STEM Interdisciplinary Unit
Theme: September 11th, 2001

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General Info:
We will be working on modifications for 8th grade middle school language arts, math, science and Spanish units. The focus is to make this a STEM interdisciplinary unit with the math and science teacher focusing on their respective disciplines, while the language arts team focuses on technology and the Spanish teacher makes connections to both technology and math. Teachers will modify to three different levels of ELL students. All teachers have agreed upon a theme for the beginning of the year, which is September 11th, while still teaching the curriculum for their respective discipline for the month of September as set forth by the district.

- **Language Arts:** focus on drawing evidence from informational pieces to support, reflect, and interpret relationships between ideas and information. The language arts team has chosen to accomplish this through the use of photographs, online journals, interviews and news broadcasts.
- **Math:** focus on operations with integers, absolute value, comparing and ordering integers and evaluating expressions by substitution of integers. The math teacher has developed lessons for each of these aspects through discussions, modeling, investigation activities and group work while creating a culminating activity that ties into the 9/11 theme.
- **Science:** focus on making students aware of three different types of bridges and the forces that act on them. The 9/11 theme will be incorporated into the unit through observing the different types of bridges in New York and what their functions on that day were.
- **Spanish:** focus on students presenting information, concepts, and ideas to an audience of listeners or readers on a variety of topics, as well as students reinforcing and furthering their knowledge of other disciplines through the foreign language. The Spanish teacher has chosen to accomplish this by having students interpret US foreign policy and war on terrorism during the presidency of Bill Clinton and George W. Bush. Students will have to analyze and synthesize how the 9/11 events impacted the United States and the world through projects, group work and presentations.
Our Rationale

New Haven School District is placing great emphasis on the use of the Common Core State Standards as a broad-base foundation for higher order thinking instruction within the classroom. It is also encouraging interdisciplinary teamwork as a means of instilling and improving application, analysis, evaluation, and creation skills among our students. These standards of effective teaching are nothing new in the world of teaching but highlighting and advancing them front and center as we create curriculum will go a long way in helping our students understand that it is not enough to have a general knowledge of certain concepts but they must also be able to use the knowledge they have just acquired in applications of analysis, evaluation, and innovative design. Unbiased subject area content must be carefully selected and examined. Technology will help in this endeavor. With these concepts and strategies in mind, our team has chosen the idea of the 9/11 attack on New York City as a jumping off point for our individual September units in an effort to immediately engage our students in a creative experience as school reconvenes. Each teacher in our team will have both content objectives and language objectives as we craft our introductory lessons for September. This unit is geared to be an interdisciplinary STEM unit with the mathematics and science teachers focusing on their respective disciplines while the language arts team and foreign language teacher focus on the use of technology will keeping with the 9/11 theme.

Language Arts - A Consideration

An essential part of Language Arts is the “art” of writing but it is a rare day when my students see English as an art form. Yet almost all students enjoy art, where paints and colored pencils rule the day. They instinctively understand the concepts of shape, line, direction, size, texture, color, and value when observing a drawing, painting, or photograph. Assessing this understanding is as simple as asking basic questions about any piece. But these elements alone do not get at the essence or the meaning of art. My students will need to consider the answer to the question, “What is art?” Art seems to escape a definitive definition. One definition of art is that it is the process of deliberately arranging elements in a composition using specific principles that appeal to the senses or emotions and even explain the human condition. My students will have to grapple with the definition and come to their own conclusions about the art based on their findings - all this through the development of a vocabulary using various parts of speech. Art, in this unit, is actually photography. Their definition of art will, therefore, need expansion to include photography and, dare I say it, writing.

Considering the elements of shape, line, direction, size, texture, color, and value are fairly easy forms to identify within a composition. Content is an area in which uncertainty arises: What was the artist’s intent when he painted, when he took the photograph? How do we know? Was there any influence on his decision? Did he succeed? How do we react when we encounter the piece? The responses to these questions and many more are why the answer to the query “What is art?” is so elusive. The heart of art depends on the word feeling. An art piece becomes seductive and captivating when the feeling transmitted by the artist is clear, individual, and sincere.
The more the viewer is affected by these three conditions of a piece, as expressed by the artist, the higher the quality of the piece in terms of the content. This, then, is the basis for the following lessons.

Content Objectives:

**W 2d- Use of precise language and domain specific vocabulary to explain a topic** - Comprehension and understanding of the basic 5 W’s present in presented photographs.

**W 4.9 – Draw evidence from information pieces to support, reflect, and interpret** - Analyzing, interpreting, evaluating, and creating meaning in presented photographs.

3. **W 6 – Use technology to produce and publish writing and present relationships between ideas and information** - Incorporation of technology as a means of recording meaning

Language Objectives:

W 5 With guidance and support from peers and adults develop and strengthen writing - Development of parts of speech reflected within presented photographs.

S& L 1, 2 Engage in effective collaborative discussions, building on other’s ideas as well as analyzing new information expressed by others to qualify and evaluate ideas.

Development of different situational and occupational roles as a result of examining and interpreting meaning in presented photographs.

Materials:

- Overhead projector
- Laptop computers
- Individual graphic organizers included in pre-made journals set up in their individual word document.
- Survivor memoirs found at: [http://www.11-sept.org/survivors.html](http://www.11-sept.org/survivors.html)
- Thesauruses and dictionaries
- Video camera, TV, DVD player
- Art supplies including large construction paper of various colors, scissors, glue sticks, colored pencils,
- Sentence frames posters
Classroom Activities: 9/11 Images

Set Up: Initially, an on-line word document journal will be established by every student after receiving an attachment that includes all worksheets and handouts. Teams will be established to include preproduction, developing, as well as nearly fluent students with close attention on teaming up students who are computer knowledgeable with students who are not. These teams will work closely together throughout this unit.

* All preproduction instruction on worksheets 1-5 will take place outside of the regular education classroom in reading intervention. When completed, students will then proceed in the regular education classroom on the developing level with their team.

Students will bring all materials from reading intervention worksheet activities to regular education classroom.

Students should be shown a set of different art supplies and the following question should be posited and answered in every student’s journal - *What is art?* TW post sentence frames on board for students to refer to during discussion:

Art is ________.
Art means ________.
Art is when a person uses ________.
Art happens when ________.

Next, a photograph should be shown and they should be asked to answer in their journal - *Is photography art?* (They should try to explain why they hold their opinion). Again TW post sentence frames on board for students to refer to during discussion:

Photography is art because ________________.
Photography is not art because ________________.
Photography is a way to ________________.
Photography is similar to art because ________________.
Photography is dissimilar to art because ________________.

The hook of this unit will center on a consideration of journalistic and, sometimes, amateur photographs documenting the 9/11 attack on New York City. Since most students were not even born when this event occurred, these photos will be never before scenes to them. These images are dramatic, shocking, and powerful: the perfect hook for opening class periods. They evoke immediate and, sometimes, divisive responses. No introduction is necessary. In fact, it would actually be beneficial if nothing is explained ahead of time. In this way, students would have no preconceived ideas or prejudices to bring to bear on the discussion. Although some may not consider these photos art, in the finer sense of the word, they certainly can be used to develop correct syntax, to increase descriptive vocabulary, and to show the human condition that is a large part of art.
Teachers will need to present all students with individual hard copies of the photos they will consider if students do not have access to computers each day. These photos should be presented on the overhead projector as well. Students with sight indicators should view it online using laptops, and an enlarged copy of the photo should be placed in the front of the room. Supplying students with individual copies will assist them as they complete reflections at home.

Activity One

Part One: 9/11 Photographs: Initial Images

The first shots I envision using are ones in which firemen, policeman, and just average people are all working together heroically in an effort to save anyone they can. The initial images exercises should take two to three days. There are other wonderful images from which to draw. The website http://911.navexpress.com offers one such group. Another site, http://nymag.com/news/articles/wtc/gallery/2.htm, has a sequential photo gallery entitled Days of Terror: A Photo Gallery. I have included two photos from this collection in Worksheet One which will be given to students in hard copy. In my inner-city class, students pay little attention to detail, so guided questioning will initially be needed. As my students view the images, I will ask them to consider the first two questions on this worksheet. Support for ELLS are made on the worksheets so they can participate in the discussion. These introductory questions will encourage them to observe only what they actually see in the picture. I will explain that no interpretation, conjecture, or analysis will be accepted – only what you see. These questions will be a direct attempt to get them to name objects and people in the photo. Again the teams of preproduction, developing, and nearly fluent students will be paired to aid in this assignment.

Initially, this exercise will be a whole-group, oral discussion with sentence starter support on the worksheets. Then, after recording their answers to these questions in their on-line journals, my students will be able to discuss their thoughts about the story within the photo with their partner referring to their handout for assistance. Because this image will portray a story with such raw human emotion and since my students love drama, I know they will connect with the subjects and then be able to write about the heartbreaking scenes that they see. I also imagine a tone of questions about what actually happened. Through the step-by-step process of observing, analyzing, interpreting, and evaluating the images with each other, my students will begin to see how to construct concrete meaning and extend their understanding of the image and the event. Hopefully they will begin to see that art expresses emotion. Teaming with their partners will encourage discussion and editing of their attempts at describing what they see.

Part Two: extended activity

An extended exercise would have students walk in the shoes of someone in the first photographs. Taking this first-person look might really strike home for some of my students. Here, I would ask my students to choose one of the people in the photo and
imagine what his/her life was like before and after 9/11. A “How 9/11 Changed My Life” memoir will be developed using Worksheet Two below. Support for ELLS are made on the worksheets. The partnering teams should again be used as a means of increasing exposure to correct written and oral language. Connecting to a real-life situation in this way may help with the higher-order thinking questions on the CCSS Reading Tasks that ask students to make inferences and reflect on a story. There are many personal memoirs of survivors and people who helped during this tragedy. The following websites contain a few of these stories, and they are well worth having my students read as they begin editing their own stories:

http://www.11-sept.org/survivors.html


These personal stories might provide insight into the thoughts and actions of the victims and their families, also giving students a broader use of descriptive words and phrases as they search for ways to express tragedy and grief. The following primary source document, a true story of an actual photographer caught in the 9/11 disaster, should be read to the entire class before completing Worksheet Two. It should be shown on an overhead projector, provided to students in hard copy so they can follow along as I read aloud, and placed in their on-line journal experience to reference back to.

David Handschuh
Daily News photographer. He was buried in rubble.

Before September 11, all I did was go out to murder scenes and fires. I photographed the occasional wedding for friends; at one, somebody introduced me as “David Handschuh, disaster photographer.” That was my beat. I photographed things blowing up and falling down.

I went from being a Weegee-esque New York newspaper photographer covering cops and firefighters and paramedics to never, ever wanting to either see or photograph anybody dead or dying again. The World Trade Center was every natural disaster and unnatural disaster rolled up into one big horrible day.

I missed a year of work. I had to learn to walk again. I still don’t run. I’m just lucky and thankful that I’m here. The next day, somebody asked me how I felt and I said I felt like I won the Powerball, but instead of $30 million, it was my life that was the grand prize. I’m thankful for the firefighters and police officers and paramedics who literally saved my life—the people I covered for years.

Now I’m photographing chocolate mousse and doll refurbishing. It’s still photojournalism, it’s still going out and making great pictures, it’s still meeting people I’ve never met before. Just without the blood, without the gore.

Activity Two

Part One: Image Two

The next image I will present will be of the plane as it struck one of the Twin Towers. This activity should span a day or two. Using the graphic organizer provided in Worksheet Three, I will ask my students to list as many actions as they imagine the photo suggests. My belief is that they will choose strong action words (verbs) because of the content of the image. Next, I will ask them to describe the action (adverbs). The
intention is to generate a list of adverbs to accompany the verbs listed. A third column will ask that students now put the two words into a meaningful sentence. Support for ELLS are made on the worksheets. After completion of the sentence, I will try to get my students to focus on verb tense. Because our world language teacher spends time on exercises of verb tenses and agreement, my students will understand the concept and recognize it as reinforcement of the correct syntactical placement of two parts of speech: verb/adverb. This activity should begin as a whole group experience where the teacher makes use of the overhead projector to generate model examples then is turned over as an independent activity. Students can use the word bank provide for them or use the on-line dictionaries and thesauruses to help in their search for new and exciting words. Next, I see students sharing with their team and finally, returning for a whole-class discussion on what they wrote and why they chose the words they chose. Lower language proficiency ELLs can use their worksheet for support in the discussion.

Part Two: Extended Activity:

An extended and stimulating activity would be to ask my students to act as reporters interviewing eyewitnesses to the event, describing the sounds, sights, and actions they heard that day. Students would be required to produce a local evening-news broadcast, reporting on the horrors of the day. The exercises using this second image have my students seeing, speaking, writing, reading, and editing, all skills necessary for employing English by using appropriate syntax.

Student teams should research several newspaper clippings on-line, where the 5W’s are the basis of the real life. They should be asked to highlight the 5 W’s and any aspects of the story that add to the factual, emotional, and human condition expressed in the account, labeling each one as the who, what, where, when, why, and how of the event. The following is one such sample that students may find of the details of 9/11. Each team should use the graphic organizer in Worksheet Four as a guide to recording the actual 5W’s of the 9/11 tragedy. Support for ELLS are made on the worksheets.
On the morning of Tuesday, Sept. 11, 2001, four U.S. airliners were turned into guided missiles after they were hijacked by al-Qaeda suicide bombers and crashed into three sites in the U.S., killing approximately 3,000 people.

Two of the planes struck the twin towers of the World Trade Center in New York, igniting fires that destroyed the 110-storey landmarks, while a third crashed into the west wing of the Pentagon in Washington. A fourth plane, which was believed to be heading for the White House, crashed in a field 120 kilometres southeast of Pittsburgh.

**American Airlines Flight 11**
Crashed into New York City's World Trade Center North Tower at 8.48 a.m.

**United Airlines Flight 175**
Crashed into New York City's World Trade Center South Tower at 9.03 a.m.

**American Airlines Flight 77**
Crashed into the Pentagon at 9.39 a.m.

**United Airlines Flight 93**
Crashed in a Pennsylvania field at 10.10 a.m.

Masterminded by al-Qaeda

Not long after the attacks, officials in the U.S. identified Pakistan-born Khalid Sheik Mohammed as the senior al-Qaeda strategist who orchestrated the plot. He had been
previously implicated in a 1995 plot known as Operation Bojinka, an early version of the Sept. 11 assault concept, that was broken up by police in the Philippines before it could be carried out. Mohammed was captured in 2003.

A rude Awakening
The attacks forced a new reality on the Western world, and on Americans in particular. In the ensuing years, particularly before a formal U.S. inquiry known as the 9/11 Commission, evidence emerged that American authorities had received warnings about imminent attacks in the months leading up to Sept. 11, both from their own intelligence agencies and at least four foreign governments. Determined not to be caught off guard again, the Bush administration dramatically reorganized its intelligence operations. It expanded unilateral presidential powers; set up a Department of Homeland Security that would introduce drastic changes to travel requirements and tighten airport and border security; and launched a wide-ranging "war on terror" that saw U.S. troops invade Afghanistan and oust the Taliban government, which had played host to al-Qaeda founder Osama bin Laden and his senior lieutenants. In the spring of 2003, the war on terror led to the invasion of Iraq after the U.S. accused its dictator, Saddam Hussein, of creating weapons of mass destruction. American forces toppled Saddam, but none of those weapons were ever found. The fighting in Iraq triggered a series of upheavals, many along Muslim sectarian lines, in the Middle East and turned the entire region into an international hot spot.

Five years later
Six years after the attack, and despite America's overwhelming military might, bin Laden remains at large and the American-led coalition in Iraq has become bogged down in an unpopular war. Close to 4,000 U.S. soldiers have been killed in Iraq and confidence in the Bush presidency has plunged.

Canada stayed out of the Iraq war, a decision taken by the Liberal government of the day. However, to assist in the war on terror, Canadian forces have taken the lead role in Afghanistan, where they have engaged in a series of bloody encounters with remnants of the fundamentalist Taliban army.

So far, Canada has been spared any direct attacks but the country has not been immune to terror's threat: In June 2006, police charged 17 people, most of them young and of South Asian descent, with plotting to blow up landmarks in Toronto and Ottawa.

Next they should be asked to watch a local evening news broadcast paying close attention to noting how the 5W’s are presented, again using Worksheet One as a guide with modifications made on the worksheets. This insight should be recorded in their journals before they discuss exactly what they discovered.

As a whole group, the class’s next job would be to discuss and decide what goes into an actual news broadcast. The following questions would be ones that might come up:
How would we find out?
Who would we need to contact?
Would a field trip to a local news station be possible?
Could we invite a local reporter to our class to help us understand the process?

A sentence frames poster will be posted in front of the class displaying the following:

We will find out by __________________________.
We found out by __________________________.
We need to contact __________________________.
A person to contact is __________________________.
A field trip to a local news station __________ possible.
I think inviting a local news reporter to our class would be __________.
Talking to a reporter would be __________.

After these exercises are complete, students would be asked to choose one person who they imagine might have been involved in some way in the attack, someone from one of the Towers, a first responder (police, firefighter, medic, etc), a tourist, a construction worker, or any eyewitness and then complete Worksheet Four with modifications on each worksheet.

The news broadcast: The next set of considerations need to be well thought-out and planned. Each group will be assigned roles, such as cameraman, set design, interviewer, reporter, eyewitness, or government official. Roles should be based on comfort and ability. Some questions that need attention are listed below;

Who will be involved?
What props will be needed?
How do they tape it?
Who will arrange for a camera?
Who will man the camera?
What will the “studio” look like?
After each role is filled and discussed, students must practice and then conduct an actual broadcast. All this would need arrangement with our multi-media specialist in terms of camera usage. The set designers must secure all materials from the art department.

