$ or $x = \frac{5-7}{4} = \frac{-2}{4} = -\frac{1}{2}$

The solutions are $x = 3$ or $x = -\frac{1}{2}$.

Example 2

Solve $3x^2 + 5x + 1 = 0$.

Identify a, b, and c.	$a = 3, b = 5, c = 1$
Write the Quadratic Formula.	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Substitute a, b, and c into the formula and do the initial calculations.	$x = \frac{-(5) \pm \sqrt{(5)^2 - 4(3)(1)}}{2(3)}$
	$x = \frac{-5 \pm \sqrt{25 - 12}}{6}$
Simplify the $\sqrt{\ }$.	$x = \frac{-5 \pm \sqrt{13}}{6}$

The solutions are $x = \frac{-5+\sqrt{13}}{6} = -0.23$ or $x = \frac{-5-\sqrt{13}}{6} = -1.43$.

Example 3

Solve $25x^2 - 20x + 4 = 0$.

Identify a, b, and c.	$a = 25, b = -20, c = 4$
Write the Quadratic Formula.	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Substitute a, b, and c into the formula and do the initial calculations.	$x = \frac{-(-20) \pm \sqrt{(-20)^2 - 4(25)(4)}}{2(25)}$
	$x = \frac{20 \pm \sqrt{400 - 400}}{50}$
Simplify the $\sqrt{\ }$.	$x = \frac{20 \pm \sqrt{0}}{50}$

This quadratic equation has only one solution: $x = \frac{2}{5}$.

Example 4

Solve $x^2 + 4x + 10 = 0$.

Identify a, b, and c.	$a = 1, b = 4, c = 10$
Write the Quadratic Formula.	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Substitute a, b, and c into the formula and do the initial calculations.	$x = \frac{-(4) \pm \sqrt{(4)^2 - 4(1)(10)}}{2(1)}$
	$x = \frac{-4 \pm \sqrt{16 - 40}}{2}$
Simplify the $\sqrt{\ }$.	$x = \frac{-4 \pm \sqrt{-24}}{2}$

It is impossible to take the square root of a negative number; therefore this quadratic equation has no real solutions.

Example 5

Solve $(3x + 1)(x + 2) = 1$.

Rewrite the equation in standard form. That is, rewrite the product as a sum and then set the equation equal to zero.	$(3x + 1)(x + 2) = 1$
	$3x^2 + 7x + 2 = 1$
	$3x^2 + 7x + 1 = 0$
Identify a, b, and c.	$a = 3, b = 7, c = 1$
Write the Quadratic Formula.	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Substitute a, b, and c into the formula and do the initial calculations.	$x = \frac{-(7) \pm \sqrt{(7)^2 - 4(3)(1)}}{2(3)}$
	$x = \frac{-7 \pm \sqrt{49 - 12}}{6}$
Simplify.	$x = \frac{-7 \pm \sqrt{37}}{6}$

The solutions are $x = \frac{-7 \pm \sqrt{37}}{6}$, or, $x \approx -0.15$ or $x \approx -2.18$.

Example 6

Solve $3x^2+6x+1=0$.

Identify a, b, and c. $a=3,\ b=6,\ c=1$

Write the Quadratic Formula. $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

Substitute a, b, and c into the formula and do the initial calculations. $x=\frac{-(6)\pm\sqrt{(6)^2-4(3)(1)}}{2(3)}$

$x=\frac{-6\pm\sqrt{36-12}}{6}$

Simplify. $x=\frac{-6\pm\sqrt{24}}{6}$

The solutions are $x=\frac{-6\pm\sqrt{24}}{6}$, or, $x\approx -1.82$ or $x\approx -0.18$.

The Math Notes box in Lesson 9.1.4 describes another form of the expression $\frac{-6\pm\sqrt{24}}{6}$ that can be written by simplifying the square root. The result is equivalent to the exact values above.

Factor the $\sqrt{24}$, then simplify by taking the square root of 4. $\sqrt{24}=\sqrt{4}\sqrt{6}=2\sqrt{6}$

Simplify the fraction by dividing every term by 2. $x=\frac{-6\pm2\sqrt{6}}{6}$

$x=\frac{-3\pm\sqrt{6}}{3}$

Problems

Solve each equation by using the Quadratic Formula.

