

4L Week 9 Instructional Book

*-You do **NOT** turn this in. Please only return the "Workbook" packet with the checklist on it.*

4L Art

Read me: Over the last few weeks we have been working on the human form, and how to draw it proportionally. First, we went over how to draw a head and lay out a face. Then, we learned how to set up a stick skeleton and draw out the body. Last week, you drew an open palm hand. Now, this week I want you to draw a gripping hand. Remember, if you have internet access there are videos on the school's website to help you through this sketch.



Step 1: Start by drawing in the simple shapes. To make the palm, start with a rectangle, then draw a U shape from one bottom corner to the other. To draw the fingers and thumb, make joint circles and bone lines. The only difference between this week and last week is that now you have to draw the fingers bending at these joints. Notice I draw all of the fingers in as if I can see them through the baton. I do this to lay out the placement of the fingers. In later steps, I will erase these lines or draw over them. If your sketch resembles the image below move on to the next step.



Step 2: Start adding thickness to your fingers, thumb and wrist. For your fingers, draw a large oval from joint to joint. For the wrist, draw a large half circle under your palm shape then a cylinder below that. If your drawing looks similar to the sketch below, you can move to the next step.



Step 3: For this step, start to add details and shading, and erase any guide lines you no longer need. If your hand sketch looks like the example below you should be good to send it back on the bus. If you want to keep your drawing you can email me a photo of it to Zachman@parnassusprep.com
REMINDER: Please make sure your full name is visible on your work or in the subject line of the email.



For EL Scholars

***Please contact me if you need help.**

Call or text my Google Voice number (321-325-5309)

Email: zook@parnassusprep.com

MR. ZOOK SOL (4L)

Week 9

CHECKLIST: Mark each circle with an “X” once completed.

- Day 1 Worksheet(s) completed with name & date filled in.**
- Day 2 Worksheet(s) completed with name & date filled in.**
- Day 3 Worksheet(s) completed with name & date filled in.**
- Day 4 Worksheet(s) completed with name & date filled in.**
- Day 5 Worksheet(s) completed with name & date filled in.**

4L History Reading

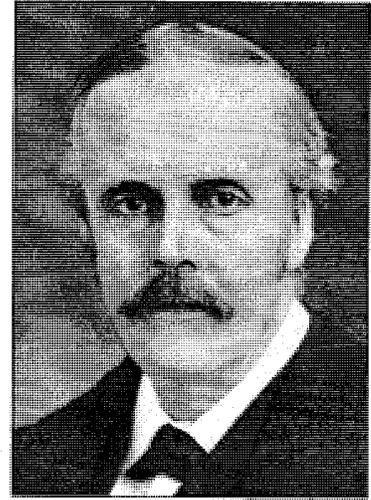
Week 9

Zionism Begins

In the late 1800's the Jewish **Zionist** movement began. Zionists established a goal to create a renewed Jewish homeland, near their Biblical homeland in the Middle East—Palestine. In the 20th century, the British attempted to allow Arab people (who were in the majority) to control most the region, while still supporting a new homeland for the Zionist Jews. It was impossible to do both peacefully.

From WWI to WWII

Great Britain's mandate of Palestine would not be governed easily. The conflicting goals of Jewish Zionism and Arab Palestinian nationalism could not be reconciled. At first, Great Britain supported the Zionists through the 1917 **Balfour Declaration** (which was a statement from Britain's Foreign Secretary, **Arthur Balfour**) that supported the notion of a new Jewish homeland in Palestine. Later, British governments seemed to flip-flop and became more supportive of the Arab Palestinians. But World War II and the **Holocaust** added more political and moral pressure to the situation (many Arab groups supported the Germany during the war). Leaders in the victorious nations felt sympathy for the Jewish people, and believed that the long-persecuted Jews deserved to have their own homeland.



Arthur Balfour

Post-WWII

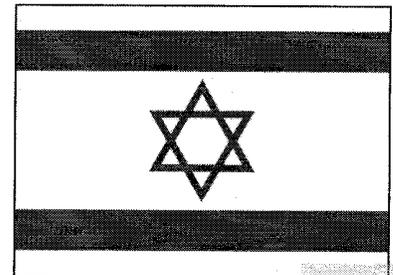
By 1947, Great Britain—its once vaunted empire crumbling world-wide—threw the issue into the hands of the newly established **United Nations**. The UN recommended the end of British control and a partition (division) of Palestine into two separate states: *one for the Jews and one for Arab Palestinians*. Palestinians and other Arab leaders rejected the UN plan to divide Palestine, while the Jewish Zionist leaders accepted the plan. Violence erupted and Palestine soon descended into a state of civil war.

Independence and Victory, War and Catastrophe

The Jews soon proclaimed their independence and **Israel** was established as a nation on May 14, 1948 (the first prime Minister was **David Ben-Gurion**). For Zionist Jews, it was a day of deliverance, independence, freedom and hope. The Jewish people regained sovereignty of at least a part of Palestine for the first time in 1800 years.



David Ben-Gurion

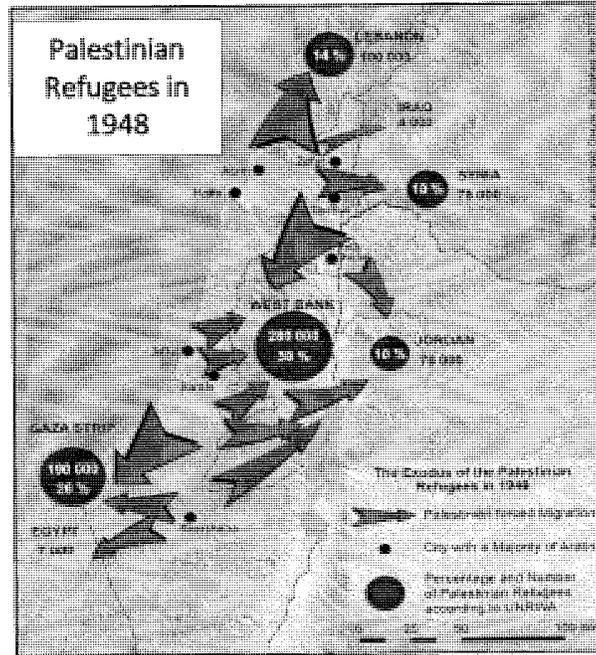


Flag of Israel

In 1948 war erupted, as the new state of Israel was suddenly attacked by its predominantly neighbors (Jordan, Lebanon, and Iraq). outnumbered Israeli the Arabs on every 1949, a cease-fire between a victorious vanquished Arab

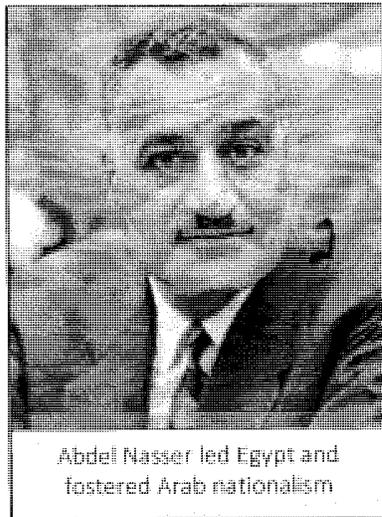
In the aftermath, 60% of what was the Arab partition, Jordan seized most Nearly a million Palestinians became were forced into neighboring Muslim struggled to care for catastrophe is

Nakba” in Arabic). In the next several years, 700,000 Jews from around the world moved to Israel.



Muslim Arab Egypt, Syria, Surprisingly, the forces defeated front. In March, was established Israel and its enemies.

Israel seized intended to be while Egypt and of the rest. Arab refugees, and new areas, or countries that them (this known as “AI-

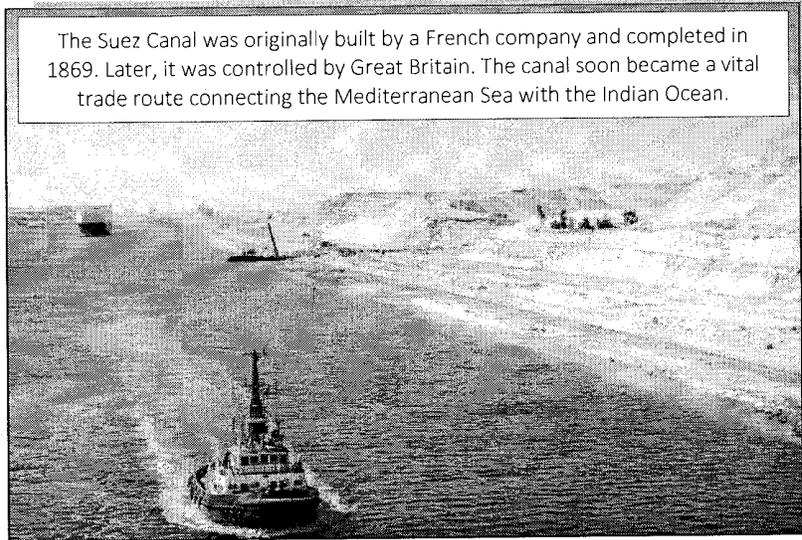


Abdel Nasser led Egypt and fostered Arab nationalism

The defeat stoked simmering resentment in the Arab world. A group of disaffected army officers led a revolution against Egypt’s own king in 1952. Soon a nationalistic leader emerged named **Abdel Nasser**. Nasser was vehemently opposed to Israel and hoped to build a sense of nationalism in majority Arab countries around the Middle East. Egypt helped establish the **PLO** (Palestine Liberation Organization), which was determined to help the Palestinians reclaim land lost to the Israelis.

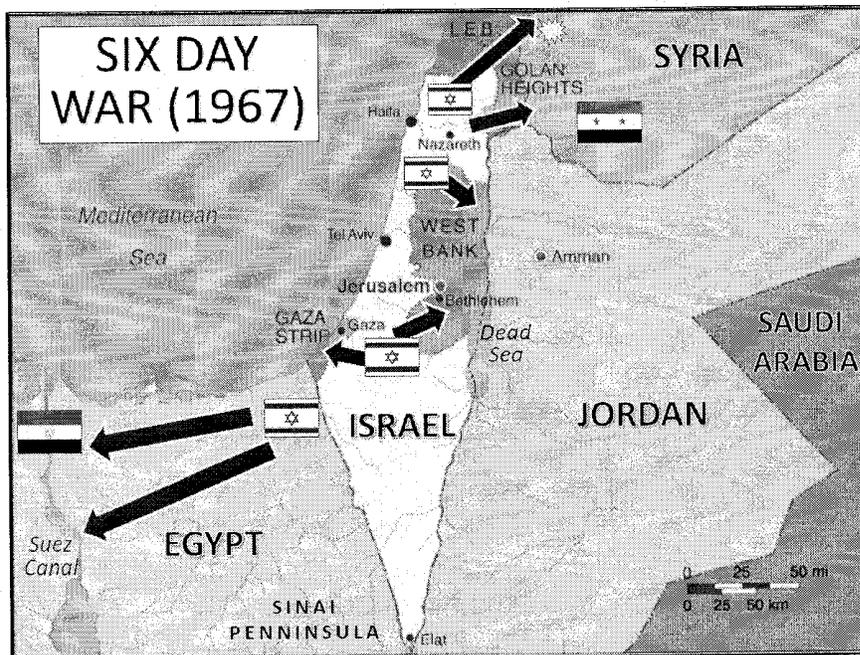
The Suez Crisis, 1956

In July, 1956, Egyptian President **Abdel Nasser** seized control of the vital Suez Canal from the British and French. This seizure was in violation of treaty agreements but Nasser believed control of the canal was needed for Egyptian pride and to finance various economic and military projects. Soon, Great Britain, France and Israel conspired to regain control of the canal and humiliate Egypt through a joint invasion. The



coordinated attack began in late October and quickly Egyptian forces were defeated. British and French forces regained part of the canal and Israel seized the Sinai Peninsula. Although a military success, Britain, France and Israel caused a political crisis. The **Soviet Union (USSR)** announced its intention of militarily supporting Egypt and now the

USA (then under President **Dwight Eisenhower**) feared this Suez issue could flare into World War III. The USA convinced the attackers that the USA could not support their invasion and they agreed to a staged



withdrawal. Nasser (and the Arab world) emerged victorious while Britain and France were humiliated and ceased to be major world powers.

Six-Day War, June 1967

In May 1967, an emboldened Egyptian President Nasser threatened a new war against Israel— and organized Jordan and Syria to join Egypt. With an impending attack near, Israel took the initiative and invaded Egypt on June 5th. Unbelievably— within only six days— Israel had destroyed Egypt's air force and



General Yitzhak Rabin led Israeli forces to victory in 1967, he later became Prime Minister

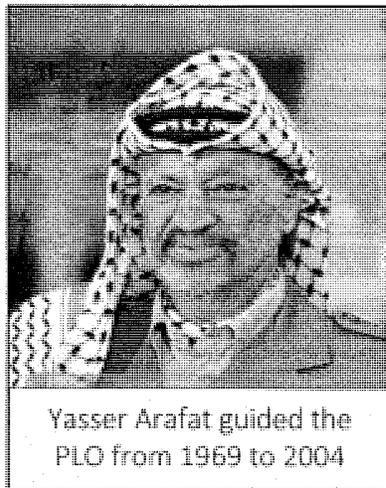


Victorious Israeli troops in Jerusalem in 1967

conquered the **Sinai Peninsula**. The plan, coordinated by Israeli General **Yitzhak Rabin**, was to avoid the major roads and surprise the Egyptians by advancing across rough terrain. Israel also occupied the **Gaza Strip** (which Egypt had administered since 1949). On the Syrian front, Israel conquered the mountainous **Golan Heights**. Israel also captured the **West Bank** and East **Jerusalem** from Jordan. With Israel's stunning success in the war, the Israelis took command

of the conquered lands, which became known as the **Occupied Territories**. Israel claimed that its future security was dependent upon controlling these lands. Due to its speed and efficiency, Israel suffered only 6,000 casualties; while the Arab forces suffered nearly 50,000 casualties.

