

NEWSPAPERS IN EDUCATION
THE OKLAHOMAN

Oklahoma's future begins in the classroom.

This educational program
brought to you by:



TOPOGRAPHIC
LOYALTY INNOVATION LEGACY



TEACHER'S GUIDE 2016

WEEK 1 GAMES

Submitted by Deanice Shegog,
Teacher, Lawton

GAME SCHEDULE

Northwestern State at Baylor
Kansas State at Stanford
Missouri at West Virginia
Oklahoma at Houston

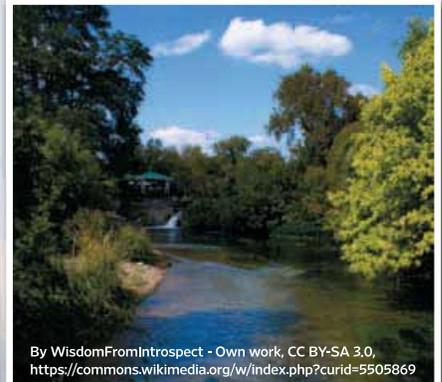
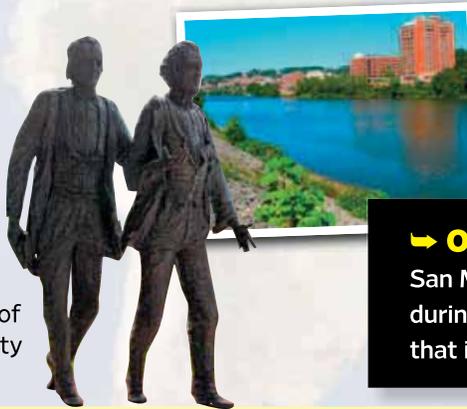
Southeastern Louisiana at Oklahoma State
Rhode Island at Kansas
South Dakota State at TCU
Stephen F. Austin at Texas Tech

Northern Iowa at Iowa State
Notre Dame at Texas

1. Stanford University is located in the heart of what valley?
2. Morgantown sits on the banks of a river named by Native Americans. The name means "river with sliding banks." The river flows northward into Pennsylvania. What is the name of the river?
3. The Chisolm Trail leading to Kansas and the Shawnee Trail leading to Abilene, Texas both cross what river using the Waco Suspension Bridge?
4. Agriculturally, what does the community of Cedar Falls, home of Northern Iowa, and the community

of Ames, where Iowa State is located, have in common?

5. TCU was founded by brothers who were preachers/teachers in 1873 during which famous movement?



By WisdomFromIntrospect - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=5505869>

→ OVERTIME ACTIVITY

San Marcos, Texas is at high risk for flooding during periods of heavy rains due to the fact that it lies on what 3 waterways?



Oklahoma Alliance for Geographic Education
Teacher Training | Curriculum Development | Outreach Programs | and More!

For more than 26 years, OKAGE has provided high-quality professional development and classroom-ready preK-12 materials to increase geographic literacy at all grade levels. OKAGE is the primary advocate and source of information for geography educators throughout Oklahoma.

Help your students to become globally aware! Membership in OKAGE and most of our programs are free. Contact us at 405-325-5832, okage@ou.edu or visit www.facebook.com/OklahomaAllianceforGeographicEducation.

2 GRIDIRON GEOGRAPHY 2016

WEEK 1: AUGUST 29-SEPTEMBER 4 ANSWERS:

1. Silicon Valley
<https://www.stanford.edu/about/>
2. Monongahela River
http://www.wvexp.com/index.php/Monongahela_River
<http://www.city-data.com/city/Morgantown-West-Virginia.html>
3. Brazos River
www.wacoheartoftexas.com
<https://tshaonline.org>
4. Both communities contain highly rich soil capable of growing numerous types of crops.
www.cedarfalls.com
<http://farms.ag.iastate.edu/>
5. The Restoration Movement
www.tcu.edu

OVERTIME ANSWER:

The San Marcos River, the Blanco River and Purgatory Creek.
<http://www.ci.san-marcos.tx.us/index.aspx?page=259>

TRIVIA ANSWER:

Permian Basin
www.eia.gov/todayinenergy

WEEK 2 GAMES

Submitted by Bailey Huntsman,
The Oklahoman

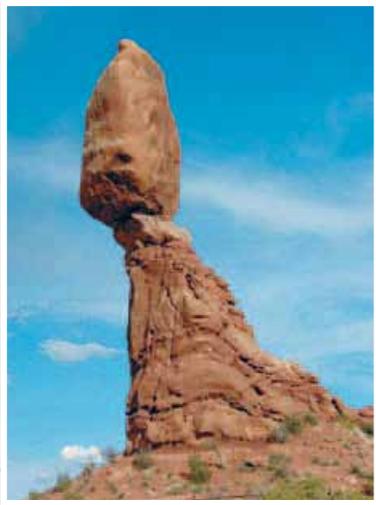
GAME SCHEDULE

Central Michigan at Oklahoma State
Youngstown State at West Virginia
Ohio at Kansas

SMU at Baylor
Arkansas at TCU
UTEP at Texas

ULM at Oklahoma
Iowa State at Iowa
Texas Tech at Arizona State

1. The Texas Tech Red Raiders travel to Tempe, Arizona this week to take on the Arizona State Sun Devils. Both teams are used to playing in the heat, but which team's hometown has the higher average temperature on game day (September 10)?
2. Iowa State fans will make the drive to Iowa City this weekend to watch their team take on the University of Iowa Hawkeyes. If they keep driving east on I-80 they could visit the world's largest truck stop. What is the name of this truck stop, where is it and how much further would the Cyclone fans need to travel to get there?



CC BY-SA 2.5, <https://commons.wikimedia.org/w/index.php?curid=1518814>

3. History was made at the Democratic National Convention this year by nominating the first female presidential candidate from a major-party. Who is the candidate and at which university represented in this week's schedule did she teach?
4. If Central Michigan fans decide to drive to the game in Stillwater this week they'll probably want to leave early so they can break the 1,000+ mile trip into two days. What would be a good halfway point between Mount Pleasant, Michigan and Stillwater, Oklahoma? About how many miles will they drive each day?
5. Two of the universities on this week's schedule are home to a presidential library. Which universities are they?

➔ OVERTIME ACTIVITY

One of the first suspension bridges built in the United States was the Waco Bridge over the Brazos River. There are two very famous suspension bridges in two of the largest cities in America, what are they? Where is the longest suspension bridge in the world?

Build your own suspension bridge! Do the research and figure out how to build your own suspension bridge out of common items like straws or Popsicle sticks.



GRIDIRON GEOGRAPHY 2016 **3**

WEEK 2: SEPTEMBER 5-SEPTEMBER 11 ANSWERS:

1. The average temperature on September 10 in Tempe, AZ is 101° and the average in Lubbock, TX is 86°

<https://weather.com/weather/monthly//USAZ0233:1:US>

<https://weather.com/weather/monthly//USTX0808:1:US>

2. The World's Largest Truck Stop is called Iowa 80, it is in Walcott, Iowa and Cyclone fans will need to keep driving about 45 minutes east of Iowa City to get to Iowa 80.

<https://www.google.com/maps/dir/Iowa+City,+IA/Walcott,+IA+52773/@41.6362202,-91.2923578,11z/data=!4m2!4m2!1d-91.5301683!2d41.6611277!3m4!1m2!1d-91.4998021!2d41.6858917!3s0x87e4699342d31b43:0xd60d0a6efcb02b76!3m4!1m2!1d-90.7901849!2d41.6178548!3s0x87e3b86004424c2b:0x19f96cf7e7a61b4f!1m5!1m1!1s0x87e3c78b993a56d5:0xda32e4e6051541ff!2m2!1d-90.7743819!2d41.585543!3e0>

<https://iowa80truckstop.com/>

3. Hillary Clinton is this year's Democratic Presidential nominee. She taught at the law school at the University of Arkansas.

<http://www.uark.edu/about/quick-facts.php>

<http://www.biography.com/people/hillary-clinton-9251306>

4. A good stopping point about halfway between Mount Pleasant, Michigan and Stillwater, Oklahoma would be Springfield, Illinois. It is 458.5 miles from Mount Pleasant to Springfield, then 561 miles from Springfield to Stillwater.

<http://tripmaker.randmcnally.com/>

5. The University of Texas is home to the Lyndon Baines Johnson

Presidential Library and SMU is home to the George W. Bush Presidential Library.

https://en.wikipedia.org/wiki/Lyndon_Baines_Johnson_Library_and_Museum

<http://www.smu.edu/aboutsmu/facts>

OVERTIME ANSWER:

The Brooklyn Bridge in New York and the Golden Gate Bridge in San Francisco are two of the most famous suspension bridges in the world. The longest suspension bridge is the Akashi Kaikyo Bridge in Japan.

http://www.encyclopedia.com/topic/Suspension_Bridge.aspx

TRIVIA ANSWER:

Bob Stoops and Mike Stoops are from Youngstown and Mark Mangino coached at YSU.

<http://newsok.com/article/3285438>

WEEK 3 GAMES

Submitted by Ginny Rohr,
OKAGE Teacher Consultant, Tulsa

GAME SCHEDULE

Baylor at Rice
Kansas at Memphis
Iowa State at TCU

Florida Atlantic at Kansas State
Pittsburgh at Oklahoma State
Louisiana Tech at Texas Tech

Ohio State at Oklahoma
Texas at California



1. The University of Oklahoma campus houses the NOAA National Severe Storms Laboratory. Forecasts and

warnings of hazardous weather help to keep us safe. Tornadoes are rated on an EF-Scale of 0 to 5. What does EF stand for and who was it named after? Which Spielberg movie sought advice from this lab?

- 2.** This is the centennial year for the National Park Service. The U.S. Mint is issuing commemorative quarters in the order that locations were first designated as national sites. Which game locations have one of these unique state quarters currently in circulation? Name the site(s) and the year each became a national park or historic site.
- 3.** Texas will face off with California this week. The goal posts of Berkeley's Memorial Stadium are in near alignment with the Hayward Fault. How many miles long is this fault? What geological concern could occur at "any time" in the Bay Area? What happened in 1868 in this area and what was the magnitude?
- 4.** The Jayhawks will flock to Tiger territory this week. Memphis' city charter was repealed by the State of Tennessee in 1879 following a yellow fever epidemic in 1878. What percentage of the population caught the fever? How was it spread? What virus is a major concern today that is spread by the same insect?