1. $x^2 - x - 2 = 0$
2. $x^2 - x - 3 = 0$
3. $-3x^2 + 2x + 1 = 0$
4. $-2 - 2x^2 = 4x$
5. $7x = 10 - 2x^2$
6. $-6x^2 - x + 6 = 0$
7. $6 - 4x + 3x^2 = 8$
8. $4x^2 + x - 1 = 0$
9. $x^2 - 5x + 3 = 0$
10. $0 = 10x^2 - 2x + 3$
11. $x(-3x + 5) = 7x - 10$
12. $(5x + 5)(x - 5) = 7x$

Quadratic Formula Worksheet 2

Solve each equation using the quadratic formula. If necessary, round any answers to the nearest hundredth.

1. $7x^2 + 8x + 1 = 0$
2. $2x^2 - 28x = -98$
3. $2x^2 - 3x = -1$
4. $2x^2 - 6x + 4 = 0$
5. $2x^2 - 6x - 8 = 0$
6. $4x^2 + 3 = 8x$
7. $x^2 - 2x = 2$
8. $-x^2 - 4x + 2 = 0$
9. $3x^2 + 10x = 5$

Use the discriminant to find the number of roots of each equation.

10. $x^2 - 8x - 3 = 0$
11. $-x^2 - 2x = 10$
12. $4x^2 = 20x - 25$

13. When is the quadratic formula useful for solving equations?

14. Leroy shoots a basketball through the air in an attempt to score two points. The height h of the ball in feet as a function of the distance d in feet that the ball travels horizontally is given by $h = -d^2 + 10d + 5$. How far horizontally from Leroy will the ball land on the ground if it does not hit the backboard or the rim of the basket?

How COVID-19 Spreads

COVID-19 is thought to spread mainly through close contact from person-to-person in respiratory droplets from someone who is infected. People who are infected often have symptoms of illness. Some people without symptoms may be able to spread virus.

COVID-19 is a new disease and **we are still learning about how it spreads** and the severity of illness it causes.

Person-to-person spread

The virus is thought to spread mainly from person-to-person.

- Between people who are in close contact with one another (within about 6 feet).
- Through respiratory droplets produced when an infected person coughs, sneezes or talks.
- These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.
- Some recent studies have suggested that COVID-19 may be spread by people who are not showing symptoms.

Maintaining good social distance (about 6 feet) is very important in preventing the spread of COVID-19.

Spread from contact with contaminated surfaces or objects

It may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. This is not thought to be the main way the virus spreads, but we are still learning more about this virus.

Wash your hands often with soap and water. If soap and water are not available, use an alcohol-based hand rub. Also, routinely clean frequently touched surfaces.

How easily the virus spreads

How easily a virus spreads from person-to-person can vary. Some viruses are highly contagious, like measles, while other viruses do not spread as easily. Another factor is whether the spread is sustained, which means it goes from person-to-person without stopping.

The virus that causes COVID-19 is spreading very easily and sustainably between people. Information from the ongoing COVID-19 pandemic suggest that this virus is spreading more efficiently than influenza, but not as efficiently as measles, which is highly contagious.

How to Protect Yourself & Others

Older adults and people who have severe underlying medical conditions like heart or lung disease or diabetes seem to be at higher risk for developing serious complications from COVID-19 illness. More information on Are you at higher risk for serious illness?

Know how it spreads

- There is currently no vaccine to prevent coronavirus disease 2019 (COVID-19).
- **The best way to prevent illness is to avoid being exposed to this virus.**
- The virus is thought to spread mainly from person-to-person.
    - Between people who are in close contact with one another (within about 6 feet).
    - Through respiratory droplets produced when an infected person coughs, sneezes or talks.
    - These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.
    - Some recent studies have suggested that COVID-19 may be spread by people who are not showing symptoms.

