Christina School District Assignment Board

Grade Level: 9th

Week of April 27th, 2020

	Day 1	Day 2	Day 3	Day 4	Day 5
ELA	Read '***Sonnet 43'*** by Elizabeth Browning. As you read underline words and phrases that identify the tone and mood of the poem. At the bottom of the page summarize in your own words what the poem is saying.	Re-read the poem, answer the Text Dependent questions 1-4. On the back of the page answer the following in a well-written paragraph. Use evidence from the poem to support your answer. How does the poem's use of repetition contribute to the tone of the poem?	Read '***To My Dear and Loving Husband'*** by Anne Bradstreet. As you read underline words and phrases that identify the tone and theme of the poem. At the bottom of the page summarize in your own words what the poem is saying.	Re-read the poem, answer the Text Dependent questions 1-5. On the back of the page answer the following in a well-written paragraph. Use evidence from the poem to support your answer. How does the rhyme scheme of the poem contribute to the tone?	Review your annotations and responses from both poems. In 1-2 well written paragraphs compare and contrast the two poems. How does the poet's use of imagery and comparisons explain their ideas about love?
Math (IM1/ Algebra 1)	*Solving $ax^2 + c = d$ and $ax^2 + bx = 0$; Modeling with Quadratic Functions* Read pages 95-96. (attached) Use the examples as a guide. Complete p. 97 #1-15. (attached)	Review Concept Summary: Modeling with Quadratic Functions (attached), and complete Modeling with Quadratic Functions Worksheet 1 #1-4. (attached)	Complete Modeling with Quadratic Functions Worksheet 2 #1-7. (attached) Reference Concept Summary if needed.	Complete Modeling with Quadratic Functions Worksheet 3 #1-4. (attached) Reference Concept Summary if needed.	Complete CC Standards Practice Week 4 #1-3. (attached) Reference Concept Summary if needed.
Science	**In honor of Earth Day (4/22), this week will focus on Earth Day related information.**	**The Truth About Plastic:** Read article. Highlight, annotate, and/or underline for	**Can You Do Anything?** Read article. Highlight, annotate, and/or underline for	**A Look at the Non-Lethal Effects of Plastic on Seabirds:** Read article. Highlight, annotate,	**Lethal Effects of Plastic on Seabirds:** Read article. Highlight, annotate,

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	Earth Day 20: Read article. Highlight, annotate, and/or underline for understanding.	understanding.	understanding. On a piece of paper, write down things you already do and/or things you will try to implement to reduce the impact.	and/or underline for understanding.	and/or underline for understanding.
Social Studies	Complete Activity 1 from the document titled, "Accessibility and Emergency Medical Systems in Delaware"	Complete Activity 2, Questions 1-4 from the document titled, "Accessibility and Emergency Medical Systems in Delaware"	Complete Activity 2, Questions 5-8 from the document titled, "Accessibility and Emergency Medical Systems in Delaware"	Complete Activity 2, Questions 9-11 & The Final Question from the document titled, "Accessibility and Emergency Medical Systems in Delaware"	Complete Activity 3, from the document titled, "Accessibility and Emergency Medical Systems in Delaware"

Name: _____ Class: _____

Sonnet 43

By Elizabeth Barrett Browning
1850

Elizabeth Barrett Browning (1806-1861) was an English poet during the Romantic Movement. "Sonnet 43" is one of the most famous poems written in the English language. This poem was originally published in 1850 in a collection called Sonnets from the Portuguese*. "My Little Portuguese" is a nickname Browning used for her husband. As you read, take notes on the tone and mood of this poem.*

How do I love thee? Let me count the ways.
I love thee to the depth and breadth and height
My soul can reach, when feeling out of sight
For the ends of being and ideal grace.
I love thee to the level of every day's
Most quiet need, by sun and candle-light.
I love thee freely, as men strive for right.
I love thee purely, as they turn from praise.
I love thee with the passion put to use
In my old griefs, and with my childhood's faith.
I love thee with a love I seemed to lose
With my lost saints. I love thee with the breath,
Smiles, tears, of all my life; and, if God choose,
I shall but love thee better after death.

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Which of the following statements best describes a central theme of the poem? [RL.2]
    A. Love is unconditional and eternal.
    B. Coming of age is when one is willing to give up everything for another person.
    C. True freedom comes from freedom of the soul.
    D. Love requires sacrifice and is not always constant.

2. PART B: Which of the following quotes best support the answer to Part A? [RL.1]
    A. "How do I love thee? Let me count the ways." (Line 1)
    B. “I love thee to the depth and breadth and height / My soul can reach” (Lines 2-3)
    C. “I love thee freely, as men strive for right. / I love thee purely, as they turn from praise.” (Lines 7-8)
    D. “I love thee with the passion put to use / In my old griefs, and with my childhood’s faith.” (Lines 9-10)

3. Which of the following best summarizes how the speaker quantifies her love? [RL.3]
    A. The speaker quantifies her love in specific numbers and instances.
    B. The speaker refuses to quantify her love, which is uncountable.
    C. The speaker compares her love to great distances, grand ideas, strong emotions, etc.
    D. The speaker talks about her love only in terms of religious ideas, like the soul.

4. What do the lines 13-14 “if God choose, / I shall but love thee better after death” reveal about the narrator’s perspective or beliefs? [RL.6]
    A. The narrator believes she and her loved one shall be together in the afterlife.
    B. The narrator fears she will be separated from her loved one after death.
    C. The narrator believes her love is so strong that it will not fade even in death but grow stronger.
    D. The narrator has faith in a grand design, that God will “choose” what is best for her and her lover.

COMMONLIT

Name: _____ Class: _____

To My Dear and Loving Husband

By Anne Bradstreet
1678

Anne Bradstreet (née Dudley; 1612-1672) was the most famous of early English poets in her time and the first published female writer in the British-North American colonies. Addressed to Bradstreet's husband, the poem depicts the intimacy of a couple deeply in love. As you read, take notes on the structure and themes of the piece—how does the narrator describe their relationship?

If ever two were one, then surely we.
If ever man were loved by wife, then thee;
If ever wife was happy in a man,
Compare with me ye women if you can.
I prize thy love more than whole mines of gold,
Or all the riches that the East[1] doth hold.
My love is such that rivers cannot quench,
Nor ought but love from thee give recompense.[2]
Thy love is such I can no way repay;
The heavens reward thee manifold, I pray.
Then while we live, in love let's so persever,[3]
That when we live no more we may live ever.

1. i.e. the Eastern world, a term which refers to a wide variety of cultures, socio-political systems, economies, and so on belonging to countries east of Europe (though this geographic definition is not exact, for certain places like Australia are considered more part of the Western world). In Bradstreet's time, the "East" was considered a source of riches as well as exoticism.
2. compensate, make amends
3. An alternative spelling of "persevere" that forces an accent over the 2nd "e," so as to maintain the rhyme scheme.

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. Consider the structural similarities of the first 3 lines. What do these similarities contribute to the piece?
    A. The repetition of "If ever… then…" emphasizes the narrator's stern tone, as the speaker tries to get her argument across.
    B. The repetition of "If ever… then…" creates a humorous and light tone, as the narrator flirts with an unknown acquaintance.
    C. The repetition of "If ever… then…" creates a serious and solemn tone, as the narrator confesses to her emotional confusion.
    D. The repetition of "If ever… then…" emphasizes the narrator's message of love as a commitment, similar to the repetition found in wedding vows.

2. PART A: What does the term "recompense" most likely mean, as used in line 8?
    A. to substitute for
    B. to satisfy
    C. to make up for
    D. to swap for

3. PART B: Which line from the poem best supports the answer to Part A?
    A. "I prize thy love more than whole mines of gold"
    B. "My love is such that rivers cannot quench"
    C. "Thy love is such I can no way repay"
    D. "Then while we live, in love let's so persever"

4. Which of the following statements best summarizes the imagery used in the poem?
    A. The poet compares her love to grand parts of nature, such as rivers and gold mines.
    B. The poet compares her love to being of more worth than all of the material wealth found in parts of the world, such as the East and in gold mines.
    C. The poet describes her love as transcending death and bringing their souls together as one.
    D. The poet uses a combination of natural, material, and spiritual imagery when describing her love, making her feelings seem larger than all three.

5. Which of the following best describes the poet's purpose?
    A. To profess the depths of her love to her husband and the unity she feels with him.
    B. To explain how lost she would be without him in her life.
    C. To extol the virtues and joys of love within the institution of marriage.
    D. To describe and praise her husband's many attractive qualities and virtues.