Palestinians became frustrated with the Arab leaders who failed to regain any part of Palestine, and who allowed even more land to be lost to Israel during the 1967 "disaster." As a result, the PLO was taken over by Arab Palestinians. In 1969, **Yasser Arafat** was elected PLO chairman. The PLO initially was based in Jordan before moving to Lebanon in 1971.



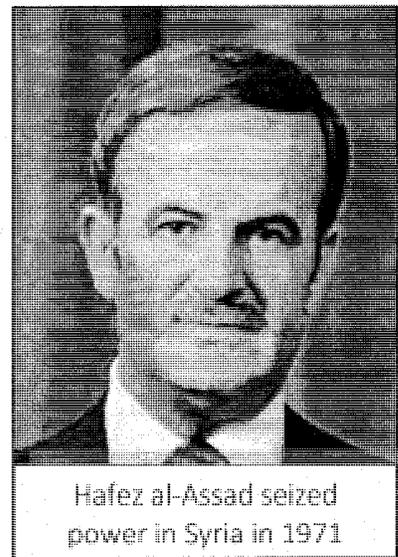
Yasser Arafat guided the PLO from 1969 to 2004

Yom Kippur

Anwar began plans Israel. Sadat **al-Assad**), Heights. Both from the while Israel armed from States. On 1973 the

Sadat succeeded Nasser in Egypt and to retake the Sinai Peninsula from was joined by the Syrians (led by **Hafez** who sought to reclaim the Golan countries had received arms shipments Soviet Union, was mainly the United October 6, Arab states

initiated a surprise attack on both fronts of what was to be known as the **Yom Kippur War**. [Yom Kippur, or "Day of Atonement" is the holiest day in Jewish calendar.] The Israelis initially lost ground in the north (Golan Heights) and southwest (Suez Canal/Sinai Peninsula). Fearing a breakthrough of its defensive lines, Israel's Prime Minister, **Golda Meir**, prepared for the use of nuclear weapons as a



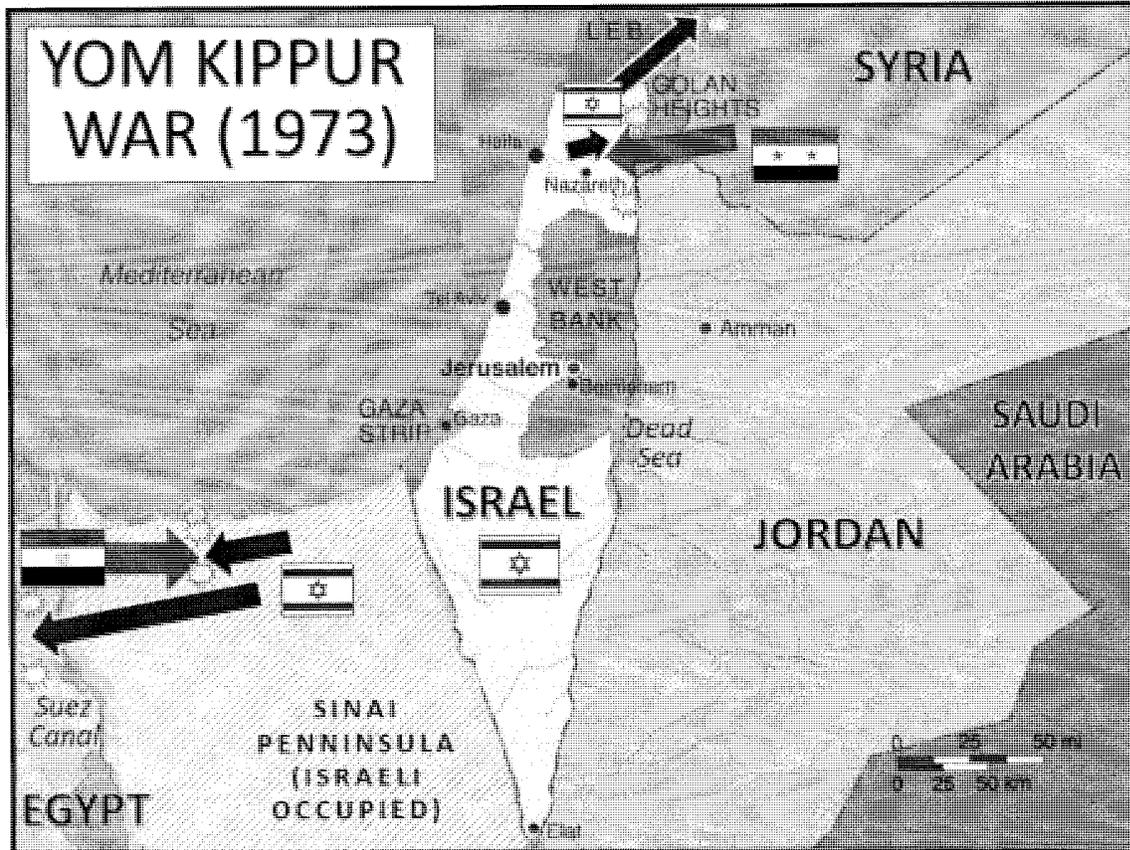
Hafez al-Assad seized power in Syria in 1971



Golda Meir was Israel's Prime Minister from 1969-1974

last resort. [The Soviet Union may have brought nuclear weapons to Egypt as well.] However, Israel soon

recovered, and launched a successful counterattack. The war featured the largest tank battles since WWII, with thousands of vehicles on both sides. After Israeli forces invaded into Syria and had crossed the Suez Canal, the Arab states and Israel agreed to a UN brokered cease-fire. Although an Israeli victory, the Yom Kippur War was not as one sided as the 1967 war. In the twenty-day war, Israel suffered 11,000 casualties; while the Arab forces suffered over 50,000 casualties.



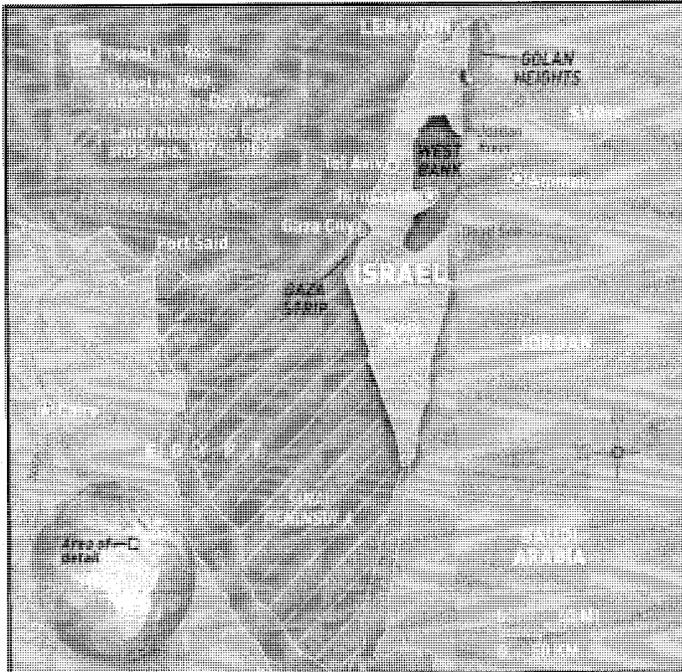
The Camp David Accords



The war led to no territorial changes, but leaders on both sides feared the continuation of the cycle of tension and war. **Anwar Sadat** made a shocking declaration in 1977 that he

wanted peace between Israel and Egypt. Israeli Prime Minister, **Menachem Begin**, extended an invitation to visit Israel, and Sadat made the historic trip to Israel in November, 1977.

In 1978, US President **Jimmy Carter** masterminded the **Camp David Accords** which envisioned not only a peace treaty between Israel and its Arab neighbors, but also a framework for an independent country for the Palestinians. However, the Camp David Accords resulted in only a peace treaty between Egypt and Israel (which has been maintained to the present day, although *Sadat was assassinated by an Egyptian extremist in 1981*). The PLO, Syria, Jordan, and Lebanon remained in a state of conflict with Israel— but without Egypt—the notion of militarily conquering Israel was impossible.



The Lebanese Civil War

Politically destabilized by the PLO, **Lebanon** descended into a 15-year civil war in 1975. After numerous PLO attacks, Israel invaded southern Lebanon in 1978 and also in 1982. International forces attempted to stop the war in 1983, but left Lebanon after a terrorist attack killed 241 US Marines with a truck bomb. Eventually, the PLO was driven out, and Arafat relocated to Tunisia.

Palestinian Militancy and the Intifada

Many Palestinians grew restless with the PLO and Yasser Arafat's ineffectiveness and some formed more militant groups, based in three areas around Israel. **Hamas**, organized by Egypt, was based in the Gaza Strip and formed in 1987. **Hezbollah** was created by Iran (but based in southern Lebanon, near Israel's northern border) and formed in 1982.

Islamic Jihad was based in the West Bank, and backed by Iran and Syria, formed in 1981.

These groups began to attack Israel with

kidnappings, rocket attacks and suicide bombings. Supporters claimed Hamas, Hezbollah and Islamic Jihad are simply Palestinian and/or Muslim



Palestinians during the Intifada



Hamas militants

freedom-fighting groups, while detractors (and most western nations) labelled them terrorist organizations.

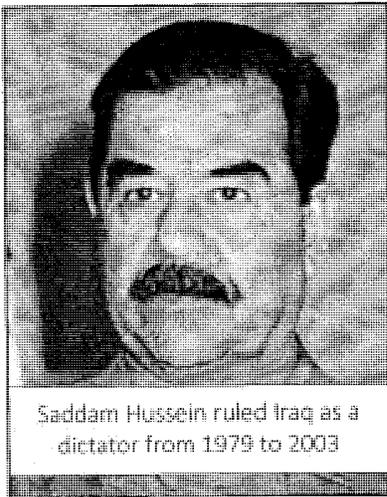
From 1987-1993, the Palestinian *intifada* (uprising) raged. This was a popular movement of resistance to over 20 years of Israeli military occupation and economic dislocation. It was both violent (rock throwing, tire-burning, stabbings and shootings) and non-violent (demonstrations, tax revolts, peace marches, boycotts). The second *intifada* was from 2000-2005.

By the late-1980's, any peace initiative was crippled by a vicious cycle: Israel refused to grant any land to the Palestinians until their violence ended, while the Palestinians refused to end the attacks until they received land.



Hamas fighters sometimes include women and children

And Back Again: War to Peace to War



Saddam Hussein ruled Iraq as a dictator from 1979 to 2003

When Iraqi dictator **Saddam Hussein** invaded its small (but oil-rich) neighbor **Kuwait** in August, 1990, many Palestinians sided with Iraq and placed their dwindling hopes in Saddam Hussein. The Iraqis claimed that their push into Kuwait was aimed at retaining oil revenues in order to build up the Arab world economically and militarily, in part to "*dislodge Israel from the occupied territories and establish a Palestinian state.*"

American President **George Bush** organized an international coalition in 1990, and in 1991 a USA-led air war and subsequent ground invasion repelled the Iraqi invaders. The brief war, dubbed **Operation Desert Storm**, demonstrated the superiority of the American

military and the inability for any Arab leader to organize the Arab nations into one fighting force. Hussein attempted to widen the war by firing Soviet-made Scud missiles into Israel, but Israel did not respond. Iraq surrendered, and although Hussein remained in power (until 2003), Iraq was placed under international sanctions.

The Oslo Accords and the Two State Solution



Yitzhak Rabin (left) with Bill Clinton (center) and Yasser Arafat (right) in 1993

Once the Gulf War was over President Bush made good on his promise to Arab leaders to convene new peace talks on the Arab-Israeli disputes. These talks continued into the Presidency of **Bill Clinton**. In 1993, an



agreement called the **Oslo Accords** (in which Israel would eventually allow an independent Palestinian state made from the Occupied Territories) seemed near. This idea has been called the “**Two State Solution**”. However, an Israeli extremist—opposed to the creation of an independent Palestine, and thereby a surrender of some Jewish-held land—assassinated Israeli Prime Minister **Yitzhak Rabin**. The two state peace plan soon unraveled.

By the mid-1990’s, Many Israelis became concerned that the Palestinians were being rewarded for violence, and hopes for a long-term peace deal faded. Meanwhile,

Hamas became increasingly extreme and began using more rocket attacks and suicide bombers against Israel (attacks that Arafat was powerless or unwilling to stop). In recent decades, nearly **3,000** Israeli civilians have been killed in various terrorist attacks and many more Palestinians have been killed from Israeli counterattacks.

Recent Developments

In 2004, **Yasser Arafat** died, and many hoped that a new Palestinian leader could negotiate peace with the Israelis. In 2005, Israeli Prime Minister **Ariel Sharon** made an agreement with a new Palestinian government (led by **Mahmoud Abbas**) to surrender the Gaza Strip (one portion of the Occupied Territories) to Palestinian authorities in exchange for a halt to all terrorist attacks against Israelis. Most Israelis supported this move, although others protested as this “*land for peace*” deal seemed to reward Palestinian terrorist attacks, and about 10,000 Jews were evicted from Gaza. Despite the agreement, Israel has launched several military campaigns into the Gaza Strip (2007-2009) in response to continued Hamas terroristic activity.