Everyone Should

Wash your hands often

- Wash your hands often with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, or sneezing.
- If soap and water are not readily available, **use a hand sanitizer that contains at least 60% alcohol**. Cover all surfaces of your hands and rub them together until they feel dry.
- **Avoid touching your eyes, nose, and mouth** with unwashed hands.

Avoid close contact

- **Avoid close contact with people who are sick, even inside your home.** If possible, maintain 6 feet between the person who is sick and other household members.
- **Put distance between yourself and other people outside of your home**.
    - Remember that some people without symptoms may be able to spread virus.
    - Stay at least 6 feet (about 2 arms' length) from other people.
    - Do not gather in groups.
    - Stay out of crowded places and avoid mass gatherings.
    - Keeping distance from others is especially important for people who are at higher risk of getting very sick.

Cover your mouth and nose with a cloth face cover when around others

- You could spread COVID-19 to others even if you do not feel sick.
- Everyone should wear a cloth face cover when they have to go out in public, for example to the grocery store or to pick up other necessities.
    - Cloth face coverings should not be placed on young children under age 2, anyone who has trouble breathing, or is unconscious, incapacitated or otherwise unable to remove the mask without assistance.

- The cloth face cover is meant to protect other people in case you are infected.
- Do NOT use a facemask meant for a healthcare worker.

- Continue to keep about 6 feet between yourself and others. The cloth face cover is not a substitute for social distancing.

Cover coughs and sneezes

- **If you are in a private setting and do not have on your cloth face covering, remember to always cover your mouth and nose** with a tissue when you cough or sneeze or use the inside of your elbow.
- **Throw used tissues** in the trash.
- Immediately **wash your hands** with soap and water for at least 20 seconds. If soap and water are not readily available, clean your hands with a hand sanitizer that contains at least 60% alcohol.

Clean and disinfect

- **Clean AND disinfect frequently touched surfaces daily**. This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks.
- **If surfaces are dirty, clean them.** Use detergent or soap and water prior to disinfection.
- **Then, use a household disinfectant.** Most common EPA-registered household disinfectantsexternal icon will work.

Coronavirus disease (COVID-19) advice for the public: Myth busters

There are currently no drugs licensed for the treatment or prevention of COVID-19

While several drug trials are ongoing, there is currently no proof that hydroxychloroquine or any other drug can cure or prevent COVID-19. The misuse of hydroxychloroquine can cause serious side effects and illness and even lead to death. WHO is coordinating efforts to develop and evaluate medicines to treat COVID-19.

Adding pepper to your soup or other meals DOES NOT prevent or cure COVID-19

Hot peppers in your food, though very tasty, cannot prevent or cure COVID-19. The best way to protect yourself against the new coronavirus is to keep at least 1 metre away from others and to wash your hands frequently and thoroughly. It is also beneficial for your general health to maintain a balanced diet, stay well hydrated, exercise regularly and sleep well.

COVID-19 IS NOT transmitted through houseflies

To date, there is no evidence or information to suggest that the COVID-19 virus transmitted through houseflies. The virus that cause COVID-19 spreads primarily through droplets generated when an infected person coughs, sneezes or speaks. You can also become infected by touching a contaminated surface and then touching your eyes, nose or mouth before washing your hands. To protect yourself, keep at least 1-metre distance from others and disinfect frequently-touched surfaces. Clean your hands thoroughly and often and avoid touching your eyes, mouth and nose.

Spraying and introducing bleach or another disinfectant into your body WILL NOT protect you against COVID-19 and can be dangerous

Do not under any circumstance spray or introduce bleach or any other disinfectant into your body. These substances can be poisonous if ingested and cause irritation and damage to your skin and eyes.

Bleach and disinfectant should be used carefully to disinfect surfaces only. Remember to keep chlorine (bleach) and other disinfectants out of reach of children.

Drinking methanol, ethanol or bleach DOES NOT prevent or cure COVID-19 and can be extremely dangerous

Methanol, ethanol, and bleach are poisons. Drinking them can lead to disability and death. Methanol, ethanol, and bleach are sometimes used in cleaning products to kill the virus on surfaces – however you should never drink them. They will not kill the virus in your body and they will harm your internal organs.