IM1/Algebra 2 – Week of April 27th

Solving $ax^2 + c = d$ and $ax^2 + bx = 0$; Modeling with Quadratic Functions

USING THE ZERO PRODUCT PROPERTY 8.2.2 and 8.2.3

The graph of a quadratic function, a parabola, is a symmetrical curve. Its highest or lowest point is called the vertex. The graph is created by using the equation $y = ax^2 + bx + c$. Students have been graphing parabolas by substituting values for x and solving for y. This can be a tedious process, especially if an appropriate range of x-values is not known. If only a quick sketch of the parabola is needed, one possible method is to find the x-intercepts first, then find the vertex and/or the y-intercept. To find the x-intercepts, substitute 0 for y and solve the quadratic equation, $0 = ax^2 + bx + c$. Students will learn multiple methods to solve quadratic equations in this chapter and in Chapter 9. One method to solve quadratic equations uses the Zero Product Property, that is, solving by factoring. This method uses two ideas:

(1) When the product of two or more numbers is zero, then one of the numbers must be zero.

(2) Some quadratic expressions can be factored into the product of two binomials.

For additional information see the Math Notes box in Lesson 8.2.2.

Example 1

Find the x-intercepts of $y = x^2 + 6x + 8$.

The x-intercepts are located on the graph where $y = 0$, so write the quadratic expression equal to zero, then solve for x. $x^2 + 6x + 8 = 0$

Factor the quadratic expression. $(x + 4)(x + 2) = 0$

Set each factor equal to 0. $(x + 4) = 0$ or $(x + 2) = 0$

Solve each equation for x. $x = -4$ or $x = -2$

The x-intercepts are $(-4, 0)$ and $(-2, 0)$.

You can check your answers by substituting them into the original equation.

$(-4)^2 + 6(-4) + 8 \Rightarrow 16 - 24 + 8 \Rightarrow 0$
$(-2)^2 + 6(-2) + 8 \Rightarrow 4 - 12 + 8 \Rightarrow 0$

Example 2

Solve $2x^2 + 7x - 15 = 0$.

Factor the quadratic expression. $(2x - 3)(x + 5) = 0$

Set each factor equal to 0. $(2x - 3) = 0$ or $(x + 5) = 0$

Solve for each x. $2x = 3$ or $x = -5$

$x = \frac{3}{2}$ or $x = -5$

Example 3

If the quadratic equation does not equal 0, rewrite it algebraically so that it does, then use the Zero Product Property.

Solve $2 = 6x^2 - x$.

Set the equation equal to 0.

$$2 = 6x^2 - x$$
$$0 = 6x^2 - x - 2$$

Factor the quadratic expression.

$$0 = (2x + 1)(3x - 2)$$

Solve each equation for x.

$(2x + 1) = 0$ or $(3x - 2) = 0$

$2x = -1$ or $3x = 2$

$x = -\frac{1}{2}$ $x = \frac{2}{3}$

Example 4

Solve $9x^2 - 6x + 1 = 0$.

Factor the quadratic expression.

$$9x^2 - 6x + 1 = 0$$
$$(3x - 1)(3x - 1) = 0$$

Solve each equation for x. Notice the factors are the same so there will be only one solution.

$(3x - 1) = 0$

$3x = 1$

$x = \frac{1}{3}$

Problems

Solve for x.

1. $x^2 - x - 12 = 0$
2. $3x^2 - 7x - 6 = 0$
3. $x^2 + x - 20 = 0$
4. $3x^2 + 11x + 10 = 0$
5. $x^2 + 5x = -4$
6. $6x - 9 = x^2$
7. $6x^2 + 5x - 4 = 0$
8. $x^2 - 6x + 8 = 0$
9. $6x^2 - x - 15 = 0$
10. $4x^2 + 12x + 9 = 0$
11. $x^2 - 12x = 28$
12. $2x^2 + 8x + 6 = 0$
13. $2 + 9x = 5x^2$
14. $2x^2 - 5x = 3$
15. $x^2 = 45 - 4x$

Concept Summary Assess

CONCEPT SUMMARY Modeling With Quadratic Functions

AREA

When the length and width of rectangle are each variable expressions, a quadratic function can be used to model the rectangle's area.

$A = (3x + 4)(x - 2)$
$= 3x^2 - 2x - 8$

VERTICAL MOTION

The vertical motion model gives the height h, in feet, of an object t seconds after launch.

$$h(t) = -16t^2 + v_0t + h_0$$

v_0 is the initial velocity

h_0 is the initial height

DATA

Quadratic regression finds the best model for a set of quadratic data.

For any model, analyzing the residuals determines how well the model fits the data.

Residual = Data value − Predicted value

Modeling with Quadratic Functions Worksheet 1

1. Match the phrase with the correct term of the vertical motion model.

$$h(t) = -16t^2 + v_0t + h_0$$

initial height gravitational constant initial velocity

2. In parts (a) and (b), determine which values are the initial height and the initial velocity of each scenario.

a. A ball is dropped from the top of 10-foot tall bleachers at an initial velocity of 2 ft/s.

initial height _____ initial velocity _____

b. A ball is kicked with an initial velocity of 9 ft/s from a height of 1 foot.

initial height _____ initial velocity _____

3. Kiyo is designing a rectangular garden with a 2-ft wide path all the way around it. The length of the garden is 3 times as long as the width. Kiyo models the area of his garden and the path with the equation $f(x) = (x + 2)(3x + 2)$. Explain Kiyo's error.

4. Compare two different quadratic models by completing the residuals tables below. Then determine the average residual and answer parts (a)–(c).

$g(x) = -3x^2 + 5x + 8$

x	0	1	2	3	4
Actual Value	4	2	8	7	3
Predicted Value	8	10	6	−4	−20
Residual (Actual – Predicted)	−4	−8			

$h(x) = -2x^2 + 7x + 4$

x	0	1	2	3	4
Actual Value	4	2	8	7	3
Predicted Value	4	9	10	7	0
Residual Actual – Predicted					

a. What is the average residual of $g(x)$?

b. What is the average residual?

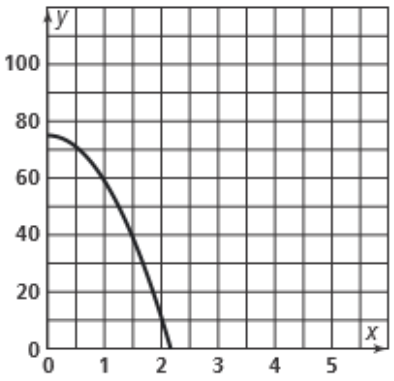
c. Which equation more closely models the actual scenario? Explain.

Modeling with Quadratic Functions Worksheet 2

1. An acrobat is on a platform that is 25 feet in the air. She jumps down at an initial vertical velocity of 4 ft/s. Write a quadratic function to represent the height h of the acrobat t seconds after the jump. If a safety net is placed 5 feet above the ground, how long will it take for her to land safely on the net?

2. A disc is thrown into the air with an upward velocity of 20 ft/s. Its height h in feet after t seconds is given by the function $h = -16t^2 + 20t + 6$. What is the maximum height the disc reaches? How long does it take for the disc to reach the maximum height? How long does it take for the disc to descend to 3 feet above the ground?

3. During a physics experiment, a class drops a golf ball off a bridge toward pavement below. The bridge is 75 ft high. The function $h = -16t^2 + 75$ gives the golf ball's height h in feet above the pavement after t seconds. Use the graph of the function at the right. After how many seconds does the golf ball hit the pavement?



4. The length of a rectangular park is twice its width. The park is surrounded by a 3-foot-wide path. Write a quadratic function to represent the total area of the park and the path.

5. For the vertical motion model $h(t) = -16t^2 + 54t + 3$, identify the maximum height reached by an object and the amount of time the object is in the air before it hits the ground. Round to the nearest tenth.

6. Compare the models $f(x) = -0.5x^2 + 0.5x + 10$ and $g(x) = -0.5x^2 + 0.45x + 10.25$ by evaluating the residuals. Analyze how the points are distributed about the line $y = 0$. Which function better represents the actual data?

$f(x)$					
x	1	2	3	4	5
residual	10	9	8	4	0

$g(x)$					
x	1	2	3	4	5
residual	10.2	9.15	7.1	4.05	0

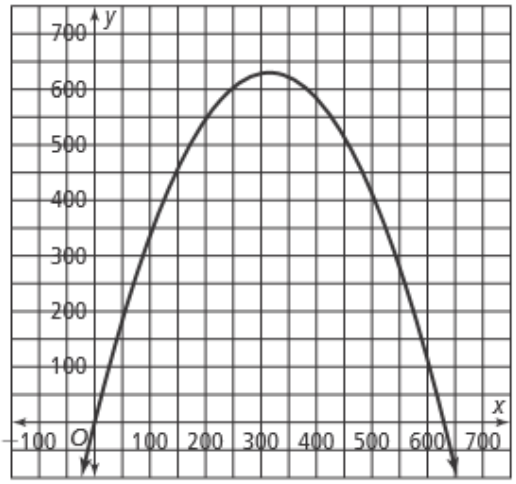
7. An object is thrown off a platform that is 15 ft high with an initial velocity of 8.5 ft/s. What function models the height h of the object after t seconds?