Activity Three

Final Images: Descriptive paragraph development

The last set of photos will be ones chosen for the complexity of composition. This lesson should take 3 days. The exercise I envision will require that my students list as
many items (nouns) as they can find in their chosen picture. Once they are finished with
the list, I will ask them to place descriptors (adjectives) beside each item listed. A
simple graphic organizer with modifications for different levels, Worksheet Five,
would help in implementation of this exercise because, again, it will highlight the
difference between the placement of adjective and noun in a second language and
English. It must be noted that the nouns appear in the middle column, the adjectives in
column one. Hopefully, students will “see” and then understand the difference in
adjective placement. Once the worksheet is completed, I would give them a second
copy of Worksheet Five and have them use a thesaurus as a means of replacing
common, mundane descriptors with ones that more accurately show the emotion or
action in the photo.

The next student step in the process is to work with their team which are grouped
heterogeneously by language proficiency to develop sentences that incorporate the
nouns and adjectives in a way that expresses what is seen and felt in the photo. Once
this step is complete, the team would then try to sequence their sentences into a
coherent, descriptive paragraph in their journals. Each team will choose a reporter and,
whomever feels most comfortable, then report out on their final paragraph, displaying
the final copy in the classroom.

Culminating Activity: Final Images

The images from Worksheet Five will be used in this section. These lessons will span
approximately three days and will act as a way of introducing the elements and
principles of art and design as well as parts of speech and syntactical usage. The
elements of art -- shape, line, direction, size, texture, color, and value--are easily
observed in these photos. The first photos I will use will be of the skyline of New York
including the World Trade Center. It will be necessary to conduct a teacher-guided
lesson as students complete this assignment because these terms will either need to be
introduced or information about them reinforced.

In an effort to understand line, I will direct my students’ eyes to areas where line can
be observed. Lines can define a space, create an outline or pattern, imply movement or
texture and suggest mass or volume. I will present both color and black-and-white
versions of the same picture so as to help students understand value or luminance, a
term used by Dr. Margaret Livingstone, noted Harvard neurophysiologist, to describe
this element. Again, consideration will have to be given to the presentation of these
photos. In this case, I will show these images on an overhead projector so that a pointer
can be used to guide the students’ eye to the specifics of line, shape, and direction.

When introducing texture, it would be very helpful to have different cloth and
building materials of different textures available for my students to feel. Local fabric
stores freely give out swatches of material, and home improvement stores will supply
scraps of building materials for this purpose. Listing the names for the different textures
would expand students’ vocabulary. We can then point out the different surfaces
present in the buildings. Again it would be worth noting that in my school these elements are discussed in our art classes.

Group 1

These students will develop a word wall with removable Velcro-backed strips. My students will be asked to describe the shapes they observe in the photos, shapes such as squares, circles, rectangles, and triangles, which the math teacher has already reviewed with students. Teacher will post a piece of chart paper on the front board with 2-D and 3-D shapes labeled. It should be noted that these shapes are two dimensional in the photos. They are flat. In real life, these shapes become three-dimensional figures such as cubes, spheres, cuboids, cylinders, and cones. Students should list the names of the different textures and surfaces on the word wall, which we already discussed.

Group 2

These students will be asked to turn the two-dimensional shapes drawn on paper into three-dimensional shapes having them available for the students to observe. Paper, pencils, rulers, glue and other supplies will be available for use.

All Students: Preproduction, Developing, and Nearly Fluent

Next, all students are asked to do a city rendering using any photo that will be displayed. Graphite, charcoal, or pastel can be used as the medium to complete this exercise. The “artists” in the group can complete these series of city renderings. After the completion of this exercise, I will ask my student’s teams to label their drawings using the “vocabulary of art terms,” then ask for volunteers to explain what they have done, encouraging them to use the new vocabulary they have just learned. In this way, students have not only been introduced to these principles, but they have used them in a drawing and commented on them in their description of their picture. Because the focus will be on describing their drawings and not correct syntax, it should be a safe, low-stress activity.” It is important to note that the understanding here comes, not from written text, but rather from the image. These renderings should most definitely be display.

Finally we must return to our initial questions - What is art? 2. Is photography art? All students must enter their final answer to these questions in their journal with an explanation of their opinion and a comment on whether their initial views have changed. Teacher will repost the sentence starters from the beginning lesson for students to refer to.
## Worksheet One
Preproduction – level 1

### Word Squares

Instructions: Review and recite each section of the box independently.

<table>
<thead>
<tr>
<th>What it is:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>terrorist</strong></td>
<td><strong>moderate</strong></td>
</tr>
<tr>
<td>Definition: somebody who uses violence to intimidate others</td>
<td>Definition: somebody who is not extreme or unreasonable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example:</th>
<th>Drawing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The terrorist bombed the World Trade Center.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The same or similar:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>radical</strong></td>
<td><strong>conservative</strong></td>
</tr>
<tr>
<td>Definition: a person who favors rapid changes in laws</td>
<td>Definition: a person who favors tradition</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example:</th>
<th>Drawing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The radical organized the protest.</td>
<td></td>
</tr>
</tbody>
</table>
## Preproduction

Instructions: Review and recite each section of the box independently.

<table>
<thead>
<tr>
<th>What it is: misery</th>
<th>What it isn’t: delight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition: great unhappiness</td>
<td>Definition: great enjoyment</td>
</tr>
</tbody>
</table>

**Example:**
Great misery was experienced because of the bombing.

<table>
<thead>
<tr>
<th>The same or similar: sadness</th>
<th>What it isn’t: happiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition: feeling of sorrow</td>
<td>Definition: feeling of pleasure</td>
</tr>
</tbody>
</table>

**Example:**
The families of the victims felt profound sorrow.

**Drawing:**
**Preproduction**

Instructions: Review and recite each section of the box independently.

<table>
<thead>
<tr>
<th>What it is:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>fear</strong></td>
<td><strong>assurance</strong></td>
</tr>
<tr>
<td>Definition:</td>
<td>Definition:</td>
</tr>
<tr>
<td>a concern that something bad will happen</td>
<td>freedom from uncertainty</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example:</th>
<th>Drawing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>News of the attack brought fear to the country.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The same or similar:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>anxiety</strong></td>
<td><strong>calmness</strong></td>
</tr>
<tr>
<td>Definition:</td>
<td>Definition:</td>
</tr>
<tr>
<td>nervousness that something is going to happen</td>
<td>without worry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example:</th>
<th>Drawing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety about another attack was growing.</td>
<td></td>
</tr>
</tbody>
</table>
# Preproduction

Instructions: Review and recite each section of the box independently.

<table>
<thead>
<tr>
<th>What it is:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td>tortured</td>
<td>content</td>
</tr>
<tr>
<td>Definition:</td>
<td>Definition:</td>
</tr>
<tr>
<td>to inflict extreme pain</td>
<td>great enjoyment</td>
</tr>
</tbody>
</table>

Example:
The hostages were tortured to persuade them to confess.

Drawing:

<table>
<thead>
<tr>
<th>The same or similar:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td>brutalized</td>
<td>humanized</td>
</tr>
<tr>
<td>Definition:</td>
<td>Definition:</td>
</tr>
<tr>
<td>to treat somebody cruelly</td>
<td>make or become human</td>
</tr>
</tbody>
</table>

Example:
Prisoners were brutalized by their captors.

Drawing:
Preproduction

Instructions: Review and recite each section of the box independently.

<table>
<thead>
<tr>
<th>What it is: agony</th>
<th>What it isn’t: pleasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition: great pain or anguish</td>
<td>Definition: a feeling of happiness</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example: Victims’ injuries caused extreme agony.</th>
<th>Drawing:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>The same or similar: suffering</th>
<th>What it isn’t: joy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition: an experience that is painful</td>
<td>Definition: feelings of great contentment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example: Across the city there was tremendous suffering.</th>
<th>Drawing:</th>
</tr>
</thead>
</table>
**Preproduction**

Instructions: Review and recite each section of the box independently.

<table>
<thead>
<tr>
<th>What it is: sorrow</th>
<th>What it isn’t: rejoice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition: a feeling of deep sadness</td>
<td>Definition: great happiness about something</td>
</tr>
</tbody>
</table>

| Example: Sorrow filled the hearts of most Americans. | Drawing: |

<table>
<thead>
<tr>
<th>The same or similar: grief</th>
<th>What it isn’t: happiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition: a feeling of loss</td>
<td>Definition: feeling or showing pleasure</td>
</tr>
</tbody>
</table>

| Example: Grief was felt throughout New Yorkers. | Drawing: |
**Preproduction**

Instructions: Review and recite each section of the box independently.

<table>
<thead>
<tr>
<th>What it is:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td>litter</td>
<td>tidiness</td>
</tr>
<tr>
<td>Definition: pieces of trash that have been left on the ground</td>
<td>Clean as in appearance</td>
</tr>
</tbody>
</table>

**Example:**
The litter was left scattered on the floor.

<table>
<thead>
<tr>
<th>The same or similar:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td>trash</td>
<td>order</td>
</tr>
<tr>
<td>Definition: to make a place messy</td>
<td>Definition: items arranged neatly</td>
</tr>
</tbody>
</table>

**Example:**
Trash from the building collapsing was everywhere.

**Drawing:**

Now move onto developing worksheet.
Worksheet One
Developing - level 3
(answered in their on-line journal)
Developing: Use the word bank below to fill in the blanks.

What items do you see in the photo?  
**The items I see in the photos include**
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

Who are the people in the photo? How do you know?  
**The people in the photo include**
______________________________________________________________________
I know because
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

Where are they?  
**I believe that this picture is taken in**
______________________________________________________________________

How are they dressed? Why are they dressed the way they are?  
**The people in the photo were dressed in**
______________________________________________________________________
They are dressed this way because
______________________________________________________________________

Why are they in the photos?  
**These firemen, photographers, workers, and tourists are in the photos because**
______________________________________________________________________

What emotions are expressed in their faces?  
**The emotions on the faces of the people in the photos are**
______________________________________________________________________

What has happened to them?  
**It appears that**
______________________________________________________________________

<table>
<thead>
<tr>
<th>Fireman</th>
<th>litter</th>
<th>fear</th>
<th>helmet</th>
<th>camera man</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck</td>
<td>tires</td>
<td>agony</td>
<td>car</td>
<td>computer case</td>
</tr>
<tr>
<td>Street</td>
<td>stretcher</td>
<td>tree</td>
<td>tortured</td>
<td>injured man</td>
</tr>
<tr>
<td>Terrorist</td>
<td>misery</td>
<td>pain</td>
<td>sorrow</td>
<td>Ambulance worker</td>
</tr>
</tbody>
</table>
Worksheet One
Nearly Fluent - level 5
(answered in their on-line journal)
What items do you see in the photo?

Who are the people in the photo? How do you know?

Where are they?

How are they dressed? Why are they dressed the way they are?

Why are they in the photos?

What emotions are expressed in their faces?

What has happened to them?
**Worksheet Two**
Preproduction- level 1

**Preproduction**

Instructions: Review and recite each section of the box independently.

<table>
<thead>
<tr>
<th>What it is:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td>memoir</td>
<td>unrecorded</td>
</tr>
<tr>
<td>Definition:</td>
<td></td>
</tr>
<tr>
<td>an account of historical events written from personal knowledge</td>
<td>Definition:</td>
</tr>
<tr>
<td></td>
<td>not recorded</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example:</th>
<th>Drawing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The fireman wrote a memoir of the events on 9/11.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The same or similar:</th>
<th>What it isn’t:</th>
</tr>
</thead>
<tbody>
<tr>
<td>record</td>
<td>undocumented</td>
</tr>
<tr>
<td>Definition:</td>
<td>not chronicled</td>
</tr>
<tr>
<td>a written account of the proceedings of something</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example:</th>
<th>Drawing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>She used a diary to keep a record of her life.</td>
<td></td>
</tr>
</tbody>
</table>
What is a memoir?
Students should refer to word squares.

**Historical**
*Happening in the past.

**Events**
*Happenings that are significant, interesting, exciting, or unusual.

**Written**
*Words put on paper.

**Personal**
*Parts of somebody’s life - specific to that person.

**Knowledge**
*Awareness of information, facts, ideas, truths, or principles.

So a memoir is a memory of:

Something that happened,
That was significant, interesting, exciting or unusual,
Written down,
That is a part of a person’s life,
That they know about.
Worksheet Two
Developing- level 3
(answered in their on-line journal)

Use the sentence starter paragraph below to write a memoir of a person of your choice who helped in the 9/11 attack. It could be a fireman, police, journalist, etc.

“How 9/11 Changed My Life”

My name is (choose a name) ___________________________. I am a (choose one person who you see in the photos) ______________________________. I got up today and went to work. While there, I started to (write what you normally would do at work)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

________. Suddenly, we heard (write something alarming that you heard)
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

_____.

Everyone (write a verb that expresses alarm, fear, or strong emotion). On the television we saw (write what you saw on the TV)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

_______. I immediately (write what you did, an action that you took).
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

_______.

For the rest of the day, I worked to (write how to worked to help the people involved in the 9/11 incident).
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

It’s been (Choose a time since the awful incident – a week, two weeks, a month, etc)________________________. Still (write something that you remember, you still do, you can’t forget).
I’m left with (Choose an emotion) __________________________. (You can explain if you want to)
Use the paragraph below to write a memoir of a person of your choice who helped in the 9/11 attack. It could be a fireman, police, journalist, etc.

“How 9/11 Changed My Life”

My name is ___________________________. I am a __________________________. I got up today and went to work. While there, I started to
_______________________________________________
_______________________________________________
_______________________________________________

____________________. Suddenly, we heard
_______________________________________________
_______________________________________________

________. Everyone On the television we saw
_______________________________________________
_______________________________________________

________. I immediately
_______________________________________________
_______________________________________________

________. For the rest of the day, I worked to
_______________________________________________
_______________________________________________

________. It’s been ______________________________. Still
_______________________________________________
I’m left with ____________________________.
Verbs/Adverbs

Whole group discussion to check background knowledge.
Students should refer to sentence starters below.

What is a verb?
A verb is a part of speech.

What part of speech?
A verb is a word that shows action taking place.

A verb is a ________________.
A verb is a part of speech that ________________.

What is an adverb?
An adverb is a part of speech.

What part of speech?
An adverb is a word that changes a verb.

It tells how, when, or where something happens.

An adverb is a___________.
An adverb is a part of speech that___________.
It tells ___, ___, or ____ something happens.
Draw a line to match verbs with the adverbs.

<table>
<thead>
<tr>
<th>Verbs:</th>
<th>Adverbs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>explode</td>
<td>intensely</td>
</tr>
<tr>
<td>(blow-up)</td>
<td>(strong)</td>
</tr>
<tr>
<td>destroy</td>
<td>thoroughly</td>
</tr>
<tr>
<td>(demolish)</td>
<td>(extremely)</td>
</tr>
<tr>
<td>demolish</td>
<td>fiercely</td>
</tr>
<tr>
<td>(wreck)</td>
<td>(intensely)</td>
</tr>
<tr>
<td>pulverize</td>
<td>furiously</td>
</tr>
<tr>
<td>(crush)</td>
<td>(angrily)</td>
</tr>
<tr>
<td>wreck</td>
<td>utterly</td>
</tr>
<tr>
<td>(damage)</td>
<td>(completely)</td>
</tr>
<tr>
<td>raze</td>
<td>totally</td>
</tr>
<tr>
<td>(destroy)</td>
<td>(absolutely)</td>
</tr>
<tr>
<td>smash</td>
<td>entirely</td>
</tr>
<tr>
<td>(crunch)</td>
<td>(wholly)</td>
</tr>
<tr>
<td>torpedo</td>
<td>completely</td>
</tr>
<tr>
<td>(ruin)</td>
<td>(entirely)</td>
</tr>
</tbody>
</table>

Now move on to developing with your team.
Worksheet Three

Developing- level 3
(answered in their on-line journal)
<table>
<thead>
<tr>
<th>Action VERB</th>
<th>Descriptor</th>
<th>ADVERB</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>crashing</td>
<td>violently</td>
<td></td>
<td>*The plane was violently crashing into the Tower.</td>
</tr>
</tbody>
</table>

First choose a verb; then an adverb; then use it in a sentence with your partner

- Explode            furiously
- Destroy            intensely
- Demolish           fiercely
- Pulverize          completely
- Wreck              thoroughly
- Raze               totally
- Smash              utterly
- Torpedo            entirely
## Worksheet Three

**Nearly Fluent - level 5**

(answered in their on-line journal)

<table>
<thead>
<tr>
<th>Action (Verb)</th>
<th>Descriptor (Adverb)</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>crashing</td>
<td>violently</td>
<td>*The plane was violently crashing into the Tower.</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Worksheet Four
Preproduction- level 1
(answered in their on-line journal)

Who, What, Where, When, Why & How

Read Aloud;
SPECIAL REPORT: 9/11 – 10 YEARS LATER

Read Aloud;
Worksheet Four

Whole group discussion to check background knowledge. Students should refer to sentence starters below.

What is a reporter?
A reporter is somebody whose job is to find out facts and tell people about them.
A reporter is someone whose job is to __________________________ and ______________________.

What are facts?
Facts are something that can be shown to be true.
Facts are something that __________________________.
What are NOT facts?
Facts are NOT beliefs.
Facts are NOT __________________________.

Reporters ask:
Who?

To ask the name or identity of a person or people.

What?

To ask about the purpose of something.
Where?

To ask about the **place** something or somebody is.

When?

To ask about what **time and date** something happens.
Why?
To ask the **reason** for something.

How?
To ask in **what way** something happens.