To protect yourself against COVID-19, disinfect objects and surfaces, especially the ones you touch regularly. You can use diluted bleach or alcohol for that. Make sure you clean your hands frequently and thoroughly and avoid touching your eyes, mouth and nose.

5G mobile networks DO NOT spread COVID-19

Viruses cannot travel on radio waves/mobile networks. COVID-19 is spreading in many countries that do not have 5G mobile networks.
COVID-19 is spread through respiratory droplets when an infected person coughs, sneezes or speaks. People can also be infected by touching a contaminated surface and then their eyes, mouth or nose.

Exposing yourself to the sun or to temperatures higher than 25C degrees DOES NOT prevent the coronavirus disease (COVID-19)

You can catch COVID-19, no matter how sunny or hot the weather is. Countries with hot weather have reported cases of COVID-19. To protect yourself, make sure you clean your hands frequently and thoroughly and avoid touching your eyes, mouth, and nose.

You can recover from the coronavirus disease (COVID-19). Catching the new coronavirus DOES NOT mean you will have it for life.

Most of the people who catch COVID-19 can recover and eliminate the virus from their bodies. If you catch the disease, make sure you treat your symptoms. If you have cough, fever, and difficulty breathing, seek medical care early – but call your health facility by telephone first. Most patients recover thanks to supportive care.

Being able to hold your breath for 10 seconds or more without coughing or feeling discomfort DOES NOT mean you are free from the coronavirus disease (COVID-19) or any other lung disease.

The most common symptoms of COVID-19 are dry cough, tiredness and fever. Some people may develop more severe forms of the disease, such as pneumonia. The best way to confirm if you have the virus producing COVID-19 disease is with a laboratory test. You cannot confirm it with this breathing exercise, which can even be dangerous.

Drinking alcohol does not protect you against COVID-19 and can be dangerous

Frequent or excessive alcohol consumption can increase your risk of health problems.

COVID-19 virus can be transmitted in areas with hot and humid climates

The best way to protect yourself against COVID-19 is by maintaining physical distance of at least 1 metre from others and frequently cleaning your hands. By doing this you eliminate viruses that may be on your hands and avoid infection that could occur by then touching your eyes, mouth, and nose.

Cold weather and snow CANNOT kill the new coronavirus.

There is no reason to believe that cold weather can kill the new coronavirus or other diseases. The normal human body temperature remains around 36.5°C to 37°C, regardless of the external

temperature or weather. The most effective way to protect yourself against the new coronavirus is by frequently cleaning your hands with alcohol-based hand rub or washing them with soap and water.

Taking a hot bath does not prevent the new coronavirus disease

Taking a hot bath will not prevent you from catching COVID-19. Your normal body temperature remains around 36.5°C to 37°C, regardless of the temperature of your bath or shower. Actually, taking a hot bath with extremely hot water can be harmful, as it can burn you. The best way to protect yourself against COVID-19 is by frequently cleaning your hands. By doing this you eliminate viruses that may be on your hands and avoid infection that could occur by then touching your eyes, mouth, and nose.

The new coronavirus CANNOT be transmitted through mosquito bites.

To date there has been no information nor evidence to suggest that the new coronavirus could be transmitted by mosquitoes. The new coronavirus is a respiratory virus which spreads primarily through droplets generated when an infected person coughs or sneezes, or through droplets of saliva or discharge from the nose. To protect yourself, clean your hands frequently with an alcohol-based hand rub or wash them with soap and water. Also, avoid close contact with anyone who is coughing and sneezing.

Are hand dryers effective in killing the new coronavirus?

No. Hand dryers are not effective in killing the 2019-nCoV. To protect yourself against the new coronavirus, you should frequently clean your hands with an alcohol-based hand rub or wash them with soap and water. Once your hands are cleaned, you should dry them thoroughly by using paper towels or a warm air dryer.

Ultra-violet (UV) lamps should not be used to disinfect hands or other areas of your skin

UV radiation can cause skin irritation and damage your eyes.
Cleaning your hands with alcohol-based hand rub or washing your hands with soap and water are the most effective ways to remove the virus.