Modeling with Quadratic Functions Worksheet 3

The St. Louis Gateway Arch in St. Louis, Missouri was built as a monument to the vision of Thomas Jefferson and St. Louis' role in the westward expansion of the United States. The arch is shaped similar to a parabola.

1. Let y be the height of the arch, in feet, and let x be the length of the arch from one base to the other, in feet. The quadratic equation that models the shape of the Gateway arch is $y = -0.00635x^2 + 4x$. If you graph the function, what do you notice about the function? How would you interpret that in terms of the construction of the arch?

2. The foundation for each leg of the Gateway Arch is about 60 feet deep. Sketch a graph of the Gateway Arch, indicating the foundations on the graph.



3. If you had to fit a rectangular scaffolding structure inside of the Gateway Arch for repairs at the 175' height of the left side of the arch, show it on the sketch above. At what height would the platform be? What is the closest distance from the scaffolding structure to the base of the arch?

4. There are 142 total sections of stainless steel that make up the exterior of the Gateway Arch. The total cost to build the Gateway Arch was $13,420,168. If a 4-foot section of stainless steel at the 175' height had to be replaced, what do you estimate the cost to be?

CC Standards Practice Week 4

Selected Response

1. Choose all the solutions of $x^2 - 10 = -3x$.

Ⓐ $x = -5$

Ⓑ $x = -2$

Ⓒ $x = 5$

Ⓓ $x = 2$

Constructed Response

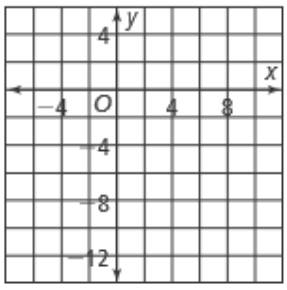
2. Solve $6x^2 + 4 = -11x$. Show your work.

Extended Response

3. a. Solve the equation $x^2 - 5x = 6$.

b. Explain how the solutions you found in part (a) help you to graph $y = x^2 - 5x - 6$.

c. Sketch a graph of the function.



EARTH DAY 20

Earth Day was founded in 1970 as a day of education about environmental issues, and Earth Day 20 occurs on Wednesday, April 22—the holiday's 50th anniversary. The holiday is now a global celebration that's sometimes extended into Earth Week, a full seven days of events focused on green living. The brainchild of Senator Gaylord Nelson and inspired by the protests of the 1960s, Earth Day began as a "national teach-in on the environment" and was held on April 22 to maximize the number of students that could be reached on university campuses. By raising public awareness of pollution, Nelson hoped to bring environmental causes into the national spotlight.

Earth Day History

By the early 1960s, Americans were becoming aware of the effects of pollution on the environment. Rachel Carson's 1962 bestseller *Silent Spring* raised the specter of the dangerous effects of pesticides on the American countryside. Later in the decade, a 1969 fire on Cleveland's Cuyahoga River shed light on the problem of chemical waste disposal. Until that time, protecting the planet's natural resources was not part of the national political agenda, and the number of activists devoted to large-scale issues such as industrial pollution was minimal. Factories pumped pollutants into the air, lakes and rivers with few legal consequences. Big, gas-guzzling cars were considered a sign of prosperity. Only a small portion of the American population was familiar with–let alone practiced–recycling.

Did you know? A highlight of the United Nations' Earth Day celebration in New York City is the ringing of the Peace Bell, a gift from Japan, at the exact moment of the vernal equinox.

Who Started Earth Day?
Elected to the U.S. Senate in 1962, Senator Gaylord Nelson, a Democrat from Wisconsin, was determined to convince the federal government that the planet was at risk. In 1969, Nelson, considered one of the leaders of the modern environmental movement, developed the idea for Earth Day after being inspired by the anti-Vietnam War "teach-ins" that were taking place on college campuses around the United States. According to Nelson, he envisioned a large-scale, grassroots environmental demonstration "to shake up the political establishment and force this issue onto the national agenda."

Nelson announced the Earth Day concept at a conference in Seattle in the fall of 1969 and invited the entire nation to get involved. He later recalled:

"The wire services carried the story from coast to coast. The response was electric. It took off like gangbusters. Telegrams, letters and telephone inquiries poured in from all across the country. The American people finally had a forum to express its concern about what was happening to the land, rivers, lakes and air—and they did so with spectacular exuberance."
Denis Hayes, a young activist who had served as student president at Stanford University, was selected as Earth Day's national coordinator, and he worked with an army of student volunteers and several staff members from Nelson's Senate office to organize the project. According to Nelson, "Earth Day worked because of the spontaneous response at the grassroots level. We had neither the time nor resources to organize 20 million demonstrators and the thousands of schools and local communities that participated. That was the remarkable thing about Earth Day. It organized itself."

The First Earth Day: April 22, 1970
On the first Earth Day on April 22, 1970, rallies were held in Philadelphia, Chicago, Los Angeles and most other American cities, according to the Environmental Protection Agency. In New York City, Mayor John Lindsay closed off a portion of Fifth Avenue to traffic for several hours and spoke at a rally in Union Square with actors Paul Newman and Ali McGraw. In Washington, D.C., thousands of people listened to speeches and performances by singer Pete Seeger and others, and Congress went into recess so its members could speak to their constituents at Earth Day events.

The first Earth Day was effective at raising awareness about environmental issues and transforming public attitudes. According to the Environmental Protection Agency, "Public opinion polls indicate that a permanent change in national priorities followed Earth Day 1970. When polled in May 1971, 25 percent of the U.S. public declared protecting the environment to be an important goal, a 2,500 percent increase over 1969." Earth Day kicked off the "Environmental decade with a bang," as Senator Nelson later put it. During the 1970s, a number of important pieces of environmental legislation were passed, among them the Clean Air Act, the Water Quality Improvement Act, the Endangered Species Act, the Toxic Substances Control Act and the Surface Mining Control and Reclamation Act. Another key development was the establishment in December 1970 of the Environmental Protection Agency, which was tasked with protecting human health and safeguarding the natural environment—air, water and land.

What Do You Do For Earth Day?
Since 1970, Earth Day celebrations have grown. In 1990, Earth Day went global, with 200 million people in over 140 nations participating, according to the Earth Day Network (EDN), a nonprofit organization that coordinates Earth Day activities. In 2000, Earth Day focused on clean energy and involved hundreds of millions of people in 184 countries and 5,000 environmental groups, according to EDN. Activities ranged from a traveling, talking drum chain in Gabon, Africa, to a gathering of hundreds of thousands of people at the National Mall in Washington, D.C. Today, the Earth Day Network collaborates with more than 17,000 partners and organizations in 174 countries. According to EDN, more than 1 billion people are involved in Earth Day activities, making it "the largest secular civic event in the world."

The theme of Earth Day 2020 is "climate action." It will be celebrated with The Great Global Cleanup, a day dedicated to removing trash from green spaces and urban centers alike. EarthDay.org hopes will be the largest volunteer event in history.

THE TRUTH ABOUT PLASTIC:

If you are reading this online, it is likely that plastic is at your fingertips – on your keyboard. Your monitor will also be framed by plastic, and your mouse will likely contain plastic as well. And that is literally only what is at your fingertips.

On May 11th 2017, Boyan Slat, Founder and CEO of The Ocean Cleanup, the Dutch foundation developing advanced technologies to rid the oceans of plastic, announced a design breakthrough allowing for the cleanup of half the Great Pacific Garbage Patch in just 5 years.

The question then becomes what happens to the plastic that we throw away. The trays in which your meat comes, the plastic bottles of pop you have emptied, the packaging materials for any item you use. Where do these all go? There is no straightforward answer to this. Some are sent for recycling overseas, which leads to some questioning how effective recycling is, as the very process of shipping it requires plastic and costs a tremendous amount of resources. A great deal of the plastic we discard ends up on landfill sites. Unfortunately, lots of it becomes plastic pollution. Over time, this ends up in our waterways, where it affects all of nature.

Even if you are someone who believes in recycling and will do everything you can to properly dispose of the plastic you use, it is still not possible to escape the pollution. Did you know, for instance, that your toothpaste and facial scrubs contain thousands of tiny plastic beads, and that these all end up in our waterways? Look no further than the Great Lakes in our own country, the biggest group of freshwater bodies on the planet, where various pieces of plastic are now found. And perhaps even more worrying is the Great Pacific Garbage Patch.