Mahmoud Abbas succeeded Arafat into the leadership of the PLO (or Palestinian Authority) in 2005



Benjamin Netanyahu has been Israel’s Prime Minister since 2006, he has overseen the expansion of Israeli settlements and the construction of border walls

In recent years, the peace process has reached a stalemate, with both sides still blaming the other. Israel points to the sporadic attacks from Palestinians militant groups; while the Palestinians point out the fact that Israel—under the leadership of Prime Minister **Benjamin Netanyahu**—continues to expand new settlements into the West Bank and has built high protective walls around borders and cities. The overall level of violence has gone down, but there are no long-term peace deals on the horizon. The Arab-Israeli conflict, centered in the most significant cultural and historic part of the world, continues.

The Oil Embargo

On two separate occasions during the 1970s, there were severe oil shortages in the United States. What caused these shortages? What was the impact of the shortages?

In June of 1967, Israel was involved in the Six Day War. As a result of this brief war, Israel seized four pieces of land. They acquired the Sinai Peninsula and the Gaza Strip from Egypt, the West Bank from Jordan, and the Golan Heights from Syria.

Six years later, several Middle Eastern countries, led by Egypt and Syria, launched an attack on Israel. The intention of these countries was to reacquire the territories which had been lost in the Six Day War. This 1973 conflict became known as the Yom Kippur War.

The United States came to the aid of Israel during the Yom Kippur War. As a result, the oil-producing countries of the Middle East declared an oil embargo against the US. This embargo also included Canada, Japan, the Netherlands, and the United Kingdom.

As part of this embargo, these oil-producing countries raised the price of oil from \$3 a barrel to \$5 a barrel and also reduced production by 5%. They announced that they would continue reducing output and raising prices until their political and economic demands were met. They also blocked all shipments of oil to the United States, the primary ally of Israel.



The oil embargo had an immediate impact on the United States. By 1974, the price of oil had risen from \$3 a barrel to nearly \$12 a barrel. The price of gas went from 38 cents a gallon to 55 cents a gallon. The US government implemented a gas-rationing program to cope with the scarcity.

The gas rationing program was simple. On odd-numbered days of the month, those who had a license plate number ending with an odd number could purchase gas. On even-numbered days, those who had a license plate number ending with an even number could buy gas.

Words to watch for:

embargo scarcity

domestic malaise

In some states, gas stations were required to use a flag system to denote the availability of gasoline. A green flag meant that gas was available and would not be rationed, a yellow flag indicated that gas would be rationed (meaning each driver would not be allowed to purchase in unlimited quantities), and a red flag meant that no gas was available at all.

Additional measures were also taken to help combat the oil shortage. A new 55 mph speed limit was implemented in 1974. Also, throughout 1974, year-round daylight savings time was adopted. Communities encouraged citizens to avoid putting up Christmas lights, and some towns forbade the use of unnecessary commercial lighting (such as electrically lit signs). There were also advertising campaigns that encouraged everyone to conserve energy. In some areas, signs which read "Last Out, Lights Out... Don't be Fuelish" were attached to light switches.

In 1979, another oil crisis emerged when the Shah of Iran was removed from power. Iran was one of the leading oil-producing countries in the world and had been an ally of the United States. However, when the Ayatollah Ruhollah Khomeini seized control of Iran, production of Iranian oil was reduced, and exports were halted.



At the beginning of the Iranian revolution, the price of oil was around \$15 a barrel. One year later, the price had skyrocketed to more than \$39 a barrel. As the price of oil started to rise, Americans panicked. Remembering the gas rationing that had occurred during the oil embargo, many people began attempting to purchase as much gas as they could. As a result, gas stations were plagued by long lines and a shortage of supply. Once again, the odd-even gas rationing was recommended.

In July of 1979, President Jimmy Carter delivered a speech which became known as the “Crisis of Confidence” speech. In this speech, he encouraged the American people to do their part in reducing the use of energy. He suggested carpooling, using public transportation, driving less, and lowering the thermostat as measures that every American could take. To lead by example, Carter installed solar panels on the White House, used a wood-burning stove in his living quarters, and even wore sweaters so that the White House wouldn’t have to use as much energy.

Many citizens felt that the situation was being made worse by oil companies who were manipulating the crisis and causing an artificial shortage to drive up prices. In fact, a survey conducted in May of 1979 revealed that only 37% of Americans believed that there was really a shortage of oil.

The oil embargo of 1973-1974, as well as the oil crisis in 1979, had a profound impact on American society, as well as the rest of the world. There were far-reaching implications that lasted for years to come, and in some cases, are probably still being felt today. For example, the Middle Eastern countries were able to demonstrate the enormous influence they could wield both politically and economically. Some European countries attempted to disconnect themselves from American foreign policy in the Middle East in the hope of avoiding being included in such embargos.

The United States also began making a concentrated effort to reduce its dependency on foreign oil. Exploration efforts began in hopes of discovering new sources for domestic production of oil. This period of time also saw an increased use of coal and nuclear power. There was also a movement to embrace renewable forms of energy such as solar power.

The automobile industry changed as well. Auto manufacturers began making smaller, more compact vehicles. These new automobiles were lighter and more fuel efficient.

There were political ramifications as well. In 1979, many Americans blamed Jimmy Carter for the problems associated with the oil crisis. They felt he was doing very little to solve the problem and had resigned himself to telling Americans to adjust their standard of living and learn to do without. Others felt that Carter was subtly blaming Americans for being overly dependent on oil. The term “malaise,” which means a vague feeling of discomfort, has often been associated with this time period in American history.

As a result, Carter’s attempt to win re-election in 1980 was thwarted. He was defeated by his Republican opponent, Ronald Reagan, who won 44 out of 50 states. It was the first time an incumbent president had lost a bid for re-election since Herbert Hoover in 1932.

The Iranian Hostage Crisis

Dozens of Americans were taken hostage in Iran in November of 1979. What events led to this happening? How was the situation resolved?

In February of 1979, the Shah of Iran, Mohammad Reza Pahlavi, was overthrown by Islamic revolutionaries who were led by the Ayatollah Ruhollah Khomeini. During this revolution, the staff at the US Embassy in Iran was taken hostage for a brief period of time. Following this incident, the number of workers at the embassy was reduced to a mere sixty individuals.



Throughout the remainder of 1979, Khomeini continued to stir up anti-American sentiments amongst the Iranian population. He referred to the United States as “the Great Satan” and convinced many of his followers that the US was conspiring against him. The rhetoric was very influential amongst college-aged students who supported the Ayatollah.

On November 4th, 1979, student-aged protesters arrived outside of the US Embassy in the early morning hours. Initially, their plan was to stage a sit-in protest at the embassy. However, as more protesters arrived, the situation spiraled out of control. Most of the US citizens and Marines who worked at the embassy were taken hostage by the mob. They were blindfolded and intentionally marched out in front of reporters, thus enabling the world to see the situation as it escalated.

Several days later, thirteen of the hostages (selected because they were either female or African American) were released by the Iranians. Another hostage, suffering from a severe illness, was released in July of 1980. As a result, fifty-two hostages remained in Iranian hands.

At first, the hostages were kept at the US Embassy. As the crisis progressed, they were moved several times to various places throughout Tehran (Iran’s capital city). Eventually, they were moved to a mansion which became their prison for several months.

The hostages were not treated well by the Iranians. Their hands and feet were bound together for several days at a time. They were not allowed to speak to one another or to stand or walk aside from using the restroom. They were threatened with gruesome punishments such as having their eyes cut out or having their feet boiled in oil. These acts were never carried out, but the threats were repeated many times.

President Jimmy Carter worked tirelessly throughout 1980 with attempts to negotiate the release of the hostages. More than once, it appeared he had been successful, only for Khomeini to back out of the agreement. Finally, in the final days of Carter’s presidency, the US government completed negotiations with Iran to guarantee the safe release of the hostages.

Words to watch for:

*embassy reprisal
sentiment rhetoric*

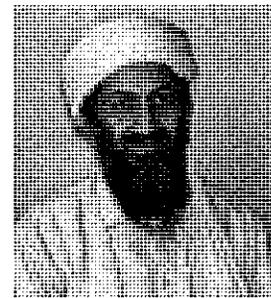
On January 20th, 1981, after being held for 444 days, the hostages were led through a crowd of angry Iranian protesters and ushered onto an airplane where they were flown to safety. When told they had left Iran, the now-free hostages cheered wildly, cried, and shouted with joy. All fifty-two hostages returned to the United States several days later where they were met by former President Jimmy Carter and a cheering crowd of Americans.

As a result of the hostage crisis, anti-American sentiment in Iran only strengthened. To this day, the United States does not maintain a foreign embassy in Iran. Likewise, Americans became increasingly anti-Iranian in the aftermath of the hostage crisis. Many Iranians living in America felt the need to hide their nationality for fear of reprisal. President Carter also paid a high price for his role in the hostage crisis. Many Americans saw Carter as the one to blame for the situation. As a result, the crisis played a major role in President Carter losing his re-election bid in 1980.

Osama bin Laden

Osama bin Laden was the mastermind behind the World Trade Center terrorist attack on September 11th, 2001. Who was Osama bin Laden? Why did he attack the United States?

Osama bin Laden was born on March 10th, 1957, in Riyadh, Saudi Arabia. His father was a successful businessman who had made billions of dollars in the construction industry. Osama was raised with three half-brothers and a half-sister.



In college, bin Laden studied business administration and economics, but he also had a strong interest in religion and spent time interpreting the Quran. He had been raised to be a devout Sunni Muslim and eventually adopted a very literal interpretation of Islam. Bin Laden believed that the Muslim world was facing a major turning point and that the only solution to their problems would be the complete transition to Sharia law.

In the late 1970s and 1980s, bin Laden fought alongside the Afghani freedom fighters, known as the Mujahideen, as they struggled to free Afghanistan from Soviet control. Through his family's wealth, bin Laden personally funded many of the Mujahideen camps and training facilities. Bin Laden became quite well-known throughout the Middle East for his role in this conflict. Eventually, as more Arabs became involved with the movement in Afghanistan, bin Laden created his own organization. Established in August of 1988, this new group would eventually be known as Al-Qaeda.

Throughout the early 1990s, bin Laden became increasingly critical of Saudi Arabia's ties to the United States. He disliked the US and viewed it as immoral. He also blamed American policies for many of the problems in the Middle East. Additionally, he believed that the US was controlled by Jews and that most of the world's problems were caused by Jewish actions. These outspoken views caused him to be exiled from Saudi Arabia but also drew many followers to his side.

Al-Qaeda became a prominent terrorist organization in the 1990s. The group assisted both militarily and financially with jihad (Islamic holy war, or struggle) which took place in Algeria, Egypt, and Afghanistan. Al-Qaeda was also believed to be linked to many terrorist attacks worldwide throughout the decade.

Osama bin Laden and Al-Qaeda declared war against the United States in August of 1996. Two years later, bin Laden issued a fatwa (an Islamic religious decree or opinion) declaring that every Muslim should consider it their duty to kill North Americans and their allies. On August 7th, 1998, Al-Qaeda perpetrated a major terrorist attack against the United States. Two separate truck-bombs were detonated simultaneously at the US embassies in Tanzania and Kenya. More than two hundred people were killed, and Osama bin Laden was placed on the Federal Bureau of Investigation's (FBI) Ten Most Wanted List. In 2000, Al-Qaeda also claimed responsibility for the bombing of the *USS Cole* off the coast of Yemen.

On September 11th, 2001, two airliners were hijacked and flown into the World Trade Center in New York City. A third airplane was hijacked and flown into the Pentagon. A fourth was also hijacked but crashed in Pennsylvania before reaching its intended target. In total, 2,996 individuals perished, and more than 6,000 were wounded in this attack. Osama bin Laden, and Al-Qaeda, eventually claimed responsibility for this incident. Bin Laden claimed that he had orchestrated the attack in retribution for the destruction caused by the United States and Israel during the Lebanon War in 1982.

Words to watch for:

Quran Sharia
fatwa jihad

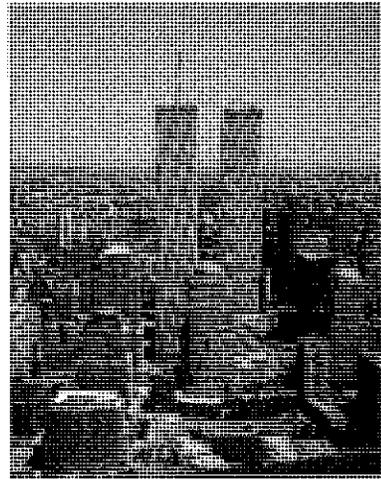
Following the September 11th terrorist attack, the United States put a tremendous amount of effort and resources into finding and either capturing or killing Osama bin Laden. Military efforts in Afghanistan (where he was believed to be hiding) proved unsuccessful. The pursuit continued for nearly ten years but there was little credible information as to his whereabouts.

After almost a decade of searching, bin Laden was tracked down in Pakistan. On May 2, 2011, a team of US NAVY SEALs infiltrated his compound with the intention of capturing him and bringing him to justice. During this operation, bin Laden was shot and killed. He was buried at sea the next day.

The September 11th Terrorist Attacks

The United States experienced a major terrorist attack on September 11th, 2001. What happened that day? What were the results of this attack?

The World Trade Center was a complex of seven structures in New York City. The most notable of these structures were the two buildings known as the “twin towers.” These two structures each stood more than 1,300 feet and were amongst the tallest buildings ever constructed. More than 50,000 people worked in the towers on a daily basis, and an additional 200,000 visited the World Trade Center on business-related matters or as tourists.



On February 26th, 1993, the World Trade Center became the target of a terrorist attack. A man named Ramzi Yousef placed a moving truck filled with 1,500 pounds of explosives in an underground parking garage. Six people perished from the blast that resulted, and an additional 1,042 were injured. This served as a precursor for the larger attack which would occur several years later.