Now move on to developing with your team.
Worksheet Four
Developing- level 3
(answered in their on-line journal)

Reporter’s Name___________________________________________

Who: (the person’s or people’s name, description, employment, what they were doing, who they were with)
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

What: (they were doing, what were they feeling)
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

Where: (where they were at the time of the attack: in a specific building outside a building, in a stairwell, in a coffee shop etc)
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

When: (did they leave home, when did they get there)
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

Why: (they thought it happen)
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
____________________________________
How: (exact ways in which it happened)

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
Worksheet Four
Nearly Fluent- level 5
(answered in their on-line journal)

Reporters Name___________________________________________

Who:
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

What
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

Where:
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

When
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

Why
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
How
Worksheet Five
Preproduction- level 1
(answered in their on-line journal)

Nouns/Adjectives

Whole group discussion to check background knowledge.
Students should refer to sentence starters below.

What is a noun?

A noun is a part of speech.

What part of speech?
A noun is a word that names a person, place or thing.

A noun is a________________________.
A noun is a part of speech that______________________.

What is an adjective?

An adjective is a part of speech.

What part of speech?
An adjective is a word that describes a noun.

It tells how, when, or where something is.

An adjective is a________________________.
An adjective is a part of speech that______________________.
It tells______, _________, or ___________ something is.
Draw a line to match adjectives with the nouns.

<table>
<thead>
<tr>
<th>Adjectives:</th>
<th>Nouns:</th>
</tr>
</thead>
<tbody>
<tr>
<td>twisted</td>
<td>smoke</td>
</tr>
<tr>
<td>(turned)</td>
<td>(fumes)</td>
</tr>
<tr>
<td>proud</td>
<td>clothing</td>
</tr>
<tr>
<td>(feeling pleased)</td>
<td>(worn on the body)</td>
</tr>
<tr>
<td>billowing</td>
<td>firemen</td>
</tr>
<tr>
<td>(fill with air)</td>
<td>(put out fires)</td>
</tr>
<tr>
<td>hanging</td>
<td>metal</td>
</tr>
<tr>
<td>(dangling)</td>
<td>(chemical element)</td>
</tr>
<tr>
<td>exhausted</td>
<td>shoes</td>
</tr>
<tr>
<td>(very tired)</td>
<td>(cover feet)</td>
</tr>
<tr>
<td>disheveled</td>
<td>rumble</td>
</tr>
<tr>
<td>(messed-up)</td>
<td>(deep sound)</td>
</tr>
<tr>
<td>amazing</td>
<td>flag</td>
</tr>
<tr>
<td>(wonderful)</td>
<td>(cloth emblem)</td>
</tr>
</tbody>
</table>

Now move on to developing with your team.
Worksheet Five
Developing - level 3
(answered in their on-line journal)
Use the word bank below.

<table>
<thead>
<tr>
<th>Descriptors (Adjectives)</th>
<th>Items (Nouns)</th>
<th>Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>toppled</td>
<td>building</td>
<td>The toppled building acted as a tomb for many people.</td>
</tr>
<tr>
<td>Twisted</td>
<td>Shoes</td>
<td></td>
</tr>
<tr>
<td>Proud</td>
<td>Firemen</td>
<td></td>
</tr>
<tr>
<td>Billowing</td>
<td>Flag</td>
<td></td>
</tr>
<tr>
<td>Hanging</td>
<td>Rumble</td>
<td></td>
</tr>
<tr>
<td>Exhausted</td>
<td>Smoke</td>
<td></td>
</tr>
<tr>
<td>Disheveled</td>
<td>Metal</td>
<td></td>
</tr>
<tr>
<td>Amazing</td>
<td>clothing</td>
<td></td>
</tr>
</tbody>
</table>
Students are to use photographs from above.

<table>
<thead>
<tr>
<th>Descriptors (Adjectives)</th>
<th>Items (Nouns)</th>
<th>Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>toppled</td>
<td>building</td>
<td>The toppled building acted as a tomb for many people.</td>
</tr>
</tbody>
</table>
Vocabulary of Art Terms
Preproduction

Whole group discussion to check background knowledge.
Students should refer to sentence starters below.

What is art?
Art is making something beautiful through creative activity.
Art is making something ______________
through______________________________.

What is a creative activity?
Creative activity is thoughtful, like painting,
photography, music, and writing.
Creative activity is ______________ like__________
________________, ______________, ____________
and ______________.

Words to know:

line
A long narrow mark.

value
The lightness or darkness of a color.

shape
The outline of something’s form.

Texture
The feel and appearance of a surface.
**Word Wall Strips**

Students will create word strips using the words below. The words will be attached to Velcro strips and displayed on the Word Wall. They will recite words as they attach them.

<table>
<thead>
<tr>
<th>Terrorist</th>
<th>Misery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear</td>
<td>Agony</td>
</tr>
<tr>
<td>Tortured</td>
<td>Sorrow</td>
</tr>
<tr>
<td>Explode</td>
<td>Destroy</td>
</tr>
<tr>
<td>Demolish</td>
<td>Pulverize</td>
</tr>
<tr>
<td>Intensely</td>
<td>furiously</td>
</tr>
<tr>
<td>Fiercely</td>
<td>Completely</td>
</tr>
<tr>
<td>Twisted</td>
<td>Proud</td>
</tr>
<tr>
<td>Billowing</td>
<td>Firemen</td>
</tr>
<tr>
<td>Exhausted</td>
<td>Rumble</td>
</tr>
<tr>
<td>Line</td>
<td>Value</td>
</tr>
<tr>
<td>Shape</td>
<td>Texture</td>
</tr>
<tr>
<td>Truck</td>
<td>Street</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Litter</td>
<td>Tires</td>
</tr>
<tr>
<td>Stretcher</td>
<td>Tree</td>
</tr>
<tr>
<td>Pain</td>
<td>Helmet</td>
</tr>
<tr>
<td>Car</td>
<td>Camera man</td>
</tr>
<tr>
<td>Computer case</td>
<td>Injured man</td>
</tr>
<tr>
<td>Ambulance worker</td>
<td>Wreck</td>
</tr>
<tr>
<td>Raze</td>
<td>Smash</td>
</tr>
<tr>
<td>Torpedo</td>
<td>Thoroughly</td>
</tr>
<tr>
<td>Totally</td>
<td>Utterly</td>
</tr>
<tr>
<td>Entirely</td>
<td>Hanging</td>
</tr>
<tr>
<td>Disheveled</td>
<td>Amazing</td>
</tr>
<tr>
<td>Shoes</td>
<td>Flag</td>
</tr>
<tr>
<td>Smoke</td>
<td>Metal</td>
</tr>
<tr>
<td>Clothing</td>
<td></td>
</tr>
</tbody>
</table>
Science - Static Forces and Bridges

Introduction:
Bridges can be designed in different ways to withstand the different forces that act on them. This unit is designed to introduce students to three different types of bridges and the forces that act on them. The unit is also designed to have the students use the scientific process to test and prove the information they are learning about. With in this unit Nine eleven will be incorporated into the unit through observing the different types of bridges in New York and what their functions on that day were. The students will explore what would have happened if there were no bridges open on 911.

Objectives:
1. Describe the different types of bridges found in New York City and explain how the bridges are built to withstand the forces that act on them.
2. Design different bridges and test the strength and weaknesses of each bridge.
3. Analyze data collected from testing strength and weaknesses of the three different bridges.
4. Use appropriate tools and techniques to make observations and gather data.

Terminology (vocabulary):
1. Beam bridge
2. Truss bridge
3. Suspension bridge
4. Force
5. Tension
6. compression
7. Torque
8. Pier
9. Abutment – Buttress
10. load
11. Decking
12. magnitude
Lesson 1

Content Objective:
1. Activate students back ground knowledge on the different bridges that they have seen throughout their travels.
2. Define the three different bridges, Beam, Truss, and suspension.
3. Describe the different bridges.

Language objective:
4. Speak and listen to their partners.
5. Write about their ideas and knowledge of bridges
6. Write their thoughts about the visuals on bridges

Activity:
1. Carousel activity using pictures of the different bridges that lead in and out of Manhattan.
2. Teacher will explain the directions of the activity.
   a. There are ______ pictures around the room of bridges (teacher points out the pictures).
   b. Each student will observe and look at each picture and comment on them. Teacher should explain that the spelling and language does not count on the comments.
      i. Teacher will give examples and model a comment on a picture for example:
         1. Have you seen the bridge before? I have seen this bridge …
         2. Have you driven over the bridge before?
         3. What is the bridge made of?
         4. What does the bridge span, water, railroads, roads?
         5. What uses the bridge, people, cars, trucks, trains?
   c. Teacher will then allow for 15 minutes for the students to make comments on the different pictures.
   d. Teacher will then conclude with reviewing the comments as a whole class and have students volunteer to explain their comments.

Activity 2: 15 minutes
1. Students will then work in heterogeneous groups to fill out a KWL chart on all the students know about bridges.
2. Teacher will first model the activity using a model for example
   A. “I know that there are Rail road bridges, so I will write rail road bridges under the know category.
   B. “I would like to know why there are different type of bridges, so I will write the question into the want to know section
C. Students will complete the Know and What they want to know sections of the chart. Teacher should make sure to explain that spelling does not count and students can draw their idea into the chart.

D. Students will complete the Learned section of the chart at the end of the unit.

E. Teacher will have each of the group’s report out to the class. Level 1 student can be the pointer for the group while a more proficient English language speaker reports out on the list.

**Conclusion:** What role did the bridges in lower Manhattan play on 911? Teacher will point to the 911 pictures from the carousel activity and write 911 on the board while the question is being asked.

**Pictures for the carousel activity**

Manhattan Bridge
Verranzo Bridge
Brooklyn Bridge

KWL chart

<table>
<thead>
<tr>
<th>Know</th>
<th>Want to know</th>
<th>Learned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lesson 2

Content Objectives:
1. Explain the different parts to the bridges.
2. Explain the different forces acting on bridges and how they act.
3. Read the text provided by the teacher and find the needed information.

Language objectives
4. Write and label the parts of the three bridges and the forces that act on the three types of bridges.
5. Speak through checking if the information is correct that they have obtained from the text.

Activity:
1. Teacher will pre-teach vocabulary for the text to be read.
   a. Tension
   b. Compression
   c. Abutment – Buttress
   d. Pier
   e. Load
   f. Decking
2. Students will fill out word squares for the different vocabulary words.
   a. Level 1 will draw a picture into the modified squares
   b. Level 3,5 – complete the square
3. Students will then take turns to teach each other the new vocabulary words
   a. Teacher will model the activity
      i. Example: teacher will say “tension is a pulling force”
      ii. Level 1 – Demonstrate the force and point to the pictures on the word squares
      iii. Level 3 – refer to the word squares
      iv. Level 5 – Can refer to the word square
4. Teacher will then with the whole class review the words together with visuals.
   a. Using a ruler supported by two blocks the teacher can demonstrate the forces on a bridge using pictures that are the same as the students word squares describe and explain the vocabulary words.
      i. Teacher can ask questions such as: (they can use there word squares to help them)
      ii. “Where does the bridge lengthen when there is a load on the bridge?”
      iii. “Can a student demonstrate what a load looks like on the bridge?”
      iv. “When a load is added to a bridge where is the compression force?”
   b. Teacher will allow the students to demonstrate the forces with the students at their tables.
5. Conclusion: Teacher will have the students demonstrate the different types of forces that act on bridges.
a. “Can a student demonstrate tension force?” While holding tension word up
   i. Students will point in opposite directions for tension
b. “Can a student demonstrate compression force?” Holding compression word up
   i. Students press their hands together for compression.

6. Homework guided reading on Beam Bridge bridges and truss bridges.
   a. See reading for scaffold ELL readers
   b. Teacher will demonstrate the homework to the level 1 students using the visuals from the reading and the guided reading questions
      i. Example: teacher will point to the compression force on the diagram in the reading and then write it on the guided reading diagram in the correct spot.
      ii. The reading is highlighted and guided reading questions are provided
<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam Bridge</td>
<td>The deck of the bridge spans the entire distance supported by an abutment or a pier at each end</td>
</tr>
<tr>
<td>Example</td>
<td>Old Quinnipiac River Bridge</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>Suspension bridge</td>
<td>A type of bridge in which the deck is suspended below the cables</td>
</tr>
<tr>
<td>Example</td>
<td>New Quinnipiac River Bridge</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>Truss Bridge</td>
<td>A bridge whose load is supported by the trusses or extra material added to the bridge</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Tension</td>
<td>Pulling force</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Compression force</td>
<td>Pushing force</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Abutment</td>
<td>Where the bridge is attached to the land at both ends</td>
</tr>
<tr>
<td>Pier</td>
<td>Raised structure that holds a bridge up</td>
</tr>
</tbody>
</table>

(c) Copyright 2005 Sandra Schwaab - DVD Image is Double this Size
<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load</td>
<td>Weight of the bridge and everything on the bridge</td>
</tr>
</tbody>
</table>

**Example**

Large truck on a bridge has a large load
### Word squares for Level 3

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beam Bridge</strong></td>
<td>The _______ of the bridge spans the entire distance supported by an _________ or a _____ at each end</td>
</tr>
<tr>
<td><strong>Suspension bridge</strong></td>
<td>A type of bridge in which the ______ is __________________ below the cables</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pictures</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Old Quinnipiac River Bridge</td>
</tr>
</tbody>
</table>

<p>|                       | Example                                                        |
|                       | New Quinnipiac River Bridge                                    |</p>
<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truss Bridge</td>
<td>A bridge whose load is supported by adding __________ to the bridge</td>
</tr>
<tr>
<td>Picture</td>
<td>Example</td>
</tr>
<tr>
<td></td>
<td>Ferry Street Bridge</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>Tension</td>
<td>__________ on a string</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>Compression force</td>
<td></td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Abutment</td>
<td>Example</td>
</tr>
<tr>
<td></td>
<td>The bridge is anchored to the land by the</td>
</tr>
<tr>
<td></td>
<td>_________</td>
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</table>

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pier</td>
<td>Example</td>
</tr>
<tr>
<td></td>
<td>The _____ is _____the bridge up</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Load</td>
<td></td>
</tr>
</tbody>
</table>

**Example**

- Large truck on a bridge has a large __________

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>deck</td>
<td></td>
</tr>
</tbody>
</table>

**Example**

- The car drives on the __________ of the bridge
<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam Bridge</td>
<td></td>
</tr>
<tr>
<td>Suspension bridge</td>
<td></td>
</tr>
<tr>
<td>Truss Bridge</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
<th>Example</th>
<th>Example</th>
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</table>

<table>
<thead>
<tr>
<th>Picture</th>
<th>Example</th>
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<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Tension</td>
<td></td>
</tr>
<tr>
<td>Compression force</td>
<td></td>
</tr>
<tr>
<td>Abutment</td>
<td></td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
</tr>
<tr>
<td><strong>Pier</strong></td>
<td></td>
</tr>
<tr>
<td>Picture</td>
<td>Example</td>
</tr>
<tr>
<td><strong>Load</strong></td>
<td></td>
</tr>
<tr>
<td>Picture</td>
<td>Example</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
</tr>
<tr>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>deck</td>
<td></td>
</tr>
</tbody>
</table>

**Picture** | **Example**
--- | ---

Tension and compression signs

**Tension**

**Compression**
Guided reading question

Beam Bridge
Level 3,5

Students will read the highlighted text and answer the guided reading questions.

1. What forces act on beam bridges?

2. What are the limitations of beam bridges?

3. Draw the forces that act on beam bridges
Guided Reading Questions Level 1
Students will label the beam bridge using the readings that are provided.

Word bank:
Tension
Compression
Pier
Deck
**Beam Bridge**

Ancient beam bridges were made primarily of wood. Modern beam-type bridges are made of wood, iron, steel or concrete. How a beam operates is more complex than a cable or an arch. In the cable all of the material is in tension, but in a beam part of the material is in tension and part of the material is in compression. Look at the example of the Royal Albert Bridge design by R. Brunel in England.


(http://www.royal-albert-bridge.co.uk/). The heavy iron tube on top acts like an arch and the smaller wrought iron chains, below, act like cables. The combination of these forces describes what happens in a beam.

How a beam works:

A beam supported at its ends and loaded in the middle deflects downward.

The top edge is in compression. The bottom edge is in tension. There is no stress in a line right through the middle.

The beam develops a compression arch across the top and a tension cable across the bottom.

The top of the beam has compression forces squeezing the material together, and the bottom of the beam has tension forces that stretch the material apart.
FIVE BRIDGE TYPES

BEAM

A beam needs to be made of material that can work well under both compression and tension forces. Wood is a good material for this. Stone is not a good material for a beam — it is strong in compression, but weak in tension. That’s why it is good for arches but bad for beams. The same is true of concrete. To make a concrete beam, we need to add steel rods or cables at the bottom (in the tension area.) Long-span beams came into great use after 1850 when the production of large batches of steel became possible.

None of the big bridges crossing the Ohio River are beam-types because the span is too long and their weight would be too great. Beams are more often found in shorter spans such as those at many overpasses. Next time you are driving with your parents on the highway, look at the structure beneath the overpasses as you travel beneath them, and you will more often than not see steel wide-flange beams supported by concrete columns.

The new girders in place for the Fort Washington Way overpass at Broadway Street

In a wide-flange (or I-shaped) beam supported on each end, the top flange carries large compression forces and the bottom flange carries equally large tension forces. The thin web in the middle separates the two flanges and develops shear forces that usually are much smaller than the forces in the flanges. The excess material in the web can be cut away and a more efficient beam, called a castellated beam, is developed.

If enough of the web is removed the castellated beam becomes a truss. In this picture, the large castellated beam will eventually support a series of trusses like those shown above it. The truss is an extreme example of what happens when the beam’s web is cut away.

Castellated beams
www.buildinggreen.com/products/prod_rev_images/smarrbeam.jpg
Guided Reading
Truss bridge
Level 3, 5

Students will read the Truss bridge text and answer the following questions.