The Great Pacific Garbage Patch

Somewhere in the middle of the Pacific Ocean, at a spot where there is almost no wind, lies a new continent. Estimated to be twice the size of our country, this continent is a huge swirling mass of plastic waste. Nothing lives there anymore, except plankton. But for every pound of plankton, there is at least six pounds of non-biodegradable plastic. This patch is perhaps the best representation of what we, as humans, are doing to our planet.

Plastic Pollution

Plastic pollution is frightening. Some people aren't frightened by the Great Pacific Garbage Patch, because they can't see it. But what you can't see will still affect you. The chemicals found in plastic, and particularly phthalates and BPA, have been found everywhere. It is in our breast milk, our saliva and our urine. These chemicals mess up many parts of our bodies and scientists have only just started to study just how damaging it is to our health. Judging from animal studies, these chemicals have the potential to be lethal.

CAN YOU DO ANYTHING?:

The million dollar question is what can be done. Unfortunately, you cannot escape plastic, because it really is all around us. You can, however, boycott plastic that contains phthalates and BPA (it will be labeled with the number 3 or the number 7). You should also stop heating plastic in microwaves, as this releases a number of toxic gases. Of course, recycling is hugely important. Some truly hardcore people have taken to trying to ban plastic altogether, even making their own toothpaste, but that is a life that is not for most of us. But by recycling properly, you are making a huge difference already.

There are many initiatives around the world that are looking at strategies to reduce plastic consumption. Public education and information, and making recycling more accessible and transparent, are two very important things. Banning plastic bags, particularly single-use ones, is something many countries have now committed to. Others also charge for thicker plastic bags. Regulations do work. In countries like Germany, for instance, 60% of all plastic is now recycled as a direct result of public education campaigns to which retailers have also signed up. Everybody has to accept their personal responsibility when it comes to reducing levels of plastic. You simply cannot wait for someone else to start, as the change must start with you, and it has to start now.

Author: ReuseThisBag.com

Written and edited by ReusethisBag.com (RTB). RTB is one of the original U.S grown suppliers of eco-friendly wholesale reusable and recycled promotional product bags and totes available in custom sizes.

A LOOK AT THE NON-LETHAL EFFECTS OF PLASTIC ON SEABIRDS:

Environmental plastic debris pollution is a rapidly expanding and significant threat to biodiversity because of its durability, abundance and persistence. Present knowledge of the adverse effects of plastic on wildlife is greatly based on the readily observed consequences like starvation and entanglement. Many debris interactions, however, lead to poorly documented and less visible sublethal effects, and like consequences, plastic's real impact is underestimated.

Globally, seabirds ingest plastic and other marine debris more often than other animal species. Out of 140 examined seabird species, 82 have been found to have ingested plastic and other types of debris.

Why Do Seabirds Eat Plastic?

There are several reasons seabirds ingest plastic:

- **Plastic looks like food:** The small plastic particles that float around the ocean are often mistaken for prey
- **Plastic smells like food:** The scent of krill eating algae that coats the plastic debris smells similar to natural smells many seabirds follow when they hunt for food
- **Plastic floats:** Because of its lightweight nature, plastic floats. Albatross species, especially, skim low over the waters and mistakenly consume plastic

Although this is a worldwide problem, species close to home seems to suffer the worst of the effects. For instance, the flesh-footed shearwater, which commonly visits mainland Australia waters and breeds on Lord Howe Island, ingests more plastic than other marine creatures.

Winds and currents carry the plastic to these remote areas, where it's often carried over thousands of kilometers from where it entered into the ocean originally. This means what was once safe island breeding colonies now have become flooded with deadly waste.

Non-Lethal Effects of Plastic on Seabirds

One study observes the non-lethal effects plastic ingestion has on seabirds. Dr. Jennifer Lavers, from the Institute for Marine and Antarctic Studies (IMAS) led the study and journal Environmental Science & Technology published the study. Dr. Lavers found plastic ingestion could have a substantial adverse impact.

It's well-known wildlife and plastic pollution make a disastrous combination, but present knowledge today of the impact is typically limited to what can be observed; tragic pictures of entanglement and bellies emptied of plastic pieces. But, as researchers from IMAS explain, debris interactions lead to poorly documented and less visible sublethal effects, so nobody really knows the true impact plastic has on wildlife.

The researchers at IMAS teamed up with scientists from UK's Natural History Museum and the Lord Howe Island Museum, to analyze plastic and blood samples gathered on Lord Howe Island from flesh-footed shearwaters.

The IMAS made the decision to study how plastic ingestion has been harming the seabirds that were surviving.

There's a decline in flesh-footed shearwater populations across the Western Australia's south coast and the southwest Pacific Ocean, according to Dr. Lavers. Plastic ingestion has been blamed in the decline, however, how it affects shearwaters is still not clear and poorly understood.

The study found the seabirds that ingested plastic had declined:

- Body mass
- Blood calcium levels
- Bill and head length
- Wing length

Plastic's presence also had an adverse impact on the seabirds' kidney function, which is causing higher concentrations of uric acid, as well as a negative impact on their enzymes and cholesterol.

The study found plastic's presence was enough to cause adverse consequences, no matter how much. Data didn't show a substantial relationship between the health of individuals and the volume of ingested plastic, which suggests any plastic ingestion is enough to have an effect.

Until recently, there's been minimal information on the seabirds' blood composition. Many of these seabirds have been named a "threatened species."

Obtaining an understanding of how each seabird is affected is also complicated even further by the fact they don't spend a whole lot of time at breeding colonies or on land and most mortalities occur at sea, which leaves the reasons for death, frequently unknown. The complicated range of problems the seabirds face — from climate change and habitat loss to marine pollution and fishing — make it important to obtain a better understanding of the effect of particular challenges like plastic debris.

LETHAL EFFECTS OF PLASTIC ON SEABIRDS:

Along with “non-lethal” effects of plastic on seabirds, there are sadly “lethal” effects as well. It’s presently estimated that one million seabirds are dying each year as a result of plastic. And, when you consider how rapidly this issue is growing, this alarming statistic is even more concerning. In 1960, fewer than 5% of seabirds had plastic in their bellies and this number has actually increased in 1980 to 80%.

Based on contemporary studies and this research, by 2050, it’s expected that 99% of all species of seabirds will be ingesting plastic. This, combined with entanglement, is one of the top causes of death among birds that is related to plastic.

What Happens to Seabirds That Ingest Plastic?

The effect of plastic ingestion on seabirds depends on what they consume. In some cases, birds experience a quick death because of sharp plastics that puncture their internal organs. Others might starve to death because the plastic makes them feel full, and they don’t receive any nutritional benefit.

Growing evidence also shows birds have a higher risk of toxic effects of chemically-coated plastics due to how much they’re eating.

Sadly, adult birds that hunt and return to their nests with plastic they’ve mistaken as food end up feeding it to their babies. The chicks’ smaller bellies have an even harder time dealing with plastic’s effects, and many die before they reach adulthood.

Plastic debris has been found lining the nests of birds on remote islands and the plastic chokes the bellies of seabirds that fish thousands of miles from land in the middle of the Pacific. Some items that make the worst offenders are items individuals use each day like:

- Plastic caps and bottles
- Plastic stir sticks
- Styrofoam coffee cups
- Straws

And plastic items aren’t the only tangible cause of issues. When plastic starts breaking down in the oceans, it releases hazardous chemicals the seabirds are attracted to. Also, damaging chemicals are released by degrading plastics. These chemicals include dioxins and polychlorinated biphenyls (PCBs). Many plastics individuals use in everyday items like water bottles and shopping bags absorb great amounts of chemicals. When they degrade into small pieces, they frequently become nearly invisible, but remain toxic to the birds and other marine life that unknowingly ingest them.

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Written and edited by ReusethisBag.com (RTB). RTB is one of the original U.S grown suppliers of eco-friendly wholesale reusable and recycled promotional product bags and totes available in custom sizes.