Words to watch for:

perished precursor

debris heinous

On the morning of September 11th, 2001, four commercial airliners were hijacked by a group of nineteen terrorists. Five of these hijackers, onboard American Airlines Flight 11, crashed the plane into the North Tower of the World Trade Center at 8:46 AM. At 9:03 AM, a second plane, United Airlines Flight 175, was flown into the South Tower of the World Trade Center.

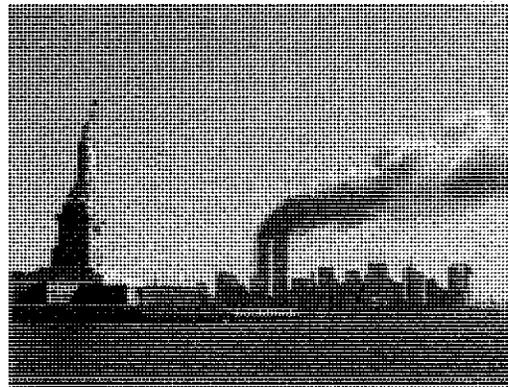
Just over thirty minutes later, at 9:37 AM, American Airlines Flight 77 was crashed into the Pentagon in Washington DC. A fourth flight, United Airlines Flight 93, was also hijacked. The hijackers intended to fly this plane into the Capitol Building in Washington DC. However, the passengers and crew attempted to recapture the plane from the hijackers. This struggle resulted in the plane crashing just southeast of Pittsburgh.

The damage, destruction, and ensuing fires in New York City resulted in the collapse of both World Trade Center towers. Additionally, debris from the enormous structures also caused one of the other five buildings in the World Trade Center complex to collapse. Damage at the Pentagon was also extensive, with a significant portion of the building being destroyed.

Emergency responders and other rescue personnel were immediately on each scene. Members of the New York City Police Department, the New York City Fire Department, and countless others worked tirelessly to rescue as many victims as possible. Additionally, police officers and firefighters from across the country volunteered their time and resources to join the rescue and recovery efforts. In Washington DC, rescue workers at the Pentagon included Secret Service agents and high ranking members of the military.

As rescue crews continued their work, investigators attempted to learn who was responsible for the heinous acts. It was eventually discovered that fifteen of the nineteen hijackers were Saudi Arabian, and the group was led by Mohamed Atta, an Egyptian. The group was a part of an extensive terrorist organization known as Al-Qaeda. The leader of Al-Qaeda was Osama bin Laden. Initially, bin Laden denied involvement, but he ultimately took responsibility for orchestrating the attacks. A second man, Khalid Sheikh Mohammed, also admitted to being heavily involved in the planning of the attack.

By the time the cleanup process was complete, 2,606 people had lost their lives in the attack on the World Trade Center. Another 125 individuals died at the Pentagon. Additionally, the 246 passengers and crew members aboard the four planes also perished. This means a total of 2,977 people lost their lives that day (this excludes the nineteen hijackers who also died).



The impact of the terrorist attacks on September 11th, 2001 was far-reaching and long-lasting. Americans became increasingly paranoid about the possibility of another attack. As a result, increased security measures at airports became commonplace. New pieces of legislation, such as the Patriot Act, allowed government officials to be more proactive with investigations of suspected terrorists. The Department of Homeland Security was also created to help better organize the various agencies responsible for US security. Also, the United States began to fight the “War on Terror” in various countries around the world, including Afghanistan.

The Afghanistan War

The United States invaded Afghanistan in 2001. What was the purpose of this invasion? What were the results?

Shortly after the terrorist attack on the World Trade Center on September 11th, 2001, the United States government discovered that the culprits were members of a terrorist organization known as Al-Qaeda. Al-Qaeda was a militant organization dedicated to practicing a fundamentalist form of Islam. It was formed in the late 1980s by Osama bin Laden, who was still the leader of the group in 2001.

Al-Qaeda had been responsible for numerous terrorist attacks throughout the 1990s. For example, in 1992, Al-Qaeda detonated bombs at two different hotels in Yemen. The group attempted to assassinate President Bill Clinton in 1996 by planting a bomb on a bridge, but the attempt was thwarted by the Secret Service. In August of 1998, the US embassies in Tanzania and Kenya were bombed, resulting in the deaths of 224 people. Al-Qaeda also attacked the USS *Cole*, killing seventeen members of the US Navy and injuring thirty-nine more.

Al-Qaeda's primary bases of operation were located in Afghanistan. At their Afghani facilities, Al-Qaeda would recruit, indoctrinate, and train followers. It was estimated that anywhere from 10,000 to 20,000 young men had participated in activities at these camps prior to the World Trade Center attack in 2001. Additionally, the camps in Afghanistan were used as bases to import and distribute weapons as well as coordinate activities with other terrorist organizations.

Words to watch for:
militant fundamentalist
thwarted indoctrinate

Al-Qaeda's presence in Afghanistan was made possible by the ruling body of Afghanistan, known as the Taliban. The Taliban is an organization that was founded in 1994 by Mullah Muhammed Omar. This group had taken control of Afghanistan in 1996 and enforced a strict interpretation of Sharia law (Islamic law).

The Taliban had committed many human rights abuses while in power in Afghanistan. They were guilty of numerous massacres, often killing hundreds of people at one time. They also withheld food to parts of the population, forcibly starving their own citizens. Additionally, the Taliban had burned crops, fields, and homes in some regions of the country. All of these things were done as part of an ethnic cleansing effort as the Taliban attempted to rid their nation of all non-Afghans. These actions resulted in the deaths of over 5,000 people, with more than 100,000 others being displaced from their homes.

When the United States invaded Afghanistan in 2001, the primary goals were to dismantle Al-Qaeda and remove the Taliban from power. By removing the Taliban from power, the US hoped to deny Al-Qaeda a safe base to operate from.



US military action in Afghanistan began on October 7th, 2001, and by November 12th, the Taliban had fled the capital city of Kabul. By December, they had also abandoned the city of Kandahar, which had been the Taliban's last remaining stronghold.

Members of Al-Qaeda and the Taliban fled into the Tora Bora Mountains where they occupied a network of underground bunkers and fortified caves. The United States used aerial bombardments and Special Forces units to eliminate these installations. These efforts lasted for more than a decade, with many members of Al-Qaeda and the Taliban disappearing into the mountainous terrain and never being captured.

Osama bin Laden evaded American forces until 2011. On May 2nd, 2011, he was shot and killed by US Navy SEALs. His death brought an end to a ten year long search for the man who had orchestrated the deadliest terrorist attack in the history of the world.

The Iraq War

In 2003, the United States invaded Iraq. Why did this invasion take place? What were the results of this event?

In the months leading up to the United States' invasion of Iraq, it was believed by high-ranking US government officials that Iraq was attempting to develop, or otherwise obtain, weapons of mass destruction. These weapons could have included chemical weapons such as sarin nerve gas, mustard gas, or even nuclear weapons. In fact, as far back as the Persian Gulf War in 1991, Iraq was known to have stockpiled uranium, which could be used in the manufacture of nuclear weapons.

Words to watch for:

stockpiled coalition

regime tactic

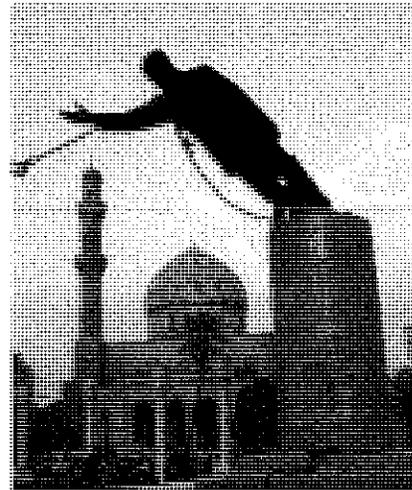
It was also believed that Iraq's president, Saddam Hussein, was possibly supporting international terrorist organizations such as Al-Qaeda. Aside from Hussein's potential support of terrorism, he was also known to be a ruthless dictator who governed Iraq through fear and intimidation. He had been responsible for numerous atrocities within his own country and had caused the deaths of more than 200,000 Iraqi citizens.

Based on these reasons, President George W. Bush, and Prime Minister Tony Blair of the United Kingdom, determined that Hussein needed to be removed from power. In the spring of 2003, a coalition force made up of military personnel from the US, the UK, Australia, and Poland began preparing to make that happen. The stated goals of the military operation were to end the regime of Saddam Hussein, locate and eliminate Iraq's weapons of mass destruction, and capture or drive out any terrorists within that country.

The invasion of Iraq, led and orchestrated by General Tommy Franks, began on March 20th, 2003 and involved more than 300,000 troops from various countries. The initial attack was a simultaneous air and ground assault which came to be known as "shock and awe." This tactic was designed to overwhelm the opponent with an astounding display of force.

The rapid invasion demoralized the Iraqi soldiers. Many Iraqis abandoned their posts or willingly surrendered to the swiftly approaching US and British forces. The machinery and weapons being used by the Iraqi military were outdated and poorly maintained. As a result, there was initially very little resistance to the coalition onslaught.

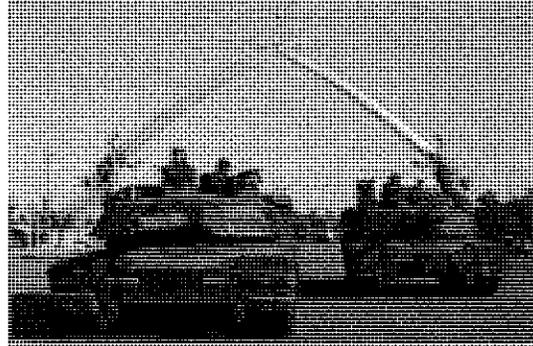
After only three weeks, coalition troops had captured virtually every major city in Iraq, including the Iraqi capital of Baghdad. In early April of 2003, Saddam Hussein fled the city. The people of Iraq rejoiced, vandalizing posters and paintings with his image and tearing down statues which bore his likeness. Hussein was eventually tracked down and captured in December



of 2003. He was placed on trial for crimes against humanity and was executed on December 30th, 2006.

On May 1, 2003, President Bush delivered a speech onboard the USS *Abraham Lincoln* in which he declared “mission accomplished” regarding the goals in Iraq. However, fighting continued for years following this speech. Forces who remained loyal to Saddam Hussein, or who opposed the US presence in Iraq, continued their resistance for the remainder of the decade. The United States would not officially withdraw all of its combat troops from Iraq until December of 2011.

The invasion of Iraq was a controversial decision at the time and remains so today. Many Americans, and others around the world, viewed this as an unprovoked act of aggression by the United States. There were large antiwar protests in many cities and countless outspoken critics of the actions of the Bush administration. Some argued that Bush was fighting the war to benefit his associates in the oil industry.



In 2007, polls showed that anywhere from 66% to 75% of the world’s population disapproved of the US presence in Iraq. However, polls taken within Iraq illustrate that a majority of Iraqis were in favor of the US removing Hussein from power. Additionally, only about one-third of Iraqis were in favor of an immediate withdrawal of US troops.

There was also a heavy financial burden from the Iraq War. It has been estimated that the cost of the war efforts from 2003 to 2011 was approximately \$1.7 trillion. There were other losses as well. More than 15,000 irreplaceable items were looted from the National Museum of Iraq.

Even more worrisome, however, is the fact that in the aftermath of the war, as much as 250,000 tons of explosives went missing. It is possible that many of these explosives ended up in the hands of individuals who could use them to commit further acts of terror.

There were many casualties in the Iraq War. There were 139 US soldiers killed, with another 551 wounded. Coalition forces suffered a combined loss of 172 soldiers. Iraqi deaths are much more difficult to calculate. There were many Iraqis who were left unaccounted for. Some fled the country, and the cause of death for many has been difficult to determine. Some organizations have put the number at 87,000, while others speculate that the death toll for Iraq could have exceeded one million people.

However, the Iraq War was not without its successes. Coalition forces did discover and destroy nearly 5,000 chemical weapons. Also, the people of Iraq were freed from the clutches of the ruthless dictator Saddam Hussein.

GLOBAL

Captivity Pageant

December 1979: Christmas comes for the Great Satan

MARK BOWDEN DECEMBER 2005 ISSUE

It would be hard to say which came first, the unrelenting press attention or the public obsession. The story of fifty-some Americans being held hostage inside the U.S. embassy in Tehran provoked indignation but also piqued America's imagination. Scott Miller, a deejay at WOBL, in Oberlin, Ohio, had himself locked in a recording studio with only a sleeping bag. He spent part of every day tied to a chair, telling listeners he wanted to share the experience of the hostages. At the outset no one imagined that the Iran hostage crisis, which began on November 4, 1979, would go on for fully 444 days.

In Lawrence, Massachusetts, all the churches around city hall sounded their bells fifty times daily at noon to remember the American captives. In Columbus, Ohio, protesters marched to express their anger, chanting, "Nagasaki, Hiroshima, why not Iran!" In Manhattan 10,000 cabdrivers drove with their lights on to express solidarity with their captive countrymen.

Fall turned into winter. As Christmas approached, Tehran grew wet and cold. And the hostages waited.

By the third week of the takeover it was clear to the Students Following the Imam's Line—the group responsible for the hostage-taking—that the planned one-or-two-day occupation of the American embassy had become a prolonged siege. The students divided themselves into committees to handle the logistics of feeding, housing, and guarding their fifty-three captives—the number remaining after the imam, Ayatollah Ruhollah Khomeini, ordered the release of most of the women and African-Americans. Some of the fifty-three were kept in the basement of the chancery, the main office building, and in other spots around the compound, but the largest number were confined in the large, damp, windowless open basement of the embassy warehouse, a place the hostages dubbed the Mushroom Inn, because it seemed ideal for growing fungi. The space was divided into thirty or more cubicles defined by empty bookshelves. Each enclosure had a mattress, and some had a chair

or a table. By December the stale air was cold and clammy, the toilets reeked, and life had settled into a dull routine.