5. The Cyclones will journey to the Horned Frogs' campus. Using state highway maps which interstate road would they travel via car or bus? Which states will they cross? What is the distance in miles? Kilometers? If the game begins at 11:00 a.m., when will the fans need to leave Iowa State?

➔ OVERTIME ACTIVITY

Make a Compass

Materials: magnet, sewing needle, leaf, bowl, water, paper, pencil

1. Pick a leaf from a tree.
2. Float the leaf in a bowl of water.
3. Using a magnet rub the pointed end of the sewing needle in the same direction 50 times.
4. Gently place the "magnetized" sewing needle on top of the leaf. What happens? Why?
5. Which direction is north? Mark it on the bowl.
6. What is the difference between the Magnetic North Pole and the Geographic North Pole?
7. Using your homemade compass show which direction each team will be traveling this week.



4 GRIDIRON GEOGRAPHY 2016

WEEK 3: SEPTEMBER 12-SEPTEMBER 18 ANSWERS:

1. Enhanced Fujita Scale
Dr. T. Theodore Fujita
Movie: *Twister*
<http://www.nssl.noaa.gov/about/>
<http://www.spc.noaa.gov/efscale/>
<http://www.spc.noaa.gov/faq/tornado/ef-scale.html>
<http://www.nssl.noaa.gov/about/events/40thanniversary/stories/twister.html>
2. California; Yosemite National Park, 1890
Oklahoma; Chickasaw National Recreation Area, 1902
Tennessee; Great Smoky Mountains National Park, 1926
<https://www.nps.gov/index.htm>
http://www.usmint.gov/mint_programs/atb/
<http://nationalparkquarters.com/>
https://en.wikipedia.org/wiki/America_the_Beautiful_Quarters
3. Earthquake
The last big earthquake on the fault, approximately 6.8-magnitude, occurred in 1868. This fault is about 74 mi (120 km) long.
<http://earthquake.usgs.gov/regional/nca/haywardfault/>
<http://sanfrancisco.cbslocal.com/2015/07/21/major-quake-on-hayward-fault-expected-any-day-now-fremont-earthquake/>
http://seismo.berkeley.edu/hayward/hayward_tours.html
<http://www.geologyfieldtrips.com/hayward.htm>
https://en.wikipedia.org/wiki/California_Memorial_Stadium
4. About 80% caught yellow fever and one-quarter died.
The disease is carried by mosquitoes.
Zika virus
<http://www.memphistn.gov/Visitors/MovingtoMemphis/>

HistoryofMemphis.aspx

<http://memphis.about.com/od/historyandfacts/a/history.htm>

<http://www.cdc.gov/zika/pdfs/zika-mosquito-maps.pdf>

5. Ames, Iowa to Fort Worth, Texas take I-35
Missouri, Kansas, and Oklahoma
About 780 miles; 1255 km
Driving straight through will take about 11.5 hours. Need to leave Ames the day before the game.
<http://www.state-maps.org/>
<http://ttp.aaa.com/TripTik/>
<http://www.convertunits.com/from/miles/to/km>

OVERTIME ANSWER:

The magnet leaves magnetic material as you rub the needle, thus magnetizing the needle. Friction is minimized by floating the needle on the water's surface. The earth's core is made up of iron. The earth's magnetic field pulls on the magnetic end of the sewing needle.

The Geographic North Pole is the northernmost point on the Earth's surface, also known as True North. Magnetic North Pole is about 250 miles south and is the place where a compass needle actually points.

- Baylor (Waco, TX) to Rice (Houston, TX) – southeast
- Kansas (Lawrence, KS) to Memphis (Memphis, TN) – southeast
- Iowa State (Ames, IA) to TCU (Forth Worth, TX) – southwest
- Florida Atlantic (Boca Raton, FL) to Kansas State (Manhattan, KS) – northwest
- Pittsburgh (Pittsburgh, PA) to Oklahoma State (Stillwater, OK) – southwest
- Louisiana Tech (Ruston, LA) to Texas Teach (Lubbock, TX) northwest
- Ohio State (Columbus, OH) to Oklahoma (Norman, OK) – southwest
- Texas (Austin, TX) to California (Berkeley, CA) – northwest

<http://news.nationalgeographic.com/news/2009/12/091224-north-pole-magnetic-russia-earth-core.html>

<http://geography.about.com/od/learnabouttheearth/a/northpole.htm>

<http://ttp.aaa.com/TripTik/>

TRIVIA ANSWER:

Checking utility lines during power outages

Deliver medical supplies and safety equipment

Video scan large areas for search-and-rescue after an earthquake and direct aid where needed

<https://unmanned.okstate.edu/>

<http://www.news9.com/story/31835551/drone-technology-to-help-during-power-outages-in-oklahoma>

<http://www.popsci.com/technology/article/2013-04/5-drones-help-disaster-boston-marathon-bombing>

<http://www.cnn.com/videos/world/2015/04/27/holmes-drone-over-nepal-damage.cnn>

WEEK 4 GAMES

Submitted by Marie Parrish,
Teacher, Hennessey

GAME SCHEDULE

TCU at SMU
West Virginia vs. Brigham Young
(Landover, MD)

Oklahoma State at Baylor
San Jose State at Iowa State

Missouri State at Kansas State

1. The TCU Horned Frogs and the SMU Mustangs meet in Dallas this week on the gridiron. The Horned Frog, TCU's mascot, is native to the Southwestern United States and is the State Reptile of Texas. What does the horned frog do when it is angered or frightened? What does the horned frog primarily eat?
2. The West Virginia Mountaineers will square off this week against the Brigham Young Cougars. They will not be playing on either of their home fields. They will clash in Landover, Maryland. Landover is only 4.07 miles in land area. The largest structure in the town is FedEx Stadium, home of what professional football team?
3. The Oklahoma State Cowboys will face off against the Baylor Bears this week at Baylor's McLane Stadium in Waco, TX. Waco is home to one of America's newest national parks. It is Waco Mammoth National Park, a 100 acre wooded parkland. It sits along what river and houses mammoth bones discovered in what year, in Waco?
4. The San Jose State Spartans will travel to Ames, IA this Saturday to face the Iowa State Cyclones on their home field of Jack Trice Stadium. Jack Trice played for Iowa State in 1923. His story is important for two reasons. He was injured on the second play of a game against Minnesota and never recovered from his injuries. The stadium is the only college stadium named for a person of what ethnicity?
5. Kansas State University became the first land-grant college in 1861. The campus is filled with new and old architecture, beautiful scenery, and aspects of various cultures throughout the grounds. KSU's All Faiths/ Danforth Chapel is devoted to the men of K-State that risked their lives in what two wars?

→ OVERTIME ACTIVITY

Oklahoma State University began on Christmas Eve of 1890. It was named Oklahoma Agriculture and Mechanical College and was located in Oklahoma's original state capitol. The location of Oklahoma's first state capitol is where and in what county?



GRIDIRON GEOGRAPHY 2016 **5**

WEEK 4: SEPTEMBER 19-SEPTEMBER 25 ANSWERS:

1. The Horned Frog will squirt a stream of blood from their eyes that can reach up to four feet! They primarily eat red harvester ants.
<http://www.admissions.tcu.edu/Fun-Stuff/What-is-a-horned-frog>
2. FedEx Stadium is home to the Washington Redskins.
www.usa.com/landovermd.htm
3. The park sits along the Bosque River and the mammoth bones were discovered in this location in 1978.
www.waco-texas.com
4. Jack Trice was African American.
http://aaregistry.org/historic_events/view/jack-trice-isu-football-legend
5. All Faiths/Danforth Chapel is dedicated to the K-State veterans of WWII and Korea.
<http://www.mymanhattankshomes.com/Historical-Manhattan-KS>

OVERTIME ANSWER:

Oklahoma's first capitol was Guthrie. It is located in Logan County.

<http://www.logancountyok.com/>

TRIVIA ANSWER:

The rivalry is known as the Battle for the Iron Skillet.

<http://magazine.tcu.edu/Magazine/Article.aspx?ArticleId=199>

WEEK 5 GAMES

Submitted by Bailey Huntsman,
The Oklahoman

GAME SCHEDULE

Kansas at Texas Tech
Texas at Oklahoma State

Oklahoma at TCU
Kansas State at West Virginia

Baylor at Iowa State

1. This week the Jayhawks of The University of Kansas will travel to Lubbock to take on the Red Raiders of Texas Tech. Which of these universities boasts a larger student population?
2. If a Kansas State fan drives the 980 miles from Manhattan, KS to Morgantown, WV they will pass through three state capitals. Which state capitals will they drive through?
3. One of Texas's most popular tourist destinations is just down the road from Texas Christian University. What destination is this, and in its heyday, what took place there on a daily basis?
4. Founded in 1890, just after the land run, the Agricultural and Mechanical College of Oklahoma Territory was established as a land grant university by the First Legislative Assembly of Oklahoma

Territory. This university is now known as Oklahoma State University. When did the name change come about and why did the Board of Regents decide on the name change?

5. Dr Pepper is said to be the 'official soft drink of the Baylor Bears' which makes sense because Dr Pepper got its start in Waco, TX which is also the home of Baylor. What city does Dr Pepper now call home?

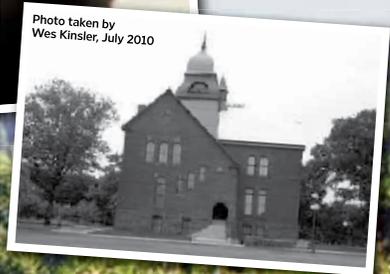


Photo taken by
Wes Kinsler, July 2010

➔ OVERTIME ACTIVITY

Yosemite National Park was established by Congress on October 1, 1890. In what state is Yosemite located? How many square miles does the park span? What types of activities are available at Yosemite National Park?

6 GRIDIRON GEOGRAPHY 2016

WEEK 5: SEPTEMBER 26-OCTOBER 2 ANSWERS:

1. Texas Tech University had an enrollment of over 35,500 students in the fall of 2015, The University of Kansas had 28,000.