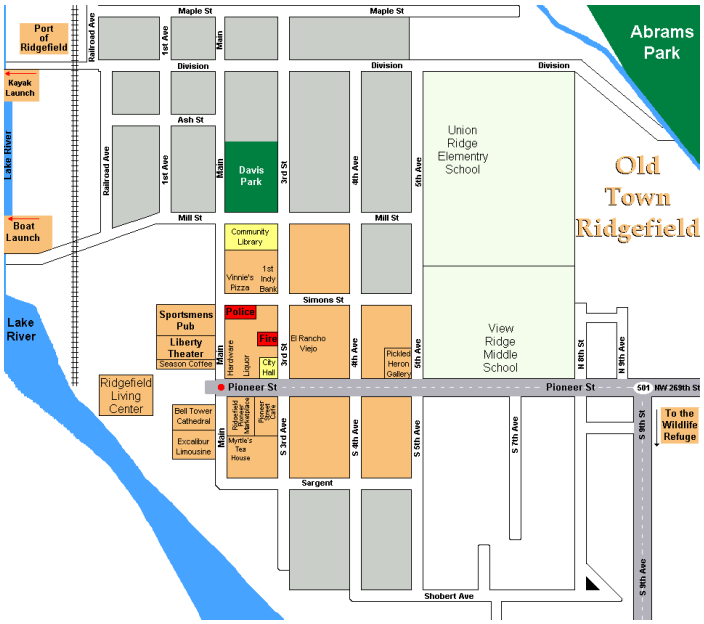
Accessibility and Emergency Medical Systems in Delaware

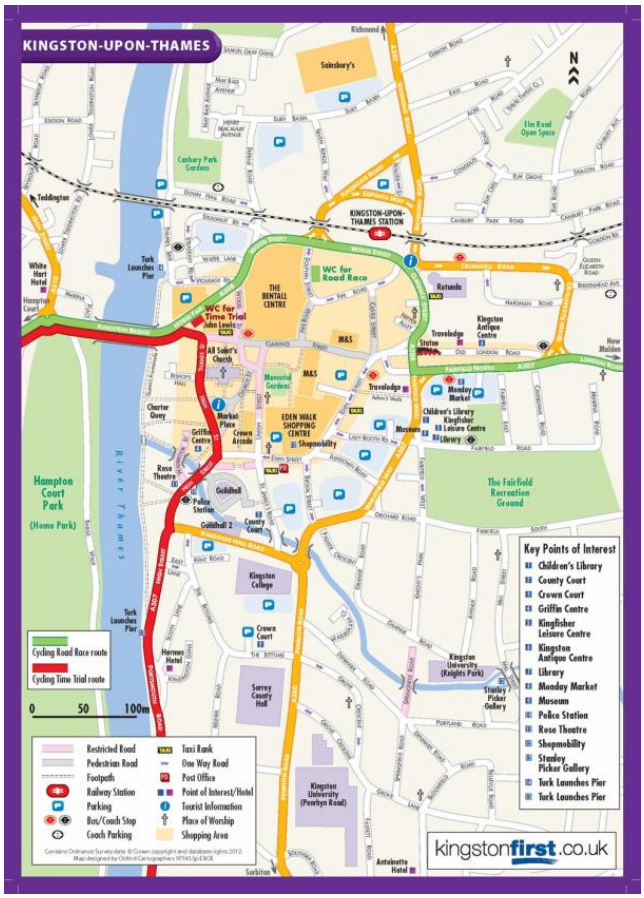
Benchmark Standard	**Geography 1a**: Students will identify geographic patterns which emerge when collected data is mapped, and analyze mapped patterns through the application of accessibility. **Geography 1b**: Students will apply the analysis of mapped patterns to the solution of problems.
Grade	9
Vocabulary / Key Concepts	Accessibility – how easily one place can be reached from another Distribution – the way things are divided or spread out Absolute location Relative location

~This lesson is from the DRC Unit "Accessibility and Emergency Medical Systems in Delaware" modified by CSD for use at home~

ACTIVITY 1:

Observe the two towns, then answer the questions below on a separate sheet of paper.





1. Which town would be easier to get around and why? Explain.
2. Why might we consider Ridgefield to have good accessibility and Kingston-Upon Thames to have poor accessibility? Explain.

Accessibility is how easily one place can be reached from another. Humans try to take the path of least resistance when going from one place to another because of time, economic choices, emergency situations. Can you think of any other reasons?

ACTIVITY 2:

Read the student reading "Analyzing Delaware's Emergency Medical Services" and use the appropriate maps to answer the questions in the following pages on a separate sheet of paper.

ANALYZING DELAWARE'S EMERGENCY MEDICAL SERVICES

STUDENT READING: Adapted from DRC unit created by Peter Rees and Maggie Legates
(Follow the click instructions in the text below for more information; internet sites are not part of the reading and are for additional background only).

What is an Emergency Medical Service (EMS)?

An EMS provides emergency services to people who suddenly experience severe medical problems (illness or accident) and require immediate attention. Delivery of these services is usually by ambulance, occasionally by helicopter, and is activated by calling 911. Ambulance services that are contracted to carry patients from one place to another where an emergency is not involved are not considered to be part of an EMS system.

There are two types of EMS services: Basic Life Support (BLS) and Advanced Life Support (ALS). BLS is staffed by emergency medical technicians (EMTs) and their main task is to move the patient to a treatment center – usually a hospital – as quickly and safely as possible. EMTs may not perform any invasive procedures, such as giving medications or establishing an intravenous line. To become an EMT, a person has to take a two-semester course (a minimum of 110 hours).

ALS is staffed by paramedics, who, unlike EMTs, are able to administer drugs and other invasive procedures. Paramedics must understand the nature of each procedure and know when it must be administered and when to hold off. In patients with apparent heart problems, they need to know how and whether to establish airway paths and administer anti-clotting drugs. Paramedics may decide to treat a patient on site at an office, residence or accident-scene before transporting the patient to a hospital if necessary. It has been said that in the first ten minutes of care, there is very little difference between what a paramedic can do and what a doctor can do. Paramedics require a two-year training program (between 1400 and 2000 hours of study) equivalent to an Associate Degree.

Some EMS systems have only BLS staffing, others have ALS. The difference is whether a paramedic is involved.

What is the process for obtaining an EMS?

EMS service is requested by calling 911. The 911 call center operator then evaluates the need, determines the location of the patient and the closest available ambulance, and dispatches the ambulance to the patient site. Examine the flow diagram below and note the different time periods involved.

What are Delaware's response time goals?

In 1999, Delaware passed House Bill 332 that established response time goals for the state's EMS system (For more information, see http://www.dhss.delaware.gov/dhss/dph/ems/files/demsocreport2006.txt, Appendix A.) Each emergency call is first classified into five levels, from Alpha (least serious) to Bravo, Charlie, Delta and Echo (most serious). The bill established the following response time goals:

Response level	**BLS**		**ALS**	
	urban	**rural**	**urban**	**rural**
Alpha	90% of calls in 18 mins	70% of calls in 18 mins		
Bravo	90% of calls in 12 mins	70% of calls in 12 mins		
Charlie	90% of calls in 12 mins	70% of calls in 12 mins	90% in 8 mins	
Delta	90% of calls in 10 mins	70% of calls in 10 mins	90% in 8 mins	

National response times

There is much debate about the choice of a particular response time. Although 8 minutes is most frequently mentioned as the maximum time for responding to severe cases, a recent study of over 9,500 patients brought to hospitals indicated that "a response time within 8 minutes was not associated with improved survival." However, there was an improved survival rate when the response time was within 4 minutes for patients with a medium to high risk of death. (See www.defrance.org/artman/publish/article_1395.shtml). In traffic accidents, severely injured victims experience quickly deteriorating health that threatens life within approximately one-hour without treatment. It is for this reason that many more traffic deaths occur in rural areas (58%) than in urban areas (42%) because, although two-thirds of accidents are in urban areas, most victims reach hospital and treatment within one-half hour vs. one hour for rural cases (see www.arl.psu.edu/capabilities/mm_soa_medical.html.