The bookshelves were remnants of the library at the old American High School in Tehran, where in happier days the offspring of embassy workers had attended classes. The books from that library, thousands of them, were piled up in the same basement. Vice Consul Richard Queen was asked to sift through the books and start a lending library. Queen was a gangly, bookish young man who, despite his fragile appearance, had been an accomplished distance runner in high school. He brought to the task an appetite for detail, sorting the books by subject matter.

Overseeing this effort was Hamid, a slight man with a fair, angular face, reddish-brown hair, and a sparse beard, who because of his propensity to cheerfully mislead his captives was known as "Hamid the Liar." His hair and skin color were atypical for an Iranian, and he seemed to compensate for this with an overabundance of zeal. When Hamid played checkers he would jump over his own pieces on the board as if they weren't there—a clear violation of universal rules. When his opponent complained, he would explain, "In Iran we always play this way. These are my men, and if I want to jump over them it is up to me!" Hamid earned his nickname primarily by lying about the mail, routinely telling the hostages that none had come when everyone knew (from the other guards) that mail from the United States arrived daily in sacks. When he did hand out mail, he played favorites, rewarding some hostages and punishing others. In his role as library supervisor Hamid permitted books to be borrowed only after he had checked personally to make sure they weren't "CIA"—even though his English was rudimentary at best. Returned books had to be given first to him, so that he could check to make sure no secret messages had been written or inserted in them.

In his fractured English he wrote out rules:

ATTENTION: LIBRARY PROCEDURES

- 1) You may never to take more than 20-twenty-20 of books from the month.
- 2) You may never to write in the twenty books your messages.
- 3) To stack you found them return your books—20.

4) A student good in English will check for messages you should not write, if he finds this library will be destroyed.

Fat books were especially prized. Don Sharer, a Navy pilot, read *War and Peace* and *Moby-Dick*. The embassy press officer, Barry Rosen, began a steady diet of prison literature: Aleksandr Solzhenitsyn's *Gulag Archipelago*; MacKinlay Kantor's *Andersonville*; Billy Hayes's *Midnight Express*; the autobiography of the French prison-escape artist Henri Charrière, *Papillon*; and James Clavell's *King Rat*. Greg Persinger, a Marine, tackled a volume of the *Encyclopaedia Britannica*, working his way through alphabetically.

The hostages were beginning to look ragged. Clean State Department and military faces sprouted stubble and then full beards; well-trimmed hair grew shaggy and then long. As the air chilled, they took whatever clothing the Iranians brought around and wore it in layers. Most looked as if they had fished their wardrobe out of a Salvation Army bin.

In what the students regarded as a "major concession," they allowed three liberal American clergymen to visit and celebrate Christmas with the captives. All three were chosen, according to a spokesman for Iran's Revolutionary Council, because of "their militant history against imperialism." Most famous was the Reverend William Sloane Coffin, the celebrated senior minister of New York City's Riverside Church. Coffin was a large man with sloping shoulders and long, curly dark hair that was retreating fast toward the crown of his head but still fell thickly over his ears. He did not seem ministerial, with his up-from-the-streets New York accent, earthy humor, and background as an officer in the Army and then in the CIA. But he had seen the light, left the Agency, and entered the ministry, achieving prominence as the chaplain of Yale University and a civil-rights worker long before he became nationally known for his often eloquent opposition to the Vietnam War. Accompanying Coffin were the Reverend William Howard, a tall, urbane, dignified African-American Baptist minister who headed the National Council of Churches and was a noted civil-rights and anti-apartheid activist, and Bishop Thomas Gumbleton, a Catholic leader from Detroit who was famous for his advocacy of liberal issues inside and outside the Church. Coffin had defended the hostage-takers in public statements in the United States, saying, "We scream about the hostages, but few Americans heard the screams of tortured Iranians."

The hostages were brought to the three clergymen in small groups for a series of services throughout Christmas Day. In session after session, wearing a flowing maroon robe, Coffin warned against the vice of "self-pity" and encouraged the captives to sing along with him as he played carols on the piano. The ceremonies were held in various rooms that had been decked with an Islamic approximation of Christmas trimmings. The students had decorated with help from one of the hostages, Army Sergeant Joe Subic, who was so accommodating to his captors that they nicknamed him "Brother Subic." Alongside the holiday decorations were the usual anti-American posters and revolutionary slogans. Cameras recorded the event for Iranian TV.

Many of the hostages were appalled by the event, by being made part of what they saw as a propaganda stunt, but Rick Kupke, a State Department communications technician, set aside his resentment when he spotted the treats laid out on a table—brownies, nuts, apples, and oranges. There was even a roasted turkey on a platter. Paul Lewis, a young Marine, was impressed enough by the goodies to go through the motions during his ceremony, though he ignored Coffin's exhortation to hold hands with his captors and sing. Many of the Marines refused to join in, and a good number of the other hostages showed little emotion or enthusiasm. Coffin hugged each one at the end of the ceremonies, and when he came to Lewis the young man whispered to him, "It's all bull[sh]." In a brief conversation with Bill Keough, the former head of the American High School in Tehran, who had come to Tehran to retrieve school records and found himself trapped by the takeover, Coffin remarked jokingly that he had often longed for an extended period of quiet in which to read and think and contemplate. Keough smiled grimly. It was the remark of a free man who was not being threatened daily with trial and execution. Al Golacinski, the embassy security chief, leaned over to William Howard at the ceremony he attended and whispered, "Don't believe what you are seeing; we're being treated like animals."

"So I gathered," Howard said.

The Baptist pastor managed to convey to each group that all of America—not just their families and friends—was intensely concerned with their fate. At each of the sessions the hostages were allowed to write brief notes to their families, which for many was their first communication since the takeover.

Forbidden to talk about politics or the hostages' situation, Colonel Chuck Scott, the embassy's military liaison, a ramrod career Army officer with a square jaw and a defiant demeanor, asked Howard intently, "What's the price of gas in America today?" Scott had thought long and hard about what question to ask if he got the chance, and had decided that the current price of oil would help him gauge how events in Iran were playing around the world. Howard looked at the gallery of armed guards and asked them, "I don't suppose I should answer that question, do you?" Scott was annoyed. *Why couldn't he just have blurted out an answer? Why was he bending over so far to be helpful to these bastards?*

Seeing Scott's anger, Howard tried to change the subject. He said he had noticed in looking over the lists of hostages that Scott was from Georgia, and he began a story about the difficulties he had faced as a young African-American traveling in that state. This further angered Scott, who felt that he was being blamed for the racism the preacher mentioned having encountered.

For some of the hostages, however, the ceremonies were rich with feeling and gave them a fleeting sense of connection with home. Kathryn Koob fought to hold back tears during her ceremony. A friendly, once corpulent woman who had been in charge of the Iran-America Society, a cultural-exchange program, she had lost a striking amount of weight already and would in the coming months become reed-thin. Koob was profoundly sad to be cut off from her world, isolated from her family and any community of Christians; from familiar Christmas music, the swirl of shopping, cards, parties, and gift-giving. And yet somehow the holiday became, if anything, more meaningful to her as a prisoner. As she stood before Bishop Gumbleton, reunited for the first time in a month with the only other remaining female hostage—the embassy first secretary, Ann Swift—she felt herself trembling so violently that it took all her strength not to break down. She was afraid if she didn't control herself in front of the bishop, word would get back to her family that she wasn't doing well. So she balled her hands into fists so tight that the nails cut into her skin.

Something else happened that Christmas Day. Early in the morning Marine Guard Kevin Hermening was given a clean turtleneck sweater, and he; Joe Subic; Steve Lauterbach, an embassy administrator from Ohio; and Jerry Plotkin, a California businessman, were taken to an office at the motor pool, where TV cameras were waiting.

The men were asked to make a statement on camera during the Christmas party to be held later that day. Over in the Mushroom Inn, unbeknownst to Hermening, most of his fellow Marines had refused the same request. Hermening, who at nineteen was the youngest of the hostages, agreed to say some things, but said he didn't want anything to do with anything "controversial." He loved America and was proud to be a Marine. He would sacrifice his life, if need be, to defend his country. But as he talked more with his captors, they got him to agree that he was not prepared to sacrifice his life to defend the deposed shah. He felt okay about saying that. He was ready to accept that the shah and SAVAK, the shah's secret police, had done terrible things to the Iranian people. He did not think those things gave the students the right to take over the embassy and hold him and his colleagues against their will, and he even wrote that down in one of the statements. He tried to get the students to promise not to edit his comments, but when they said no he agreed to go ahead anyway.

Hermening was excited about being on TV. Maybe his family back in Wisconsin would see him. This ordeal was making him famous, he was sure, and with that fame would come opportunity. At the motor pool he met Nilufar Ebtekar, the young Iranian woman whose fluent, American-accented English had elevated her to the role of international spokesperson for the students (and who today is one of Iran's vice-presidents and the minister of the environment), and fell into easy conversation with her. Hermening told her he was surprised that a woman held a position of such importance. He said if she was so successful already, maybe someday she would be a big leader in Iran.

"If I ever get back to the United States, and get into politics, maybe I'll become a leader there," he said. He joked that years later the two of them would be shaping world events. Ebtekar laughed gaily at the idea.

While Coffin, Howard, and Gumbleton looked on with apparent approval, the four captives performed precisely as their captors wished. Each read a statement critical of the United States. Hermening and Lauterbach read their statements in a flat monotone. Lauterbach, his hair long and his beard untrimmed, seemed particularly pained to be participating. Plotkin, who had been trapped at the embassy by chance on the day of the takeover, seemed more comfortable. Subic, who often held the microphone, appeared to be speaking in full earnest, even cheerfully.

Chubby and blond, Subic had been working as a clerk at the embassy and began making himself useful to the Iranians on the day of the takeover, leading them around the compound and identifying his bound, blindfolded colleagues by name and job description. Since then he had been allowed special privileges: a telephone, warm clothing, a steady supply of snack foods from the embassy commissary. In return he had helped with things like the Christmas decorations. Hermening had been made Subic's roommate, and Subic had helped convert the young Marine into a more pliable prisoner.

Some of the statement Hermening read had been prepared for him, and some of it—about getting letters from home and receiving medical care when it was needed—was what he had written. The students had added lines about how the American government had sold fertilizer to Iran that killed all its crops. Hermening read on. The statement summarized the American-led coup that unseated Muhammad Mossadeq in 1953, before Hermening was born; told how the United States had placed the shah on the throne; and said that Hermening and the other hostages were suffering because America refused to own up to its crimes and return the shah to face judgment in Iran.

"It hurts us to have to say that, but that is what we believe to be the situation," he read. "We will always be Americans and still pray that they make the right decision as soon as possible."

Clean-shaven and neatly groomed, his hair trimmed and parted down the middle, Hermening looked hale and fit; he towered over the guards in the room, and despite his wooden performance he did not seem like a man being forced to do something against his will. Although he felt awkward about reading the statement even as the words came out, he thought, *Who is going to believe this?* Clearly the statement was being made under duress, so he didn't worry about it.

Jerry Plotkin read with apparent feeling: "Why is the exshah given protection and sanctuary in the United States of America? He is an accused criminal and admitted his abuses of power on Iranian TV before he was dethroned. Why isn't he extradited like any other alleged criminal would be?"

Only glancing at his prepared statement, Subic offered the most dramatic personal testimony. He wore a colorful sweater and had grown a thin beard. In his short time of traveling in Iran before the embassy was taken, he said, he had begun to see

the evils wrought by the American-supported shah. "We started to see more and more poor people, people without homes, food, education. I asked myself, what had the shah done? My thinking started to turn around. My eyes and mind were starting to awake to the truth."

Subic then stepped around to the front of the table where the four sat, holding the microphone in one hand and in the other displaying a "special" Christmas card that "the hostages" had made for Khomeini. It was actually his own work. He read from the card: "A Christmas wish especially for you, Imam Khomeini. Merry Christmas. May Christmas bring you lasting joy and lovely memories. Merry Christmas, the American Hostages, 25 December 1979. Tehran, Iran." If he was aware of how he might appear to his fellow Americans, he showed no sign of it. He seemed proud of himself, sincere, and entirely at ease.

Two weeks after the Christmas celebrations a nearly hour-long film was released, and portions were played on all three American TV networks. The film had aired in Tehran over the holidays, and had been offered at that time to American TV. But despite the huge interest in the hostages, the networks balked at the conditions: a fee of \$21,250 and a promise to air the film in full, along with windy speeches from Iranian captors. After a few days the students dropped their demands and handed over the film. Their propaganda show was meaningless if no one saw it.

Trapped on the third floor of Iran's Foreign Ministry, Bruce Laingen, the embassy's charge d'affaires, its highest-ranking diplomat; his political secretary, Vic Tomseth; and Mike Howland, an assistant security officer, had access to Iranian television. The three had left the embassy for a meeting at the Foreign Ministry on the day of the takeover, and had been stranded there ever since. They were not hostages, but they were not free, either. When Laingen saw the propaganda film of his cooperative staff members, he was shocked. He wrote angrily in his diary that evening, "I think tonight I have learned to hate."

... Far and away the bulk of the film was of these hostages reading a prepared statement, praising the revolutionary zeal of their captors, reciting the misdeeds of the embassy in supporting the Shah, citing documents discovered in the embassy to suggest "espionage," and calling on the US government to return the Shah to Iran. All this was done in what appeared to be a rehearsal reading, seriatim, by the hostages of their statement, the desk in front of them

displaying "evidence" of one kind or another. Only one (Steve Lauterbach) of the four seemed in any way hesitant in what he was reading. The hostage who seemed to preside, Joe Subic, clearly was, or seemed to be, relishing his role. A young marine, Kevin Hermening, too, seemed relaxed and at ease. The fourth, the businessman Jerry Plotkin, read a separate statement, and he, too, seemed in control of himself.

