

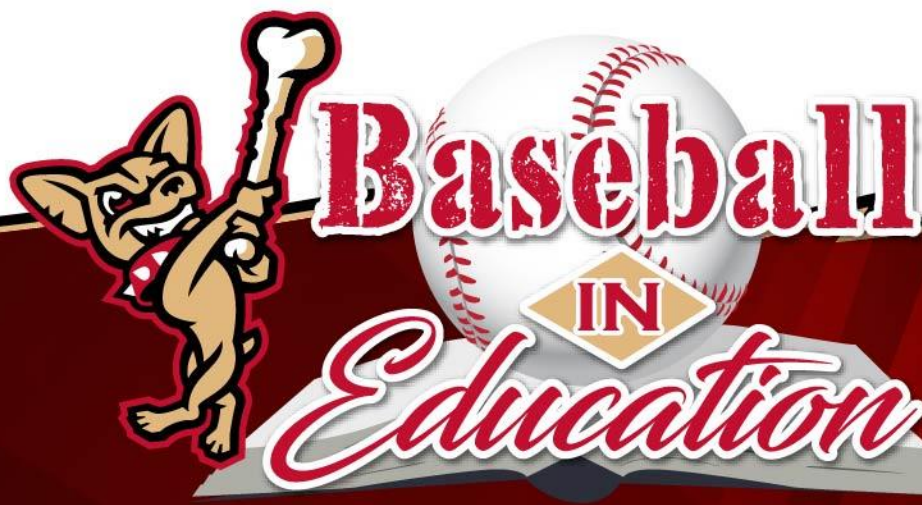
WELCOME TO THE 2019 BASEBALL IN EDUCATION GAME

Thank you for participating in the Chihuahuas 2019 Baseball in Education Program! The El Paso Chihuahuas and Chico are excited to see your class this season!

This is the 2019 Baseball in Education lesson plan. You can use the content as it is or make it your own to fit your classroom needs. While most of the activities can be done before the game, some can be done during and after. We hope you enjoy our baseball-themed curriculum and make sure to visit the educational concourse tables through out the game!

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Math

The El Paso Chihuahuas are one of 16 teams in the Pacific Coast League. Use the table on Page 4 to find the distance between each team and solve the problems below!

- A. What two teams are the closest together and by how many miles?
- B. What two teams are the farthest apart and by how many miles?
- C. What team is the farthest away from El Paso and how many miles away is it?
- D. If the El Paso Chihuahuas travel to Omaha for a game, how far will they travel roundtrip?
- E. The El Paso Chihuahuas are playing in Oklahoma City. How far will they travel to get there?
- F. If the Memphis Redbirds are going to visit the Iowa Cubs in Des Moines, Iowa, traveling at a speed of 60 MPH, and stop for a one hour lunch break, how long will it take them to get there?
- G. Chico is going to visit some of his friends in the Pacific Coast League. First, he goes to Albuquerque, followed by Fresno, Salt Lake City and Las Vegas before returning to El Paso. How far will he have traveled after his trip is over?