BLS vs. ALS

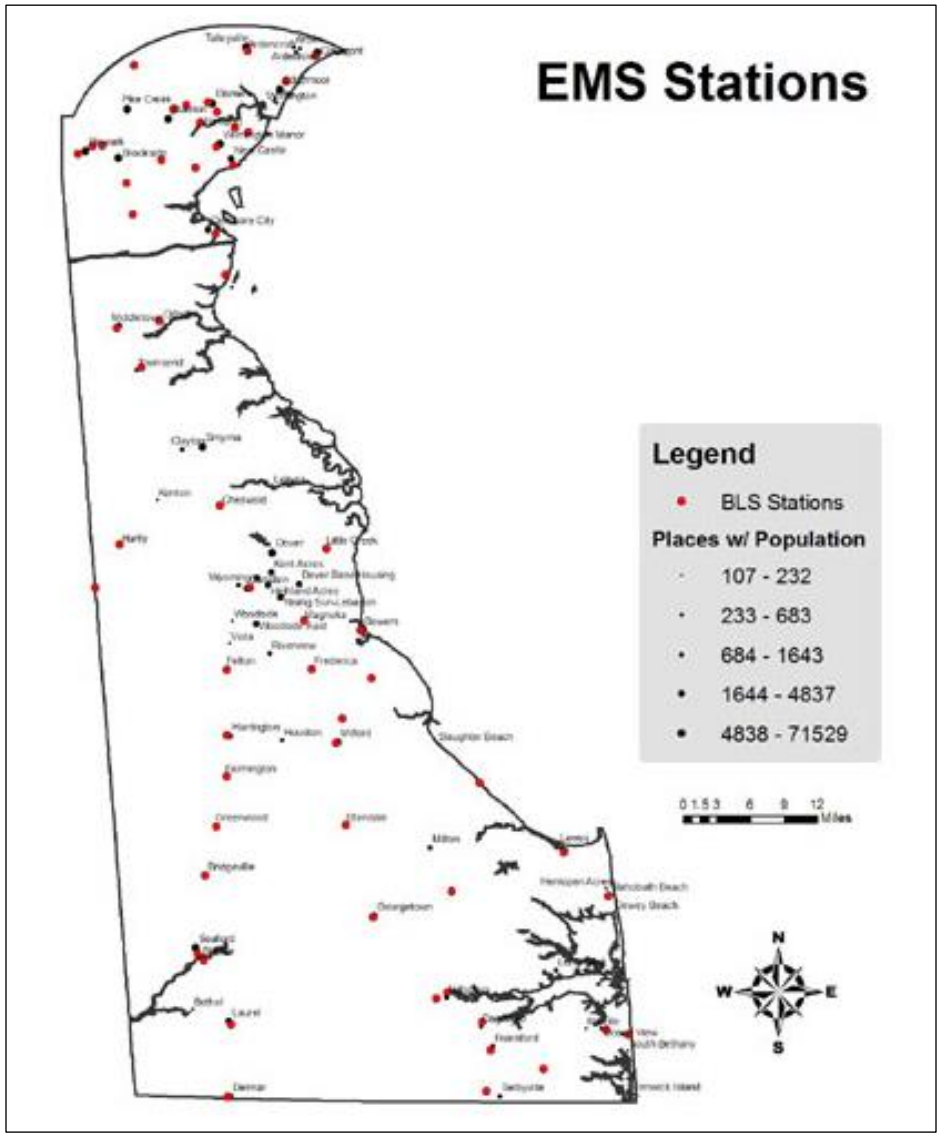
This is also a somewhat controversial issue. Is it better to send victims directly to the hospital (BLS, "the scoop and run" approach) or to treat patients at the scene (ALS). A recent review of 174 research articles on the topic concluded that for trauma patients, the chances of dying were 2.59 times higher for those receiving ALS (on-site) treatment than being taken as quickly as possible to hospital before treatment began (the BLS approach).

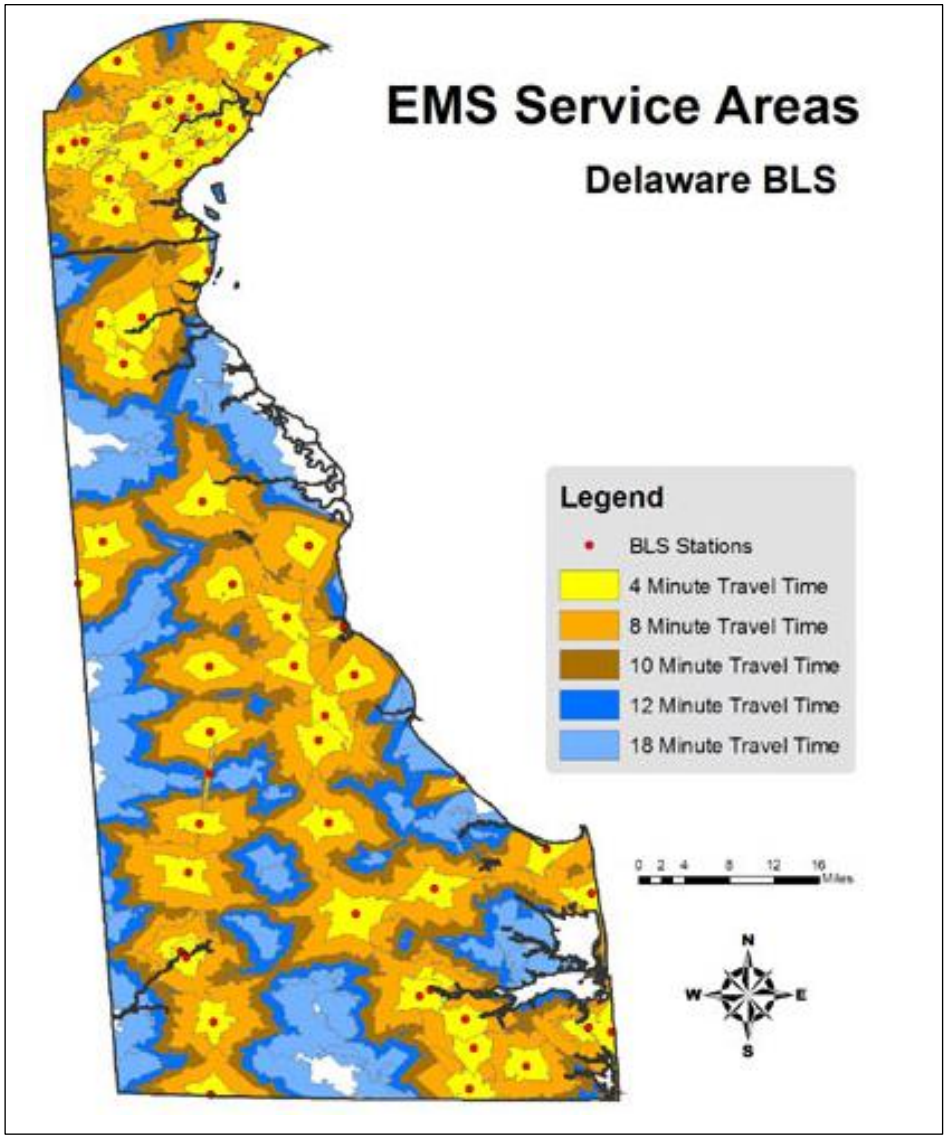
While analyzing the BLS Station map:

1. Describe the distribution of **BLS** stations.
2. What areas do you perceive to have low **accessibility** to **BLS** services?

While using the BLS Service map:

3. Identify the areas you now perceive to have low **accessibility** to BLS services.
4. Explain how your assessment of **accessibility** to **BLS** services changed?