All of this culminated in young Subic displaying a Christmas card from which he read a special greeting to Imam Khomeini on behalf of the hostages. All of this is incredible. I have heard of brainwashing and mind control. I have read of such and recognize that in all hostage situations this is commonplace. But here is an example involving people I *know* and whom I *respect* ... Eight weeks of confinement and harassment by sound from the crowds in the streets brought the hostages to the point of apparent servitude to their captors' purposes. And all this in a setting of Christmas with the two priests sitting docilely, watching and listening to the entire charade.

If the students thought such images were going to affect public opinion in the United States, they were right. Americans were horrified. There was a further outpouring of sympathy for the hostages. Bishop Gumbleton explained in press conferences at home that the four men had clearly been forced to make the statements. He told reporters that while the men were reading, one of them (Hermening) had whispered to him, "This is just a put-up job. Don't pay any attention to what you hear."

Gumbleton said he had asked, "Aren't you afraid of what might happen if I report that when I return?"

"Just tell the truth, sir," Hermening told him. "That's all we care about."

Laingen didn't need the bishop of Detroit to tell him that his colleagues were under great duress. He knew that those of his colleagues who had attended the Christmas celebrations were the most fortunate of the hostages. Others had it considerably worse, and had not been seen or heard from since the takeover—men like the CIA station chief Thomas Ahern and the Agency officers Bill Daugherty and Malcolm Kalp; the embassy's political officer, Michael Metrisko; and others. Laingen knew they had been undergoing intensive interrogation, and he could only wonder whether they were dead or alive.

He felt guilty that his own confinement was so much easier. On Christmas Eve he, Tomseth, and Howland had received a gift from the Spanish ambassador—a wicker basket stuffed with various kinds of Iranian candy. The British ambassador visited and brought sturdier fare: a variety of meats and snacks and a bottle of "cough syrup," which contained a lovely red wine for dinner that evening—all the more delicious after such long deprivation. The three American clergymen had also paid a visit, and the six had talked together for hours. Tomseth was impressed with Howard and Gumbleton, whom he felt to be sincere and there purely for humanitarian reasons. He was suspicious of Coffin, who had the air of a grandstander about him. It seemed to Tomseth that the famous leftist preacher was playing to his home audience. In one glib aside Coffin had remarked, "This situation is much too serious to be left in the hands of professionals!"

Coffin seemed not to appreciate that he had just insulted three foreign-service professionals.

"You are being absolutely silly," Laingen told him.

After they left, Laingen hoped that the clergymen, whatever their political motives in coming, had been appropriately shocked by the zealotry of the students and the strange new political contours of Iran. Islamic fundamentalism posed a threat that transcended the traditional liberal-conservative divisions of Western politics. Liberals like these three visitors had a natural tendency to see any revolutionary as ideological kin, he thought, but they needed to be careful in this case about whom they were cozying up to. The world was a more complicated place than they imagined. Dissenters in Iran were being led to the gallows and to firing squads in droves. In a speech just days before, the imam had defended the great official bloodletting going on in his country as "the blessing of God on a human society," and for good measure had praised amputating the hands of thieves and publicly whipping "prostitutes" (a term with a somewhat broader definition in Islamic society than in the West). Khomeini had ridiculed the Western concept of human rights, saying that the advocates of such liberal notions were ignorant of true humanity, because in their eyes "a man is no more than just an animal." A new form of totalitarianism was taking shape—a religious variation on an ugly twentieth-century theme.

Michael Metrisko spent the holiday as he had spent all his days since the first week of the takeover, locked in a windowless basement storage room by himself. He had been invited to the Christmas party, but he wanted no part of a propaganda show. When his guards brought him a gift from the ceremony, a plate of turkey and stuffing, cookies, and decorated marshmallows, the food was tempting; Metrisko was hungry, but he was galled by how self-congratulatory his captors seemed, how generous and noble and proudly Islamic. He accepted the plate, and when they left him alone to eat, he sat staring at the food.

Then he knocked on the door and said he needed to use the toilet. When the door opened, Metrisko emerged holding the gift plate before him. He marched down the hall into the bathroom and dumped the contents into the toilet bowl. He made sure the guards saw him do it.

They were furious with him. He had insulted their hospitality and kind intentions. He was crazy! When they shoved him back into his room and slammed the door shut, Metrisko felt a momentary pang at having lost the meal. What a glorious treat he had denied himself! But his remorse was nothing next to the pleasure he took in delivering the insult. It had hit home and wounded them, and that was something that gave a more lasting pleasure than the food ever could have.

We want to hear what you think about this article. Submit a letter to the editor or write to letters@theatlantic.com.

4L Latin Distance Learning

— Week of May 29 - June 4 —

Directions:

- *Carefully* read through our new (final!) grammar notes on “The Gerund”, and how this is different from the “gerundive” (a.k.a. the “future passive participle”) that you’ve known for a while now!
- On the page labelled “Latin Exercises”, write your name and class (hour) in the top right, and translate #1-5 to turn in. For optional/enrichment, you may complete the section labelled “optional/enrichment” at the end of this week’s grammar notes!

As always, please reach out to me with any questions you have (including the “enrichment” work)!



← **DID YOU KNOW?**

Although the Romans would eventually go on to conquer much of Europe, the Middle East, and North Africa, Latin was originally just one of many tribal languages spoken in the Italian peninsula during the Iron Age!

Chapter 39 Grammar Notes

Gerunds and Gerundives

Gerundive: a verbal adjective; 1st/2nd (-us, -a, -um); passive in meaning

liber **legendus** *a book to be read*

hic liber (mihi) **legendus est**. *This book should be read/must be read (by me).*

Gerund: a verbal noun; neut. sing. (gen., dat., acc., abl.); active in meaning!!

(Nom.)	(laudāre) <i>to praise/praising</i>	(dūcere)	(sequī)	(audīre)
Gen.	laudandī <i>of praising</i>	dūcendī	sequendī	audiendī
Dat.	laudandō <i>to/for praising</i>	dūcendō	sequendō	audiendō
Acc.	laudandum <i>praising</i>	dūcendum	sequendum	audiendum
Abl.	laudandō <i>by praising</i>	dūcendō	sequendō	audiendō

N.B. 1) the infinitive is used as the nom. of the gerund. (and also the acc.)

errāre est humānum. *To err is human.* (Note, humānum = nt. nom. sg.)

iussit eōs **venīre**. *He ordered them to come.*

2) the acc. gerund was most often used as the obj. of **ad** (to show purpose, v.i.)

Examples:

studium **vīvendī** cum amīcīs habet. *She has a fondness of (for) living with friends.*

bene **vīvendō** operam dat. *He gives attention to living well.*

ad bene **vīvendum** Athēnās iit. *She went to Athens to live well.*

bene **vīvendō** fēlīciōres fīmus. *We become happier by living well.*

Gerundive Substitution

Gerunds may take whatever case is required by the verb, noun, or adjective.

studium **legendī** librōs habet. *She has a fondness of reading books.*

librōs **legendō** discimus. *We learn by reading books.*

Gerundives (and Gerunds) Used to Show Purpose

- 1) **ad** + an acc. gerundive/gerund
- 2) gerundive/gerund in gen. case followed by **causā**

A. ad legendum librōs vēnit.

B. **ad** librōs **legendōs** vēnit. *He came **to read** books.*

A. legendī librōs causā ōtium petit.

B. **librōrum** legendōrum **causā** ōtium petit. *She seeks leisure **for the sake of reading** books.*

*You have now learned six ways to express **purpose** in Latin!*

- **ut/nē** with the subjunctive
- the supine (with verbs of motion)
- **ad** with the accusative of the gerund (plus object, etc.)
- **ad** with the accusative of a noun and gerundive
- **causā** with the genitive of the gerund (plus object, etc.)
- **causā** plus the genitive of a noun and gerundive

For optional enrichment:

*Using the words **veniō**, **oppugnō**, and **aedificium**, (“to come”, “to attack”, “building”) translate the following sentence into Latin in the six ways listed above:*

They are coming to attack the buildings.

Subjunctive: _____

Supine: _____

ad + gerund: _____

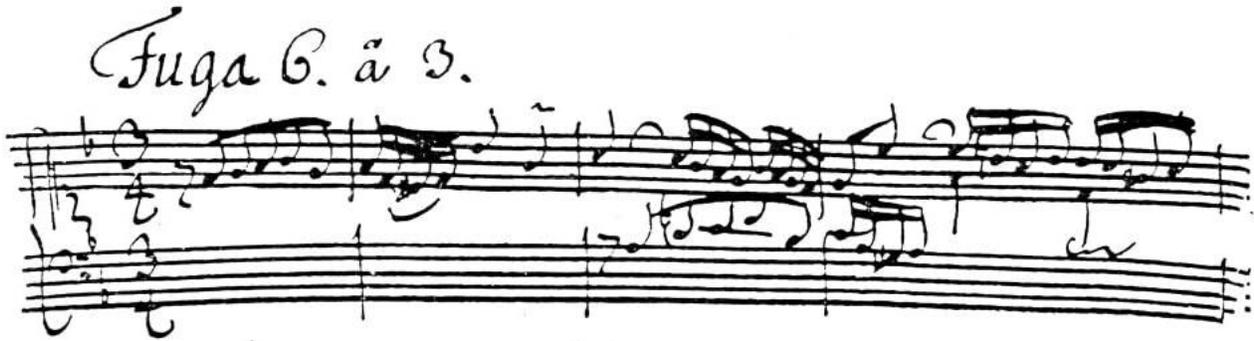
ad + gerundive: _____

causā + gerund _____

causā + gerundive _____

Music Visions

There are many ways that we can “see” music. When we look at a musical score, we see the notes that are played when a piece of music is performed. Each composer’s unique personality comes through not only in how their music sounds, but even in how their music looks. Here is a piece by the famous composer of the Baroque era, Johann Sebastian Bach, in Bach’s own handwritten musical notation:



Opening of a three-voice fugue (“Fuga a 3”) in G minor by J. S. Bach, as written out by the composer

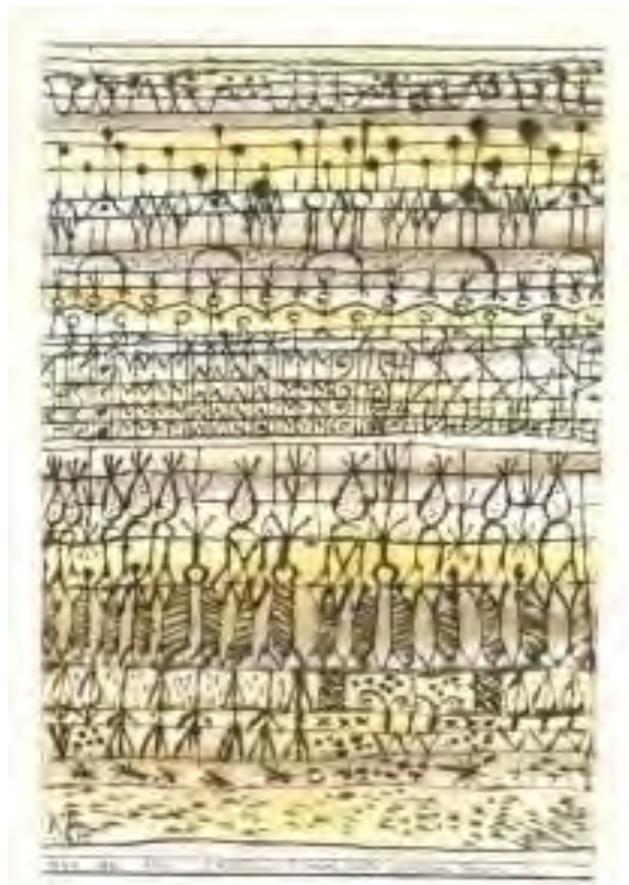
But seeing is more than just looking. To really “see” something, we have to go beyond what is being shown – we have to interpret it. Music is most often interpreted by performing it, that is, through sound. However, some of the most intriguing interpretations of music have resulted from “seeing” music through the creative lens of another art form, often by giving music a different, visual form.

Painting in the Style of Bach

The important Swiss artist Paul Klee (1879-1940) saw the music of Bach through the prism of painting. For Klee, painting was like “improvising freely on my keyboard of colors.” His painting *In the Style of Bach* uses plants, symbols, and signs like elements in a musical score, and its visual rhythm is similar to the structures of Bach’s multi-voiced fugues. Klee’s *Cooling in the Garden of the Torrid Zone* divides elements into horizontal lines and creates repetitive rhythmic structures. You can see black-and-white images of these painting on the next page; go to the Parnassus teachers music page for color images.



In the Style of Bach by Paul Klee



Cooling in the Garden of the Torrid Zone by Paul Klee

Listening: Bach E minor fugue, BWV 900 (a favorite of Klee's) <https://www.youtube.com/watch?v=trSjLjE5ptc>

Read more on painters and music: <https://interlude.hk/paul-kee-painting-music/>

<https://www.artsy.net/article/artsy-editorial-music-motivated-artists-matisse-kandinsky-reinvent-painting>

Bach-Inspired Music Garden

In a series of six films called *Inspired by Bach*, the famous cello player Yo-Yo Ma teams up with painters, dancers, architects, and film makers to interpret Bach's cello suites in new and unexpected ways. For Suite No. 1 in G Major, he partners with designer Julie Messervy to create a public city garden. The different dances of the cello suite take them (and us) on a "curvilinear" journey, one that doesn't always follow a straight, predictable path. There were unforeseen challenges in "translating" music into a physical space, first intended for the city of Boston but finally completed in Toronto, where it welcomes thousands of visitors each year.



Plan of the Toronto Music Garden. The upper half of photo shows the actual garden, and the lower half shows how the garden's sections correspond to the movements of the Bach Cello Suite No. 1.