Pacific Coast League

Distance in miles

	ABQ	ELP	FRE	IOW	LV	MEM	NAS	NO	OKC	OMA	RNO	RR	SAC	SL	SA	TAC
Albuquerque Isotopes		266	912	981	572	1008	1220	1152	54	885	1010	686	1080	598	716	1449
El Paso Chihuahuas	266		1094	1132	726	1088	1299	1094	694	1018	1164	587	1185	863	552	1714
Fresno Grizzlies	912	1094		1087	395	1918	2130	2112	1454	1677	298	1605	170	814	1571	897
Iowa Cubs	981	1132	1087		1415	617	657	1010	545	134	1578	911	1708	1065	1005	1769
Las Vegas Aviators	571	726	395	1415		1582	1793	1726	117	1284	438	1259	563	421	1279	1105
Memphis Redbirds	1008	108	1918	617	1582		212	395	466	635	2015	629	2086	1523	725	2300
Nashville Sounds	1220	1299	2130	657	1793	212		533	678	739	2140	840	2271	1627	937	2404
New Orleans Baby Cakes	1152	1094	2112	1010	1726	395	533		708	1030	2158	512	2228	1744	543	2625
Oklahoma City Dodgers	544	694	1454	545	1117	466	678	708		459	1557	370	164	1188	467	1998
Omaha Storm Chasers	885	1018	1677	134	1284	635	739	1030	459		1447	822	1578	934	919	1668
Reno Aces	1010	1164	298	1578	438	2015	2140	2158	1551	1447		1750	132	518	1715	675
Round Rock Express	686	587	1605	911	1259	629	840	512	370	822	1750		1771	1279	97	2130
Sacramento River Cats	1080	1185	170	1708	563	2086	2271	2228	1621	1578	132	1771		649	1736	722
Salt Lake Bees	598	863	814	1065	421	1523	1627	1744	1188	934	518	1279	649		1310	853
San Antonio Missions	716	552	1571	1005	1279	725	937	543	467	919	1715	97	1736	1310		2159
Tacoma Rainiers	1449	1714	891	1769	1105	2300	2404	2625	1998	1668	675	2130	722	853	2159	

Minor League Baseball is affiliated baseball, a ladder system of professional baseball teams that are affiliated with a different major league team. Each major league team has seven minor league teams. The highest level of baseball before the majors is the Triple-A affiliate and the lowest is Rookie League. Between those two leagues, there are Double-A, Single-A, Advance (High A), Single-A (Low A), and Single-A Short Season. It is a long road from Rookie League to the majors.

The El Paso Chihuahuas are the Triple-A team for the San Diego Padres. Under the Chihuahuas are the Amarillo Sod Poodles (Double-A affiliate), the Lake Elsinore Storm (Single-A Advance), the Fort Wayne TinCaps (Single-A), the Tri-City Dust Devils (Single-A Short Season), and two teams in the Arizona League.

Use the table below to calculate how far players in the Padres organization travel to get to San Diego.

City	Distance
Tri-City to Fort Wayne	2,066 Miles
Fort Wayne to Lake Elsinore	2,155 Miles
Lake Elsinore to Amarillo	1,038 Miles
Amarillo to El Paso	438 Miles
El Paso to San Diego	724 Miles

A. How many miles do players travel from Tri-City to San Diego? How far do they travel if they stop to play for every team in the organization?

B. How long would it take an El Paso Chihuahuas player to travel to San Diego from El Paso if he is going 55 MPH and stops once for an hour-long break?

C. How long would it take a player traveling 65 MPH to get from Fort Wayne to Lake Elsinore if he stopped every five hours for an hour-long break?

The scorekeeper accidentally erased some of the runs in the scorebook. Help the Chihuahuas fill in the missing numbers.

	1	2	3	4	5	6	7	8	9	Runs
Fresno	0	0	0	3	0	2	1	0	1	
El Paso	1	2	0	2	2	1	0	1	0	

	1	2	3	4	5	6	7	8	9	Runs
Sacramento	0	1	2	0	0		0	0	0	5
El Paso		0	2	0	0	0	3	0	0	6

	1	2	3	4	5	6	7	8	9	Runs
Nashville	1	1	2		0	0	2	1	4	11
El Paso	0	0	4	3	2	1	1	0		12

	1	2	3	4	5	6	7	8	9	Runs
Tacoma	0	0	2	0	0	0		0	1	3
El Paso	0	1	3	0	2	0		0		10

Baseball Card Glossary

YR - The year the player played for a given team.

AVG - The player's batting average. This average is the decimal equivalent to the ratio of hits to official at-bats.

AB - The number of official at-bats the player had during the season. Official at-bats do not include walks (BB), sacrifice hits (sacrifice bunts, sacrifice flies), or being hit-by-a-pitch (HBP).

H - The number of hits a player had during the season. This number represents the sum total of singles, doubles, triples, and home runs the player accumulated during the season.

2B - The number of doubles or times a player reached second base safely due to a hit.

3B - The number of triples or times the player reached third base safely due to a hit.

HR - The number of home runs the player hit during the season.