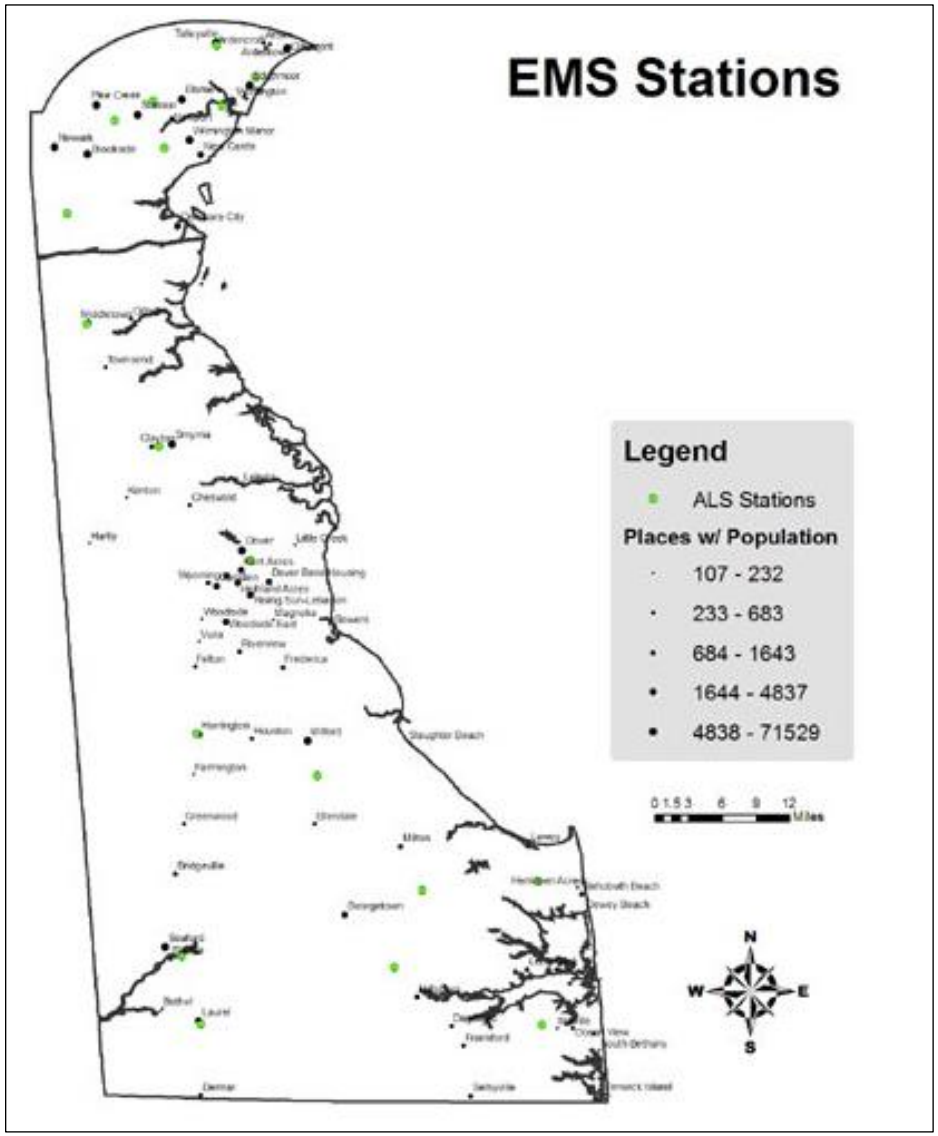


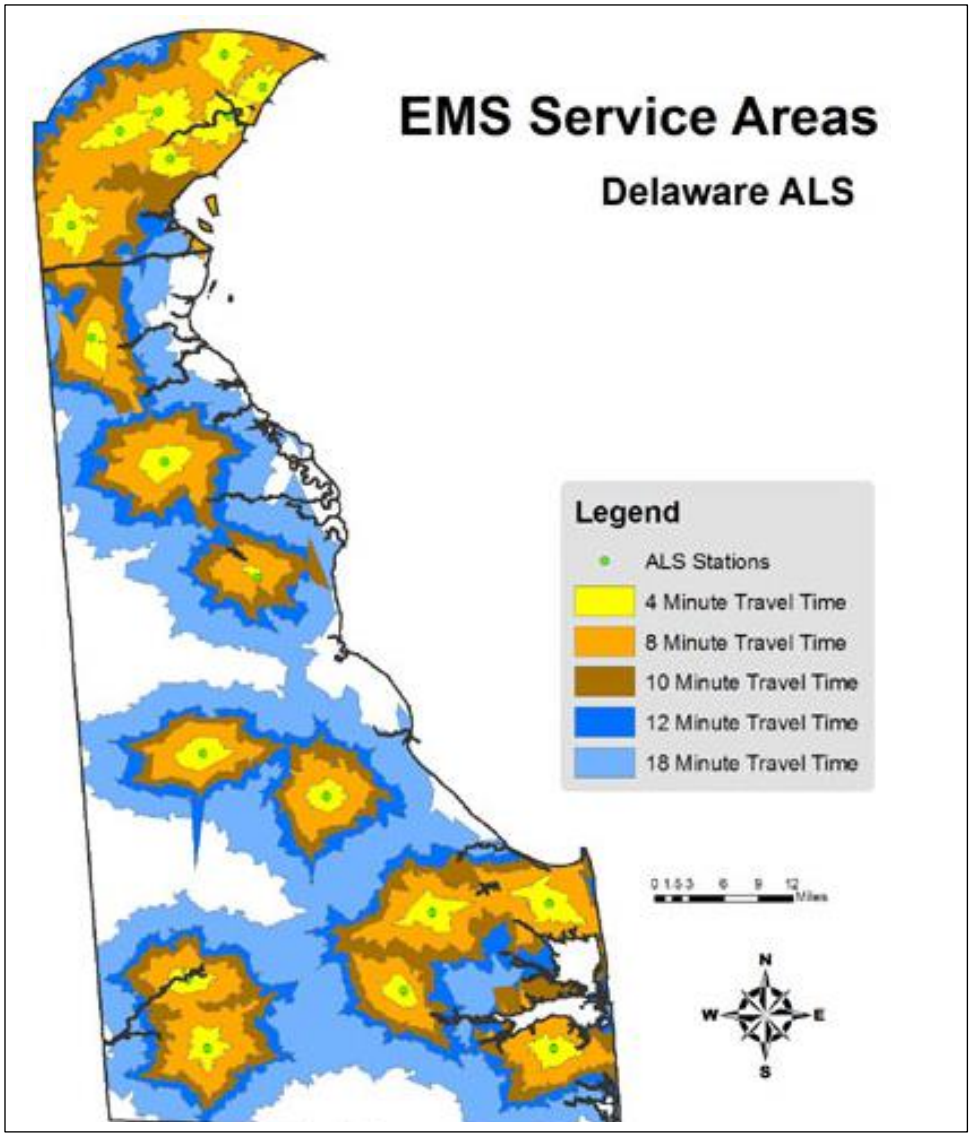
While using the ALS Station map:

5. Describe the distribution of **ALS** stations.
6. Identify the areas you perceive to have low **accessibility** to **ALS** services?

Use the ALS Service Map:

7. Identify the areas you now perceive to have low **accessibility** to **ALS** services?
8. Explain how your assessment of **accessibility** to **ALS** services changed?