Listening: Bach Cello Suite No. 1 with Yo-Yo Ma <https://www.youtube.com/watch?v=1prweT95Mo0>

Watch: "Minuet" from *The Music Garden* (from 47'20 to 51'20) https://www.youtube.com/watch?v=GyM9F_KaRWk

Read more: <https://www.harbourfrontcentre.com/venues/torontomusicgarden/>

Bach in the Music Animation Machine

The Music Animation Machine shows the music's inner structure in real time with bars of color representing the notes. As you listen, these bars scroll across the screen. Their position tells you their pitch (how high or low on the screen) and their timing in relation to each other (bars of different lengths – how far left or right from each other). Different colors are given to different instruments or voices, melodies, and harmonies. Each note lights up at the exact moment it sounds.

There are many variations in the ways that music animation visualizes the music being performed. Some are very similar to the “sound picture” of a spectrogram, where the sound “looks” different depending on what instrument or other source is making it. Watch the three music animation videos (links below) to get an idea just how different the animation can be!



Bach's *In Dulci Jubilo*, from *Das Orgelbüchlein*, first ten measures

Watch/listen to Bach's "Little Fugue" for organ with music animation

<https://www.youtube.com/watch?v=ddbxFi3-UO4>

More music animation <https://www.youtube.com/watch?v=MvF8XWr17nw> (guitar music)

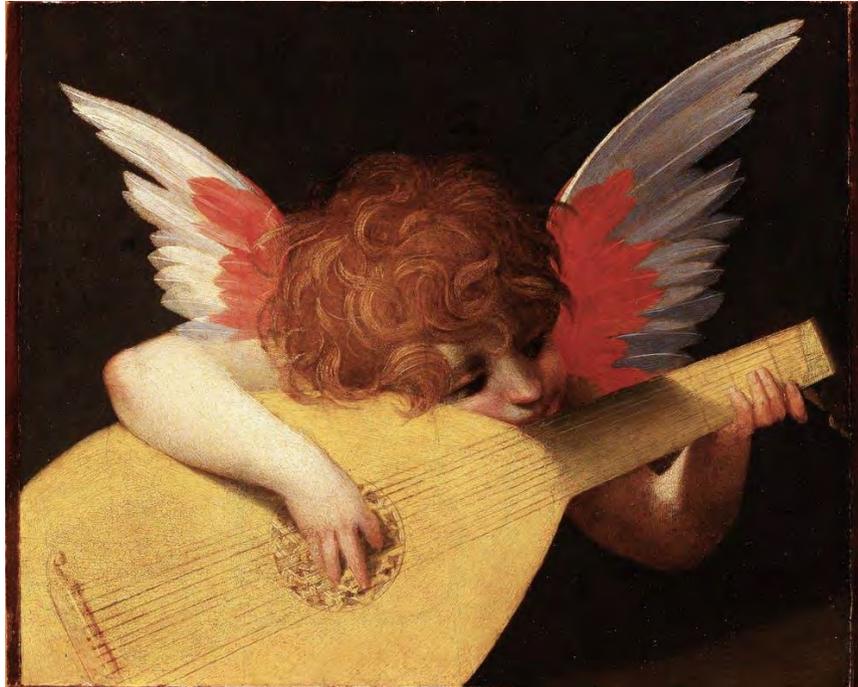
<https://www.youtube.com/watch?v=yoiDu3E9jls> (Beethoven "Moonlight" Sonata)

Interactive Spectrogram <https://musiclab.chromeexperiments.com/Spectrogram/>

Read more <https://www.musanim.com/mam/overview.html>

For Further Exploration

Have you seen the painting of an angel playing the lute (a plucked string instrument) that is hanging in the School of Grammar hallway near the Forum? It's one of my favorite paintings because I can really feel the concentration and effort that the angel is putting into it. It reminds me that music, or anything that we want to get better at, requires dedication and hard work. It is always worth the effort! (Dr. Dean)



<https://www.uffizi.it/en/artworks/angel-playing-the-lute>

Visit the music page at parnassteachers.com to see the full-color images and additional resources for this lesson, including more of our favorite music-related paintings!



Women In Science



The women scientists profiled here span several centuries and several nationalities. Despite many barriers, women all over the world have participated in unraveling the secrets of nature since the dawn of civilization. As historian of science Naomi Oreskes said recently, “The question is not why there haven’t been more women in science; the question is rather why we have not heard more about them.” Most of the women whose stories are told here, in fact, were active in recent times, when the sciences had already become professionalized endeavors.

This publication stems from a project undertaken at the San Diego Supercomputer Center (SDSC) in early 1997, when a new wing was added to the center’s building. It featured a classroom designed for workshops in the most advanced computational and visualization techniques. The classroom was furnished with 16 new Silicon Graphics workstations*

The machines had Internet addresses, which were strings of numbers, but since humans misremember numbers, they all needed memorable names as well. To recognize the several educational programs that SDSC directs at girls and young women interested in careers in the sciences,† we named each machine after a woman who had a career in or made a significant contribution to a scientific discipline. Brief biographies were written for each woman selected, and these were put on the walls of the classroom. They were also gathered in this pamphlet, which we hope to distribute to audiences beyond our computational laboratory.

Many of the women celebrated here were mathematicians, physicists, or astronomers, all fields strongly related to the computational sciences. But there are also two biologists, two biochemists, a geological pioneer, a doctor, and an industrial psychologist, which is also

appropriate, as these fields are also developing significant computational components.

The common thread running through their stories is their record of accomplishment. Each was able to make a significant contribution and each achieved recognition in her field. To one degree or another, all of these women faced obstacles to their scientific work that arose simply because they were women. Many were hardly permitted to get an education; some were allowed to work only without the pay or privileges accorded to men doing the same work. Engaging in normal scientific collaborations was an impossibility for some and a great difficulty for others, barred as they were from the milieu in which male scientists met and conversed.

But these women in science were also women specifically situated in time and place. They also struggled in common with their male counterparts against fascism, racism, and discrimination based on class and ethnicity. Some achieved such pinnacles as the Nobel Prize, while others have been nearly lost to history. We find that, in simply naming some computers, we have been privileged to enter a rich historical territory, one little enough explored—and we invite you to share it with us. ■

ACKNOWLEDGMENTS

Many individuals helped gather the information and pictures presented here. Those whom we are delighted to thank include Bonnie Bird, Executive Secretary, The Royal Astronomical Society; Clare Bunce and the PR staff at Cold Spring Harbor Laboratory; Lynda Claassen, Steve Coy, and Bradley Westbrook, UCSD Libraries, Mandeville Special Collections; Deborah Day, Archivist, Scripps Institution of Oceanography, UCSD; Leo Dolenski, Bryn Mawr College; Patrice Donoghue, Assistant Curator, Harvard University Archives; Joyce Hansen, Austin Hansen Collection, Schomburg Center; Leon and Cynthia Pitts Harkleroad, Cornell University Department of Mathematics and Cornell Theory Center; Dorothy Kaupé, San Diego Historical Society; Purdue University Technical Information Service; Ruth Sime, Sacramento City College; Hugh Torrens, Keele University; Agnes Túska, Mathematics Department, California State University, Fresno; and Tom Zinnen, Pam Peters, and Vivian Lee Ward, Access Excellence Web Site. We also wish to acknowledge our colleague Anke Kamrath, who asked for help in naming the machines, and our leader, Ann Redelfs, Director of External Relations at SDSC, for her steady encouragement. —MM and LS

* Specifically, these were Indigo 2 “Killer Impact” workstations with R10000 processors, 128 Mbytes of memory apiece, fast Ethernet cards, and videoconferencing hardware. A significant discount obtained from Silicon Graphics, Inc., enabled SDSC to inaugurate the new classroom.

† These include a Girl Scout Science Interest Group and an ongoing program directed at young and minority high-school level women; see the SDSC web site for more information: <http://www.sdsc.edu/Education/>.



ROSALIND ELSIE FRANKLIN

BORN: LONDON, ENGLAND, JULY 25, 1920

DIED: LONDON, ENGLAND, APRIL 16, 1958

Pioneer Molecular Biologist

techniques. In 1951, she returned to England as a research associate in John Randall's laboratory at King's College, Cambridge.

It was in Randall's lab that she crossed paths with Maurice Wilkins. She and Wilkins led separate research groups and had separate projects, although both were concerned with DNA. When Randall gave Franklin responsibility for her DNA project, no one had worked on it for months. Wilkins was away at the time, and when he returned he misunderstood her role, behaving as though she were a technical assistant. Both scientists were actually peers. His mistake, acknowledged but never overcome, was not surprising given the climate for women at Cambridge then. Only males were allowed in the university dining rooms, and after hours Franklin's colleagues went to men-only pubs.

But Franklin persisted on the DNA project. J. D. Bernal called her X-ray photographs of DNA, "the most beautiful X-ray photographs of any substance ever taken." Between 1951 and 1953 Rosalind Franklin came very close to solving the DNA structure. She was beaten to publication by Crick and Watson in part because of the friction between Wilkins and herself. At one point, Wilkins showed Watson one of Franklin's crystallographic portraits of DNA. When he saw the picture, the solution became apparent to him, and the results went into an article in *Nature* almost immediately. Franklin's work did appear as a supporting article in the same issue of the journal.

A debate about the amount of credit due to Franklin continues. What is clear is that she did have a meaningful role in learning the structure of DNA and that she was a scientist of the first rank. Franklin moved to J. D. Bernal's lab at Birkbeck College, where she did very fruitful work on the tobacco mosaic virus. She also began work on the polio virus. In the summer of 1956, Rosalind Franklin became ill with cancer. She died less than two years later. ■

There is probably no other woman scientist with as much controversy surrounding her life and work as Rosalind Franklin. Franklin was responsible for much of the research and discovery work that led to the understanding of the structure of deoxyribonucleic acid, DNA. The story of DNA is a tale of competition and intrigue, told one way in James Watson's book *The Double Helix*, and quite another in Anne Sayre's study, *Rosalind Franklin and DNA*. James Watson, Francis Crick, and Maurice Wilkins received a Nobel Prize for the double-helix model of DNA in 1962, four years after Franklin's death at age 37 from ovarian cancer.

Franklin excelled at science and attended one of the few girls' schools in London that taught physics and chemistry. When she was 15, she decided to become a scientist. Her father was decidedly against higher education for women and wanted Rosalind to be a social worker. Ultimately he relented, and in 1938 she enrolled at Newnham College, Cambridge, graduating in 1941. She held a graduate fellowship for a year, but quit in 1942 to work at the British Coal Utilization Research Association, where she made fundamental studies of carbon and graphite microstructures. This work was the basis of her doctorate in physical chemistry, which she earned from Cambridge University in 1945.

After Cambridge, she spent three productive years (1947-1950) in Paris at the Laboratoire Central des Services Chimiques de L'Etat, where she learned X-ray diffraction



DOROTHY CROWFOOT HODGKIN, OM

BORN: CAIRO, EGYPT, MAY 12, 1910
DIED: SHIPSTON-ON-STOUR, ENGLAND,
JULY 29, 1994

A Founder of Protein Crystallography

Oxford, described in the memoirs of her many students as an unfailingly joyful and productive environment.*

The challenges were always huge, as every new technique seemed to reach limits that constrained the size of protein that could be successfully solved, and each protein tackled presented special problems of its own. Hodgkin was elected a Fellow of the Royal Society in 1947 after publishing the structure of penicillin and was awarded the Nobel Prize in Chemistry in 1964 for her solution of vitamin B-12. The solution of the insulin structure came in 1969, after many years of struggle. Hodgkin and her collaborators produced a more refined solution in 1988, one that took full advantage of computational techniques that can now reduce the time for protein solutions from years to months or weeks.

Hodgkin was the first of four daughters of John and Grace Crowfoot. Her father was an archaeologist working for the Ministry of Education in Cairo and her mother, an accomplished artist, was an expert on Coptic textiles. Dorothy married Thomas Hodgkin, an expert in African Studies, in 1937, and they had three children.

Hodgkin's role in the arena of science policy and international relations was a constant complement to her own scientific work. The entire family distinguished itself over more than three decades by working in the public arena for the cause of world peace. She belonged to many international peace organizations and, owing to Cold War restrictions, was not permitted to obtain a U.S. visa until 1990. Although she was over 80 and extremely crippled by rheumatoid arthritis, she lost no time in making a grand tour of U.S. institutions to discuss insulin, the history of crystallography, and its future. Her talks drew standing-room-only crowds at every stop. She suffered a stroke and died in 1994. ■

Scientific biographers do not, in general, find much correlation between good character and great science. There are a few exceptions. Historians have unanimously agreed, for example, that Charles Darwin was a particularly admirable, even lovable, figure: a collegial scientist, devoted father, faithful supporter of young colleagues, sincere, honest, and without personal enemies.

The Darwin of our age is certainly Dorothy Crowfoot Hodgkin. In the words of colleague Max Perutz (Nobelist for his solution of the hemoglobin molecule), she was "a great chemist, a saintly, gentle and tolerant lover of people, and a devoted protagonist of peace." In a short space it is impossible to discuss both the significance of her science and the scope of her tireless activity for world peace.

Concentrating first on her contributions to science, she is known as a founder of the science of protein crystallography. She and her mentor, J.D. Bernal, were the first to successfully apply X-ray diffraction to crystals of biological substances, beginning with pepsin in 1934. Hodgkin's contributions to crystallography included solutions of the structures of cholesterol, lactoglobulin, ferritin, tobacco mosaic virus, penicillin, vitamin B-12, and insulin (a solution on which she worked for 34 years), as well as the development of methods for indexing and processing X-ray intensities. After the work with Bernal, she established her own laboratory at

* Guy Dodson, Jenny P. Glusker, and David Sayre (Eds.), 1981: Structural studies on molecules of biological interest: A volume in honour of Professor Dorothy Hodgkin. (Oxford: The Clarendon Press).