<https://www.ttu.edu/about/facts/>

<https://www.ku.edu/about/>

2. Driving from Manhattan, KS to Morgantown, WV you pass through the following state capitals:

Topeka, KS Indianapolis, IN Columbus, OH

<https://www.google.com/maps/dir/Manhattan,+KS/Morgantown,+WV/@38.7524786,-83.4529947,7.25z/data=!4m13!4m12!1m5!1m1!1s0x87bdb7ef44c3632d:0xa9185d487312c7ef!2m2!1d-96.5716694!2d39.1836082!1m5!1m1!1s0x88357b684185333d:0x78bee909ab8d43e4!2m-2!1d-79.9558968!2d39.629526>

<http://www.50states.com/tools/thelist.htm>

3. The Fort Worth Stockyards are just down the road from Texas Christian University. From the 1890s to the 1940s the stockyards processed millions of heads of cattle, sheep and hogs. The decline of the railroad after WWII led to the downfall of the stockyards operation. Today the stockyards are still operational and host the world's only twice a day cattle drive every week. There are also many shops, restaurants and entertainment venues around the stockyards.

<http://www.admissions.tcu.edu/Visit-TCU/Fort-Worth>

<http://www.fortworthstockyards.org/history>

4. Oklahoma State University became the name of the university in July of 1957. The Board of Regents decided to change the name to reflect the variety in the curriculum offered at the university.

<http://www.okhistory.org/publications/enc/entry.php?entry=OK082>

https://en.wikipedia.org/wiki/Oklahoma_State_University%E2%80%93Stillwater

5. Although Dr Pepper got its start in Waco, TX, the Dr Pepper/Snapple Group is now headquartered north of Waco in the North Dallas suburb of Plano.

<https://www.admitsee.com/blog/10-fun-facts-about-baylor>

<http://www.drpeppersnapplegroup.com/brands/dr-pepper/>

OVERTIME ANSWER:

Yosemite National Park is located in California and spans 1,189 square miles. There are a wide variety of activities available at Yosemite including, but not limited to: Hiking, Climbing, Guided Walks, Biking, Rafting, Ice Skating and Snow Tubing.

<http://www.travelyosemite.com/things-to-do/experience-yosemite-national-park/>

https://en.wikipedia.org/wiki/Yosemite_National_Park

Since a field trip to Yosemite probably isn't an option for us in Oklahoma, the National Park Service offers virtual learning

<https://www.nps.gov/yose/learn/education/distancelearning.htm>

TRIVIA ANSWER:

The University of Texas has the largest stadium in the Big 12 with seating for 100,119 at Royal Memorial Stadium. Amon Carter Stadium at TCU holds the least amount of people, topping out at 45,000.

<http://www.collegegridirons.com/comparisons.htm>

WEEK 6 GAMES

GAME SCHEDULE

Iowa State at Oklahoma State

TCU at Kansas
Texas Tech at Kansas State

Oklahoma vs Texas (Dallas)

1. The Oklahoma State Cowboys play the Iowa State Cyclones in Stillwater this weekend. A mesocyclone often turns into a tornado. Using <http://www.city-data.com/>, research Ames, Iowa (the home of ISU), and Stillwater, Oklahoma. Which city is at a higher risk for tornadoes? How different or similar are the risks? (Note: You will need to click on the state, then "city profiles", and then click on the city to find your answers.) (Janet Hall, Bethany)
2. The Oklahoma Sooners and Texas Longhorns meet at the Texas State Fairgrounds in Dallas to continue the Red River Rivalry. The Dallas-Ft. Worth area is known as the Metroplex. Which is larger in population, the Metroplex or the State of Oklahoma? (Bill Amburn, Bartlesville)
3. Kansas State University's main campus is located in Manhattan. The university also has campuses in what two other Kansas towns? Besides its main campus in Stillwater, where else does Oklahoma State University have campuses? (Ginny Rohr, Tulsa)
4. Great herds of cattle were driven from Fort Worth to the railheads in Kansas along the Chisholm Trail during the 19th century. What type of cattle followed this route from 1867 to 1884? Why did Kansas prohibit Texas cattle to enter the state in 1885? (Ginny Rohr, Tulsa)
5. While they are visiting Manhattan this weekend, Texas Tech and Kansas State fans may want to visit the boyhood home and presidential library of the 34th president of the United States in Abilene. Who was this president and when did he serve? What was his principal vocation before he entered politics? (Annie Elsberry, Pawhuska)

➔ OVERTIME ACTIVITY

On Your Feet and Sing!

Locate Stillwater on a state map. Find the Salt Fork of the Arkansas River and Arkansas River. Which river is a tributary to the other? What general direction does each river flow?

1. Pretend you are in a boat on one of these rivers.
2. Sing Row Row Row Your Boat, as you travel downstream on your river.
3. Sing in a round as one river flows into the other.
[Note: You may have to turn up the volume on your player after clicking on the "Row Row Row" link.]

http://freemusicarchive.org/music/Mister_Jan/Silly_Songs/14_-_mister_jan_-_row_row_row_your_boat_kzz01_vbr

(Ginny Rohr, Tulsa)



WEEK 6: OCTOBER 3-OCTOBER 9 ANSWERS:

1. This site has a great deal of data; you will need to scroll down nearly halfway on each page to find information about "tornado activity." Stillwater is at a higher risk for tornadoes. Ames-area historical tornado activity is 224% greater than the overall U.S. average. Stillwater-area historical tornado activity is 360% greater than the overall U.S. average.

<http://www.city-data.com/city/Ames-Iowa.html>

<http://www.city-data.com/city/Stillwater-Oklahoma.html>

2. With about 6.8 million people, the Dallas-Ft. Worth Metroplex contains nearly three million more people than the entire state of Oklahoma, which has an estimated 2013 population of 3,850,568.

<http://www.ntc-dfw.org/northtexas/poplargestmetro.html>

<http://quickfacts.census.gov/qfd/states/40000.html>

3. Kansas State has campuses in Salina and Olathe in addition to Manhattan, Kansas. Oklahoma State also has campuses in Oklahoma City (OSU-OKC), Okmulgee (Institute of Technology), Pryor (MidAmerica Industrial Park), and Tulsa (OSU Center for Health Sciences and OSU-Tulsa).

<http://www.k-state.edu/about/>

<http://www.osuokc.edu/home/>

<http://go.osuit.edu/>

<http://www.healthsciences.okstate.edu/index.php>

<http://www.osu-tulsa.okstate.edu/>

4. Millions of Texas longhorn cattle were driven from Texas to Kansas through what was then Indian Territory. The longhorns were immune to Texas fever, but sometimes were carriers of the disease and passed it on to other cattle in Kansas.

<http://fortworthtexas.gov/government/info/default.aspx?id=3252>

<https://www.tshaonline.org/handbook/online/articles/awt01>

<https://www.tshaonline.org/handbook/online/articles/atl02>

5. Although he was born in Texas, Dwight David Eisenhower grew up in Kansas; he served two terms as U.S. president from 1953 until 1961. He entered the U.S. Military Academy at West Point, New York, in 1911, and was supreme allied commander in the European Theater of Operations during World War II, rising to the rank of five-star General of the Army. "Ike" served in the U.S. Army until his retirement in 1948 to become the president of Columbia University.

<http://www.whitehouse.gov/about/presidents/dwightdeisenhower>

http://www.eisenhower.archives.gov/all_about_ike/army_years.html

OVERTIME ANSWER:

The Salt Fork of the Arkansas River is a tributary (empties its waters into) of the Arkansas River and flows generally east, while the Arkansas River flows generally southeast.

<http://www.okladot.state.ok.us/hqdiv/p-r-div/maps/statemap/>

<http://geology.com/lakes-rivers-water/oklahoma.shtml>

http://en.wikipedia.org/wiki/Salt_Fork_Arkansas_River

http://en.wikipedia.org/wiki/Arkansas_River

<http://goo.gl/maps/S8XWT>

TRIVIA ANSWER:

Oklahoma won its first national football championship in 1950 led by Coach Charles "Bud" Wilkinson, the first of three his teams would win. That year OU played in the Sugar Bowl against the University of Kentucky where the Wildcats outscored the Sooners 13-7. Kentucky was then coached by Paul "Bear" Bryant.

http://www.soonersports.com/ViewArticle.dbml?&DB_OEM_ID=31000&ATCLID=208798540

WEEK 7 GAMES

GAME SCHEDULE

Kansas at Baylor

Kansas State at Oklahoma
West Virginia at Texas Tech

Iowa State at Texas

1. The University of Kansas team's nickname is the Jayhawks. This nickname originated before the Civil War. It was during this time that the area became known as "Bleeding Kansas." Why was this? On which side of the slavery issue were Jayhawkers and from what state did the Jayhawker's main opponents come? (Rob Miles, Oklahoma City)
2. Wheat is a member of the grass family and was first introduced in the United States in 1777. Wheat is grown in 42 states and is one of the primary grains grown in the United States. Rank the order of wheat production from 1st to 3rd for Oklahoma, Texas, and Kansas. (William E. Amburn, Bartlesville)

3. Near Manhattan, Kansas, home of the Kansas State Wildcats, is the largest contiguous area of unplowed, native tallgrass prairie remaining in North America. It is part of the same grassland biome that includes the Tall Grass Prairie Preserve in Osage County, Oklahoma. What is the name of this important area in the Flint Hills region of Kansas? How is it used today? (Joseph Rohr, Tulsa)
4. Both Stillwater, the home of Oklahoma State University, and Norman, the home of the University of Oklahoma, were officially opened for settlement on the same day. What event in Oklahoma history created this fact? What future Oklahoma

counties were opened for settlement on that day? (Annie Elsberry, Pawhuska)

5. A 130-mile-long river in the Allegheny Plateau flows from north central West Virginia past West Virginia University in Morgantown, through western Pennsylvania to Pittsburgh where it meets another river to form the Ohio River. Name these two rivers. (Denise Aguilar, Lawton)

➔ OVERTIME ACTIVITY

As a result of the Compromise of 1850, Texas ceded to the U.S. government a strip of land that later became the Oklahoma Panhandle. Its southern border is 36°30' N. Why did Texas give this land back to the U.S.? What is the significance of 36°30' N? How wide is the Oklahoma Panhandle from north to south? Why was this area sometimes called "No Man's Land"? (Ginny Rohr, Tulsa)