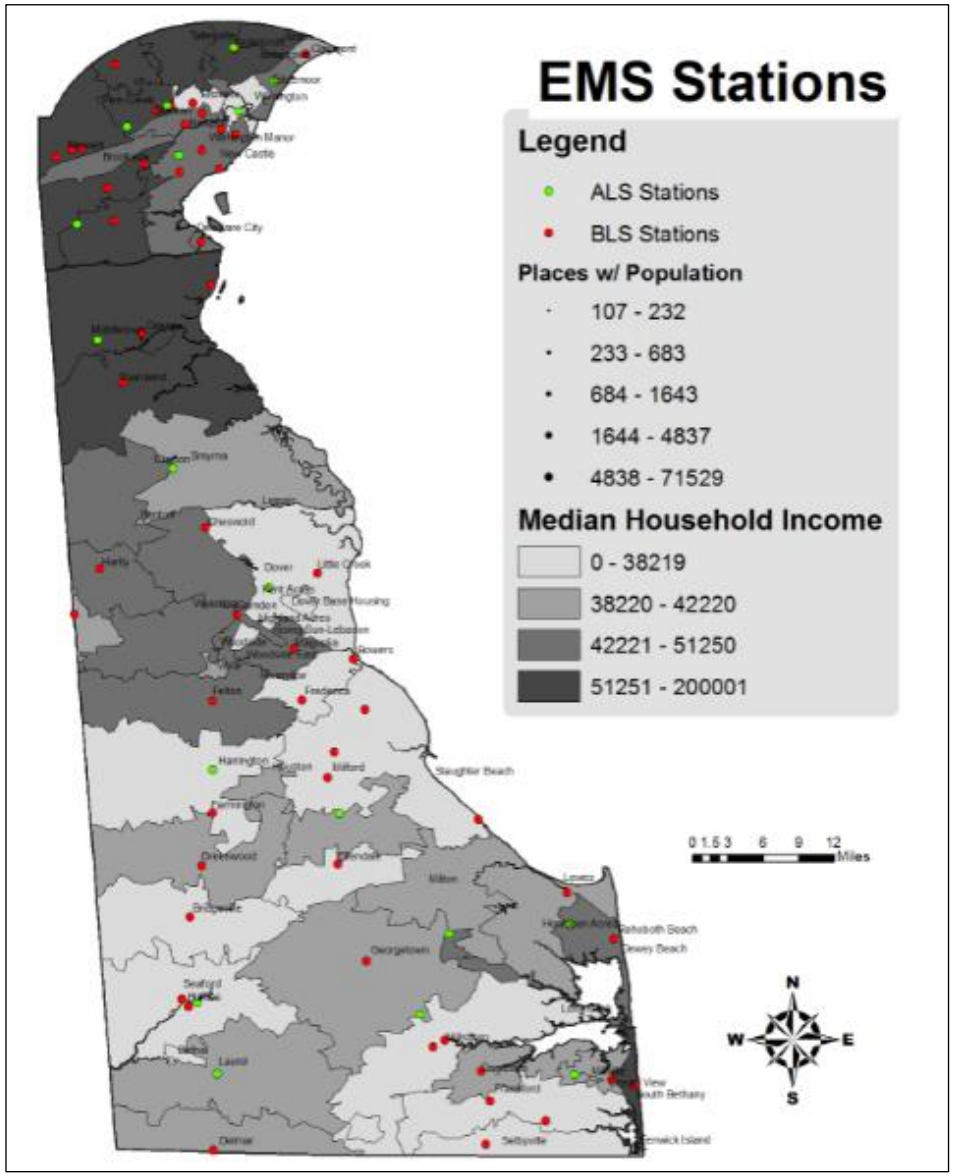


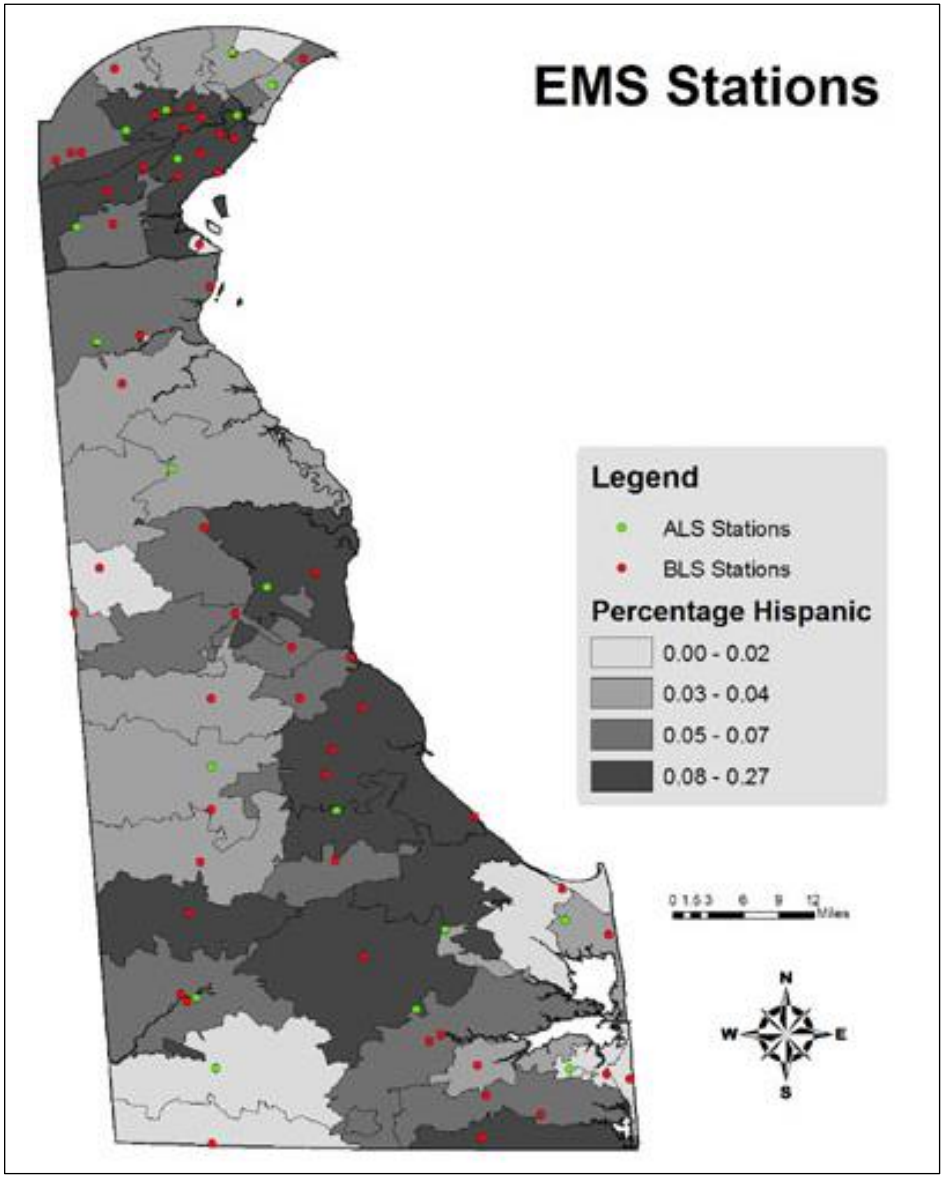
Use the Income Map:

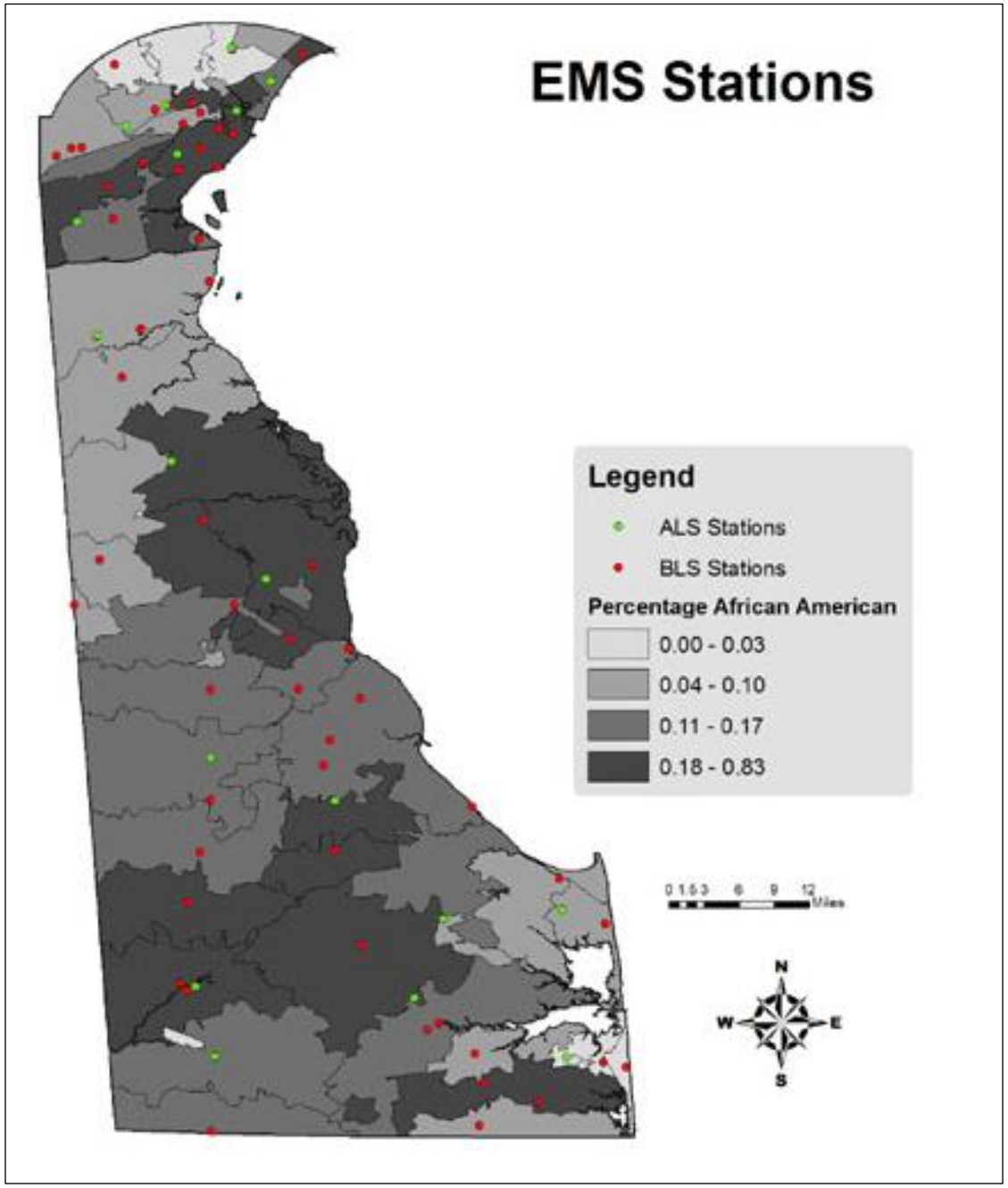
9. Might income affect **accessibility** to **EMS** services? Explain.

Use the Hispanic Distribution Map.

10. Explain how accessible **EMS** services are to Hispanic populations?







Use the African American Distribution Map:

11. Explain whether **EMS** services are or are not **accessible** to African-American populations?

The Final Question:

Where would you recommend placing new BLS and ALS stations in Delaware so that all parts of the state would have accessibility to emergency services as prescribed by State guidelines. Explain.

ACTIVITY 3:

ASSESSMENT REPORT:

Playing the role of consultant, you are to prepare a report to the State Assembly committee o Health and Human development in order for them to decide on funding to open a new EMS station. Data for the report will be drawn from maps provided in the section for student research. Your report should address specific information outlined in the prompt as well as supporting evidence extracted from your data collection. Any information from the readings or reports used in the investigation should b used and cited accordingly.

1. Based on the state's own standards of service, are there any areas in Delaware where the population is inadequately served? Explain your answer.
2. Suggest a location for one new BLS and one new ALS station. Both placements must adjust for a gap in accessibility of EMS resources. Justify your answer with evidence from the data collected.