How effective are thermal scanners in detecting people infected with the new coronavirus?

Thermal scanners are effective in detecting people who have developed a fever (i.e. have a higher than normal body temperature) because of infection with the new coronavirus.
However, they cannot detect people who are infected but are not yet sick with fever. This is because it takes between 2 and 10 days before people who are infected become sick and develop a fever.

Do vaccines against pneumonia protect you against the new coronavirus?

No. Vaccines against pneumonia, such as pneumococcal vaccine and Haemophilus influenza type B (Hib) vaccine, do not provide protection against the new coronavirus.
The virus is so new and different that it needs its own vaccine. Researchers are trying to develop a vaccine against 2019-nCoV, and WHO is supporting their efforts.

Although these vaccines are not effective against 2019-nCoV, vaccination against respiratory illnesses is highly recommended to protect your health.

Can regularly rinsing your nose with saline help prevent infection with the new coronavirus?

No. There is no evidence that regularly rinsing the nose with saline has protected people from infection with the new coronavirus.

There is some limited evidence that regularly rinsing nose with saline can help people recover more quickly from the common cold. However, regularly rinsing the nose has not been shown to prevent respiratory infections.

Can eating garlic help prevent infection with the new coronavirus?

Garlic is a healthy food that may have some antimicrobial properties. However, there is no evidence from the current outbreak that eating garlic has protected people from the new coronavirus.

Does the new coronavirus affect older people, or are younger people also susceptible?

People of all ages can be infected by the new coronavirus (2019-nCoV). Older people, and people with pre-existing medical conditions (such as asthma, diabetes, heart disease) appear to be more vulnerable to becoming severely ill with the virus.

WHO advises people of all ages to take steps to protect themselves from the virus, for example by following good hand hygiene and good respiratory hygiene.

Are antibiotics effective in preventing and treating the new coronavirus?

No, antibiotics do not work against viruses, only bacteria.

The new coronavirus (2019-nCoV) is a virus and, therefore, antibiotics should not be used as a means of prevention or treatment.

However, if you are hospitalized for the 2019-nCoV, you may receive antibiotics because bacterial co-infection is possible.

Are there any specific medicines to prevent or treat the new coronavirus?

To date, there is no specific medicine recommended to prevent or treat the new coronavirus (2019-nCoV).

However, those infected with the virus should receive appropriate care to relieve and treat symptoms, and those with severe illness should receive optimized supportive care. Some specific treatments are under investigation, and will be tested through clinical trials. WHO is helping to accelerate research and development efforts with a range or partners.