1. Draw the forces that act on a truss bridge.

2. What do the Trusses on the truss bridge do to the forces acting on the bridge?
Guided Reading
Truss Bridge
Level 1

Students will label the parts of a truss bridge and draw the forces acting on the truss bridge.

Word bank:
Tension
Compression
Truss
Deck
**FIVE BRIDGE TYPES**

**TRUSS**

**Truss Bridge**

Trusses work much like beams: they carry a combination of compression and tension forces. The main difference is that trusses are less bulky (heavy) than beams. Beams use extra material in some areas, these areas don't use the full strength available to them. Engineers and builders can determine which portions of beams can be removed. The resulting truss concentrates the forces into many smaller members and eliminates the under-stressed areas of beams.

How a truss works

A castellated beam has a portion of the web removed, the remaining web carries shear.

A truss has vertical and diagonal struts to carry shear.

Like the beam, the truss has compression in the top chord, tension in the bottom chord, and either tension or compression in the vertical and diagonal components.

Taylor - Southgate bridge in Cincinnati
http://www.cincinnati-transit.net/taylong.html

The Taylor-Southgate is a modern example (1995) of a truss bridge over the Ohio River in Cincinnati. It replaced the Central Bridge built in 1890.

http://www.cincinnati-transit.net/central.html

Compare the differences. The Taylor-Southgate uses fewer, longer spans than the Central Bridge. These longer spans produce much larger forces in the Taylor-Southgate, yet this bridge is not as deep as the Central Bridge. The tubes in the Taylor-Southgate Bridge must carry much higher stress, but they can do so, primarily, because they use a stronger type of steel than the types available in 1890.
FIVE BRIDGE TYPES

TRUSS

The Central Bridge was an early example of a type of bridge called a cantilever truss bridge. In the center of the main span you see a small trapezoidal truss that is actually supported by the two large cantilever trusses. These tall trusses, one on each end, sit on the stone piers in the middle of the river. This construction type was very popular at the time these bridges were built.

There are two more cantilever truss bridges over the Ohio River in Cincinnati: The C&O Railway Bridge (1929) and Clay-Wade-Bailey Bridge (1974) are side-by-side just downstream from the suspension bridge and the Brent Spence (I-75, I-71) bridge built in 1963.

The C&O Railway Bridge and Clay-Wade-Bailey Bridge

Brent Spence (I-75, I-71)
http://www.cincinnati-transit.net/brentspence.html

The Brent-Spence Bridge carrying I-71 and I-75 traffic across the Ohio is also a cantilever truss bridge.

The Firth of Forth Bridge in Scotland
http://bridgepros.com/projects/FirthofForth/FirthofForth.htm

One of the longest and earliest cantilever truss bridges in the world is the Firth of Forth Bridge in Scotland. It is also the first truly large structure that used steel instead of iron. Its total span is 2520 meters or 8276 feet. Its center spans are each about 107 meters (350 feet). It took 7 years to build and was completed in 1890. It was designed following the disaster in which a nearby railway bridge at the Firth of Tay collapsed in a huge windstorm. When the Firth of Forth Bridge was designed the engineers, Benjamin Baker and John Fowler, wanted to be very cautious so they used wind loads eight times larger than those that destroyed the Tay Bridge.
Lesson 3

Content Objectives:
1. Describe the different types of bridges and the forces that act on each bridge.
2. Understand the limitations of each of the three bridges and why Architects and Engineers use certain bridges.

Language objectives:
1. Write notes on static forces and bridges.
2. Read the notes to partners in the classroom.
3. Use speaking in order to teach the tension and compression forces to their partners.

Warm up: Draw a picture of tension and compression.

Activity 1:
1. Teacher will provide notes for Level 1 students to follow along while the teacher gives an interactive lecture on bridges.
2. Teacher will also use manipulative to visualize the different types of bridges and the forces acting on them.
   a. Teacher will need a Knex beam bridge, Truss bridge made of Knex the same length and width as the beam bridge and if possible a model of a suspension bridge the same length as the beam bridge.
3. When the teacher explains the limitations or draw backs to each particular bridge the teacher should use the models to demonstrate.
   a. Teacher will take the Knex Beam Bridge and show how the beam bridge becomes weaker when the span is increased
   b. Teacher will compare the beam bridges forces with the truss bridge forces by adding weights to each model bridge. This will demonstrate how the tension and compression forces work and how the truss bridge can withstand more forces and a longer span that Beam Bridges.

Activity 2:
1. Students will beak up into groups of three and do a turn and teach on the three bridges.
   a. Teacher will model activity first.
      i. Example: Teacher will explain what a beam bridge is and how forces act on beam bridges
      ii. “A beam bridge has a deck and 2 piers. It is the simplest bridge design. Teacher will be pointing to diagrams of the bridges.
      iii. “The tension forces are found on the bottom of the deck of the beam bridge and the compression forces are found on the top of the deck of the beam bridge. Teacher will point at the appropriate parts of the bridge.
      iv. Each student will do one bridge in the groups.

Conclusion: Teacher will have the model of the Beam Bridge at the front of the class and ask students to come up and point out where the tension and compression forces acting on the bridge are found.

Homework: guided reading for suspension bridge
Guided Reading Questions
Suspension Bridge
Level 3, 5

Using the reading that has been outlined, complete the following guided reading questions.

1. What does the deck of the suspension bridge hang from?

2. List different examples of suspension bridges given in the article.

3. What carries the Tension load on a suspension bridge?

4. What carries the compression load on a suspension bridge?

5. What is the purpose of back stays?

6. What is the purpose of suspension bridges?

7. Draw and label diagram with the parts to the suspension bridge and the forces that act on the bridge.
Level 1 ELL Guided Reading Questions

Students will label the Parts of the bridge and the forces that act on the suspension bridge.

Word bank:
- Tension
- Compression
- Deck
- Cables
- Tower
- Abutment (buttress)
- Load


**FIVE BRIDGE TYPES**

**SUSPENSION**

**Suspension Bridge**

Ancient suspension bridges were made of rope, vines or chains.

Newer suspension bridges use steel plates or super-strong steel cables. Cables work by putting the material into tension. Stone and concrete do not work well in tension; they are too brittle and usually too heavy. A material is in tension when its particles are being pulled apart. A rope holding a weight at its end is a long thin tension element, as shown in the picture of the dangling elephant on page 9.

Parts of a suspension bridge

A suspension bridge has a curved tension member. Look back at the diagram of “curved tension” back in the forces section. Examples of suspension bridges include rope bridges like those in ancient China, or the Roebling Bridge in Cincinnati.

Roebling under construction (http://www.cincinnati-transit.net/suspension.html)

Work on the Roebling Bridge began in 1856. The first parts to be constructed were the two stone towers. Even before they could be started, workers had to build cofferdams that held back the Ohio River water so that they could build the foundations on the dry riverbed. Before the towers were completed work was halted, in part because of the Civil War. In order to transfer troops to Kentucky a temporary pontoon bridge (a bridge built from boat to boat to boat) was built near the site of the Roebling Bridge. By the end of the war, the bridge was finished and it opened in December 1866.

In 1896, after fewer than thirty years in use, the Roebling Bridge was greatly modified to allow it to carry heavier loads. An additional set of cables was added above the original set and the deck was stiffened with a truss.

FIVE BRIDGE TYPES

SUSPENSION

Compare these two pictures to see the new cable running over the top of the towers and the new truss along the sides of the road deck.

Original vs. Modern Roebling

Suspension bridges use a combination of tension and compression. The cables can only carry tension loads. By stretching across the towers, they pull down and create compression in the towers.

How a suspension bridge works

The cables that go from the top of the towers down to the ground are the backstays. The backstays are connected to huge rock or concrete piers buried in the ground. The backstays keep the towers from bending in.

There are some experiments later in this tutorial that will let you see what happens if the bridge doesn't have backstays.

Look at the second black and white photo of the Roebling Bridge. Can you see that the cables in the center span curve upward to the towers, but the outer cables, called the backstays, are straight? Can you determine the direction of force on the backstays? It is always in the same direction because the force must run in the same direction of the cable. What is the direction of force on the main cables? What makes them curve?


FIVE BRIDGE TYPES

SUSPENSION

Diagrams
Suspension bridges are very light. This allows them to span very long distances. The longest suspension bridge in the world is the Asakushi Kaikyo Bridge in Japan. In addition to the long span, this bridge was designed to resist huge earthquakes (8.5) and hurricane force winds (220 MPH).

Asakushi Kaikyo Bridge
www.hsba.go.jp/bridge/e-akasi

Its center span is over a mile long (6531 feet). This is more than six times as long as the Roebling bridge whose span is 1057 feet. Because suspension bridges are very light, they can sometimes be damaged by winds that cause them to sway or gallop. This picture shows the famous collapse of the Tacoma Narrows Bridge (also known as “Galloping Gerty”) in Washington in 1947.

Tacoma Narrows failure
http://www.lib.washington.edu/specialcoll/tmb/

A home-movie was made of the collapse by Professor E.B. Farquharson, an engineering professor at the University of Washington, who was studying the dynamic effects of the wind on the bridge. It can be viewed at the first site below. More still photos are available at the second site, below.

http://cee.carleton.ca/Exhibits/Tacoma_Narrows/TacomaNarrowsBridge.mpg
http://cee.carleton.ca/Exhibits/Tacoma_Narrows/DSmith/photos.html
Diagrams to help students take notes and for the turn and teach activity
Lesson 4: experiment on testing the limitations of Beam bridges

Content Objectives
2. Design and conduct an experiment to test the limitations of beam bridges.
3. Analyze data and experiment.

Language objectives:
1. Write an experiment and analyze with group.

Materials: Knex blocks, weights, 2 stools, rulers, template for lab report

Warm up: Make a beam bridge with the Knex blocks provided.

Activity: Day 1
2. Teacher will introduce students to lab through observations. The first step is to pick the different variables.
   a. Teacher will model observations using a model knex beam bridge
      i. Example: teacher will say, “The bridge is designed to hold weight.” then demonstrate on a model bridge.
3. Students will observe and manipulate the bridge they made from Knex then make a list of their observations. These observations will be the variables in the experiment. Teacher will walk around the room guiding students in their lists.
4. After the groups make a list the teacher will demonstrate how to distinguish between Independent and Dependent variables.
   a. As the teacher calls on each group the teacher will either put their observations in the Independent list or dependent list on the board for the class to see. Teacher will highlight the variables that should be used in the experiment. **Independent Variable** ________ **Dependent Variable**
   b. The students will add their variables to the lab report template.
5. The teacher will then have the students move to writing the hypothesis by modeling on the board.
   a. Teacher should write on the board and think out load, “If the span is increased on the beam bridge the weight that can be held will decrease.”
6. Teacher should then have the students fill out materials needed.
7. Day 2 Demonstrate how the experiment should take place by modeling the setup and adding weights to the bridge. The student will write a step by step procedure to perform the experiment.
   a. **Level 1** – template has the procedure written and pictures added so students can follow.
   b. **Level 3** – procedure has sentence frames and a word bank to aid students
   c. **Level 5** - should use the lab report poster at the front of the room. They should write the procedure with the teacher correcting any mistakes made.
8. The students can then proceed with the lab and collect data using a data chart on the lab reports.
a. Level 1 – draw a picture of the forces affecting the bridge for the three different lengths.

b. Level 3, 5 record data in data chart in lab report.

9. **Day 3** Teacher will demonstrate how to write a conclusion through modeling the answer.

a. Teacher will use the sentence frames in the lab report. “**The data shows that the bridge span does affect the strength because the averages of the amount of weight held decreased by ____________ as the span increased.**
   i. Level 1 – draws their observations of the 3 different spans
   ii. Level 3, 5 will use sentence frames to complete lab.
   iii. Teacher will walk around the room and guide the groups through the conclusions.

**Conclusion of experiment:** teacher will ask students to explain what they have observed in their experiments.
# Poster for lab reports (level 5)

**Title:**
**Problem:** What is the research question?

How does _____________ affect the ________________ of a beam bridge?

<table>
<thead>
<tr>
<th>Variables:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent:</strong> what variable do you want to change? _________________</td>
</tr>
<tr>
<td><strong>Dependent:</strong> Changes as a result of your choice. _______________</td>
</tr>
<tr>
<td><strong>Controlled variables:</strong> Remain the same in the lab. _______________</td>
</tr>
</tbody>
</table>

**Hypothesis:**
Links back to the research question.
What do you predict will happen?
Why do you predict this is going to happen?

If the ___ (independent variable) _______ is ___ (how will it change) ______ on the beam bridge
then the ___ (dependent variable) ___ will _______ (what do you predict will happen).

**Materials:** What you will use to complete the experiment.

**Procedure:**
- Instructions that will complete the lab.
- Listed step by step.
- Explain how you are changing the Independent variable.
- How you are measuring the dependent variable.
**Results:**
Data collection: should have both a graph and a data table

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
</tr>
<tr>
<td>Trial 1</td>
</tr>
<tr>
<td>-------</td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Graphing:**
- Averages
- X axis = independent variable
- Y axis = dependent variable
- Label all axis and title

**Conclusions:**
- Write a conclusion based on the data collected.
- Should answer the research question
- Should explain if the data agrees or disagrees with the hypothesis
Sentence frames:
The data shows that the __________________________ affect the __________________________ because ___________________________.
The data _____ (agrees, Disagrees) ____ with the hypothesis because ___________________________.

**Errors in experiment:**
- evaluate your procedure:
  - Did you have: 1 Independent variable, 1 dependent variable, 3 trials control all other variables?
  - Explain how you could have made the experiment better.

Sentence frames:
An error that was made in the experiment was __________________________ and it affected the data by ___________________________.
To improve the experiment the ______________________ needs to be changed because ___________________________.
Lab report template for level 3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Problem: What is the research question?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How does ______________ affect the ______________ of a beam bridge?</td>
</tr>
<tr>
<td></td>
<td>Word wall: span, Strength</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent:</strong> what variable do you want to change? ________________</td>
</tr>
<tr>
<td><strong>Dependent:</strong> Changes as a result of your choice. ________________</td>
</tr>
<tr>
<td><strong>Controlled variables:</strong> Remain the same in the lab. ________________</td>
</tr>
<tr>
<td><strong>Word bank:</strong> strength, span, length, width, height</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hypothesis:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Links back to the research question.</td>
</tr>
<tr>
<td>What do you predict will happen?</td>
</tr>
<tr>
<td>Why do you predict this is going to happen?</td>
</tr>
</tbody>
</table>

If the ____ (independent variable) _______ is ____ (how will it change) ____ on the beam bridge
then the ____ (dependent variable) ____ will ________ (what do you predict will happen).

| Word bank: span, increase, decrease, strength |

<table>
<thead>
<tr>
<th>Materials: What you will use to complete the experiment.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Procedure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Instructions that will complete the lab.</td>
</tr>
<tr>
<td>- Listed step by step.</td>
</tr>
<tr>
<td>- Explain how you are changing the Independent variable.</td>
</tr>
<tr>
<td>- How you are measuring the dependent variable.</td>
</tr>
</tbody>
</table>

**Procedure**

1. Build a ______________ bridge _______cm long with Knex blocks
2. Place ______________ on a span that is _______cm
3. Add _______ to _______ and observe _______ acting on the bridge. Measure the amount of _______the bridge can hold
4. Do _______ trials
5. Repeats steps 1-4 with a span of _______cm and _______cm
6


Results:
Data collection: should have both a graph and a data table
Title

<table>
<thead>
<tr>
<th>IV</th>
<th>Trial 1</th>
<th>Trail 2</th>
<th>Train 3</th>
<th>average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Graphing:
- Averages
- X axis = independent variable
- Y axis = dependent variable
- Label all axis and title

Conclusions:
- Write a conclusion based on the data collected.
- Should answer the research question
- Should explain if the data agrees or disagrees with the hypothesis
Sentence frames:
The data shows that the __________________________ affect the __________________________ because ________________________________
The data _____ (agrees, Disagrees) ____ with the hypothesis because ________________________________________________.

Errors in experiment:
- evaluate your procedure:
- Did you have: 1 Independent variable, 1 dependent variable, 3 trials control all other variables?
- Explain how you could have made the experiment better.

Sentence frames:
An error that was made in the experiment was __________________________ and it affected the data by ________________________________.
To improve the experiment the _______________ needs to be changed because ________________________________.
Lab report for level 1

Title:
Problem: What is the research question?
How does ________________ affect the _______________ of a beam bridge?

Variables:
Independent: what variable do you want to change? ________________
Dependent: Changes as a result of your choice. ________________
Controlled variables: Remain the same in the lab. ________________
Word bank: strength, span, length, width, height

Hypothesis:
Links back to the research question.
What do you predict will happen?
Why do you predict this is going to happen?

If the ___ (independent variable) ______ is ___ (how will it change) ____ on the beam bridge
then the ___ (dependent variable) ____ will ________ (what do you predict will happen).

Word bank: span, increase, decrease, strength

Materials: What you will use to complete the experiment.

Procedure:
- Instructions that will complete the lab.
- Listed step by step.
- Explain how you are changing the Independent variable.
- How you are measuring the dependent variable.