RBI - The number of runs batted in that the player was credited with during the season. This means that other players scored runs due to the player's hitting performance.

SB - The number of stolen bases the player had during the season.

SO - The number of strikeouts the player had during the season.

BB - The number of bases on balls (walks) the player had during the season.

R - The number of runs scored by the player during the season.

G - The total number of games the player participated in during the season.

PA - The number of times a player goes to the plate including appearances that resulted in a walk (BB), sacrifice hit (sacrifice bunt, sacrifice fly), or being hit-by-a-pitch (HBP).

OB% - A measure of how often a batter reaches base.

SLG - The measure of the batting productivity of a hitter calculated as total number of bases divided by at bats.

Baseball Card Formulas

Use the formulas below to fill in the missing stats on Page 9.

BATTING AVERAGE (AVG)

$$\frac{H}{AB} = .____$$

STRIKEOUT RATIO (SO: PA)

$$\frac{1}{PA/SO} = \frac{1}{X} = 1:____$$

PLATE APPEARANCES (PA)

$$AB + BB = ____$$

TOTAL BASES

$$H + 2B + 2(3B) + 3(HR) = ____$$

ON-BASE PERCENTAGE (OB%)

$$\frac{(H + BB)}{PA} = .____$$

SLUGGING AVERAGE (SLG.)

$$\frac{TB}{AB} = .____$$

HOME RUN RATIO (HR; PA)

$$\frac{1}{PA/HR} = \frac{1}{X} = 1:____$$

SINGLES (1B)

$$H - 2B - 3B - HR = ____$$

TY FRANCE

Games	25
AB	94
PA	
R	18
H	27
TB	
1B	
2B	8
3B	0
HR	5
RBI	19
BB	13
SO	19
SB	0
AVG	
OBP	
SLG	
HR:PA	1:
SO:PA	1:

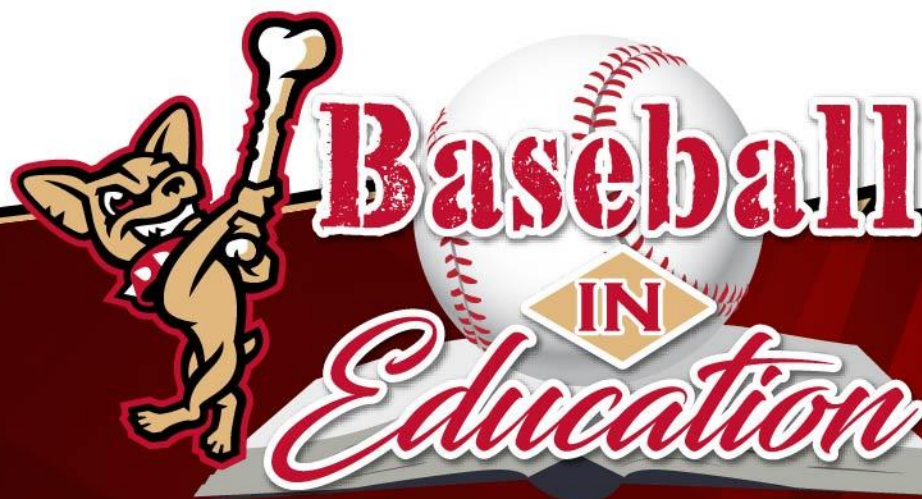
ESTEBAN QUIROZ

Games	87
AB	272
PA	
R	42
H	65
TB	
1B	
2B	17
3B	2
HR	2
RBI	26
BB	38
SO	63
SB	3
AVG	
OBP	
SLG	
HR:PA	1:
SO:PA	1:

JOSE PIRELA

Games	31
AB	122
PA	
R	22
H	40
TB	
1B	
2B	8
3B	1
HR	7
RBI	23
BB	7
SO	25
SB	0
AVG	
OBP	
SLG	
HR:PA	1:
SO:PA	1:

Round Home Run and Strike Out Ratios to the nearest whole number and round Batting Average, On-Base Percentage and Slugging Percentage to the third decimal point.



Science

Science

ACTIVITY 1



FOCUS

A player can tell if the ball will go far just by the sound the ball makes when it hits the bat. Can you tell the difference?