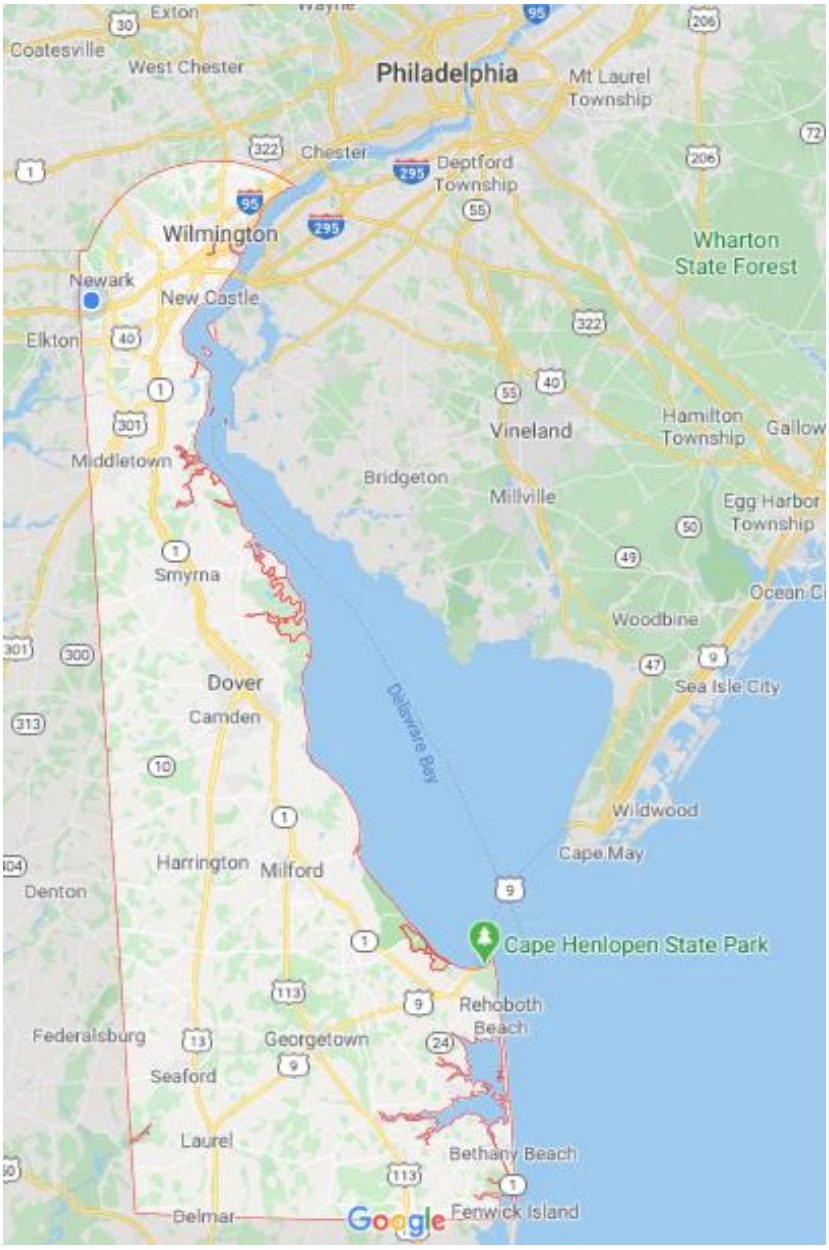
The Unique Nature of Places – Part 1

Benchmark Standard	Geography 3a: Students will understand the processes which result in distinctive cultures, economic activity, and settlement form in particular locations across the world.
Grade	9
Vocabulary / Key Concepts	Site; situation; physical characteristics; cultural characteristics; urbanization

~This lesson is a part of the DRC Unit "The Unique Nature of Places" – Modified by CSD for use at home~

ACTIVITY 1: Read the following excerpt and respond to the questions:

You are unique. What makes you unique are two main factors: your physical features and your environment, or where you grew up and the experiences you had. Like people, places have their own unique makeup and character. Just as humans have physical features, so do places. While the physical features for people might include gender and height, physical features like hilly terrain, dry climate, or red soil help to make a place unique. The physical features of a place are called the **site**. Every **site** has a unique combination of physical environmental conditions such as climate, landforms, soils, and vegetation. Site includes more than just the physical landscape. The cultural features, number of people, their religion, their language, the economy, their buildings and roads, their settlement patterns are also all part of a place's site.



*Q #1: Can you think of examples of places where the physical landscape is very distinct, even unforgettable? Describe at least two places and what makes them distinct.

*Q #2: What about the human or cultural features? Describe at least two places and what makes them distinct.