Procedure

1. Build a ______ bridge __30 cm long with Knex blocks

2. Place ___________ on a span that is __ ____22____ cm

3. Add ____ weights ______ to ________ and observe ______ acting on the bridge. Measure the amount of ______ weight ______ the bridge can hold
4. Do ___3____ trials
5. Repeats steps 1-4 with a span of __26_____cm and a span of _28__ cm

Conclusion:
Students will draw when happened to the bridges as the span increased

Span 22cm

Span 26cm

Span 28cm
Circle the letter of the best answer. (2 point each)

1. Engineers use suspension bridges in order to
   a. Make the towers bear the entire weight of the load
   b. Lessen the cost of the bridge
   c. Decrease the tension forces
   d. Cross longer spans

2. The strongest shape used in truss bridges is
   a. Square
   b. Triangle
   c. Circle
   d. Diamond

3. The most fundamental rule relating to bridge design is that
   a. Compression force must be zero
   b. Tension force must be zero
   c. The force of gravity must be zero
   d. The net force must be zero

4. Two forces of equal strength that can act on an object in opposite directions are
   a. Balanced forces
   b. Unbalanced forces
   c. Tension forces
   d. Compression forces

5. A problem with the beam bridge is
   a. The closer together the supports, the weaker the bridge
   b. The farther apart the supports, the weaker the bridge
   c. They can only be used to cross shallow streams
   d. They cannot balance forces that act on them

6. A pulling forces that lengthens material it is acting on is called
   a. Net force
   b. Total force
   c. Compression force
   d. Tension force

7. When a massive truck drives over a bridge it creates
   a. More force on a bridge than car
   b. Less force than a car
   c. no force
   d. too much force
8. A controlled variable is
   a. The variable you keep changing in the experiment
   b. The only variable you change throughout the experiment
   c. The factors that you keep constant throughout the experiment
   d. What you measure in the experiment

9. The variable that you change in order to study it is called
   a. Independent variable
   b. Dependent variable
   c. Control variable
   d. Measurable variable

Short answers. Answer each question. You may use diagrams as long as you label them. (10 point each)

10. Draw a beam bridge and draw the arrows to show how tension and compression act on beam bridges.

11. Draw and label a truss bridge to show how tension and compression act on the bridge.

12. Draw and label a suspension bridge to show how tension and compression forces are acting on the bridge.

(20 points)

13. Students decide to examine how the material used to build the deck of the bridge affects the strength of the bridge. The students think that the tile is the strongest material and will hold the largest amount of mass. They made three different bridges and then proceeded to test three different materials on each bridge.

   - Their findings are below
<table>
<thead>
<tr>
<th></th>
<th>BEAM</th>
<th>TRUSS</th>
<th>SUSPENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARDBOARD</td>
<td>50G</td>
<td>100G</td>
<td>150G</td>
</tr>
<tr>
<td>WOODEN POCICLE STICKS</td>
<td>200G</td>
<td>500G</td>
<td>600G</td>
</tr>
<tr>
<td>TILE</td>
<td>4000G</td>
<td>4500G</td>
<td>4560G</td>
</tr>
</tbody>
</table>

- What are the Independent, Dependent and Control variables?

- What conclusion can you make for the experiment above and explain if the experiment is valid or did they make mistakes in their experiment?

(Hint: don’t forget explain data, support or not support hypothesis, validity of experiment)
Level 1 test

14. Draw a beam bridge and draw the arrows to show how tension and compression act on beam bridges.

15. Draw and label a truss bridge to show how tension and compression act on the bridge.

16. Draw and label a suspension bridge to show how tension and compression forces are acting on the bridge.
Math Unit  
Comparing, Ordering and Performing Operations with Integers  

Lesson 1.4: Compare and Order Integers

Content Objective:
1. Compare positive and negative numbers to determine which one is greater.
2. Order positive and negative numbers on a number line.

Language Objective:
1. Become familiar with the language of integers and communicate it in oral and written form.

Vocabulary: integer, positive integer, negative integer, absolute value, opposites

Materials: laminated number line, vocabulary word squares, sentence starter posters for discussions, paper, pencil, expo markers, number line worksheet, inequality symbol poster, chart paper, sharpie markers, adding integers graphic organizer

(3 minutes)
Warm Up- Put the numbers 3 and -3 on the board. Have students draw a number line starting at -5 and ending at 5. There will be a sample on the board for lower ELLs to copy. Students will be asked to put a dot on their number line to represent 3 and -3.

(11 minutes)
Vocabulary Development: TW use guided questions to begin a discussion which will review the definitions through group observation. TW use questions such as, “how are 3 and -3 the same? How are they different? What does the – sign represent? Is ½ on the number line? No, then it’s not an integer? Is 5 on the number line? Yes, then it’s an integer. Is -1/3 on the number line?....Integers are numbers on the number line. Where is zero on the number line? How do the positive numbers compare to zero? They are more than zero. How do the negative numbers compare to zero? They are less than zero. Students will now fill out their vocabulary squares for all vocabulary words, except for absolute value which will be discussed later in the lesson, in small groups. First, students will be grouped by ability to fill out the squares. Modifications are made for each level on the handout. Then the groups will be mixed to share out their squares with one another.

(10 minutes)
Activity 1: Graph numbers on a number line.
Students have had time to practice the vocabulary terms and finding numbers on a number line. Now they must graph integers (plot points) which I will give them on their own number line. They will have five numbers at a time which they must graph on one
number line. Once they have graphed the numbers, they must put them in order from least to greatest using their number line they have just drawn. Lower ELLs will be provided with a number line handout. TW have a laminated number line poster on the front board and call on students to come up and graph their answer with an expo marker and then write out the integers in order underneath their number line. TW repeat this 5 times for each problem listed below.

Problems:
1. -8, 5, -4, 2, 0
2. -5, 6, -1, 8, -3
3. 0, -1, -6, -3, 4
4. -10, 10, -7, -2, 1
5. 5, -1, 0, -3, -6

TW then put two numbers on the board and ask students in their groups to determine which number is greater. They will need to use the symbols for less than, <, and greater than, >, to fill in the expression. TW have a poster with the symbols listed on it displayed in the front of the room for students to refer back to. TW also share an analogy that the inequality symbol is an alligator’s mouth and the alligator’s mouth eats the larger number.

(10 minutes)
Activity 2: Find Absolute Value of a Number
TW use laminated number line poster on the board and illustrate an example of how to find absolute value of a number. For example, TW plot the point 5 on the number line. TW ask students to count out loud as a class how many spaces away from zero is the number 5. TW then plot -5 on the board and again ask students to count the spaces to zero. TW ask students, How many spaces between 5 and 0? How many spaces between -5 and 0? Why do you think it is the same? How many spaces do you think is between 7 and 0? How about -7 and 0? Then teacher will plot -7 and 7 on the number line so students can see if their prediction was correct. TW ask students to make predictions for the numbers -6, 8, -3, 9 and then as a class will plot the points and count the spaces aloud. TW review with students the symbol which represents absolute value and give students a few math expressions involving absolute value, listed below, to solve in their groups.
1. absolute value of -3 plus 8
2. a.v. of -4 plus a.v. of -1
3. 20 minus a.v. of 6
4. a.v. of 50 minus a.v. of -18

(8 minutes)
Activity 3: Find Opposite of a Number
TW put several real world examples on the board and ask students to state the opposite of the example given. Samples are listed below.
1. boy - girl
2. black - white
3. day - night
4. tall - short
5. fat - skinny
6. positive – negative

Then TW put the number **positive** 8 on the board and ask students to state the opposite which is **negative** 8. TW put students back into heterogeneous groups and ask each group to write down 10 numbers on a piece of chart paper. Once each group has done this, ask the groups to switch recorders and have the new recorder write the opposite next to each number. Each group will come up and post their chart paper on the front board. One member from each group will share out two of their examples.

(3 minutes)
Closure: TW write and read aloud two problems on the board. SW respond with thumbs up for true or thumbs down for false.

Question 1: The absolute value of -8 is -8.
Question 2: The opposite of -7 is 7.

Homework:
Pg. 25 #18-40 even and 44-50 even
TW pass out a graphic organizer to preview tomorrow’s lesson on adding integers.
**Preproduction**

Instructions: Review and recite each section of box independently.

<table>
<thead>
<tr>
<th>Word:</th>
<th>Definition/Synonym:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integer</td>
<td>Any number on the number line.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How to Find:</th>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw a number line and label the integers.</td>
<td>..... , -3, -2, -1, 0, 1, 2, 3, ....</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phrase:</th>
<th>Definition/Synonym:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Integers</td>
<td>Any integer greater than zero.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How to Find:</th>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw a number line and label the integers greater than zero.</td>
<td>1, 2, 3, 4, 5, 6, ....</td>
</tr>
<tr>
<td>Phrase:</td>
<td>Definition/Synonym:</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Negative Integers</strong></td>
<td><strong>Any integer less than zero.</strong></td>
</tr>
<tr>
<td><strong>How to Find:</strong></td>
<td></td>
</tr>
<tr>
<td>Draw a number line and label the integers less than zero.</td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>….., -6, -5, -4, -3, -2, -1,</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phrase:</th>
<th>Definition/Synonym:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opposites</strong></td>
<td><strong>Two numbers have the same absolute value but different signs.</strong></td>
</tr>
<tr>
<td><strong>How to Find:</strong></td>
<td></td>
</tr>
<tr>
<td>Keep the same number but put a different sign.</td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>10 and -10, 8 and -8</td>
<td></td>
</tr>
</tbody>
</table>
Developing

Instructions: Fill in the blanks for each box, using the word bank. (Beware: Not all words will be used!).

<table>
<thead>
<tr>
<th>Word: Integer</th>
<th>Definition/Synonym: Any number on the _______ _______.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to Find:</td>
<td>Draw a number line and label the _________.</td>
</tr>
<tr>
<td>Example:</td>
<td>..... , -3, -2, ___ , 0, 1, 2, 3, ....</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>How to Find:</td>
<td>Draw a ______ line and ______ the integers greater than ______.</td>
</tr>
<tr>
<td>Example:</td>
<td>1, ___ , 3, 4, ___ , 6, ....</td>
</tr>
</tbody>
</table>

Word Bank: greater than, number line, positive, label, 5, zero, 2, integers, negative, -1, number
<table>
<thead>
<tr>
<th>Phrase:</th>
<th>Definition/Synonym:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Integers</td>
<td>Any integer ______ ______ zero.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How to Find:</th>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw a ______ line and ______ the integers less than _______.</td>
<td>..... , -6, _____, -4, _____, -2, -1,</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phrase:</th>
<th>Definition/Synonym:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opposites</td>
<td>______ numbers have the same ____________ value but ____________ signs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How to Find:</th>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep the ______ number but put a different ______.</td>
<td>_____ and -10 8 and _____</td>
</tr>
</tbody>
</table>

Word Bank: absolute, greater than, same, -8, number, integer, zero, less than, different, -3, label, -5, two, sign, 10
**Nearly Fluent**

Instructions: Fill in the blanks for each box and discuss in small groups.

<table>
<thead>
<tr>
<th>Word:</th>
<th>Definition/Synonym:</th>
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</thead>
<tbody>
<tr>
<td>Integer</td>
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<th>Example:</th>
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<td>Positive Integers</td>
<td></td>
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<table>
<thead>
<tr>
<th>How to Find:</th>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phrase:</td>
<td>Definition/Synonym:</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Negative Integers</td>
<td></td>
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<tr>
<td>How to Find:</td>
<td>Example:</td>
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<tr>
<th>Phrase:</th>
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<tr>
<td>Opposites</td>
<td></td>
</tr>
<tr>
<td>How to Find:</td>
<td>Example:</td>
</tr>
</tbody>
</table>
Inequality Poster

The alligator eats the larger number. He is hungry!!!

> greater than 
  Ex. 8 > 2

< less than 
  Ex. 3 < 10

≥ greater than or equal to 
  Ex. x ≥ 4

≤ less than or equal to 
  Ex. x ≤ 2
Steps to Adding Integers
Graphic Organizer/Example

Add the following two integers: \(-19 + 8\)

Follow these steps to add integers.

Step 1:
Identify the signs of both integers by circling them.
\(-19 \text{ and } +8\)

Step 2:
If signs are the same then add.
If signs are different then subtract.
\(-19 \text{ and } +8 \text{ are different so subtract: } 19-8 = 11\)

Step 3:
Whichever number has a greater absolute value, keep the sign of that number.
\(19 > 8 \text{ so the answer is } -11.\)
Sentence Frames Poster

• Integers are numbers ________________________.

• Positive numbers are ________________________.

• Negative numbers are ________________________.

• A positive number is greater ____________________.

• A negative number is less ________________________.

• < means ____________________.

• > means ____________________.

• The alligator eats the ________________.

• The numbers in order from least to greatest are ____________________.

• The number _____ is less than the number ____.

• The number ____ is greater than the number ____.

• Absolute value means counting ________________.

• The absolute value of the number ____ is ____.
• The number _____ is _____ spaces from zero.

• Opposites have different ____________________.

• Opposites have the same ____________________.

• The opposite of the number _____ is ______.
Lesson 1.5: Adding Integers

Content Objective:
1. Add two or more integers.
2. Substitute a value into an expression and evaluate.

Language Objective:
1. Listen and follow directions to add integers.
2. Explain orally how to add integers.

Vocabulary: positive integer, negative integer, absolute value, same signs, different signs

Materials: laminated number line, vocabulary word squares from yesterday, sentence starter posters for discussions, paper, pencil, expo markers, number line worksheet, warm up, exit slip, subtracting integers graphic organizer, crayons, adding integers graphic organizer, yellow and red counters

(5 minutes)
Warm Up- Review the vocabulary words from yesterday since students will use them again today. Students will complete the warm up handout individually which requires them to match the word with its correct definition. Lower ELLs may use the vocabulary word squares we completed yesterday to reference back to and TW walk around to monitor and assist.

(5 minutes)
Vocabulary Development: TW go over the warm up handout with the class. TW have the numbers 1 through 9 written on the whiteboard in front of the class and ask for 9 students to come up and fill in the correct letter next to the number. TW make sure ELL student has correct answer before she asks them to come up and write the answer on the board. Once all 9 answers are on the board, TW say the first vocabulary word, which is “integer” and ask students to read aloud as a whole class the definition which is on the paper, “any number on the number line.” We will repeat this with all definitions. This gives students another opportunity to practice the content language.

(10 minutes)
Activity 1: Add integers Using Manipulatives-
TW place students in heterogeneous groups of 3-4 based on language proficiency and model how to use different colored counters to add integers. TW give each group yellow and red counters. The yellow represent positive integers and the red represent negative integers. TW write a problem on the board, -8 + 13 and have students count in their groups 8 red counters and 13 yellow counters. Once each group has completed this task, TW have the groups pair a red and yellow counter together and explain that they cancel each other out. Once the pairings are discarded, TW tell students to count whatever they have left and this represents their answer. In the example, -8 + 13, students should have paired up 8 counters and they will have 5 yellow counters left.
This means the answer is positive 5. TW put 5 more problems on the board and students will work in their groups with the manipulatives to solve the problems. TW call on 5 students to come up and write the answers.

1. \(-9 + 12\)
2. \(10 + (-12)\)
3. \(-16 + (-3)\)
4. \(-8 + 5 + (-10)\)
5. \(7 + (-12) + 11\)

(10 minutes)

Activity 2: Adding Integers Using a Number Line-
TW use laminated number line poster on the board and illustrate an example of how to add integers using a number line. SW have their own number line handout and two different colored crayons to follow along as the teacher explains the steps. For example, TW show students how to evaluate \(-3 + 8\). TW plot the point -3 on the number line and SW do the same on their own handout. TW then have students as a class orally count eight spaces to the right of -3 as they follow along on their own number line and then put a point using a different colored expo marker or crayon. TW ask students to say what number the new point is on, which is 5. This is the answer. TW repeat this procedure 5 more times with the examples listed below. TW call on 5 students to come up and write the answers.

1. \(-10 + 6 =\)
2. \(8 + (-7) =\)
3. \(-3 + (-4) =\)
4. \(5 + 6 + (-14) =\)
5. \(-1 + (-8) + 12 =\)

(12 minutes)

Activity 3: Adding Integers Using the Rules
Teacher passed out a graphic organizer at the end of yesterday’s lesson for students to preview the rules for adding integers. TW have students take out the graphic organizer and go over the example on the graphic organizer while talking students through the steps. TW then put five more problems on the board and students will go back to their heterogeneous groups from activity 1 and complete the 5 problems using the graphic organizer to reference back to. TW call on 5 students to come up and write the answers.

1. \(-25 + 18\)
2. \(36 + (-12)\)
3. \(-13 + (-84)\)
4. \(8 + 23 + (-19)\)
5. \(-36 + (-29) + 15\)
(3 minutes)
Closure: TW will pass out an exit slip with two problems on it. SW solve the problem using any method of their choice and hand in the exit slip as they leave.

Homework:
Pg. 32 #16-38 even
TW pass out a graphic organizer to preview tomorrow’s lesson on subtracting integers.
Directions: Match the word or picture with its correct definition.

1. Integer: _____  a. Any integer greater than 0.
3. Negative Integer: _____  c. The # of spaces (distance) from 0.
4. Absolute Value: _____  d. Any number on the number line.
5. Opposite: _____  e. -9 and -7
6. Same Signs: _____  f. >
7. Different Signs: _____  g. Any integer less than 0.
8. Less than: _____  h. -14 and 8
9. Greater than: _____  i. Two numbers have the same absolute value but different signs.

Exit Slip: Lesson 1.5 – Adding Integers

1. \(-9 + 8 = \) _____
2. \(23 + (-6) = \) _____
Steps to Subtracting Integers
Follow these steps to subtract integers.

**Step 1:**
Identify the signs of both integers by circling them.

-21 and -7

**Step 2:**
If signs are the same then add.
If signs are different then subtract.

-21 and -7 are the same so add: 21 + 7 = 28

**Step 3:**
Whichever number has a greater absolute value, keep the sign of that number.

21 > 7 so the answer is -28.

Sentence Frames Poster
• The alligator eats the ________________.

• The number _____ is less than the number _____.

• The number ____ is greater than the number _____.

• Absolute value means counting ________________.

• The absolute value of the number ____ is _____.

• The number _____ is ______ spaces from zero.

• The signs of the numbers _____ and ____ are the same.

