



# 2023 School Kids Day Prep Course

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# Welcome



Welcome to the 2023 Buffalo Bisons "Prep Course". We look forward to having you join us for our annual School Kids Day game on June 1<sup>st</sup>!

To help you get ready for the game, we have put together this guide to give you all of the info you will need to enjoy the day.

Inside you will find information on the Bisons and the basics of a baseball game, as well as some information tied to our theme for the day, which is a STEM activity, focusing on the Science, Technology, Engineering, and Math behind Bisons baseball!

At the end of this guide is a certificate of completion. Snap a picture of your class holding them up, and we'll put it up on the video board during the game! Email pictures to [solay@bisons.com](mailto:solay@bisons.com).

Thanks and we'll see you at the game!





# Bisons Baseball



- Triple-A Baseball affiliate of the Toronto Blue Jays
- Baseball season: April-September (75 home games)
- Play at Sahlen Field in downtown Buffalo
- Stadium capacity: 16,600 seats!
- Home to Buster T. Bison, Chip, Chicken Wing, Bleu Cheese, Atomic Wing, Beef on Weck, Carrot, Fish Fry and fan-favorite, Celery!



## Online

- Website: [Bisons.com](http://Bisons.com)
- Twitter: @BuffaloBisons
- Instagram: @BuffaloBisons
- Facebook: Buffalo Bisons
- Tik Tok: @BuffaloBisonsBaseball





# Baseball Basics



- Game is 9 innings (includes top + bottom)
  - Extra innings played if tied after 9, until someone wins
- Top of the inning – Bisons are in the field
- Bottom of the inning – Bisons are batting
- 3 outs end half an inning
- Outs can be made by:
  - Batter striking out (3 strikes)
  - A batted ball caught before touching the ground
  - A batted ball thrown to base before player arrives
  - A runner tagged out by a fielder





# Baseball Basics



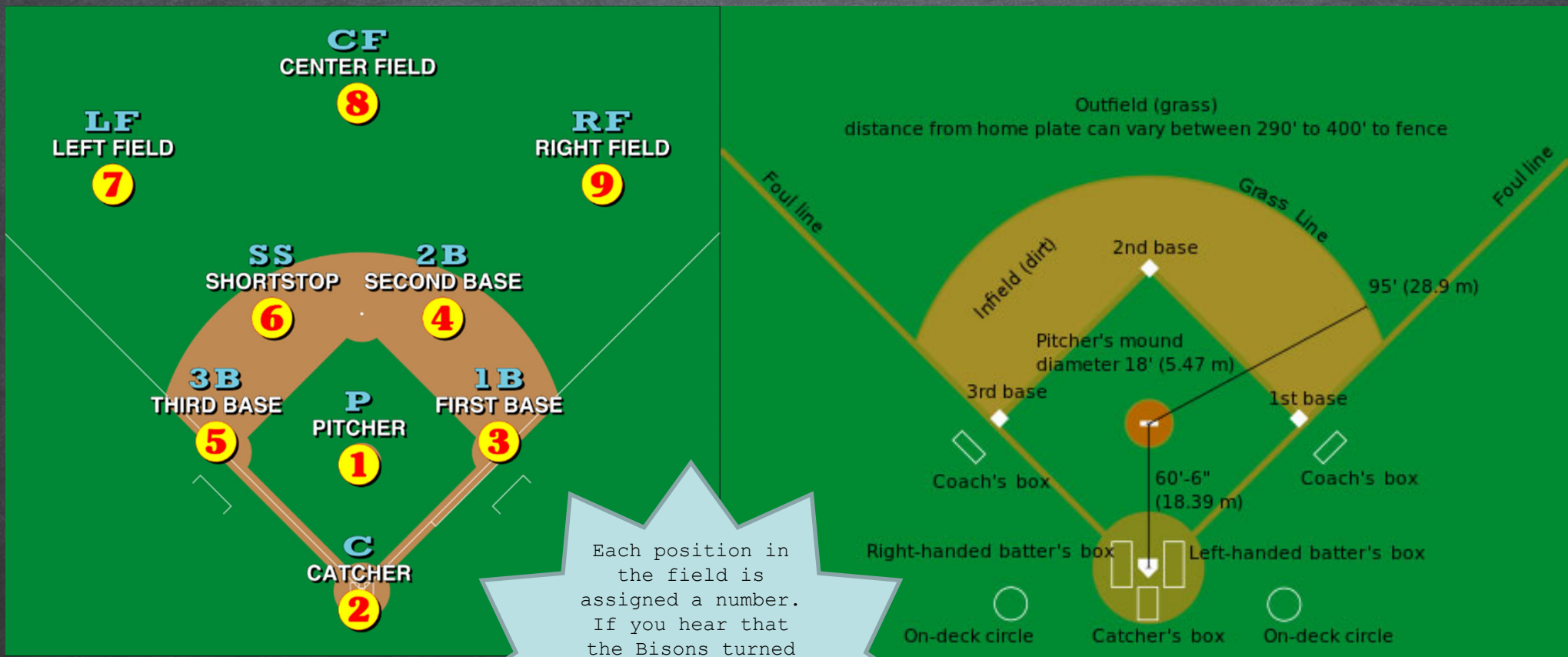
Here is a look at the players in the field:

- How many positions are there?
  - Is that an even or an odd number?
- How many bases are on the field?
- What shape is the infield?
- At what degree angle do the baselines intersect?





# Baseball Basics



Each position in the field is assigned a number. If you hear that the Bisons turned a 6,4,3 double play, that means the shortstop threw to the second baseman, and he threw to first to get 2 runners out.





# Game Info.



## Line Score

- R: Runs scored for the game for each team
- H: Each team's total Hits for the game
- E: Total Errors made for the game for each team

**MORALES**  
B: 4 ERA: 0.00  
S: 4 TP: 8  
**Sahlen's**  
MPH

**GREGORY POLANCO** # 5 RF

H: 19 AB: 62 AVG: .306  
HR: 4 SB: 4 OBP: .358  
RBI: 12 R: 7 OPS: .939

**LA NOVA** B S O **LEHIGH VALLEY BISON** R H E 2ND  
0 0 0 0 0 0 0

**Platter's**  
CHOCOLATE FACTORY



# Game Info.



## Pitch Count

- B: number of balls
  - 4 balls put a man on base!
- S: number of strikes
  - 3 strikes and you're out!
  - Foul balls count as strikes up to 2
  - If 2 strikes already, foul ball doesn't count
- O: number of outs
  - 3 outs and teams switch places

MORALES  
B: 4 ERA: 0.00  
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LA NOVA B S O LEHIGH VALLEY BISON R H E 2ND  
0 0 0 0 1 0

Platter's CHOCOLATE FACTORY



# Game Info



Looking at this photo of the Bisons lined up down the first base line for the National Anthem, can you find:

- The mean of the jersey numbers
- The median of the jersey numbers
- The range of the jersey numbers





# SCIENCE



The Bisons, with help from the Blue Jays, use Science to formulate a plan to keep their players in great shape, so they can play their best and avoid injuries. This includes:

- Diet
- Exercise/Practice
- Rest





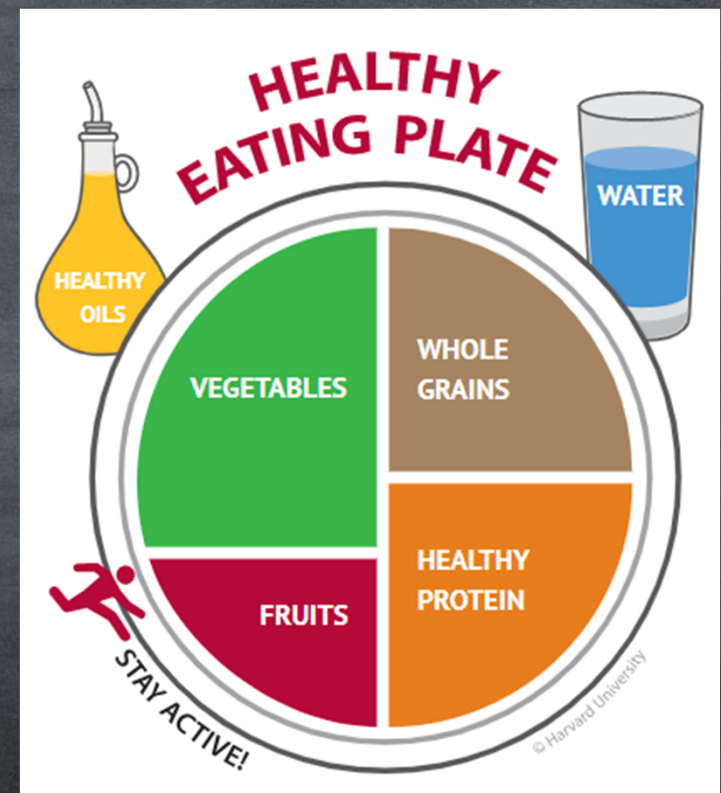
# Diet



Players are educated on how to take care of their bodies, which starts with eating healthy. The graphic breaks down how meals can be planned out.