MATERIALS

Hammer
2 Baseball Bats (Aluminum and Wood)
Masking tape
Ruler

PROCEDURES

A. Crouch down and hold the wooden bat horizontally in front of you. Have a friend or classmate drop a ball on the bat so it hits various points on the bat. Watch how the ball bounces each time. Mark with a small piece of tape where the ball bounces the highest. Repeat the same procedure with an aluminum bat.

- Where on the bat does the ball bounce the highest?
- When a moving ball hits a moving bat will the combined energy launch the ball as far as possible into the park or will some energy be wasted? Explain where the ball needs to be hit to maximize the energy and why.

B. To find the “sweet spot” on a wooden bat, hold the bat hanging down loosely between your thumb and index finger, just below the knob on the bat’s handle. Have a friend tap the bat gently with a hammer, starting at the fat end and moving toward the handle. Repeat the same procedure with an aluminum bat except you hold the aluminum bat 1/3 of the way from the top. You should feel a vibration in your fingers whenever the bat is struck, except when the “sweet spot” is hit. When the hammer hits the “sweet spot” you should feel nothing. You may notice a different sound when the “sweet spot” is hit.

- What did you notice about the sound of the wooden bat each time you hit it?
- Was there a different sound between the wooden and aluminum bats?
- Where is the spot that makes the most solid sound? Was this the same for both bats? Why or why not?
- How far is the “sweet spot” from the thick end of the bat? Was this the same spot where the ball bounced the highest? Why or why not?

Science ACTIVITY 1



AT SOUTHWEST UNIVERSITY PARK

- A. Listen to the sound that the Chihuahuas players' bats make. Are the sounds different from the sounds of your bat? Do ground balls sound different than fly balls?
- B. Have students close their eyes for one batter. Have the students attempt to determine the distance that the ball traveled based on the sound of the bat and whether it was a ground ball or a fly ball. Have your students graph the difference between their estimate and the actual distance of the ball.
- C. Why do professional players use wooden bats and little league through college players use aluminum bats?

Science

ACTIVITY 2



FOCUS

Newton's Law of Motion

- A. An object which is at rest will remain at rest and an object in motion will stay in motion at the same speed and in a straight line, unless acted on by a force.
- B. When a body is acted upon by a force it's resulting acceleration (change of speed) is proportional to the force and inversely proportional to the mass.
- C. For every action there is always an equal force that acts in an opposite direction.

How far and how fast a ball is thrown depends on how much force is put on the ball with a certain mass. Force is the product of the mass of an object and speed with which it moves. Mass is the amount of body matter which resists a change in motion. Acceleration is the rate of change in velocity or speed.

Acceleration = Force/Mass (more force = more acceleration, less mass = more acceleration)

MATERIALS

1 Basketball
1 Baseball

2 Whiffle Balls
1 Measuring Tape

1 Foam Ball

PROCEDURE

Place a basketball and whiffle ball as targets approximately 10-12 feet away from a starting line, so they are about 3 feet apart from each other. Now take the whiffle ball, foam ball and baseball, roll each ball at each of the target balls, using the same amount of force. Measure the distance each target ball (whiffle ball and basketball) moved when it was hit by the rolling ball (whiffle ball, foam ball, baseball).

Make bar graphs to show the distance each target ball (whiffle ball and basketball) moved when hit by the rolling ball.

Which target moved the greatest distance? Why? Which rolled ball moved the target ball the greatest distance?

Science

ACTIVITY 2



PROCEDURE

Choose one ball (whiffle ball, foam ball or baseball) and try to move the basketball by rolling it on the ground. Other than getting closer, what can you do (using Newton's Law of Motion) to move the basketball the greatest distance? List three predictions and try it.

AT SOUTHWEST UNIVERSITY PARK

Collect data from the following:

- A. Total number of off-speed pitches the pitcher threw in every inning. (Off-speed pitches will be slower than all of the others. You can see the speed on the bottom left corner of the videoboard.
- B. Total number of times a batter tried to hit an off-speed pitch and missed in the first 4 innings.
- C. Total number of times the batter hit an off-speed pitch in the first 4 innings.