• The signs of the numbers _____ and ____ are different.

• If the signs are the same then ______.

• If the signs are different then ______.

• The answer is _____.

Lesson 1.6: Subtracting Integers

Content Objective:
1. Subtract two or more integers.
2. Substitute a value into an expression and evaluate.

Language Objective:
1. Listen and follow directions to subtract integers.
2. Explain orally how to subtract integers.

Vocabulary: positive integer, negative integer, absolute value, same signs, different signs

Materials: laminated number line, sentence starter posters for discussions, paper, pencil, expo markers, number line worksheet, exit slip, subtracting integers graphic organizer, crayons, yellow and red counters, adding integers graphic organizer

(5 minutes)
Warm Up - Review how to add integers seems students are doing a similar procedure today. TW put three problems on the board. SW sit with a partner and solve the three problems then TW review the rules for adding integers as she models how to solve the problems. TW tell students to take out the graphic organizer on adding integers to follow along on.

1. 19 + (-25)
2. -72 + (-23)
3. -30 + 15

Vocabulary Development: There are no new vocabulary words for this lesson.

(10 minutes)
Activity 1: Subtract integers Using Manipulatives - TW place students in heterogeneous groups of 3-4 based on language proficiency and model how to use different colored counters to subtract integers. TW give each group yellow and red counters. The yellow represent positive integers and the red represent negative integers. TW review that 8 – (-1) really means 8 + 1 because two negatives next to each other make a positive. This was previously taught but teacher will remind students. TW write a problem on the board, 7 - 10 and have students count in their groups 7 yellow counters and 10 red counters because the sign in front of the ten is a negative sign. Once each group has completed this task, TW have the groups pair a red and yellow counter together and explain that they cancel each other out. Once the pairings are discarded, TW tell students to count whatever they have left and this represents their answer. In the example, 7 -10, students should have paired seven counters so they will have 3 red counters left. This means the answer is negative 3. TW put 5 more problems on the board and students will work in their groups with the manipulatives to solve the problems. TW call on 5 students to come up and write the answers.

1. -19 - 3
Activity 2: Subtracting Integers Using a Number Line-
TW use laminated number line poster on the board and illustrate an example of how to subtract integers using a number line. SW have their own number line handout and two different colored crayons to follow along as the teacher explains the steps. For example, TW show students how to evaluate -4. TW plot the point -4 on the number line and SW do the same on their own handout. TW then have students as a class orally count five spaces to the left of -4 as they follow along on their own number line and then put a point using a different colored expo marker or crayon. TW ask students to say what number the new point is on, which is -9. This is the answer. TW repeat this procedure 5 more times with the examples listed below. TW call on 5 students to come up and write the answers.

1. -9 - 3
2. -8 - (-6)
3. 10 - (-1)
4. 7 - 3 - (-5)
5. 10 - 4 – (-6)

Activity 3: Subtracting Integers Using the Rules
Teacher passed out a graphic organizer at the end of yesterday’s lesson for students to preview the rules for subtracting integers. TW have students take out the graphic organizer and go over the example on the graphic organizer while talking students through the steps. TW then put five more problems on the board and students will go back to their heterogeneous groups from activity 1 and complete the 5 problems using the graphic organizer to reference back to. TW call on 5 students to come up and write the answers.

1. -24 - 17
2. 39 - (-10)
3. -3 - 81
4. 6 - 21 - (-11)
5. -15 – (-12) - 23

Closure: TW will pass out an exit slip with two problems on it. SW solve the problem using any method of their choice and hand in the exit slip as they leave.
Homework:
Pg. 36 #12-30 even

Exit Slip: Lesson 1.6 – Subtracting Integers

1. \(-7 - 8 = \)______

3. \(13 - (-4) = \)______
Sentence Frames Poster

• The alligator eats the ________________.

• The number _____ is less than the number ____.

• The number ____ is greater than the number ______.

• Absolute value means counting ________________.

• The absolute value of the number _____ is _____.

• The number _____ is ______ spaces from zero.

• The signs of the numbers _____ and ____ are the same.

• The signs of the numbers _____ and ____ are different.

• If the signs are the same then ______.

• If the signs are different then ______.

• The answer is _____.
Content Objective:
1. Multiply or divide two or more integers.

Language Objective:
1. Investigate in groups and explain orally the rules for multiplying and dividing integers.

Vocabulary: positive integer, negative integer, same signs, different signs

Materials: sentence starter posters for discussions, paper, pencil, anticipation guide, integer worksheet 1, investigative lab, integer worksheet 2

(5 minutes)
Warm Up - SW complete with a partner an anticipation guide for multiplying and dividing integers. Then TW read aloud to the class each topic and then as a class fill out one anticipation guide. For example, TW read the first topic, a positive number is always greater than a negative number. SW raise thumbs up for completely agree, thumbs sideways for somewhat agree and thumbs down for disagree. The majority vote wins when we complete the class anticipation guide.

Vocabulary Development: There are no new vocabulary words for this lesson.

(10 minutes)
Activity 1: Lab Using Calculator
TW pass out a worksheet with 20 problems on multiplying and dividing integers. TW give each student a calculator and instruct the students to use the calculator to answer all 20 problems. No modifications are needed in this worksheet because students are using a calculator and there are no language demands. SW have 5 minutes to complete the 20 problems. TW have the 20 problems written on the board and call students to come up and write their answer next to the problem. Once all 20 answers are written on the board, students can check their answers and make corrections if necessary. Then TW split students into heterogeneous groups of 3-4 based on language proficiency. TW pass out a “lab report form” for students to complete in their small groups. The lab report asks questions of students about their observations for the rules for multiplying and dividing integers.

(27 minutes)
Activity 2: Multiplying Integers Lab Report and More Practice
SW complete a lab report on their observations from activity 1 which includes making up their own rules for multiplying and dividing integers. Once each group has completed their form, TW ask for one representative from each group to come up and share their findings with the whole class. TW write on the board each group’s rules as they present. Once all groups are done presenting, the class will agree on the rules, which TW write in big letters on the front board and TW pass out a worksheet for groups to now practice the rules without a calculator.
(3 minutes)
Closure: TW will have students take out the anticipation guide from the beginning of class and make adjustments based on what they learned today in class. SW hand them in as they leave class.

Homework:
Pg. 44-45 #3-23, skip #11

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**Sentence Frames Poster**

- The signs of the numbers _____ and ____ are the same.
• The signs of the numbers _____ and ____ are different.

• If the signs are the same then ______.

• If the signs are different then ______.

• The answer is _____.

• We found that ________________________.

• In problem # ____ we saw that ____________________.

• When multiplying integers you ____________________.

• When dividing integers you ____________________.

• The rules for multiplying and dividing are ________.

Anticipation Guide – Lesson 1.7

<table>
<thead>
<tr>
<th>Agree</th>
<th>Somewhat Agree</th>
<th>Disagree</th>
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A positive number is always greater than a negative number.

A positive times a positive is a negative.

A positive divided by a negative is a negative.

The rules for multiplication and division are the same.

When multiplying integers, you keep the sign of the larger number.
Solve using a calculator.

1. \(-23(18) = \) ______
2. \(\frac{60}{-4} = \) ______
3. \(468 + (-78) = \) ______
4. \(-5(-4) = \) ______
5. \(16(12) = \) ______
6. \(\frac{-150}{-5} = \) ______
7. \(-25(-9) = \) ______
8. \(-135 + (-9) = \) ______
9. \(-6(7) = \) ______
10. \(-35(-19) = \) ______
11. \(\frac{369}{3} = \) ______
12. \(18(-51) = \) ______
13. \(126 \div 63 = \) ______
14. \(\frac{-186}{6} = \) ______
15. \(9(-10) = \) 

16. \(-216 \div (-12) = \) 

17. \(10(85) = \)

18. \(-\frac{84}{-2} = \)

19. \(-12(-8) = \)

20. \(-810 \div 9 = \)

Multiplying and Dividing Integers Activity 2
Nearly Fluent

Name: _____________________  Date: ___________
Solve **without** using a calculator.

1. \(-3(8) = \______\)
2. \(\frac{24}{-4} = \______\)
3. \(42 \div (-7) = \______\)
4. \(-6(-3) = \______\)
5. \(10(8) = \______\)
6. \(\frac{-15}{-5} = \______\)
7. \(-8(-9) = \______\)
8. \(-49 \div (-7) = \______\)
9. \(-10(7) = \______\)
10. \(-12(-2) = \______\)
11. \(\frac{36}{6} = \______\)
12. \(11(-5) = \______\)
13. \(120 \div 10 = \______\)
14. \( \frac{-48}{6} = \) ______

15. \( 4(-11) = \) ______

16. \( -100 \div (-10) = \) ______

17. \( 8(9) = \) ______

18. \( \frac{-84}{-7} = \) ______

19. \( -12(-3) = \) ______

20. \( -81 \div 9 = \) ______

Multiplying and Dividing Integers Activity 2
Developing

Name: _____________________

Date: __________
Solve \textbf{without} using a calculator in your groups.

Remember:

\begin{align*}
+ \cdot + &= + & \text{Same Signs = Positive} \\
- \cdot - &= + \\
+ \cdot - &= - & \text{Different Signs = Negative} \\
- \cdot + &= - 
\end{align*}

1. \(-3(8) = \text{______}\)
2. \(\frac{24}{-4} = \text{______}\)
3. \(42 \div (-7) = \text{______}\)
4. \(-6(-3) = \text{______}\)
5. \(10(8) = \text{______}\)
6. \(\frac{-15}{-5} = \text{______}\)
7. \(-8(-9) = \text{______}\)
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9. \(-10(7) = \text{______}\)
10. \(-12(-2) = \text{______}\)
11. \(\frac{36}{6} = \text{______}\)
12. $11(-5) = ______$
13. $120 \div 10 = ______$
14. $\frac{-48}{6} = ______$
15. $4(-11) = ______$
16. $-100 \div (-10) = ______$
17. $8(9) = ______$
18. $\frac{-84}{-7} = ______$
19. $-12(-3) = ______$
20. $-81 \div 9 = ______$

Multiplying and Dividing Integers Activity 2
Preproduction
Name: _____________________ Date: __________
Solve without using a calculator in your groups.

Remember:

\[ + \cdot + = + \quad \text{Same Signs = Positive} \]
\[ - \cdot - = + \]
\[ + \cdot - = - \quad \text{Different Signs = Negative} \]
\[ - \cdot + = - \]

1. \(-3(8) = \)_______  
   A. -7

2. \(\frac{24}{-4} = \)_______  
   B. -72

3. \(42 \div (-6) = \)_______  
   C. -24

4. \(-6(-3) = \)_______  
   D. 7

5. \(10(8) = \)_______  
   E. 18

6. \(\frac{-15}{-5} = \)_______  
   F. -6

7. \(-8(9) = \)_______  
   G. -70

8. \(-49 \div (-7) = \)_______  
   H. 80

9. \(-10(7) = \)_______  
   I. 24

10. \(-12(-2) = \)_______  
    J. 3

11. \(\frac{36}{6} = \)_______  
    K. -8

12. \(11(-5) = \)_______  
    L. 6
13. $120 \div 10 = \underline{\hspace{2cm}}$  
   M. 10

14. $\frac{-48}{6} = \underline{\hspace{2cm}}$  
   N. -9

15. $4(-11) = \underline{\hspace{2cm}}$  
   O. -55

16. $-100 \div (-10) = \underline{\hspace{2cm}}$  
   P. 72

17. $8(9) = \underline{\hspace{2cm}}$  
   Q. 12

18. $\frac{-84}{7} = \underline{\hspace{2cm}}$  
   R. 36

19. $-12(-3) = \underline{\hspace{2cm}}$  
   S. -44

20. $-81 \div 9 = \underline{\hspace{2cm}}$  
   T. -12

---

Lab to Investigate the Rules for Multiplying/Dividing Integers:
Nearly Fluent

Title:
Problem: What are the rules for multiplying and dividing integers?

Variables:

Independent: What variable do you want to change? ______________
Dependent: What variable is affected by the change? ______________

Hypothesis:
Links back to the question.
What do you predict will happen?
Why do you predict this is going to happen?

Materials: What did you use to complete the experiment?
Procedure:
- Instructions to complete the lab.
- Listed step by step.

1. Complete the handout on multiplying and dividing integers.

2. Check your answers with the ones on the board.

3. Fill in the data chart below with your group.

<table>
<thead>
<tr>
<th>Problem #</th>
<th>Sign of Integer 1</th>
<th>Sign of Integer 2</th>
<th>Sign of Product/Quotient</th>
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</thead>
<tbody>
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</table>

4. Based on the data chart, write a conclusion.

Results:
Data collection: complete the data table below based on the worksheet

**How do the signs of the integers affect the signs of the product/quotient?**
**Conclusions:**
- Write a conclusion based on the data collected.
- Should answer the research question.
- Should explain if the data agrees or disagrees with the hypothesis.
Lab to Investigate the Rules for Multiplying/Dividing Integers:
Developing

Title:

Problem: What are the rules for multiplying and dividing integers?

How does the sign of the ________________ affect the sign of the ________________?

Word Bank: product/quotient, integers

Variables:

Independent: What variable do you want to change? ________________
Dependent: What variable is affected by the change? ________________

Word Bank: signs of product/quotient, signs of integers

Hypothesis:
Links back to the question.
What do you predict will happen?
Why do you predict this is going to happen?

If the ___ (independent variable) ______ are ___ (the same or different?) ___ then the ___ (dependent variable) ___ will be ________ (what do you predict will happen?).

Word Bank: same, different, signs of the integers, signs of the product/quotient, same, different

Materials: What did you use to complete the experiment?
**Procedure:**
- Instructions to complete the lab.
- Listed step by step.

1. Complete the handout on multiplying and dividing integers.

2. Check your answers with the ones on the board.

3. Fill in the data chart below with your group.

4. Based on the data chart, write a conclusion.

**Results:**
Data collection: complete the data table below based on the worksheet

**How do the signs of the integers affect the signs of the product/quotient?**

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</tbody>
</table>
Conclusions:
- Write a conclusion based on the data collected.
- Should answer the research question.
- Should explain if the data agrees or disagrees with the hypothesis.

The data shows that the ________________________ (does, does not) affect the ________________________ because the _____________________ is ________________________.

The data _____ (agrees, disagrees) ____ with the hypothesis because ______________________________________________________________.
Lab to Investigate the Rules for Multiplying/Dividing Integers: Preproduction

Title: Rules for Multiplying/Dividing Integers

Problem: What are the rules for multiplying and dividing integers?

How does the sign of the ______________ affect the sign of the ______________?

Word Bank: product/quotient, integers

Variables:

Independent: What variable do you want to change? ______________
Dependent: What variable is affected by the change? ______________

Word Bank: signs of product/quotient, signs of integers

Hypothesis:
What do you predict will happen?
Why do you predict this is going to happen?

If the ___ (independent variable) _____ are ___ (the same or different?) ____ then the ___ (dependent variable) ___ will be ______ (what do you predict will happen).

Word Bank: same, different, signs of the integers, signs of the product/quotient, same, different

Materials: What did you use to complete the experiment? Circle them below.

Calculator, computer, worksheet, book, pencil, pen, highlighter
Procedure:
- Instructions to complete the lab.
- Listed step by step.

1. Complete the handout on multiplying and dividing integers.

2. Check your answers with the ones on the board.

3. Fill in the data chart with your group.

<table>
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<th>Sign of Product/Quotient</th>
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</table>

4. Based on the data chart, write a conclusion.
Results:
Data collection: complete the data table below based on the worksheet

How do the signs of the integers affect the signs of the product/quotient?

<table>
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</table>

Conclusions:
- Write a conclusion based on the data collected.
- Should answer the research question.
- Should explain if the data agrees or disagrees with the hypothesis.

The data shows that the __________________________ (does, does not) affect the __________________________ because the __________________________ is __________________________.

The data _____ (agrees, disagrees) _____ with the hypothesis because __________________________.
Culminating Themed Lesson on 9/11

Content Objective:
1. Find absolute value of a number.
2. Compare positive and negative numbers to determine which one is greater.
3. Perform operations with integers.

Language Objective:
1. Explain orally how to solve absolute value problems and compare integers.

Vocabulary: integer, positive integer, negative integer, absolute value, greater than, less than, opposites, x axis, y axis

Materials: student graph paper, computers, rulers, pencils, 9/11 question worksheet, sentence starters, teacher graph paper, reflection sheet

(10 minutes)
Warm Up- As soon as students come in, they will be split into heterogeneous pairs based on language proficiency. Each pair will be given a laptop. Students will be told to search the internet to answer the following 2 questions.
• How many floors above ground are in each Twin Tower?
• How many floors are underground in each Twin Tower?

TW write these 2 questions on the board and read aloud to the class before they begin. Once time is called TW ask students what they found and go over the answers so students have the correct measurements. Both towers had a total of 110 floors above ground and 7 parking levels below ground.

Vocabulary Development: There are no new vocabulary words for this lesson. TW tell students to take out word squares to reference back to if necessary.

(25 minutes)
Activity 1: Create a Scaled Drawing on Graph Paper
Each pair will be given a piece of graph paper and a ruler. TW write on the board the steps pairs need to complete in order to make the scaled drawing of the Twin Towers. The steps are listed below. Lower level ELLs will be given a piece of graph paper with the scale already started. They must finish completing it. TW read step 1 and model how to do it on a large piece of graph paper in front of the class. TW pause to give pairs time to complete that step. Then TW read step 2 and model it on the graph paper in front and pause again. TW continue to do this until pairs have completed their drawing and begin coloring it.
1. Count 8 rows from the bottom of the paper and make a line going horizontally across.
2. Count 3 spaces from the left and make a line going vertically down.
3. Label the x axis (horizontal line) as ground level.
4. Then label the y axis (height) counting by 5s, don’t forget to label the negative numbers because these represent the basement levels.
5. Draw one of the towers, using the ruler. Label it the North Tower. Also draw the basement level of that same tower.
6. Repeat step 5 for the South tower.
8. Answer the 9/11 questions on the handout with your partner.