8 GRIDIRON GEOGRAPHY 2016

WEEK 7: OCTOBER 10-OCTOBER 16 ANSWERS:

1. Whether Kansas Territory should become a free state or a slave state led to much loss of life caused by raids and attacks on the settlers by pro- and anti-slavery forces. This gave rise to the nickname "Bleeding Kansas." The Jayhawkers were opposed to slavery, while pro-slavery raiders from neighboring Missouri were sometimes called Bushwhackers.
<http://www.pbs.org/wgbh/aia/part4/4p2952.html>
<http://www.historynet.com/americas-civil-war-missouri-and-kansas.htm>
2. Kansas, Oklahoma, Texas
<http://www.wheatworld.org/wheat-info/fast-facts/>
<http://www.statista.com/statistics/190376/top-us-states-in-wheat-production/>
3. The Konza Prairie, located in the Kansas Flint Hills about ten miles from Manhattan, is 8,616 acres of native tallgrass prairie that preserves some of the grasslands that once covered much of the center of the continent. This preserve and biological station is used for ecological research and as an environmental education facility for students and the public.
<http://www.konza.ksu.edu/keep/Plantdiversity.htm>
<http://keep.konza.ksu.edu/ecology/>
4. Both Stillwater and Norman were officially established on April 22, 1889, when the "Unassigned Lands" in central Oklahoma were opened in the first "land run" in U.S. history. This area eventually was divided into all or parts of Canadian, Cleveland, Kingfisher, Logan, Oklahoma, and Payne Counties.
<http://www.okgenweb.org/~land/>
<http://crescentok.com/staff/jaskew/TAH/OK/landruns.htm>
5. The two rivers that form the Ohio River in Pittsburgh, Pennsylvania, are the Monongahela and Allegheny Rivers.

http://www.ohioriverfdn.org/education/ohio_river_facts/index.html
<http://www.monriver.org/>
Nystrom Classroom Atlas

OVERTIME ANSWER:

From the Kansas line on the north to the Texas line on the south, the Oklahoma Panhandle is 34 1/2 miles wide. By the Compromise of 1850, slavery was prohibited north of the 36°30' parallel. It was the line that basically divided the northern free states and territory from the southern slave states and territory west of the Mississippi River. Texas chose to give up land north of the 36°30' parallel in order to remain a "slave state." From the 1850s to the 1880s, no person could legally own or use the land in the Oklahoma Panhandle; also, there was no local government in the Oklahoma Panhandle, so it became a place where outlaws could hide out and avoid law enforcement. This gave rise to the name "No Man's Land."

<http://digital.library.okstate.edu/encyclopedia/entries/N/NO001.html>
http://en.wikipedia.org/wiki/Oklahoma_Panhandle
<http://www.historynet.com/oklahoma-panhandle-badmen-in-no-mans-land.htm>
<http://www.history.com/topics/missouri-compromise>
<http://www.ushistory.org/us/30d.asp>
<http://etc.usf.edu/maps/pages/2900/2906/2906.htm>
http://www.netstate.com/states/geography/ok_geography.htm

TRIVIA ANSWER:

The statue, entitled "Into the Sunset," of Will Rogers on his horse Soapsuds is located near one of the entrances to the Texas Tech campus in Lubbock.
<http://www.ttu.edu/traditions/rogers.php>
http://lubbockonline.com/local-news/2011-10-04/texas-tech-will-rogers-and-legend-am-.Ufl_B1N4Nfk

WEEK 8 GAMES

Submitted by Nicole Bolton,
Topographic Land Surveyors of Oklahoma

GAME SCHEDULE

TCU at West Virginia

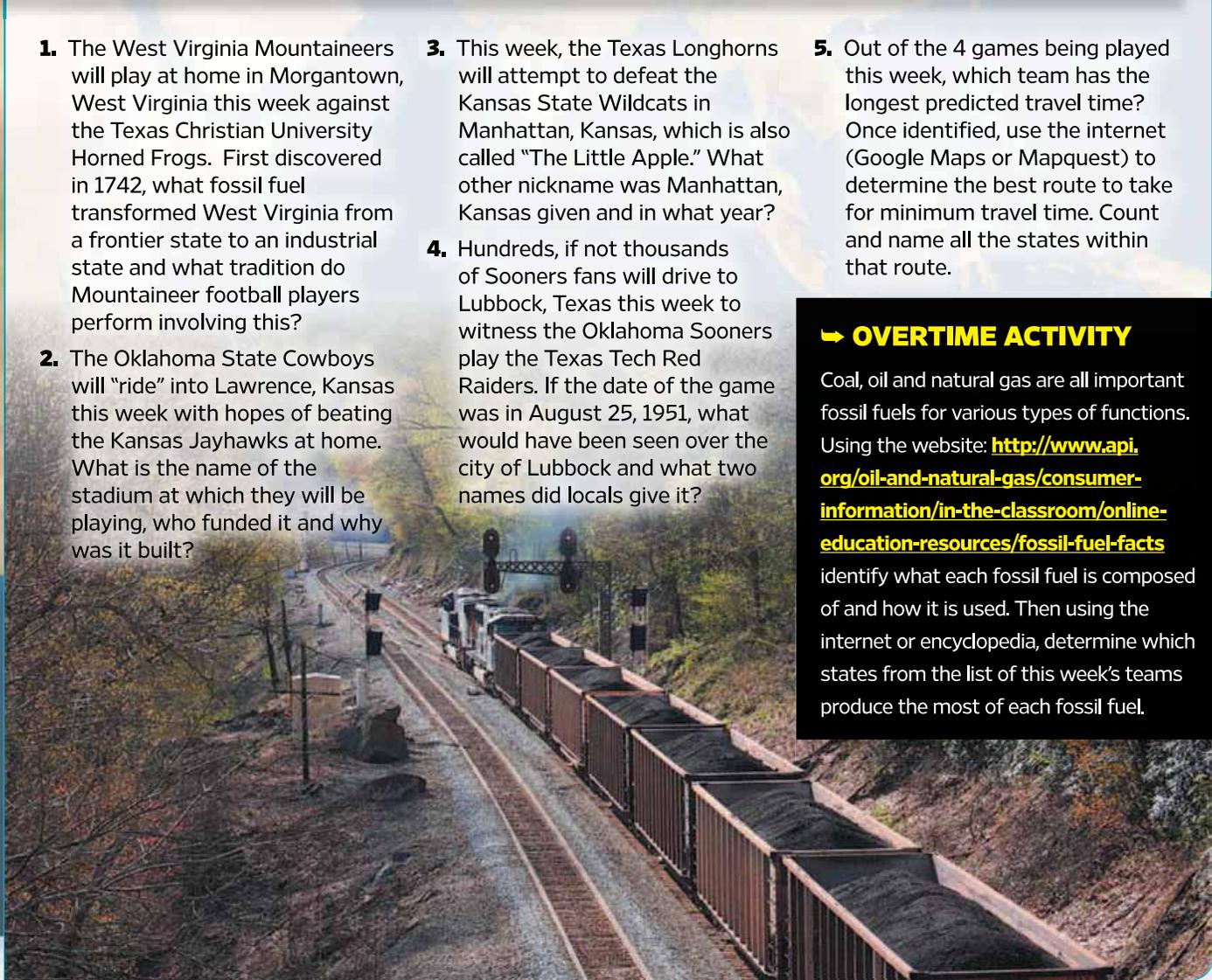
Oklahoma State at Kansas
Texas at Kansas State

Oklahoma at Texas Tech

1. The West Virginia Mountaineers will play at home in Morgantown, West Virginia this week against the Texas Christian University Horned Frogs. First discovered in 1742, what fossil fuel transformed West Virginia from a frontier state to an industrial state and what tradition do Mountaineer football players perform involving this?
2. The Oklahoma State Cowboys will "ride" into Lawrence, Kansas this week with hopes of beating the Kansas Jayhawks at home. What is the name of the stadium at which they will be playing, who funded it and why was it built?
3. This week, the Texas Longhorns will attempt to defeat the Kansas State Wildcats in Manhattan, Kansas, which is also called "The Little Apple." What other nickname was Manhattan, Kansas given and in what year?
4. Hundreds, if not thousands of Sooners fans will drive to Lubbock, Texas this week to witness the Oklahoma Sooners play the Texas Tech Red Raiders. If the date of the game was in August 25, 1951, what would have been seen over the city of Lubbock and what two names did locals give it?
5. Out of the 4 games being played this week, which team has the longest predicted travel time? Once identified, use the internet (Google Maps or Mapquest) to determine the best route to take for minimum travel time. Count and name all the states within that route.

➔ OVERTIME ACTIVITY

Coal, oil and natural gas are all important fossil fuels for various types of functions. Using the website: <http://www.api.org/oil-and-natural-gas/consumer-information/in-the-classroom/online-education-resources/fossil-fuel-facts> identify what each fossil fuel is composed of and how it is used. Then using the internet or encyclopedia, determine which states from the list of this week's teams produce the most of each fossil fuel.