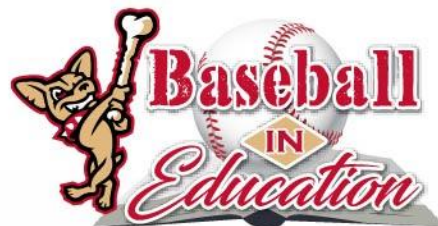
Graph all off-speed pitches versus any other pitches the pitcher threw that game. (You can get the total pitch count of the pitcher in the box score on epchihuahuas.com or the newspaper).

What outside forces may have affected your findings: weather, location of the batter in the batter's box, location of the fielder, etc.

TM

Science

ACTIVITY 3



FOCUS

In baseball, the angle of the swing has a dramatic effect on the angle of the baseball and the distance the ball travels.

MATERIALS

3 - 5 Baseballs
1 Bat
Small Cones
Tee

PROCEDURE

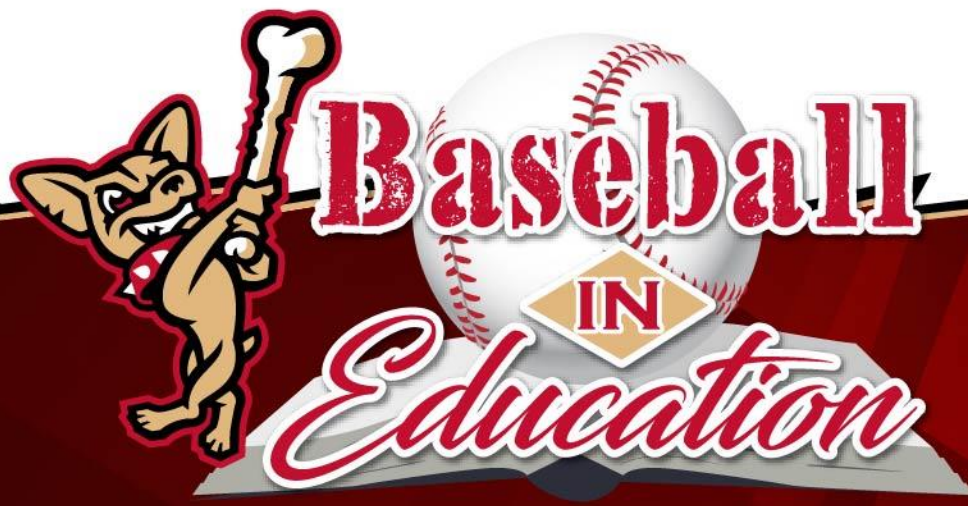
Place a ball on a tee and take turns trying to hit the ball at different angles. Mark where the ball lands after each swing.

1. Which angle resulted in the ball going the farthest?
2. Which angle resulted in ball not traveling at all?
3. What other factors affect how far the ball traveled?

Change the height of the tee and have students take turns trying to hit the ball at different angles.

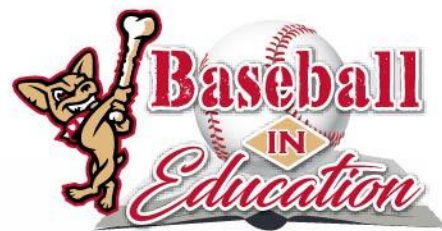
How does this change affect the distance of the ball?

Which ball was easier to hit at a high angle and which was easier to hit at a low angle?



Language Arts

Language Arts




KWL (WHAT I KNOW, WHAT I WANT TO KNOW, WHAT I LEARNED)

Fill out the first two columns of the KWL chart before attending your Baseball in Education game at Southwest University Park. After the game, fill in "What I Learned".

What I know...	What I want to know...	What I learned...

Create a baseball card about yourself. Include the information below, a picture of yourself and a biography.



Name: _____

Age: _____

Height: _____

Hobbies: _____

Interests: _____

Dislikes: _____

What do you want to be when you grow up:

Biography:



Pick a classmate and interview them to collect information for their baseball card made by you!