(7 minutes)
Activity 2: Complete the 9/11 Question Worksheet
SW complete 9/11 questions about their scaled drawings. Modifications are made on the handouts. Also teacher will walk around and assist if any questions.

(3 minutes)
Closure: Pairs will write their names on the front of the graph paper and post their paper to the student work wall. As they post their drawing, they can look at other pairs drawings. They will hand in their 9/11 questions worksheet to the teacher.

Homework:
Write a reflection on what you liked and did not like about the activity.
Reflection 9/11 Scale Drawing Activity
Nearly Fluent

1. What did you like about the scale drawing activity?
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

2. What did you dislike about the scale drawing activity?
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

3. What would you do better if you could redo it?
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
Reflection 9/11 Scale Drawing Activity
Developing

1. What did you like about the scale drawing activity?

My favorite part of the activity was

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. What did you dislike about the scale drawing activity?

My least favorite part of the activity was

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. What would you do better if you could redo it?

I would like to change how I

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Reflection 9/11 Scale Drawing Activity  
Preproduction

1. What did you like about the scale drawing activity?

My favorite part of the activity was: (circle one or two)
  • Coloring
  • Making the axis
  • Using the computer
  • Labeling the picture
  • Answering the questions

2. What did you dislike about the scale drawing activity?

My least favorite part of the activity was: (circle one or two)
  • Coloring
  • Making the axis
  • Using the computer
  • Labeling the picture
  • Answering the questions

3. What would you do better if you could redo it?

I would change: (circle one or two)
  • Coloring
  • Making the axis
  • Using the computer
  • Labeling the picture
  • Answering the question
Sentence Frames Poster

• There are _____ floors above ground in each Twin Tower.

• There are _____ floors underground in each Twin Tower.

• The towers are ____ floors tall.

• The towers have _____ floors in the basement.

• Horizontal means ____________.

• Vertical means ____________.

• The x axis is the line that ________________.

• The y axis is the line that ________________.

• I liked ________________.

• I disliked ________________.

• I would change ________________.
9/11 Questions Worksheet
Nearly Fluent

1. What is the absolute value between ground level and the top of the South Tower?

2. What is the absolute value between ground level and the bottom of the basement of the South Tower?

3. What is the difference between the absolute value from the top to the bottom of the South Tower?

4. What is the difference between the absolute value from the top to the bottom if there were eight towers?

5. If there were five towers, what would be the absolute value between ground level and the top of all five towers combined?

6. If there were ten towers, what would be the absolute value between ground level and the bottom of the basement of all ten towers combined?
9/11 Questions Worksheet
Developing

Directions: Use all words from the word bank to fill in the blanks.

1. What is the absolute value between ground level and the top of the South Tower?

The _______ ______ between _______ ______ and the _____ of the South Tower is _______.

2. What is the absolute value between ground level and the bottom of the basement of the South Tower?

______ absolute value between ground level and the ______ of the __________ of the South Tower is _______.

3. What is the difference between the absolute value from the top to the bottom of the South Tower?

The _______ between the absolute _______ from the top to the bottom of the _______ Tower is ___________.

4. What is the difference between the absolute value from the top to the bottom if there were eight towers?

The difference _______ the _______ value from the top to the bottom of _______ towers is ___________.

Word Bank: absolute, between, and, ground, level, of, the, top, Tower.
5. If there were five towers, what would be the absolute value between ground level and the top of all five towers combined?

The absolute value between __________ level and the top of all _______ towers ____________ is __________.

6. If there were ten towers, what would be the absolute value between ground level and the bottom of the basement of all ten towers combined?

The absolute value between ground _______ and the bottom _____ the basement of all ______ towers combined is _________.

Word Bank:
South, basement, ten, 103, absolute value, eight, combined, of, value, 70, ground level, 824, difference, 110, bottom, five, 7, absolute, between, top, ground, 550, level, The
9/11 Questions Worksheet
Preproduction

Directions: Use the numbers from the number bank to fill in the blanks. Not all numbers will be used!!!!!

1. What is the absolute value between ground level and the top of the South Tower?

The absolute value between ground level and the top of the South Tower is ________.

2. What is the absolute value between ground level and the bottom of the basement of the South Tower?

The absolute value between ground level and the bottom of the basement of the South Tower is ______.

3. What is the difference between the absolute value from the top to the bottom of the South Tower?

The difference between the absolute value from the top to the bottom of the South Tower is ____________.

4. What is the difference between the absolute value from the top to the bottom if there were eight towers?

The difference between the absolute value from the top to the bottom of eight towers is ____________.
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The absolute value between ground level and the top of all five towers combined is ________.

6. If there were ten towers, what would be the absolute value between ground level and the bottom of the basement of all ten towers combined?

The absolute value between ground level and the bottom of the basement of all ten towers combined is ________.

Number Bank:
103, 10, 7, 824, 16, 110, 708, 550, 70
8th grade Spanish

Student levels of proficiency
Native speaker advanced level (level 5)
Native speaker regular level     (level 3)
Native speaker lower level       (level 1)
ACTFUL (Association Council of Teachers of Foreign Language)
Standards:
Standard 1.3: Students present information, concepts, and ideas to an audience of listeners or readers on a variety of topics.
Standard 3.1: Students reinforce and further their knowledge of other disciplines through the foreign language.
Standard 5.1: Students use the language both within and beyond the school setting.

<table>
<thead>
<tr>
<th>Language objectives</th>
<th>Content objectives</th>
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<tbody>
<tr>
<td>Students will be able to:</td>
<td>Students will be able to:</td>
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<tr>
<td>1. Summarize events in writing.</td>
<td>1. Understand and interpret US foreign policy and war on terrorism during the presidency of Bill Clinton and George W. Bush era</td>
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<tr>
<td>2. Present orally a poster with 9/11 the most important moments.</td>
<td>2. Analyze and synthetize how the 9/11 events impacted the United States and the world.</td>
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<tr>
<td>3. Write paragraphs in Spanish expressing thoughtful consideration on topics of interest.</td>
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Synopsis:
In this unit, students will focus on learning about U.S Foreign Policy and the war on terrorism. They will learn how to put events in a sequence while they learn summarizing skills. In addition, students will be able to present orally the most important events of the 9/11 attack and how the American people and the World were affected from this tragedy. Students will be able to practice their writing skills in Spanish by writing paragraphs using the main idea and supporting their argument with details from the reading materials. Based on Bloom’s Taxonomy, students will be able to use analyzing and synthesizing. Students will be able to analyze and synthesize events by orally presenting in front of the class a poster with main events that are key to the American foreign policy.

*The materials in the unit are designed using the format and the framework of “Realidades para hispanohablantes”. Prentice Hall. Level A/B. Realidades.*
Lesson Plan: 57-60 minutes: 8th grade Spanish for Native speakers

Lesson Objectives:

Language objective: Students will be able to discuss orally, read in Spanish and answer questions about the U.S Foreign Policy

Content objective: Students will write in Spanish their thoughts about US Foreign Policy and US aid in developing countries.

Warm-up 5-7 min:
Students will work in groups to fill in a world map with the most important countries and label them in Spanish.
Teacher will give a word bank for the lower level (1) (USA, Mexico, Brazil, France Germany, Russia, Spain, Argentina, China and India)
Level 3 will have a bank with words written in Spanish.
i.e., Estados Unidos, México, Brasil, Alemania, Rusia, España, Argentina, China, India.
(Appendix 1, 1a, 1b)
Level 5 will have no word bank and is required to label at least 5 countries in Spanish.

Brainstorm 1: 5-7 minutes
Teacher will have an open discussion in Spanish and ask the students What they know about US foreign policy, the economic aid to other countries.
Level 1 will have a sentence starter (Appendix 1c, 1d, 1e)

Technology connection: Teacher must look at the school library for resources or youtube: Video of 5-10 minutes about American foreign policy.

Reading comprehension: 12-15 minutes
Students will read silently independently the “Foreign Policy” reading, and will underline the new vocabulary.
Teacher will discuss the new vocabulary with students and go over the information that they do not understand. (Appendix 1c, 1d, 1e)

Differentiation: The reading will be differentiated in three levels of readers.

Writing 20 minutes:
Students will reflect about the discussions and write paragraphs while they answer questions about the US states foreign policy.

Differentiation: The higher level will complete 3 questions in Spanish, the middle and the lower will complete 2 questions in Spanish; the lower level will have cues while completing the questions (Appendix 1f, 1g, 1h).
Appendix 1 (level 5)
Enumera al menos 5 países más importantes del mundo
Appendix 1a (level 3)

Enumera al menos 5 países más importantes del mundo

Estados Unidos, México, Brasil, Alemania, Rusia, España, Argentina, China, India.
USA, Brazil, France, Germany, Russia, Argentina, China, India, Greece, Iraq, Afghanistan, Pakistan, South Africa
La política exterior de los Estados Unidos

Los Estados Unidos es un país con valores democráticos que promueven la paz y la armonía en el mundo.

La política exterior de los Estados Unidos incluye ayudas monetarias y programas en diversos países de la América del Sur, África y Asia. En ciertas naciones los Estados Unidos han abierto programas escolares, gobernantes para enseñar a los líderes a promover la paz en sus países.

Los Estados Unidos han contribuido a traer la democracia en varios países, y ayudar a los nuevos gobiernos a establecer un sistema democrático en sus naciones. Pero la ayuda internacional que los Estados Unidos dan a otras naciones del mundo no está siempre apoyada y apreciada. Varios grupos terroristas como Al-Qaeda y Yihad, que conducen guerras y tienen que controlar zonas calientes en el Medio Oriente están siempre opuestos de la política exterior de los Estados Unidos.

Estas organizaciones terroristas no promueven una democracia sino, cometen actos de terrorismo en la tierra de los Estados Unidos y el exterior donde quedan los intereses de los Estados Unidos, como las Misiones Diplomáticas, las Embajadas Americanas etc.

- Al-Qaeda: Organización islámica terrorista con base en Afganistán, cuidada por Osama Bin Laden, y apoyada por Taliban.
- Yihad: Organización islámica terrorista basada en el Medio Oriente.
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- **Al-Qaeda:** Organización islámica terrorista con base en Afganistán, cuidada por Osama Bin Laden, y apoyada por Talibán.
- **Yihad:** Organización islámica terrorista basada en el Medio Oriente.
Actividad A.

Responde en español a las preguntas siguientes según la información del artículo, y da tu opinión sobre el tema.

1. Según el artículo, ¿cual tipos de programas los Estados Unidos han financiado en varios naciones del mundo? ¿A qué sirven estos programas?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

¿Según el artículo, cuales son unas de razones que organizaciones terroristas como Al-Qaeda y Yihad están opuestos de la política exterior de los Estados Unidos?
________________________________________________________________________
________________________________________________________________________
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________________________________________________________________________

2. Da un ejemplo de la ayuda del gobierno americano a unos países del mundo ¿en qué consiste la ayuda?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Actividad A.
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1. Según el artículo, ¿cual tipos de programas los Estados Unidos han financiado en varios naciones del mundo?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
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________________________________________________________________________

2. ¿Según el artículo, cuales son unas de las organizaciones terroristas opuestas de la política exterior de los Estados Unidos?

________________________________________________________________________
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2. Da un ejemplo de la ayuda del gobierno americano a unos países del mundo, ¿en qué consiste la ayuda?

________________________________________________________________________
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Actividad A.
Responde en español a las preguntas siguientes según la información del artículo, y da tu opinión sobre el tema.

1. ¿Cuál tipos de programas los Estados Unidos han financiado en varios naciones del mundo?

Los estados Unidos han financiado programas como:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. ¿Cuáles son unas de las organizaciones terroristas opuestas de los Estados Unidos?

Unas de las organizaciones terroristas son:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. ¿En que forma ayudan los Estados Unidos los otros países?

Los Estados Unidos ayudan:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Lesson Plan: 57-60 minutes: 8th grade Spanish for Native speakers

Language Objectives: Students will be able to discuss orally, read in Spanish and answer questions about the attacks of September 11, 2001

Content Objectives: Students will organize in Spanish their thoughts and ideas about the attacks on September 11 and how they impacted the life of the American people.

Warm-up 5-7 min:
Students will work in groups to will fill in a Manhattan Map with famous landmarks.
Teacher will give a word bank in Spanish for level 3
Teacher will give a word bank in English for the lower level (1)
(Empire State Building, World financial Center, Chrysler Building etc)
(Appendix 2, 2a, 2b)

Background building:
I: 5-7 minutes. Teacher will have an open discussion in Spanish and ask the students What they know about terrorist attacks on the American soil till recent days. Sentence starters will be posted on the board in Spanish and English.
Terrorist attacks _______________________.
The terrorist organizations have _______________________.
The department of homeland security is _______________________.
II: 5-7 minutes: Teacher will have an open discussion about how do we as Americans commemorate the events of September 11, and how do they help us be aware of our surrounding and vigilant (Focus on the logo “if you see something say something”) using sentence starters which will be posted:
We can be aware of our surroundings by ____________________.
We can protect each other by __________________________.
We can protect our land/landmarks by ______________________.
(Appendix 2c, 2d, 2e)

Differentiation: The low level (1) of native speakers may express themselves in English, if they choose to do so. Or they will have sentence starters to facilitate their writing which are above.

Technology connection: Teacher must look at the school library for resources. (Video of 5-10 minutes about September 11).

Reading comprehension: 12-15 minutes
Students will read silently independently the Attacks on September 11th reading, and will underline the new vocabulary.
Teacher will discuss the new vocabulary with students and go over the information that they do not understand. (Appendix 2c, 2d, 2e)
Differentiation: The reading will be differentiated in three levels of readers.
**Writing 20 minutes:**
Students will reflect about the discussions and write paragraphs while they answer questions about the attacks on September 11.
**Differentiation:** The higher level will complete 3 questions in Spanish, the middle and the lower will complete 2 questions in Spanish; the lower level will have cues while completing the questions (Appendix 2f, 2g, 2h).
Appendix 2 Level 5
Busca los sitios más importantes de New york y luego haz una lista en español.

1._______________________
2._______________________
3._______________________
4._______________________
5._______________________
6._______________________
Appendix 2a Level 3

Busca los sitios más importantes de New york y luego haz una lista en español.

1. La estatua de la libertad.
2. ______________________
3. ______________________
4. ______________________
5. ______________________
6. ______________________
Busca los sitios más importantes de New York y luego haz un circulo en cada uno.

Un acto de terrorismo que tembló el mundo entero fue el 11 de septiembre del año 2001, cuando tres velos secuestrados estrellaron contra las torres gemelas y el Pentágono.

Los atentados fueron cometidos por diecinueve miembros de Yihad y Al-Qaeda divididos en cuatro grupos. Cada uno de ellos con un terrorista piloto que se encargaría del avión.

Los aviones de los vuelos 11 de American Airlines y 175 de United Airlines fueron los primeros en ser secuestrados, siendo ambos estrellados contra las dos torres gemelas del World Trade Center, el primero contra la torre Norte y el segundo poco después contra la Sur, provocando que ambos rascacielos se derrumbaran en las dos horas siguientes.

El tercer avión secuestrado pertenecía al vuelo 77 de American Airlines y fue empleado para ser impactado contra una de las fachadas del Pentágono, en Virginia.

El cuarto avión, perteneciente al vuelo 93 de United Airlines, no alcanzó ningún objetivo rellado en campo abierto, cerca de Shanksville, en Pensilvania, tras perder el control en cabina como consecuencia del enfrentamiento de los pasajeros y tripulantes do terrorista.

¿Cuáles son algunos ataques terroristas en la tierra de los Estados Unidos en los últimos 15 años?
Atentados del 11 se septiembre de 2001

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Atentados del 11 se septiembre de 2001

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El cuarto avión, perteneciente al vuelo 93 de United Airlines, fue estrellado a Shanksville, en Pensilvania.
Actividad A.
Responde en español a las preguntas siguientes según la información del artículo, y da tu opinión sobre el tema.

1. Según usted ¿cual es el impacto que los atentados del 11 de septiembre tuvieron en los Estados Unidos?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. ¿Según usted y basando en el artículo, cuales fueron las intenciones de las organizaciones terroristas como Al-Qaeda y Yihad el 11 de septiembre?

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

3. Da un ejemplo de un acto de terrorismo domestico en los últimos años, y ¿cómo han impactado nuestra sociedad?
Actividad A.
Responde en español a las preguntas siguientes según la información del artículo, y da tu opinión sobre el tema.

1. ¿Cuáles son los atentados del 11 de septiembre en los Estados Unidos?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. ¿Basando en el artículo, cuales fueron las intenciones de las organizaciones terroristas como Al-Qaeda y Yihad el 11 de septiembre?
________________________________________________________________________
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________________________________________________________________________

3. Da un ejemplo de un acto de terrorismo domestico.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Actividad A.
Responde en español a las preguntas siguientes según la información del artículo, y da tu opinión sobre el tema.

1. ¿Cuáles son los atentados del 11 de septiembre en los Estados Unidos?
Los atentados en la tierra de los Estados Unidos

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________________________________________________________________________
_____________________________________________________
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________________________________________________________________________

2. ¿Basando en el artículo, cuáles fueron las intenciones de las organizaciones terroristas como Al-Qaed? y Yihad el 11 de septiembre?
Al Qad y Yid son dos

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________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. Da un ejemplo de un acto de terrorismo doméstico.
Un acto de terrorismo doméstico es:
Lesson Plan: 70-75 minutes (two periods): 8th grade Spanish for Native speakers

**Language Objective:** Students will be able to understand, write and interpret orally how the events on September 11 occurred in a sequential order.