WEEK 8: OCTOBER 17-OCTOBER 23 ANSWERS:

1. Coal was first discovered by Peter Salley in 1742 before West Virginia became a state. To recognize the significance of coal, the football team runs from the west end of the field to the east end and once at the end, stop to rub a 350-pound chunk of coal.
<http://www.friendsofcoal.org/a-history-of-coal-in-west-virginia.html>
https://en.wikipedia.org/wiki/West_Virginia_Mountaineers_football#The_Mountaineer
2. Memorial Stadium was first built in 1920 as a dedication to the Kansas University students who died in World War 1. The stadium was funded by students, faculty and fans.
[https://en.wikipedia.org/wiki/Memorial_Stadium_\(University_of_Kansas\)](https://en.wikipedia.org/wiki/Memorial_Stadium_(University_of_Kansas))
3. Manhattan was named an All-American City in 1952.
https://en.wikipedia.org/wiki/Manhattan,_Kansas
4. 3 professors at Texas Tech University saw an unusual formation of lights known as the "Lubbock Lights" and after more sightings were seen, locals called the formation a "Flying Wing."
https://en.wikipedia.org/wiki/Lubbock_Lights
5. The TCU at West Virginia game has the longest travel time. Using Google Maps, the route with the least amount of travel time is listed as using I-30E and I-40E goes through 5 different states, being Texas, Arkansas, Tennessee, Kentucky and West Virginia.
<https://www.google.com/maps/dir/Texas+Christian+University,+South+University+Drive,+Fort+Worth,+TX/Morgantown,+WV/@35.3328566,-91.8665293,6.25z/am=t/data=!4m1!4m13!1m5!1m1!1s0x864e723d3d0cbdf0:0x53701c8ae08dff0!>

[2m2!1d-97.3627948!2d32.7095304!1m5!1m1!1s0x88357b684185333d:0x78bee909ab8d43e4!2m2!1d-79.9558968!2d39.629526!3e0](https://www.google.com/maps/dir/Texas+Christian+University,+South+University+Drive,+Fort+Worth,+TX/Morgantown,+WV/@35.3328566,-91.8665293,6.25z/am=t/data=!4m1!4m13!1m5!1m1!1s0x88357b684185333d:0x78bee909ab8d43e4!2m2!1d-79.9558968!2d39.629526!3e0)

OVERTIME ANSWER:

Coal consists mostly of carbon and is mainly used for generating electricity and as a heating fuel. Oil is a combination of hydrocarbons, oxygen, nitrogen and sulfur impurities and is mainly used as a fuel for transportation. Natural Gas is a naturally occurring gas component of coal and oil formations and is a fuel used mainly for heating and cooking. West Virginia is second on the list for producing the most Coal. It is preceded by Wyoming

http://www.eia.gov/energyexplained/index.cfm?page=coal_home#tab2

Texas produces the most Oil

<http://www.investopedia.com/articles/investing/100515/us-states-produce-most-oil.asp>

Texas produces the most Natural Gas

http://www.eia.gov/energyexplained/?page=natural_gas_home#tab2

TRIVIA ANSWER:

The TCU Horned Frogs was the first team in the list to have the National Anthem played before their game.

<http://www.music.army.mil/music/nationalanthem/>

<http://www.history.com/this-day-in-history/the-star-spangled-banner-becomes-official>

<http://www.sports-reference.com/cfb/schools/texas-christian/1931-schedule.html>

WEEK 9 GAMES

GAME SCHEDULE

Kansas at Oklahoma
Baylor at Texas

West Virginia at Oklahoma State
Texas Tech at TCU

Kansas State at Iowa State

1. West Virginia fans will travel to Oklahoma State to play in Stillwater this week. If they drive the most direct route via interstate and U.S. highways, what major rivers that are part of the Mississippi drainage system will they cross? Name the two major highways they will travel. (Ginny Rohr, Tulsa)
2. Stillwater, the home of Oklahoma State University, is the county seat of Payne County. For whom is Payne County named and what role did he play in the settlement of Oklahoma? (Annie Elsberry, Pawhuska)
3. The University of Texas is located in the state capitol of Austin. There have been four state capitol buildings, but only three locations of these buildings. The current state capitol building was built on the site of which other capitol building? In what architectural style was the current building designed? How were the builders paid for their work? (Bailey Huntsman, *The Oklahoman*)
4. What prominent agricultural scientist and inventor attended Iowa State University from 1891-1896? He experimented

with sweet potatoes, soybeans, and pecans, but is probably best known for the hundreds of products, including plastics, paints, and even gasoline, derived from what crop? (Ginny Rohr, Tulsa)

5. Austin, Texas, developed on the banks of the Colorado River, the longest river in the Lone Star State with both its source and mouth in Texas. How long is the river? In what county would you find the headwaters? Where is its mouth? What reservoir on the river is named for a U.S. president? [Note: Don't confuse this Colorado River with the one that carved the Grand Canyon!] (Jeffrey M. Widener, *The University of Oklahoma*)

➔ OVERTIME ACTIVITY

Draw a map of Oklahoma and Kansas with the latitude and longitude borders as well as rivers. Use an atlas or the following links to guide you. Most of the borders of Kansas are straight lines, while one of Oklahoma's borders is formed by a river. Which two rivers make up a portion of the borders of Kansas and Oklahoma? These rivers separate Kansas and Oklahoma from what other states?

<http://www.okatlas.org/okatlas/location/lat-long.htm>

<http://www.mapsofworld.com/usa/states/kansas/lat-long.html>

(Bill Amburn, Bartlesville)



IO GRIDIRON GEOGRAPHY 2016

WEEK 9: OCTOBER 24-OCTOBER 30 ANSWERS:

1. Driving from Morgantown to Stillwater, West Virginia fans will probably travel mostly on I-70 and I-44, although there is about a 40 miles segment on I-79 from Morgantown to get to I-70. The major rivers they will cross en route include the Ohio, the Wabash, the Mississippi, the Neosho, and the Arkansas Rivers.

<http://goo.gl/maps/LSHdh>

<http://img.4plebs.org/boards/tg/image/1397/67/1397670494343.jpg>

2. The county in which Stillwater is located was named for David L. Payne, whom some called the "Father of Oklahoma." He illegally led several groups of "Boomers" into the Unassigned Lands. Boomers were would-be settlers who believed these lands not assigned to Native American Indian tribes were public property and open to settlement by anyone. Payne was arrested several times by federal troops responsible for maintaining law and order in the territory. He died less than five years before his dream of opening the Unassigned Lands to non-Indian settlement came true on April 22, 1889.

<http://www.okgenweb.org/~okpayne/>

<http://digital.library.okstate.edu/encyclopedia/entries/P/PA028.html>

3. The state capitol of Texas was built on the same site as the second state capitol building. It was designed in the Italian Renaissance Revival style. The builders, John and Charles Farwell, were paid with over three million acres of land in the panhandle of Texas.

https://en.wikipedia.org/wiki/Texas_State_Capitol

4. Born a slave in southeastern Missouri, George Washington Carver went to Iowa first to study art and music at Simpson College, but a teacher suggested that he transfer to Iowa State because of his interest and abilities in botany. Carver devised over 100 products, such as dyes, plastics, and

gasoline, from the peanut. These new uses for the peanut gave many former slaves an important cash crop that they could grow on land that they had rented, sharecropped, or homesteaded.

<http://www.add.lib.iastate.edu/spcl/exhibits/150/template/test.html>

<http://www.biography.com/people/george-washington-carver-9240299>

5. The Colorado River is about 600 miles long from its headwaters in Dawton County, Texas, to its mouth on Matagorda Bay in the Gulf of Mexico. Lake Lyndon B. Johnson was named for the 36th U.S. president.

http://www.tpwd.state.tx.us/publications/pwdpubs/pwd_rp_t3200_1047/15_c_tx_colorado.phtml

<http://www.tshaonline.org/handbook/online/articles/rnc10>

OVERTIME ANSWER:

The Red River serves as much of the border between southern Oklahoma and Texas, and northeastern Kansas is separated from Missouri in part by the Missouri River.

TRIVIA ANSWER:

The six Burris brothers (who also had five sisters!) were from Muskogee: Paul "Buddy", Kurt Bob, Lynn, Lyle, and Don. Eufaula claims the Selmon brothers: Lucious, Dewey, and Lee Roy.

<http://www.normantranscript.com/obituaries/x519001531/Paul-Buddy-Burris/print>

<http://www.footballfoundation.org/Programs/CollegeFootballHallofFame/SearchDetail.aspx?id=50111>

<http://newsok.com/collected-wisdom-of-former-oklahoma-football-player-bob-burris/article/3514402>

<http://digital.library.okstate.edu/encyclopedia/entries/s/se009.html>

WEEK 10 GAMES

GAME SCHEDULE

Oklahoma at Iowa State
Texas at Texas Tech

Oklahoma State at Kansas State
TCU at Baylor

Kansas at West Virginia

1. Texas Tech University is located in one of the largest cotton-growing regions in the U.S., in spite of its semi-arid climate. The farmers in this region are dependent on irrigation to grow their crops. Where is Texas Tech located, and what water source do these farmers use? (Annie Elsberry, Pawhuska)
2. Both the University of Kansas and Kansas State University, as well as the state capital of Kansas, are in cities located on a river that flows from west to east across the state. Historically, the river has been known by two names. What are these names? Where is the Kansas state capital located? (Joseph Rohr, Tulsa)
3. Texas is the second largest state in the Union by area, and it has "borders" on six different sides. It is one of four U.S. states to be bordered by other states, a major body of water, and another country. What are the names of the states, the body of water, and the country that border Texas? (Joseph Rohr, Tulsa)
4. Using Google Earth, get directions from Texas Christian University to Baylor University by typing

the names of each university in the "search/get directions" box. How many miles is it from TCU in Fort Worth, to Baylor University in Waco? About how many miles per hour would you have to drive to make it from Fort Worth to Waco in one hour and 25 minutes? On the left side of your Google Earth window, find the "Layers" menu (it should say "Primary Database, Borders and Labels, Places, Photos, Roads, etc."). Click the box next to "Roads" so a checkmark appears. [You may need to uncheck "Borders and Labels" and "Photos" to make the map easier to use.] If TCU fans want to avoid interstate traffic, what other routes could they take to get to Waco? Would these routes be faster or slower? Why? (Jeffrey M. Widener, University of Oklahoma)

5. The University of West Virginia Mountaineers play their home games in Morgantown. The coordinates of its absolute location are 39° 37' 45" N and 79° 57' 22" W. Which number represents the latitude and which the longitude? Write down how a person reads these numbers aloud. (Joseph Rohr, Tulsa)

➔ OVERTIME ACTIVITY

Ames is the home of Iowa State University, which began as an agricultural college and model farm in 1858. Located on State Highways 30 and 69, it is only thirty minutes from the State Capital and three hours or less by car from three major metropolitan areas. What is the capital of Iowa, and in what states are Kansas City, Minneapolis, and Omaha located?

What major interstate highways would one take to drive to these three cities from Ames?