Name: _____

Age: _____

Height: _____

Hobbies: _____

Interests: _____

Dislikes: _____

What do you want to be when you grow up:

Biography:

Pick your favorite Chihuahuas player and create a baseball card about them. Include their stats and other teams they have played for in the biography. Use MiLB.com to help you find the information.

Name: _____

Age: _____

Height: _____

Birthplace: _____

School: _____

Bats/Throw: _____

Position: _____

Number: _____

Biography:

Language Arts



SPORTS WRITER FOR A DAY

At your Baseball in Education game pick one event and answer the following questions.

A. What happened?

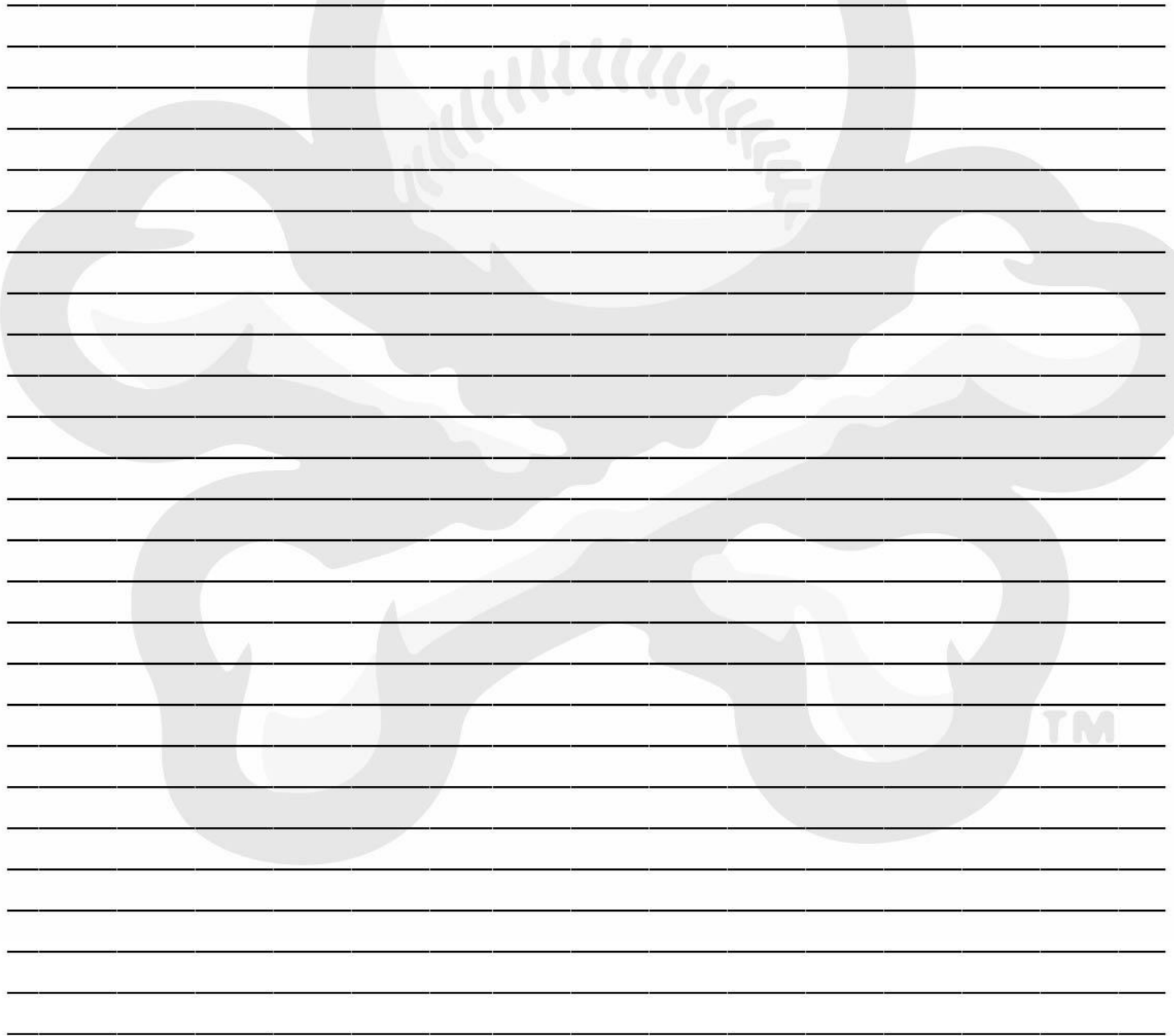
b. Who did it effect?