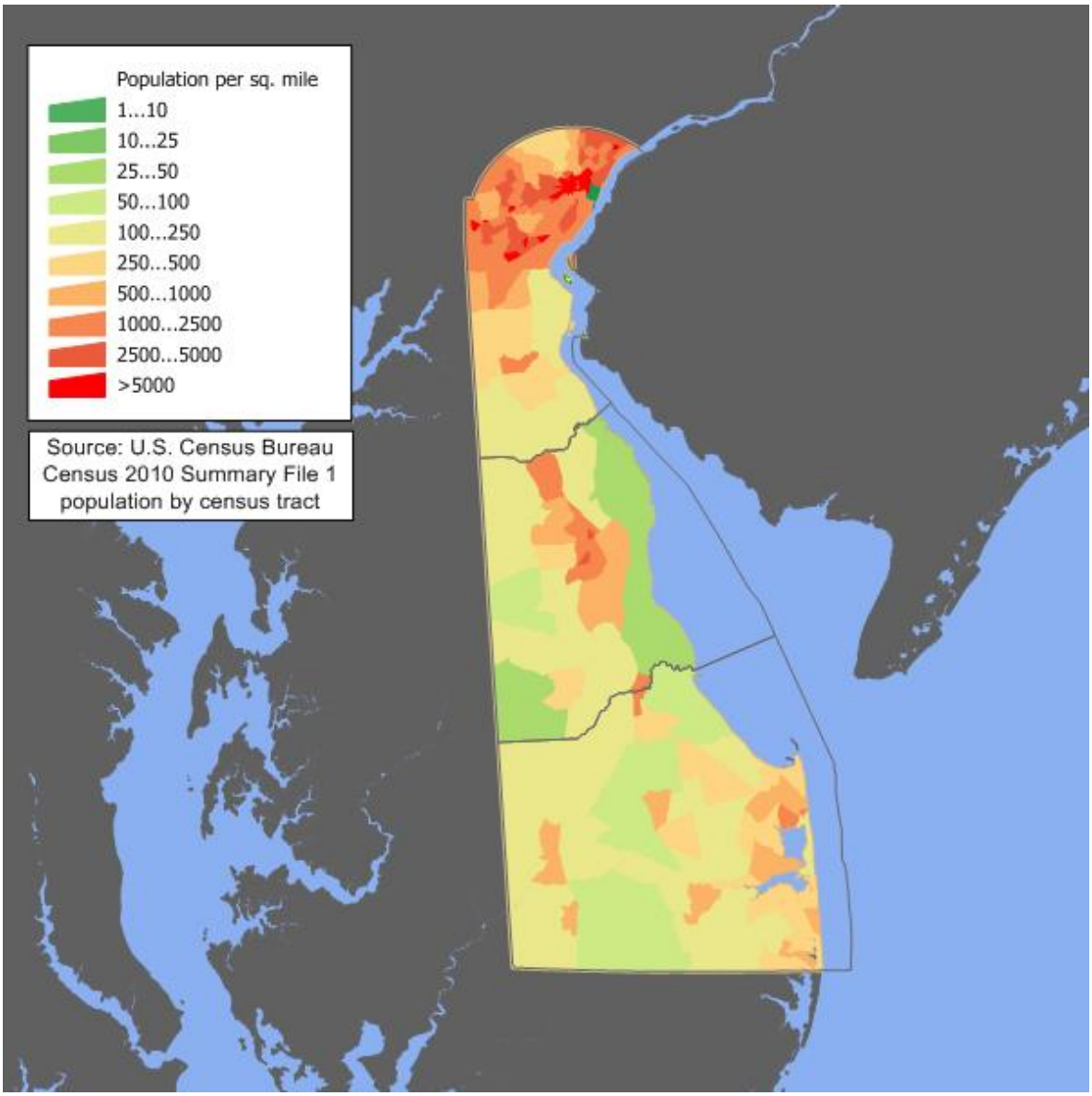
In a similar way to the impact of your environment on your unique character, the surroundings of a place also affect and influence it. How close or far away are other cities? Are natural resources available near-by? Location and interaction relative to all others places is called **situation**. Studying the site and also the situation of a place helps us understand what makes a place unique. For different purposes, such as farming and trade, some places have better site and situation than do other places. The right combination of site and situation can lead to prosperity or economic success for businesses in a place, while the wrong combination can put people and businesses there at a disadvantage.

Site = The **Physical AND Human** Characteristics of a place.

Situation = How a place is positioned in **relation** to other places and surroundings.

*Q #3: What factors can you identify about Wilmington's site and situation that might help explain why it is Delaware's largest city

Delaware's history and settlement patterns show how choices based on site and situation affected the distribution of places in Delaware. When Europeans first began to set up settlements in Delaware, like Lewes and New Castle, it was vital for the settlements' site to be on the coast and to have fertile soil. A coastal site enabled colonists to be situated where the colony could still interact and trade with their mother countries. Fertile soil was needed for the colonists to grow food. Recently in Delaware's settlement, suburbs have been situated away from urban areas for various reasons such as cheaper land or the perception of urban crime. Suburbs are only feasible because of the widespread availability of cars and the development of a road network that make it possible Delawareans to move around easily.