*Hint – Two cities use the same interstate, while you will have to travel on two different interstates to reach the other city. (Annie Elsberry, Pawhuska)



WEEK 10: OCTOBER 31-NOVEMBER 6 ANSWERS:

1. Texas Tech is located in Lubbock in the Texas Panhandle. The farmers are dependent on the Ogallala Aquifer for water to irrigate their crops. <http://stateimpact.npr.org/texas/2013/05/22/ogallala-aquifer-in-texas-panhandle-suffers-big-drop/>
http://www.cbsnews.com/8301-18563_162-20109776.html
<http://droughtmonitor.unl.edu/>
2. From its source the Kansas or Kaw River flows 173 miles to where it empties into the Missouri River. Topeka is the state capital of Kansas. <http://kansasriver.org/>
<http://www.50states.com/kansas.htm> - .UfsG91N4Nfk
3. Texas is bordered by New Mexico on the west, Oklahoma on the north, Arkansas on the north and east, and Louisiana on the east. To the southeast is the Gulf of Mexico. Along its southwestern border is the Rio Grande, the 1,951-mile-long river that also serves as an international boundary between the United States and Mexico. <http://www.worldatlas.com/webimage/countrys/namerica/usstates/txlatlog.htm>

4. **Note #1:** depending on student knowledge and grasp of arithmetic and algebraic skills, the teacher may need to round numbers to accommodate reasonable calculation.

Note #2: the same basic information can be gathered using a highway atlas or Texas road map, but the results may not be as precise.

According to Google Earth, this distance from Baylor to TCU is 87.3 miles; to arrive in an hour and 25 minutes (85 minutes), the driver would have to travel at a constant speed of 61.6 miles per hour. To arrive at this figure, divide 87.3 by 85 and then multiple the quotient by 60. Answers will vary as to what route to take without driving on I-35. Probably these routes would be slower because of roads having fewer lanes and stop signs/lights in some of the communities en route. However, if traffic is heavy on I-35 on game day, it could be faster to travel the back roads. Students should also take other variables (e.g., weather and highway construction) into consideration when

making their predictions.

Google Earth

<https://maps.google.com/>
<http://goo.gl/maps/zkGKg>

Highway atlas or Texas road map.

5. The first number (39° 37' 45" N) is Morgantown's latitude and the second number (79° 57' 22" W) is its longitude. The following is how one reads the coordinates aloud:
--39 degrees 37 minutes 45 seconds North of the equator
--79 degrees 57 minutes 22 seconds West of the Prime Meridian
Usually "of the equator" and "of the Prime Meridian" is understood, so they do not have to be read aloud.
<http://www.travelmath.com/cities/Morgantown,+WV>
http://www.ehow.com/how_5083052_read-longitude-latitude.html

OVERTIME ANSWER:

Des Moines is the capital of Iowa. The Kansas City metropolitan area is actually located in Missouri and Kansas. Minneapolis is the largest city in Minnesota. Omaha is the largest city in Nebraska.

To travel from Ames to these cities, follow these highways:

I-35 South to Kansas City
I-35 North to Minneapolis
I-35 South, then I-80 West to Omaha

<http://www.iastate.edu/about/>
<http://goo.gl/maps/DZGAZ>

Nystrom Classroom Atlas

TRIVIA ANSWER:

OSU has the only accredited College of Veterinary Medicine (now Veterinary Health Sciences) in Oklahoma. Other Big 12 schools that educate veterinarians are Iowa State and Kansas State Universities.

<http://www.cvhs.okstate.edu/>
<https://www.avma.org/ProfessionalDevelopment/Education/Accreditation/Colleges/Pages/colleges-accredited.aspx>

WEEK 11 GAMES

GAME SCHEDULE

Texas Tech at Oklahoma State

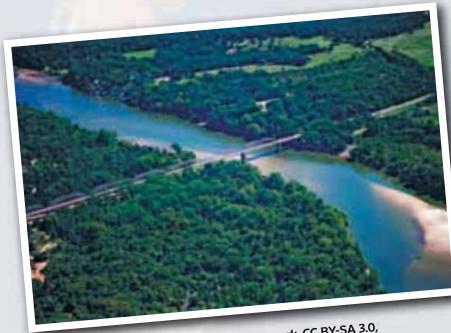
Baylor at Oklahoma
West Virginia at Texas

Iowa State at Kansas

1. The Texas Tech Red Raiders face off with the Oklahoma State Cowboys in Stillwater this week. In what time zone is Stillwater located? How much earlier will Cowboy fans in California need to tune in? What about Cowboy fans on the east coast? (Bailey Huntsman, The Oklahoman)
2. Baylor is the oldest continually operating university in Texas. Chartered by the Republic of Texas, in what year did it open? Why was Texas once called the Republic of Texas? (Ginny Rohr, Tulsa)
3. With the exception of West Virginia, all the Big 12 states produce significant quantities of grain, such as wheat and corn. Where did the Big 12 states rank in wheat production in 2012 and 2013? Which Big 12 state ranks first in the production of corn? (Joseph Rohr, Tulsa)
4. Three rivers separate Texas almost completely from its neighboring areas. Only New Mexico's border with Texas is made up by the straight lines typical of western state boundaries. What are the three rivers? They serve as boundaries between Texas and

what other areas? From source to mouth, about how long are each of these rivers? (Marilyn Pineda, Comanche)

5. Texas, Oklahoma, and Kansas were states through which many cattle trails ran. The Chisholm Trail was probably the one used most to get cattle from Texas to the railroads in Kansas, and then to the market back East. If cattle were worth \$4 a head in Texas, but could be sold for \$40 a head in Kansas, how much more could a rancher make on a herd of 3,000 cattle by hiring a crew and driving the cattle up the Chisholm Trail? How much profit could the cattleman make after expenses? (Marilyn Pineda, OKAGE Teacher Consultant, Comanche Elementary School, Comanche OK)



By Henley Quadling - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=11647071>

➔ OVERTIME ACTIVITY

The Ames Laboratory, part of the U.S. Department of Energy, is located on and operated by Iowa State University. The new standard of DNA sequencing was developed in their lab. You can follow these directions to make a DNA model.

Materials:

- 2 long red licorice sticks
- 8 toothpicks

4 colors of soft sweets (ex. mini marshmallows, gummy bears; 16 total)

1. Assign a letter or name to each color: (A) adenine (T) thymine (C) cytosine (G) guanine
2. Pair up sweets A with T; C with G. (It doesn't matter if a pair is A-T or T-A, as long as it is paired together.)
3. Stick a toothpick through each pair.
4. Attach ends of the toothpicks through the licorice sticks. (It will look like a ladder when you are finished.)
5. Pick up your ladder at each end and gently twist.
6. Enjoy your DNA double helix! It makes YOU unique!

Extended Learning

Explain DNA. What do the three letters stand for? (Ginny Rohr, Tulsa)

12 GRIDIRON GEOGRAPHY 2016

WEEK 11: NOVEMBER 7-NOVEMBER 13 ANSWERS:

1. All of Oklahoma is in the Central Time Zone. California is located in the Pacific Time Zone which is two hours earlier than Central, so fans there will need to tune in two hours earlier than kickoff in Oklahoma. All of the east coast is in the Eastern Time Zone which is an hour later than Central, so they will need to tune in an hour later than kickoff time in Oklahoma.

<http://www.worldtimezone.com/time-usa12.php>
<http://www.timeanddate.com/time/dst/2014.html>

2. Baylor University was chartered in 1845. Texas had once been part of New Spain and later of Mexico, but broke away from Mexico in 1836, declaring itself the Republic of Texas, an independent nation. Eventually, Congress agreed to admit Texas as the 28th state on December 29, 1845.

<http://www.baylor.edu/about/index.php?id=88791>
http://www.50states.com/statehood.htm#.U8DQOLH_ITA

3. In wheat production, Kansas ranks first among the U.S. states, Oklahoma is fourth, and Texas is ninth. Iowa is first in the nation in producing corn.

<http://www.statista.com/statistics/190376/top-us-states-in-wheat-production/>
http://www.iowacorn.org/en/corn_use_education/faq/

4. The Rio Grande is the international boundary between Texas and Mexico, while the Red River serves as the longest border between Texas and Oklahoma. About half the length of the Sabine River separates Texas from Louisiana.

Rio Grande: 1,900 miles long
Red River: 1,290 miles long
Sabine River: 578 miles long

<http://www.mapsofworld.com/usa/states/texas/>
http://www.allcountries.org/usensus/386_flows_of_largest_u_s_rivers.html
<http://www.britannica.com/EBchecked/topic/515079/Sabine-River>

5. A Texas rancher selling cattle at the end of the trail in Kansas could make \$120,000 on a herd of 3,000 cattle, selling at \$40.00 a head, or \$108,000 more than if he sold them in Texas. Of course, he would have to subtract from this total the pay for his trail boss (\$100 a month), cook (\$60 a month), and eight to ten wranglers and drovers (\$30 a month). The average cattle drive took about two months, but even after expenses, the owner of the herd could expect to profit close to \$100,000.

<http://digital.library.okstate.edu/encyclopedia/entries/c/ch045.html>
<http://www.texasalmanac.com/topics/agriculture/cattle-drives-started-earnest-after-civil-war>
http://plainshumanities.unl.edu/encyclopedia/doc/egp_tra.007.xml

OVERTIME ANSWER:

DNA, the abbreviation for deoxyribonucleic acid, is the material that carries all the information about how a living thing will look and function as it grows and matures.

<https://www.ameslab.gov/about>
https://www.ameslab.gov/files/FactSheet_AmesLabBreakthroughs_0.pdf
<http://kids.britannica.com/elementary/article-390730/DNA>
<http://www.theguardian.com/science/blog/2013/apr/25/dna-double-helix-jelly-babies-liquorice>

TRIVIA ANSWER:

OU athletics teams were called "Rough Riders" or "Boomers" for 10 years before the current Sooner nickname emerged in 1908.