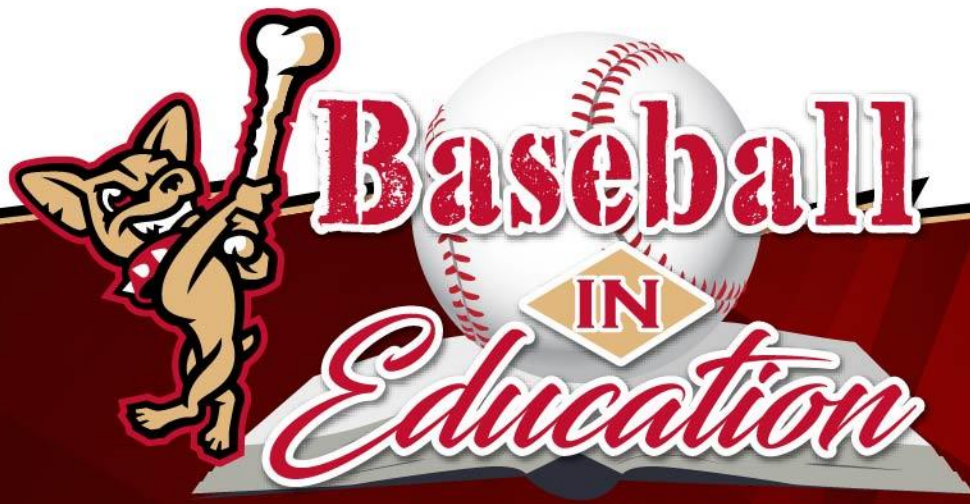
C. When did it happen?

D. Where did it happen?

E. Why did it happen?

F. How did it happen?





Social Studies

GEOGRAPHY OF BASEBALL

- A. Pick five Triple-A teams and three Major League Baseball teams from Page 27. If you want to pick another Minor League Baseball team you can find them on MiLB.com.
- B. Use the Map on Page 26 to plot the location of El Paso and the five Triple-A teams and the three Major League Baseball teams you picked for part A.
- C. From your list of teams pick one major league team and one minor league team and fill out the chart on Page 28.

US Map



TRIPLE-A BASEBALL TEAMS				MAJOR LEAGUE BASEBALL TEAMS			
	Albuquerque Isotopes		New Orleans Baby Cakes		Arizona Diamondbacks		Milwaukee Brewers
	Buffalo Bisons		Norfolk Tides		Atlanta Braves		Minnesota Twins
	Charlotte Knights		Oklahoma City Dodgers		Baltimore Orioles		New York Mets
	Columbus Clippers		Omaha Storm Chasers		Boston Red Sox		New York Yankees
	Durham Bulls		Pawtucket Red Sox		Chicago Cubs		Oakland Athletics
	El Paso Chihuahuas		Reno Aces		Chicago White Sox		Philadelphia Phillies
	Fresno Grizzlies		Rochester Red Wings		Cincinnati Reds		Pittsburgh Pirates
	Gwinnett Stripers		Round Rock Express		Cleveland Indians		San Diego Padres
	Indianapolis Indians		Sacramento River Cats		Colorado Rockies		San Francisco Giants
	Iowa Cubs		Salt Lake Bees		Detroit Tigers		Seattle Mariners
	Las Vegas Aviators		San Antonio Missions		Houston Astros		St. Louis Cardinals
	Lehigh Valley IronPigs		Scranton/Wilkes-Barre Railriders		Kansas City Royals		Tampa Bay Rays
	Louisville Bats		Syracuse Mets		Los Angeles Angels		Texas Rangers
	Memphis Redbirds		Tacoma Rainiers		Los Angeles Dodgers		Toronto Blue Jays
	Nashville Sounds		Toledo Mud Hens		Miami Marlins		Washington Nationals