ADMIRAL GRACE MURRAY HOPPER

BORN: NEW YORK, NEW YORK, DECEMBER 9, 1906
DIED: ARLINGTON, VIRGINIA, JANUARY 1, 1992

Pioneer Computer Scientist

The new discipline of computing and the sciences that depend upon it have led the way in making space for women's participation on an equal basis. That was in some ways true for Grace Murray Hopper, and it is all the more true for women today because of Hopper's work.

Grace Brewster Murray graduated from Vassar with a B.A. in mathematics in 1928 and worked under algebraist Oystein Ore at Yale for her M.A. (1930) and Ph.D. (1934). She married Vincent Foster Hopper, an educator, in 1930 and began teaching mathematics at Vassar in 1931. She had achieved the rank of associate professor in 1941 when she won a faculty fellowship for study at New York University's Courant Institute for Mathematics.

Hopper had come from a family with military traditions, thus it was not surprising to anyone when she resigned her Vassar post to join the Navy WAVES (Women Accepted for Voluntary Emergency Service) in December 1943. She was commissioned a lieutenant in July 1944 and reported to the Bureau of Ordnance Computation Project at Harvard University, where she was the third person to join the research team of professor (and Naval Reserve lieutenant) Howard H. Aiken. She recalled that he greeted her with the words, "Where the hell have you been?" and pointed to his electromechanical Mark I computing machine, saying "Here, compute the coefficients of the arc tangent series by next Thursday."

Hopper plunged in and learned to program the machine, putting together a 500-page *Manual of Operations for the Automatic Sequence-Controlled Calculator* in which she outlined the fundamental operating principles of computing machines. By the end of World War II in 1945, Hopper was working on the Mark II version of the machine. Although her marriage was dissolved at this point, and though she had no children, she did not resume her maiden name. Hopper was

appointed to the Harvard faculty as a research fellow, and in 1949 she joined the newly formed Eckert-Mauchly Corporation.

Hopper never again held only one job at a time. She remained associated with Eckert-Mauchly and its successors (Remington-Rand, Sperry-Rand, and Univac) until her official "retirement" in 1971. Her work took her back and forth among institutions in the military, private industry, business, and academe. In December 1983 she was promoted to commodore in a ceremony at the White House. When the post of commodore was merged with that of rear admiral, two years later, she became Admiral Hopper. She was one of the first software engineers and, indeed, one of the most incisive strategic "futurists" in the world of computing.

Perhaps her best-known contribution to computing was the invention of the *compiler*, the intermediate program that translates English language instructions into the language of the target computer. She did this, she said, because she was lazy and hoped that "the programmer may return to being a mathematician." Her work

embodied or foreshadowed enormous numbers of developments that are now the bones of digital computing: subroutines, formula translation, relative addressing, the linking loader, code optimization, and even symbolic manipulation of the kind embodied in *Mathematica* and *Maple*.

Throughout her life, it was her service to her country of which she was most proud. Appropriately, Admiral Hopper was buried with full Naval honors at Arlington National Cemetery on January 7, 1992. ■





MARIA GOEPPERT-MAYER

BORN: KATTOWITZE, GERMANY, JULY 28, 1906
DIED: LA JOLLA, CALIFORNIA, FEBRUARY 20, 1972

Nobelist in Physics

other students included Fermi, Oppenheimer, Dirac, and von Neumann. Maria thrived in this environment. For her dissertation (1930), she calculated the probability that an electron orbiting an atom's nucleus would emit two photons of light as it jumped to an orbit closer to the nucleus. Her challenging calculation was confirmed experimentally in the 1960s.

Maria married physical chemist Joseph E. Mayer in 1930 and together they moved to Baltimore, where Joe was a professor at Johns Hopkins. Maria adopted a hyphenated form of their names and anglicized the spelling. She had an attic office and a mixed assortment of honorary job titles, but no pay. She nevertheless produced ten papers, a textbook, and her daughter Maria Ann during her time in Baltimore. She was pregnant with her son John in 1938, when Joe unexpectedly lost his job. They left Hopkins for Columbia University.

There, they wrote a classic textbook, *Statistical Mechanics*. Again, Goeppert-Mayer had office space, but no pay. During the Second World War, she worked on uranium isotope separation, under Harold Urey and others who helped develop the atom bomb. After the war, the Columbia physicists moved to Chicago, and the Mayers followed.

Maria worked at the Institute for Nuclear Studies at the University of Chicago and at the Argonne National Laboratory. In 1948 she started her work on the nuclear shell model. Chicago received her willingly and gave her great respect, but no salary. In 1956, she was elected to the National Academy of Sciences. Three years later, she and Joe accepted professorships at the new University of California campus at San Diego.

When the Nobel Prize was awarded to her in 1963, a San Diego newspaper ran the headline "S.D. Mother Wins Nobel Prize." Shortly afterward, her health began to decline and she died in 1972. ■

Maria Goeppert-Mayer developed the nuclear shell model of atomic nuclei, an achievement honored when she became the third woman ever awarded the Nobel Prize for physics, in 1963. She shared the prize with J. Hans D. Jensen, who had independently developed a similar model, and with theoretician Eugene Wigner.

Although she lived a life of scholarly privilege, with the support of her family and many notable scientists, she was not able to secure full-time work in her field until she was 53. Mayer performed most of her scientific work as a volunteer.

Maria Göppert came from a family of academics. Her father was a professor of pediatrics and the seventh generation of university scholars in his family. When Maria was four, he moved the family from Kattowitz to Göttingen so he could teach there. Maria idolized her father. It was expected that she acquire an education because of her family pedigree in academics. Maria attended a small private school that prepared girls for the university entrance exams. In 1924 she enrolled at Göttingen in mathematics.

Göttingen was then a world center for physics (and the new study of quantum mechanics). The Göppert family had friends who were prominent scientists, and Maria's social contacts included Niels Bohr and her teacher, Max Born. While attending Born's physics seminar, Maria decided to study physics instead of mathematics. Born's

Gramática

INSTRUCTIONS

Making comparisons

DAY 3

To compare people or things that are equal to one another, you use:

tan + adjective + como	as + adjective + as
------------------------	---------------------

En mi club, levantar pesas es tan popular como correr.

To say that things are *not* equal, you can use the negative.

En el club atlético, levantar pesas **no** es tan popular como correr.

To say "as much as" or "as many as," you use:

tanto, -a + noun + como	as much + noun + as
tantos, -as + noun + como	as many + noun + as

Note that *tanto* agrees in gender and number with what is being compared.

Hay tantas actrices en el ensayo como actores.

¿Recuerdas?

You already know several ways to compare things and people.

- más + adjective + que
- menos + adjective + que
- mayor que / menor que
- mejor que / peor que

You also know how to say that someone or something is "the most" or "the least":

- el / la / los / las + noun + más / menos + adjective + de
- el / la / los / las + mejor(es) / peor(es) + noun + de

- Cecilia cree que hacer gimnasia es la actividad más divertida de la escuela.

GramActiva VIDEO

To learn more about making comparisons, watch the GramActiva video.



Repaso del capítulo 1B

Vocabulario y gramática

jdd-0199

INSTRUCTIONS

To prepare for the test, check to see if you . . .

- know the new vocabulary and grammar
- can perform the tasks on p. 69

to talk about extracurricular activities

las actividades extracurriculares	extracurricular activities
el ajedrez	chess
el club, pl. los clubes	club
el club atlético	athletic club
el equipo	team
la fotografía	photography
el fotógrafo, la fotógrafa	photographer
los jóvenes	young people
el miembro	member
ser miembro	to be a member
el pasatiempo	pastime
la práctica	practice
la reunión, pl. las reuniones	meeting

DAY 3

to talk about athletic activities

el animador, la animadora	cheerleader
las artes marciales	martial arts
hacer gimnasia	to do gymnastics
el hockey	hockey
jugar a los bolos	to bowl
la natación	swimming

to talk about music and drama

la banda	band
el bailarín, la bailarina	dancer
la canción, pl. las canciones	song
el (la) cantante	singer
el coro	chorus, choir
ensayar	to rehearse
el ensayo	rehearsal
el músico, la música	musician
la orquesta	orchestra
la voz, pl. las voces	voice

to talk about actions with activities

asistir a	to attend
ganar	to win, to earn
grabar	to record
participar (en)	to participate (in)
tomar lecciones	to take lessons
volver (o → ue)	to return

to talk about and describe Internet activities

crear una página Web	to create a Web page
estar en línea	to be online
hacer una búsqueda	to do a search
navegar en la Red	to surf the Web
visitar salones de chat	to visit chat rooms

other useful words

entre	among, between
el interés	interest
la oportunidad, pl. las oportunidades	opportunity

to tell how long something has been going on

¿Cuánto tiempo hace que . . . ?	How long . . . ?
Hace + time + que . . .	It has been . . .

to make comparisons

tan + adj. + como	as + adj. + as
tantos(as) + noun + como	as much / many + noun + as

saber to know (how)

sé	sabemos
sabes	sabéis
sabe	saben

conocer to know, to be acquainted with

conozco	conocemos
conoces	conocéis
conoce	conocen

For Vocabulario adicional, see pp. 498–499.

Lectura

4L Sra. Serrano
Week 9: May 29 - June 4th

Objectives

- Read a travel article about Ecuador
- Learn about historic travel chronicles
- Research and talk about taking a trip to a Spanish-speaking country

INSTRUCTIONS

Page 1



DAY 4 Read both pages

ECUADOR

país de maravillas

El Ecuador está en la costa Pacífica del norte de América del Sur y representa un país típico de la zona andina. Es un país pequeño, pero tiene paisajes para todos los gustos¹. Desde playas tropicales hasta montañas nevadas, desde ciudades coloniales hasta parques naturales, el Ecuador es una joya que deleita² al visitante. Le invitamos a descubrir este país de maravillas.

Estrategia

Previewing

Before you read a magazine article, look at the photos and read the title, subheads, and photo captions. This will help you determine what type of information you will be reading. What do the title and subheads of this article tell you about the information it's likely to contain? What types of places are featured in the photos?



La iglesia la Compañía de Jesús, Quito

la altitud, le puede resultar difícil respirar y puede sentirse cansado.

Declarada parte del patrimonio mundial por la UNESCO en 1978, Quito mantiene el centro histórico colonial mejor preservado de América Latina. La iglesia La Compañía de Jesús, con un interior muy rico en oro, representa el estilo barroco típico de Quito. Otras iglesias interesantes para el turista son La iglesia de San Francisco y la Catedral.

Mitad del Mundo

A 30 minutos al norte de Quito está el monumento a la Mitad del Mundo. Se llama así porque la Línea Ecuatorial que divide al planeta en dos hemisferios pasa por este lugar. Los turistas se divierten tomando fotos con un pie en el hemisferio norte y el otro en el hemisferio sur. ¡De un lado, es invierno, y del otro, verano! Durante los equinoccios del 21 de marzo y del 23 de septiembre, las personas y los objetos no tienen sombra⁴.

Quito

Quito, la capital del Ecuador, es una ciudad cosmopolita situada en un valle rodeado por las cimas³ nevadas de Pichincha y de Cotopaxi. La ciudad está a 9,200 pies de altura. Para el visitante que no está acostumbrado a



La Mitad del Mundo



¹tastes ²delights ³peaks ⁴shadow

4L Sra. Serrano Week 9: May 29 - June 4th
 Page 2 INSTRUCTIONS



Haciendo tejidos en un mercado Otavalo, Ecuador

Islas Galápagos

Las Islas Galápagos representan una de las atracciones turísticas más importantes del Ecuador. Estas islas, así llamadas por las gigantescas tortugas galápagos que viven allí, están en el océano Pacífico a más de 600 millas de la costa del Ecuador. El archipiélago tiene 125 islas e islotes. Para proteger las especies de animales que viven en las islas, como las iguanas, los leones marinos⁸ y la gran variedad de pájaros, los turistas no pueden visitar las islas por su cuenta⁹. Tienen que tomar una excursión organizada dirigida por un guía naturalista.



La mejor manera de llegar a las islas es por avión desde el aeropuerto de Quito o de Guayaquil. Vuelos diarios¹⁰ salen hacia la isla de Baltra. De ahí, se llega a la Isla de Santa Cruz, donde está la Estación Científica Charles Darwin. El científico inglés visitó las islas en el siglo XIX y su teoría de la evolución

se basa en los estudios que hizo durante su viaje. Desde la Isla de Santa Cruz salen barcos para explorar el archipiélago. La mejor época del año para visitar las islas es entre los meses de enero y mayo porque las temperaturas son más cálidas. Los turistas pueden disfrutar de¹¹ actividades al aire libre, como el buceo y las caminatas que les permite entrar en contacto con la inmaculada naturaleza de estas bellas islas.

Las Islas Galápagos



Dentro del monumento hay un museo que celebra las distintas culturas indígenas del Ecuador. De hecho, el 25 por ciento de la población del país es de origen indígena. Entre los grupos más conocidos están los salasacas, los shuars y los otavalos. Cada grupo se viste de una manera diferente, habla su propio idioma y se especializa en algún tipo de artesanía, como los tejidos, los sombreros, las joyas o las canastas⁵.

El Ecuador le ofrece al visitante un viaje inolvidable por su gran riqueza cultural y natural. Como dijo el científico Humboldt⁶, "Un viaje por el Ecuador se puede comparar con un viaje desde la Línea Ecuatorial casi hasta el Polo Sur"⁷.



⁵baskets ⁶German scientist who traveled extensively in Latin America ⁷South Pole ⁸sea lions ⁹on their own ¹⁰daily ¹¹enjoy