<http://www.soonersports.com/ViewArticle.dbml?ATCLID=208806115>

WEEK 12 GAMES

GAME SCHEDULE

Oklahoma State at TCU
Texas Tech at Iowa State

Texas at Kansas
Kansas State at Baylor

Oklahoma at West Virginia

- Oklahoma State plays Texas Christian University this weekend in Fort Worth. If an OSU fan travels on the Heartland Flyer from Oklahoma City to Fort Worth and then rents a car, how many miles would he then have to drive to get to Amon G. Carter Stadium to attend the game? How many miles will you travel on the Heartland Flyer travel from Oklahoma City to Fort Worth? (Bailey Huntsman, The Oklahoman)
- The Spanish explorer Francisco Vázquez de Coronado y Luján, usually known simply as Coronado, explored this arid region while searching for the Seven Cities of Gold. The Llano Estacado, which translates to the “staked plains” or “palisaded plains,” is a large desert mesa whose edges form a large ridge

- outside the city that is home to a Big 12 university in the panhandle of Texas. Name this university and the city in which it is located. What is the distinguishing geological characteristic of the Llano Estacado called? (Denise Aguilar, Lawton)
- Big Bend National Park is located about 500 miles west of the University of Texas at Austin. Big Bend is sometimes called a “geologist’s paradise.” Why is this? What country borders Big Bend along its south edge? What river forms that boundary? (Annie Elsberry, Pawhuska)

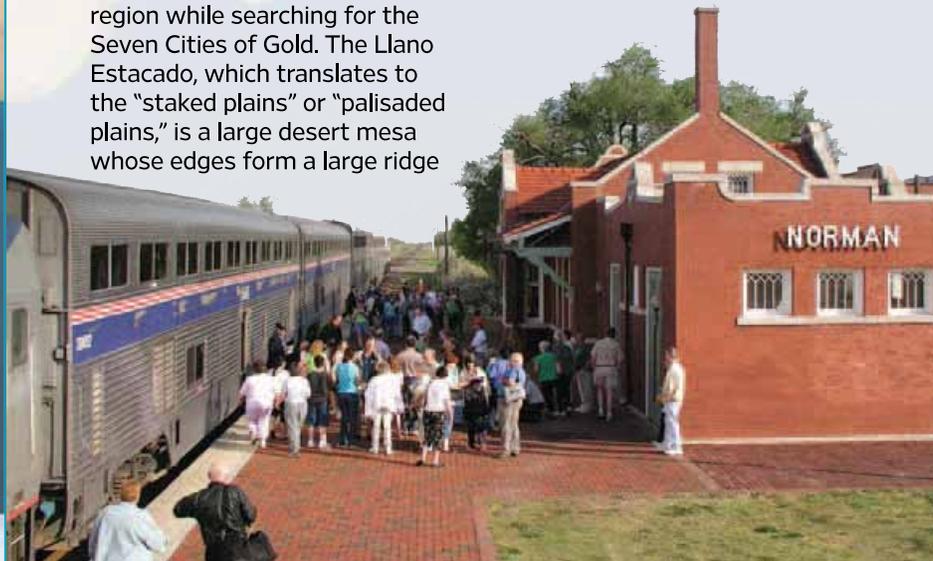
- West Virginia became a state in what year? What major event in U.S. history caused West Virginia to join the Union after separating from Virginia? What side of the event did West Virginia join? (Rob Miles, Oklahoma City)
- The University of Oklahoma is the only college in Division I at which the teams of four football coaches have reached the 100 victory mark. Name the coaches, the years they coached, and their won/lost/tied record. (Ginny Rohr, Tulsa)

➔ OVERTIME ACTIVITY

Latitude is the direction in degrees, minutes, and seconds north or south of the equator. Lines of latitudes are sometimes called parallels. Using the Internet, locate the absolute location (the latitude and longitude) of your hometown to the nearest degree. Then, find the average high temperature and low temperature for the year. What are the averages for October and November? Use these two web sites to find your answers:

<http://www.worldatlas.com/aatlas/findlatlong.htm>

<http://www.weatherbase.com/>
(Annie Elsberry, Pawhuska)



WEEK 12: NOVEMBER 14–NOVEMBER 20 ANSWERS:

- From the train station at Sundance Square to Amon G. Carter Stadium you’ll drive 6.5 miles. The ride from Oklahoma City to Fort Worth on the Heartland Flyer is 206 miles.

<https://www.google.com/maps/dir/420+Main+St,+Fort+Worth,+TX/2850+Stadium+Drive,+Fort+Worth,+TX/@32.7363731,-97.360944,14z/data=!3m1!4b1!4m13!4m12!1m5!1m1!1s0x864e714088d70e21:0xfa46073052da702f!2m2!1d-97.3308836!2d32.7550895!1m5!1m1!1s0x864e723b9f35a53f:0xcac3aae3829f76c4!2m2!1d-97.3682427!2d32.7097444>
<http://heartlandflyer.com/schedule/>

- Texas Tech University, located in Lubbock, is near the “heart” of the Llano Estacado. The Caprock Escarpment, as the Llano Estacado is also known, rises about 300 feet above the desert floor around Lubbock.

http://www.llanoestacado.org/resources/LlanoEstacado_small.jpg
<http://digital.library.okstate.edu/encyclopedia/entries/C/CO062.html>
<http://www.tshaonline.org/handbook/online/articles/ryl02>
<https://www.tshaonline.org/handbook/online/articles/rxc01>
<https://mysite.du.edu/~jcalvert/geol/llano.htm>

- Big Bend National Park is sometimes called a “geologist’s paradise” because of the sparse vegetation of the region, which allows the various strata to be easily observed and studied. It is also due to the complex geologic history of the area, presenting a challenge to students and researchers from all over the world. The Rio Grande (“Great River” in English) forms the southern boundary of the park and as the border between the U.S. and Mexico.

<http://www.nps.gov/bibe/naturescience/geology.htm>
<http://www.nps.gov/bibe/planyourvisit/river-trips.htm>
<http://www.nps.gov/bibe/planyourvisit/upload/BIBEmap3.pdf>

- Soon after the election of Abraham Lincoln as president in November of 1860, the Civil War began and a majority of voters in Virginia approved a bill to secede (separate) from the Union to join the Confederate States of America. Many delegates from the western counties of Virginia vowed to form a new state government loyal to the Union. Congress agreed to admit West Virginia to the Union, and it officially became the 35th state on June 20, 1863.

<http://www.wvculture.org/history/statehoo.html>
<http://www.infoplease.com/ipa/A0763770.html>

- Bob Stoops, 1999–2016, 179–46
Barry Switzer, 1973–1988, 157–29–4
Bud Wilkinson, 1947–1963, 145–29–4
Bennie Owen, 1905–1926, 122–54–16

http://soonerstats.com/football/coaches/ou/index.cfm#.U8Fth7H_ITA

OVERTIME ANSWER:

Answers will vary.

TRIVIA ANSWER:

The traditional American folk-tune to which “The Eyes of Texas” is sung is “I’ve Been Working on the Railroad”. The first school song written by Sinclair and Johnson was named “Jolly Students of the Varsity”, but it lasted only a year when it was replaced by the current alma mater.

<http://www.texasexes.org/uthistory/audio.aspx?audio=songsut>

<http://www.texasexes.org/uthistory/traditions.aspx?tradition=eyesoftexas>

http://texassports.com/sports/2013/7/28/traditions_0728131333.aspx?id=267

<http://www.utexas.edu/know/2013/10/07/the-truth-about-bevo-and-9-more-ut-facts/>

WEEK 13 GAMES

GAME SCHEDULE

TCU at Texas

Texas Tech vs Baylor (Dallas)
West Virginia at Iowa State

Kansas at Kansas State

1. The Lone Ranger is a fictional character based on a group of real lawmen called the "Texas Rangers." In what city could you visit the Texas Ranger Hall of Fame and Museum? What Big 12 university is also located there? (Ginny Rohr, Tulsa)
2. The Horned Frogs of Texas Christian University have called three places home since the college opened in 1873. It began in Thorp Spring, Texas, and is presently located in Fort Worth. Before settling in Fort Worth, TCU was located in another Texas city that is located on Interstate Highway 35 at these coordinates: 31.54 N, 97.14 W. What is the name of this city that served as the second home for TCU, and what is the name of another Big 12 university located there today? (Denise Aguilar, Lawton)
3. The Red Raiders and Bears square off this week in Arlington, TX at AT&T Stadium. This stadium is the home to which NFL Team? Who is the coach of this team? Name some famous former players for this team. (Bailey Huntsman, The Oklahoman)

4. This week the Jayhawks travel to Manhattan to take on the Wildcats. The University of Kansas has a legendary basketball program that has made it to the NCAA finals 3 times in their history. How many times have the Jayhawks made it to the NCAA tournament? And how many times have they been in the Final Four? (Bailey Huntsman, The Oklahoman)
5. Texas Tech University was established in 1923 as the largest comprehensive higher education institutions in the western two-thirds of the state of Texas. The Red Raiders are located in one of the largest cities in west Texas today. What is the name of the city, and what are the coordinates (latitude and longitude) for the home of the Texas Tech Red Raiders? (Denise Aguilar, Lawton)



Public Domain, <https://en.wikipedia.org/w/index.php?curid=2703252>

↪ OVERTIME ACTIVITY

Using Google Earth, search for and fly to Ames, Iowa, home of the Iowa State Cyclones. Use the navigation bar on the right side of your Google Earth window to zoom out to show Ames's landscape. Describe what you see: Is it flat? Mountainous? What types of land use do you see: Urban? Rural? Agricultural? Zoom out a bit more so that the towns of Fraser (west north west of Ames), Boone (west of Ames), and Nevada (east of Ames) show on your screen. Notice the vegetation patterns that surround the rivers and streams. What is the term for this type of vegetation?

Now, fly to Morgantown, West Virginia, home of the Mountaineers. Describe the landscape you see there: Is it flat? Mountainous? Rural? Urban? How do you know?

By looking at its urban "footprint," which city do you think is more populous -- Ames, IA or Morgantown, WV? Using the American FactFinder <http://factfinder2.census.gov> provided by the US Census Bureau, find the 2010 population of each city. What is the population of Ames? Morgantown? What is the difference in population between the two places?

(Jeffrey M. Widener, University of Oklahoma)

14 GRIDIRON GEOGRAPHY 2016

WEEK 13: NOVEMBER 21–NOVEMBER 27 ANSWERS:

1. Waco, Texas, is home to both Baylor University and the Texas Ranger Hall of Fame and Museum.
<http://www.texasranger.org/>
<http://www.waco-texas.com/about.asp>
2. The town is Waco, Texas, and the Big 12 college located there today is Baylor University.
<http://www.magazine.tcu.edu/Magazine/Article.aspx?ArticleId=286>
<http://www.baylor.edu/about/index.php?id=88778>
Nystrom Classroom Atlas
3. AT&T Stadium in Arlington is home to the Dallas Cowboys. The head coach is Jason Garrett. There are many famous players from the Cowboys, answers may vary.
<http://www.sportsecyclopedia.com/nfl/dallas/cowboys.html>
<http://www.dallascowboys.com/stadium>
4. The Jayhawks have been to the NCAA tournament 45 times and have made it to the Final Four 14 times.
http://espn.go.com/mens-college-basketball/tournament/history/_team1/6292
5. Texas Tech University is located in Lubbock; its coordinates are approximately 33.58 N and 101.86 W.
<http://www.ttu.edu/traditions/>
<http://www.maps-streetview.com/United-States/Lubbock/>

Nystrom Classroom Atlas

OVERTIME ANSWER:

Note: Students will need to be acquainted with the symbols and/or colors used on different kinds of maps to be able to interpret the aerial imagery they will see on Google Earth. The teacher may want to show examples of land use and topographic maps as well as political maps, so students will know how maps can be used to represent many different pieces of information.