Social Studies



		Selected minor league team	Selected major league team
Team	El Paso Chihuahuas		
Level in the minor league system			
Name of the league			
Number of the games played in 2018			
Stadium / ballpark name			
Stadium / ballpark named in honor of			
Stadium / ballpark capacity			
Downtown or suburban stadium / ballpark			
Most recent city population			
Distance from stadium / ballpark to El Paso			
Year team was first organized			
Major League Affiliate (if the team is not one)			
Triple-A affiliate (If the team is not one)			

Social Studies



- A. Use the map on Page 30 to plot the location of each team in the Pacific Coast League.
- B. Using the chart below, record the direction each Pacific Coast League team is located in relation to El Paso (N, NW, W, SW, S, SE, E, NE).
- C. Using the same map on Page 30, plot the location of each Pacific Coast League team's major league affiliate.
- D. Using the chart below, record the direction from each Triple-A team from their respective major league affiliate.

Pacific Coast League Team	Direction from El Paso	Major League Affiliate	Direction of the PCL team from their MLB affiliate
Albuquerque Isotopes		Colorado Rockies	
El Paso Chihuahuas		San Diego Padres	
Fresno Grizzlies		Washington Nationals	
Iowa Cubs		Chicago Cubs	
Las Vegas Aviators		Oakland Athletics	
Memphis Redbirds		St. Louis Cardinals	
Nashville Sounds		Texas Rangers	
New Orleans Baby Cakes		Miami Marlins	
Oklahoma City Dodgers		Los Angeles Dodgers	
Omaha Storm Chasers		Kansas City Royals	
Reno Aces		Arizona Diamondbacks	
Round Rock Express		Houston Astros	
Sacramento River Cats		San Francisco Giants	
Salt Lake Bees		Los Angeles Angels	
San Antonio Missions		Milwaukee Brewers	
Tacoma Rainiers		Seattle Mariners	

US Map

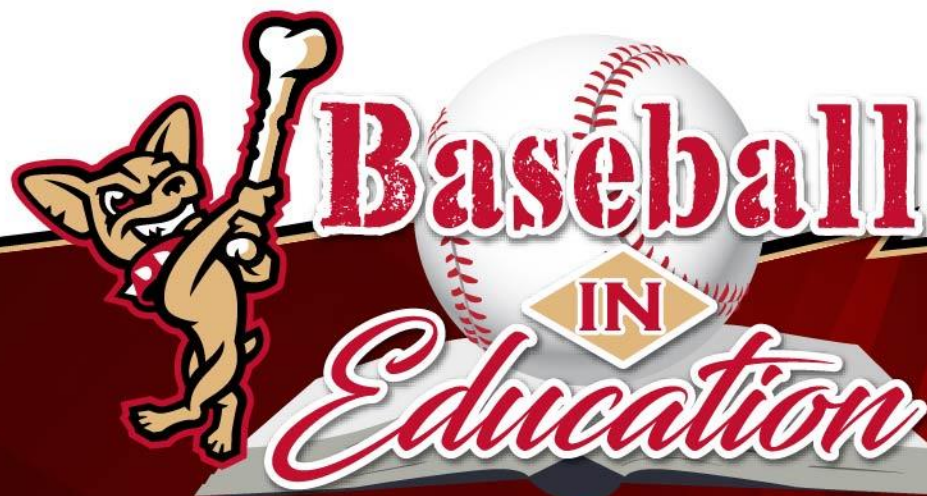


Social Studies



Use the El Paso Chihuahuas roster on epchihuahuas.com to answer the following questions.

- A. How many international players play for the El Paso Chihuahuas?
- B. What countries are these players from?
- C. Using a map, draw a line from each country to El Paso that is represented on the Chihuahuas. Which international player is the farthest from home?
- D. How many players are from the United States?
- E. What state is each player from?
- F. Draw a line from each city or state to El Paso. Which player is the farthest from home?



Thank
You