**Content Objective:** Student will connect with math by placing September 11th events in a consecutive order presented in a time line.

**Warm-up 5-7 min:**
Students will have a matching activity paper connecting events with the year. These events are the most important moments in the American History. After students complete the work, teacher checks for understanding by having a discussion (Appendix 3, 3a)

**Differentiation:** Advanced level will work only with words and sentences, lower levels will have pictures to go with the events.

**Brainstorm 1: 10 minutes**
Teacher will have an open discussion in Spanish and ask the students Who were the people who help the most the victims of September 11 and how were they able to save hundreds of people? Sentence starters below:
The victims of 9/11 are helped by ___________________________.
The wounded of 9/11 were cared for by ___________________________.
The area around the World Trade Center was secured by _____________________.

**Differentiation:** (low level of native speaker may express themselves in English, if they choose to do so, also low level will have a paper with sentence starterS.) Appendix 3b

**Activity 1: 10-12 minutes**
Students will complete a chart stating their opinion and what they discussed in the warm-up activity. They will write in sentences how the above professionals helped the victims of September 11. Appendix 3c, 3d, 3e (part 1)

**Differentiation:** advanced level and middle level are required to write in full sentences. Lower level can write the action.

**Reading comprehension: 15 minutes**
Students will read silently independently the events of September 11 in a sequential order and will underline the new vocabulary. Teacher will discuss the new vocabulary with students and go over the information that they do not understand. (Appendix 3f, 3g, 3h)

**Differentiation:** The reading will be differentiated in three levels of readers.

**Connection with math: Writing 20 minutes:**
Students will put the events of September 11 in a sequential order (time line). Appendix (3i, 3j, 3k)
Appendix 3 Level 5

¿Cuál es el evento histórico?
Appendix 3a Level 1 and 3 ¿Cuál es el evento histórico?

El día de la independencia, La guerra civil, El movimiento de derechas civiles, El President John F. Kennedy, El 11 de septiembre.
Apendix 3b

Sentence starter:

Los bomberos ayudan a la gente

________________________________________________________________________

________________________________________________________________________

Las enfermeras ayudan a los heridos

________________________________________________________________________

________________________________________________________________________

Los policías ayudan a la comunidad

________________________________________________________________________

________________________________________________________________________
Appendix 3c Level 5

Qué sabes ya?

¿Qué hicieron los bomberos y paramédicos para ayudar a los víctimas del 11 de septiembre? Contesta en español en frases completas.

<table>
<thead>
<tr>
<th>Dentro de las Torres Gemelas</th>
<th>En las calles de Nueva York</th>
<th>En los centros de primer ayuda</th>
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Según las lecturas, describe en tus palabras cómo fue la situación en Nueva York el día de 11 de septiembre. Escribe un párrafo en frases basándose en la tabla, ¿qué hacían los profesionista del servicio público para ayudar a los víctimas. Usa frases completas.

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Appendix 3d Level 3

Qué sabes ya?

¿Qué hicieron los bomberos y paramédicos para ayudar a los víctimas del 11 de septiembre? Contesta en español.

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<th>Dentro de las Torres Gemelas</th>
<th>En las calles de Nueva York</th>
<th>En los centros de primer ayuda</th>
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Describe en tus palabras como fue la situación en Nueva Cork el día de 11 septiembre. Escribe un párrafo en frases basándose en la tabla, ¿qué hicieron los profesionista del servicio público para ayudar a los víctimas?

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Appendix 3e Level 1

¿Qué sabes ya?

¿Qué hicieron los bomberos y paramédicos para ayudar a los víctimas del 11 de septiembre? Contesta en español o en inglés.

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<th>Dentro de las Torres Gemelas</th>
<th>En las calles de Nueva York</th>
<th>En los centros de primer ayuda</th>
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Según las lecturas, describe en tus palabras cómo fue la situación en Nueva York el día de 11 septiembre. Escribe un párrafo en frases basándose en la tabla, ¿qué hacían los profesionista del servicio público para ayudar a los víctimas. Contesta en español o en inglés.

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Conexiones: Las Matemáticas

Cuando el mundo dejó de ver los atentados de 11 de setiembre, los ojos y el corazón del mundo entero estaban con la gente que murió, los bomberos que ayudaban la gente a escapar de las Torres Gemelas.

Recurso de eventos del 11 se setiembre de 2001

8:47 dos vuelos secuestrados de American Airlines y United Airlines siendo ambos estrellados contra las dos Torres Gemelas

9:08 FAA (La Administración Federal de Aviación) cierra todos los aeropuertos de Nueva York y “esteriliza” el espacio aéreo sobre la Ciudad de Nueva York.

9:20 FBI anuncia que está investigando los vuelos secuestrados

9:21 Las Autoridades de los Puertos de Nueva York y Nueva Jersey cierran todos túneles y puentes entrando en Nueva Cork

9:26 FAA cancela todos vuelos en los Estados Unidos por la primera vez en la historia

9:27 Los aeropuertos de Nueva York están cerrado y todos los vuelos cancelados.

9:29 Los empleados de la primera ayuda y los bomberos de Nueva York entran en World Trade Center a evacuar la gente atrapada

9:37 El vuelo 77 de American Airlines fue estrellado contra Pentágono del departamento de Defensa en Washington DC

9:58 El vuelo 93 de United Airlines que fue secuestrado en el aeropuerto Newark en New Jersey se cayó en Shanksville Pensilvana

9:59 La Torre Sur cayó a las 9:59 tras estar en llamas por 56 minutos causado por el impacto del vuelo 175 de United Airlines

La Torre Norte cayó a las 10:28 tras estar en llamas por 102 minutos causado por el impacto del vuelo 11 de American Airlines.
Appendix 3g   Level 3

Conexiones: Las Matemáticas

Cuando el mundo dejó a ver los atentados de 11 de setiembre, los ojos y el corazón del mundo entero estaban con la gente que murió, los bomberos que ayudaban a la gente a escapar de las Torres Gemelas.

Recurso de eventos del 11 se setiembre de 2001

8:47 dos vuelos secuestrados siendo ambos estrellados contra las dos Torres Gemelas

9:08 FAA (La Administración Federal de Aviación) cierra todos los aeropuertos de Nueva York

9:20 FBI anuncia que está investigando los vuelos secuestrados

9:21 Las Autoridades de los Puertos de Nueva York y Nueva Jersey cierran todos los túneles y puentes entrando en Nueva York

9:26 FAA cancela todos los vuelos en los Estados Unidos

9:27 Los aeropuertos de Nueva York están cerrados.

9:29 Los empleados de la primera ayuda y los bomberos de Nueva York entran en World Trade Center

9:37 El vuelo 77 de American Airlines fue estrellado contra el Pentágono.

9:58 El vuelo 93 se cayó en Shanksville Pensilvania

9:59 La Torre Sur cayó a las 9:59

10:28 La Torre Norte cayó a las 10:28 tras estar en llamas.
Appendix 3h  Level 1

Conexiones: Las Matemáticas

Recurso de eventos del 11 se setiembre de 2001

8:47 dos vuelos secuestrados siendo ambos estrellados contra las dos Torres Gemelas

9:08 FAA (La Administración Federal de Aviación) cierra todos los aeropuertos de Nueva York

9:20 FBI anuncia que está investigando los vuelos secuestrados

9:21 Las Autoridades de los Puertos de Nueva York y Nueva Jersey cierran todos túneles y puente entrando en Nueva York

9:26 FAA cancela todos los vuelos en los Estados Unidos

9:27 Los aeropuertos de Nueva York están cerrados.

9:29 Los empleados de la primera ayuda y los bomberos de Nueva York entran en World Trade Center

9:37 El vuelo 77 de American Airlines fue estrellado contra Pentágono.

9:58 El vuelo 93 se cayó en Shanksville Pensilvana

9:59 La Torre Sur cayó a las 9:59

10:28 La Torre Norte cayó a las 10:28 tras estar en llamas.
Apendix 3i level 5
Conexiones con la matemática:
Basándose en la lectura, clasifica los eventos del 11 de setiembre en orden que ocurrieron. Escriban la hora correcta para cada evento.
Appendix 3j level 3
Conexiones con la matemática:
Basándose en la lectura, clasifica los eventos del 11 de setiembre en orden que ocurrieron. Escriban la hora correcta para cada evento.

Torre Norte cayó Los aeropuertos de los Estados Unidos se cierran FBI notificó que vuelos están secuestrados
Torre Sur cayó Vuelo 77 se estrelló en Pentágono Dos vuelos estrellan contra las Torres Gemelas
El vuelo 93 cayó en Pensilvania Los bomberos entran en el WTC a evacuar la gente Los aeropuertos de Nueva York están cerrados
Conexiones con la matemática:
Basándote en la lectura, clasifica los eventos del 11 de setiembre en orden que ocurrieron. Escrib en la hora correcta para cada evento.

- Torre Norte cayó
- Los aeropuertos de EU se cierran
- FBI notificó que vuelos están secuestrados
- Torre Sur cayó
- Vuelo 77 se estrelló en Pentágono
- Dos vuelos contra las Torres Gemelas
- El vuelo 93 cayó
- Los bomberos entran en el WTC
- Los aeropuertos de Nueva York están cerrados
Lesson Plan: 57-60 minutes: 8th grade Spanish for Native speakers

Lesson Objectives:

1. **Language Objectives:**
   Based on the Readings and the September 11 video students will interview in Spanish their peers to see what is their career choice in the public service field.

2. **Content Objectives:**
   Students will draw a math graph after the interview. They will then use the Technology to design a real graph and present it orally to the class.
   Students will be able to understand and interpret the importance of careers in the public service as one of the field that relates to helping people in the time of need.

**Warm-up 10 min:**
Students will go over the appendix 3c, 3d, 3a, and complete 3b part two in writing. Students can share thoughts for about three minutes by reading either their paragraphs or talking about it.

**Differentiation:** Advanced level can use the past. Lower level can use the present tense and write in incomplete sentences.

**Activity 1. 10 minutes math connections**
Students will go around the classroom asking their peers what is the career that they would like to choose to help others (Appendix 4). After that, students will color the boxes to indicate the numbers of students that picked a certain career in the medical field to create a bar graph.

**Differentiation:** Level 1 and 3 will have scripted questions. Appendix 4a and 4b

**Activity 2. 17 minutes, technology connections (this should take place in a library, or a technologically advance class, where students have access to internet)**
Teacher will guide students how to make a graph in the computer using the following website:
http://nces.ed.gov/nceskids/createagraph/default.aspx
If the teacher is aware of different sites, she/he is more than welcome.
Students will interpret the results writing sentences.

**Differentiation:** advanced level is expected to write complete sentences.
Lower level can indicate the profession and the number of students who preferred that profession. Lower level (1) will also have a sentence starter Appendix 4c

**Activity 3  17-20 minutes Presentation**
Students will present their findings to the class orally.
Students can use an overhead projector to display their graph and images on the white board and interpret them.

**Differentiation:** Advanced level and middle level are required to speak in full sentences. Lower level can speak using the sentence starter Appendix 4c or simply point to the bar graph only stating numbers.
Apendix 4  level 5: **Conexiones con las matemáticas**

Entrevista los estudiantes del octavo grado sobre sus preferencias de ayudar a la gente que pueden ser heridos o estar en peligro de un ataque terrorista: Luego, presenta tu búsqueda en un gráfico. Colorea los cuadros para indicar los números de los participantes.

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Luego, presenta tu búsqueda en un gráfico.
Appendix 4a. level 3 **Conexiones con las matemáticas:**

Entrevista los estudiantes del octavo grado sobre sus preferencias de ayudar a la gente que pueden ser heridos o estén peligro de un ataque terrorista: Luego, presenta tu búsqueda en un gráfico. Colorea los cuadros para indicar los números de los participantes.

1. ¿Cuántos de sus compañeros prefieren ser médicos

2. ¿Cuántos de sus compañeros prefieren ser enfermeras?

3. ¿Cuántos de sus compañeros prefieren ser bomberos?

4. Cuántos de su compañeros prefieren ser policías

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Appendix 4b: level 1 *Conexiones con las matemáticas*

*Interview the 8th grade students about what are their preferences in choosing a profession in the public service during terrorist attacks. Then, present the information in the graph below. Color the finding with different colors to indicate the number of participants.*

1. ¿Cuántos de sus compañeros prefieren ser médicos
2. ¿Cuántos de sus compañeros prefieren ser enfermeras?
3. ¿Cuántos de sus compañeros prefieren ser bomberos?
4. Cuántos de su compañeros prefieren ser policías

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Appendix 4c
Sentence starter for level 1

Example:
__________ estudiantes prefieren ser _____________ a ayudar los heridos __________

__________________________

Word Bank

Médicos       Enfermeros/as       Bomberos       Policía
Lesson Plan: 120 minutes: 8th grade Spanish for Native speakers
Lesson Objectives: (This lesson can be divided in two classes or independent project: in this plan, it is developed as 120 minutes of teaching and learning)

Language Objective: Based on the readings writing, presentations, interviewing videos from the unit all the previous lessons students will be able to complete a project using 21 century skills including technology. They will present their work in an exhibition to either their peers or extended to other classes.

Content objectives: Students will be able to understand and interpret the importance of September 11 as one of the events that change USA foreign policy.

Warm-up 10 min:
In an open discussion, teacher will go over the highlights of the unit at her discretion, using the concepts that students seemed to grasp and made an impact on them with the intention of exploring more about the subject. Lower level ELLs can reference back to all handouts from the unit.

Activity 1 10 minutes
Teacher will present a series of topics for the project. Topics range from US Foreign Policy and homeland security; the war on terrorism to the depiction of September 11 chronological order of the events; and finally careers in the field of public services. Students will be informed about the importance of each and every one of the topics and will have a choice to pick one of them and explore more using technology, internet, library, videos etc. Appendix 5

Activity 45 minutes: Technology connections (this should take place in a library, or a technologically advanced class, where students have access to internet)
Students will research on their own about the topic. US government has a website for young students to explore

Activity 3 40-45 minutes: Presentations
Students will present their posters or power points in front of the class. Students can use an overhead projector to display their graph and images on the white board and interpret them.
Differentiation: Advanced level and middle level are required to speak in full sentences. Lower level can speak in short sentences explaining the action and the numbers. They can reference Appendix 4c for sentence support.
Appendix 5 (level 5)

Highlights for discussions:

1. ¿En qué consiste la política exterior de los Estados Unidos?
2. ¿Cómo promueven los Estados Unidos La democracia en el mundo?
3. ¿Cuál es el recurso de eventos del 11 de setiembre de 2001?
4. ¿Cuáles son algunos ataques terroristas en la tierra de los Estados Unidos en los últimos 15 años?
5. ¿Cómo se conmemoran las víctimas del 11 de setiembre del 2001 hoy en día?
Highlights for discussions:

1. ¿Piense en la política exterior de los Estados Unidos?
2. ¿Cómo ayudan los Estados Unidos los países del mundo?
3. ¿Cuál es el orden de eventos del 11 se setiembre de 2001?
4. ¿Cuáles son algunos ataques terroristas en la tierra de los Estados Unidos?
5. ¿Qué hacemos nosotros para acordarnos de las víctimas del 11 de setiembre del 2001 hoy en día?
Appendix 5b level 1

Highlights for discussions:

1. Think about the United States foreign policy, share your thoughts.

2. How do U.S help promote democracy in other countries?

3. Based on the reading, what is sequence of orders on September 11?

4. What were some of the terrorist attack on the American soil and American interests overseas and other countries in the last 15 years?
Topics for the research work: Connections with technology.

Teacher will present a series of topics for the project. Topics range from US Foreign Policy and homeland security; the war on terrorism to the depiction of September 11 chronological order of the events; and finally careers in the field of public services. Students will be informed about the importance of each and every one of the topics and will have a choice to pick one of them and explore more using technology, internet, library, videos etc.

1. Recommended for level 5.
Create a power point presentation where you develop a topic about US Foreign policy. What is US contribution in establishing democracy around the world? How does USAID program and Peace Corps help other countries? What is the budget that US government has set for the foreign policy and how is it spent?

2. Recommended for level 3.
Create a power Point presentation where you develop a September 11th research paper with the most excruciating moments. Be sure to include, the reasons behind the attack. Who were involved in the attacks? How did the attacks impact our history and lastly how did it change American mentality about patriotism and tolerance?

3. Recommended for level 1:
Create a power presentation where you talk about jobs in the public service. Be sure to explain why are these jobs so important? How did the public service employees helped the city of New York in September 11, 2001?

The work will be graded based on a teacher’s rubric.

- Fluency
- Accuracy
- Presentations skills
- Comprehensibility
Types of bridges

1. Beam bridge
2. Truss bridge
3. Suspension bridge
Beam bridge

- Horizontal beam
- Supported by piers
- Draw back
  - Farther apart piers are the weaker beam bridge is
  - Rarely span more than 250 feet
What is the rule that keeps bridges standing?
Beam bridges

- Faith Sultan Mahemit
- Istanbul, Turkey

- Lake Pontchartrain
- Louisiana
Truss bridges

- Modified beam bridge
- Assembly of triangle
- Can span farther than a simple beam bridge
- The forces are spread out across the truss on these bridges
Truss bridge forces

- upper chord
- resist shear
- brace chords
- lower chord
- compression — tension
- panel loads w
- reactions R

Pratt Truss
Examples of truss bridges
Suspension bridges

- Deck of bridge supported by cables that the bridge hangs from
- Cables spread out the tension on the deck
- Span longer distances
  - 2,000-7,000 feet
Forces on suspension bridges
Golden Gate Bridge
Comparing bridge lengths

AKASHI KAIKYO
12,828'

GOLDEN GATE
8,981'

BROOKLYN
3,460'