The landscape around Ames should appear to students to be fairly flat with much of the land being used for agriculture outside of the city. Around the rivers and streams students should be able to discern riparian [having to do with rivers or sometimes bodies of water] vegetation. In the Morgantown area, students should be able to see the mountainous terrain and the rural nature of the landscape.

The 2010 population of Ames was 58,965.

Morgantown's population in 2010 was 29,660.

Ames had 29,305 more people than Morgantown in 2010.

Google Earth

<https://maps.google.com/>

<http://factfinder2.census.gov/>

TRIVIA ANSWER:

Heliotropism means that a plant's flower or blossom "follows" the sun's path across the sky, so the sunflower's head faces east in the morning and west in the afternoon. Both the Kansas state flag and the Kansas state quarter have images of the sunflower on them. There may be additional correct answers.

http://www.statesymbolsusa.org/Kansas/flower_sunflower.html

<http://epod.usra.edu/blog/2010/08/sunflowers-follow-the-sun.html>

WEEK 14 GAMES

GAME SCHEDULE

Oklahoma State at Oklahoma

Baylor at West Virginia

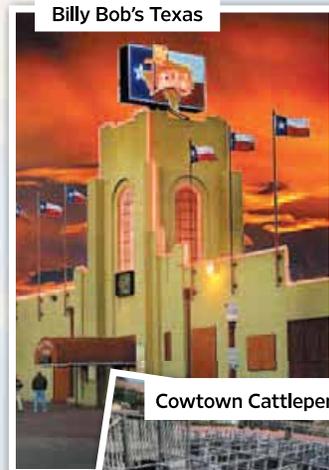
Kansas State at TCU

- West Virginia University's mascot is the Mountaineer and the terrain in that state is part of the Appalachian Mountain range. Most people probably think of Iowa, Kansas, Oklahoma and Texas as relatively flat states. Which of the five Big 12 states actually has the highest high point? Which has the lowest high point? (Darren Purcell, University of Oklahoma)
- Every city with a Big 12 university is connected to all the other cities by the interstate highway system, a network of four-lane highways sometimes called the "greatest public works project in history." When was construction on the system begun? Which US President is called the "Father of the Interstate System"? After which European country did the U.S. model the interstate system? What cardinal directions do even numbered interstates generally run? Odd numbered? (Jeffrey M. Widener, University of Oklahoma)
- Baylor University is located in a town that sits at the confluence of two rivers. What does the word "confluence" mean? Use an online map or an atlas to name the two rivers that join up on the north

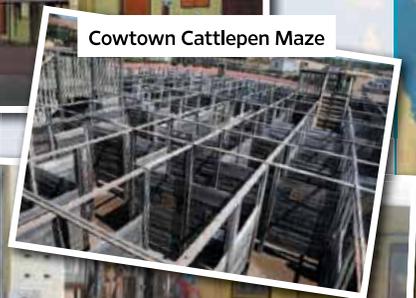
side of town, and the body of water into which the joined river flows. (Rob Miles, Oklahoma City)

- Using a physical map of the United States, tell what major physical geographical feature is found in or nearby the home cities of each of the Big 12 teams playing this week. (Jayne Marley, Yukon)
- The first "bedlam" football game between Oklahoma State University and the University of Oklahoma occurred before statehood on a Sunday (November 6), but it was played neither in Stillwater nor in Norman. What was the date of the game and where was it played? (Eugene Earsom, Oklahoma City)

Billy Bob's Texas



Cowtown Cattlepen Maze



Stockyard Museum

➔ OVERTIME ACTIVITY

Which Big 12 team is located close to Billy Bob's Texas, the world's largest honky-tonk, the Cowtown Cattlepen Maze, and the Stockyard Museum? (William E. Amburn, Bartlesville)

WEEK 14: NOVEMBER 28-DECEMBER 4 ANSWERS:

- Texas has the highest elevation of the five Big 12 states, with Guadalupe Peak at 8,749 feet in elevation, followed by Oklahoma's Black Mesa at 4,973 feet in elevation, West Virginia's Spruce Knob at 4,863 feet, and Kansas's Mt. Sunflower at 4,039 feet. Iowa has the lowest high elevation among the Big 12 states: Hawkeye Point has an elevation of 1,670 feet above sea level.
<http://geology.com/state-high-points.shtml>
- President Dwight D. Eisenhower admired German's well-engineered highways that he convinced Congress to authorize a similar system in the U.S., and he signed the bill into law on June 29, 1956. Even numbered interstates run generally east and west, while odd numbered ones run generally north and south.
<http://www.fhwa.dot.gov/interstate/faq.htm-question2>
<http://www.fhwa.dot.gov/interstate/homepage.cfm>
<http://www.fhwa.dot.gov/interstate/history.htm>
- In geography, the confluence is where one river flows into another or where two or more streams come together to form a single river. Just north of Waco, Texas, the Bosque River flows into the Brazos River which eventually empties into the Gulf of Mexico.
<http://goo.gl/maps/zK3sT>
http://www.mclennan.edu/brs/assets/images/Waco_Map_Color.jpg
<http://waterschool.brazos.org/category/Brazos-River.aspx>
- The Canadian River flows past the University of Oklahoma in Norman, while West Virginia University in Morgantown, WV rests in the midst of the Appalachian Mountains. The Brazos River runs alongside the Baylor University campus in Waco, while Manhattan, home of Kansas State University, is located in the Flint Hills. The campus of the University of Kansas in Lawrence rests on Mt. Oread which is nearly 200 feet above the surrounding city, while Iowa State University is located in Ames

through which the South Skunk River flows. Lubbock, home of Texas Tech University, is surrounded by the Llano Estacado, commonly referred to as the Staked Plains. Oklahoma State University in Stillwater has several human-created geographical features (such as Lake Carl Blackwell and the National Wrestling Hall of Fame), but it lacks any major physical geographical feature, although the Cimarron River runs about 10 miles south of Stillwater.

<http://maps.google.com/>

- November 6, 1904, in Guthrie, Oklahoma's territorial capital.
https://en.wikipedia.org/wiki/Bedlam_Series

OVERTIME ANSWER:

Texas Christian University is one of many places to visit in Fort Worth, Texas. <http://www.fortworth.com/things-to-do/>

TRIVIA ANSWER:

Kansas State University became the first land grant university under the provisions of the Morrill Act, opening its doors in 1863. Earlier in 1855, New York investors in the Cincinnati and Kansas Land Company, founded to organize settlements in Kansas Territory, insisted that the first new town be named Manhattan. When New York City became known as "The Big Apple," it was natural for Manhattan, Kansas, to become known as "The Little Apple," a nickname that was used as early as 1977.

<http://www.ourdocuments.gov/doc.php?flash=tru&doc=33&page=transcript>

<http://www.k-state.edu/about/>

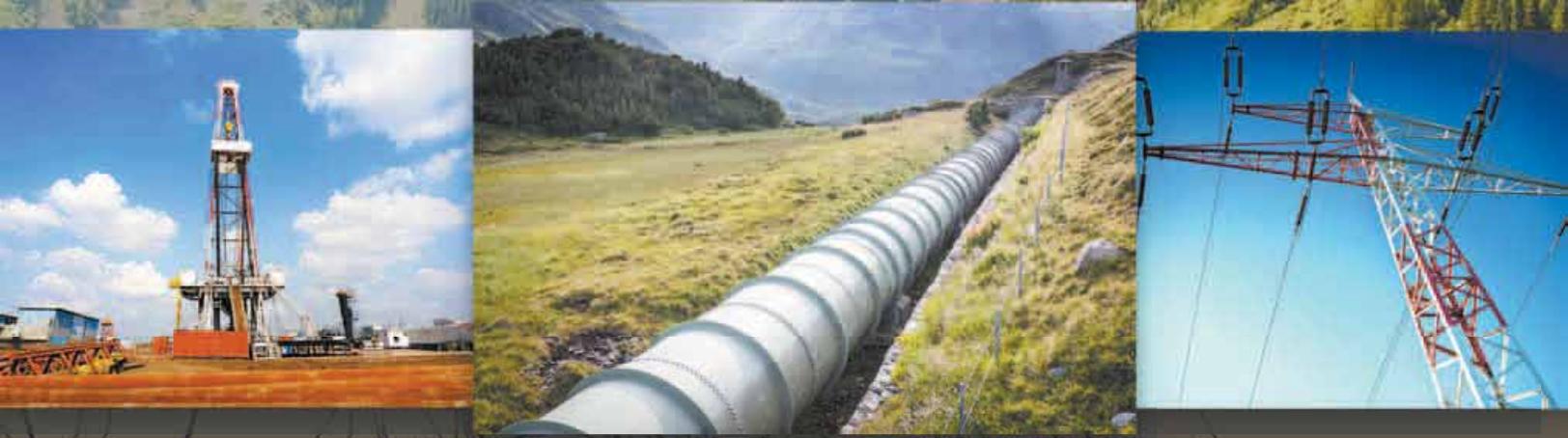
<http://manhattancvb.org/index.aspx?nid=26>



TOPOGRAPHIC

LOYALTY INNOVATION LEGACY

Land Surveying since 1958



Now registered in: Alabama, Arizona, Arkansas, California, Colorado, Illinois, Indiana, Kansas, Kentucky, Louisiana, New Mexico, Mississippi, Nevada, North Dakota, Oklahoma, Tennessee, Texas, Utah, Wisconsin & Wyoming

GET TO KNOW US AT: [TOPOGRAPHIC.COM](https://www.topographic.com)