*Q #4: What factors have caused populations in Delaware to spread out from its original settlements to the rural farmlands in the middle?

Whether you have been outside of Delaware or not, can you describe one place that you think is unique compared to Delaware – either due to physical characteristics or cultural characteristics? An example of a cultural characteristic is that places down south refer to a soda as "pop." A physical characteristic would be that Florida is very flat, compared to Colorado which is very mountainous.

ACTIVITY 2: On a separate sheet of paper, answer the following questions for each of the 6 photographs (Since there are 6 photographs, each question will be answered 6 different times - photographs are below the questions).

ASK GOOD PLACE QUESTIONS: TO HELP STUDENTS READ PICTURES AND GRAPHICS BETTER

About the physical characteristics:

1. Is this place flat or mountainous, wet or dry, natural or altered by man?
2. A)What types of landforms are visible? B)What other natural features do you see? C)What vegetation? D)What animal life? E)What resources?
3. What kind of climate does this place have? How can you tell?

(continued on next page)

About the human characteristics:

1. Does anyone live here? Who? Can you describe the people? How? How many people live in this place? Why do you suppose these people chose this place to live? Why is this place urban (or rural)? IS there evidence of urbanization, if not here, nearby? What is necessary for urbanization? Do you see those things here?
2. What is the architecture? Are there different styles that indicate sequential building? What are the materials used in the buildings?
3. What level of technology is present? Is education important here?

About movement and change:

1. How do people make a living here? Is recreation an important part of their lives? Is this subsistence living? What are the products of this place? What must be imported? What is exported? Is there evidence of trade? What is probably traded? To where and from where?
2. Is life valuable here? Is population density a factor in the quality of life of these people? Is there evidence that new ideas have been adopted by the people in this area? Where would new ideas come from? What are barriers to communication of ideas? Are there man-made natural barriers? Is language important? Are there any ethnic conflicts in this place? Would war or revolution cause barriers to movement of ideas, people, or products?

About the perceptions of the author and/or illustrator:

1. How does the artist or illustrator feel about this place? How can you tell?
2. What does the artist or illustrator think is important about this place? How can you tell?
3. What words does the author use to describe this place? What details are included?
4. What did the artist leave out? Why?

Photograph 1

Photography 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

ACTIVITY 3: After you have completed the "Ask Good Place Questions" for each photograph, recreate the Chart on your paper and answer the "Conclusion of Place" column and the "Evidence" column for each photograph.

Photograph	**Conclusion of Place** (Which city of country do you think this is?)	**Evidence** (What evidence does the photo provide to back this claim, ie. Physical characteristics, human characteristics, movement and change?)
1		

Once finished, check your answers (below the line -----) and complete the "Check for Understanding" Activity 4.

ACTIVITY 4: Check for Understanding

1. What places did you correctly identify?
2. What places did you not identify correctly?
3. What additional information, if any, might have helped to better identify the place/location?

Photograph 1: The sun sets behind onlookers at the Big Rodeo in Burwell, Nebraska.
Photograph 2: A woman dressed as a lobster participates in the annual Lobster Festival in Rockland, Maine.
Photograph 3: a mariachi band serenades newlyweds on the way to their reception in San Miguel de Allende, Mexico. Mariachi bands have been around since the 1860s, when France occupied Mexico.
Photograph 4: At a mall in Dubai, United Arab Emirates (UAE), Muslim shoppers pause to participate in Friday afternoon prayers.
Photograph 5: A father and child take a stroll in the rain to Coventry Cathedral, which was mostly destroyed by bombs in World War II (do you see the old and new?). Coventry, England
Photograph 6: For centuries, the gondola was a major means of transportation and the most common watercraft within Venice. In modern times, the boats still do have a role in public transport in the city, serving as traghetti (small ferries) over the Grand Canal operated by two oarsmen. Venice, Italy