- Protein –  $\frac{1}{4}$  Plate
- Vegetables/Fruits –  $\frac{1}{2}$  Plate
- Whole Grains –  $\frac{1}{4}$  Plate
- Water, Coffee, Tea
  - Avoid sugary drinks
- Healthy Oils – in moderation

More information can be found [here](#)!





# Exercise/Practice



After eating a healthy meal, players will hit the gym or baseball field to exercise.

This can include:

- Stretching
- Lifting Weights
- Jogging/Running
- Playing Catch
- Batting Cages

These activities help players avoid injury and perform better on game day!





# Rest



While eating healthy and exercise are important, players also need time to rest and reset. In minor league baseball, teams will travel and have rest days on most Mondays. This is also why most pitchers will not pitch in consecutive games, because they need time for their body to recover.





# Technology – Players



Baseball teams use technology to track all the past results of their games to help them predict what will happen in future games. This helps them in their decision-making process.

Some examples:

- Hot/Cold Zones
- Spray Charts
- Tablets for pitcher/batter review

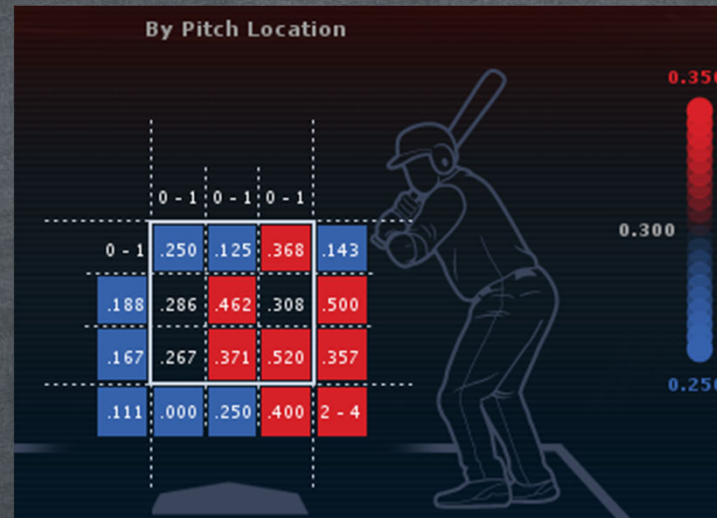




# Technology – Players



Here is an example of a Hot/Cold Zone chart:



This graphic shows where the batter excels and struggles at hitting certain pitch locations. Red = hot (good), blue = cold (needs improvement). Each batter has their own personal chart, which can change many times throughout the season based on the results of every at bat.

- Where should the pitcher try to throw the ball?
- Should the batter swing at pitches inside or outside?

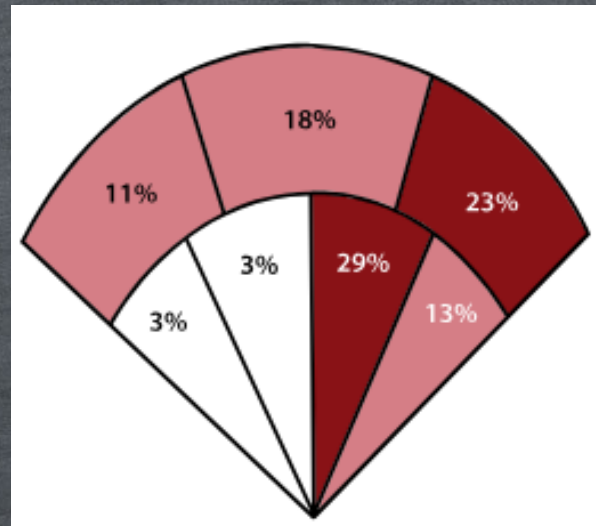




# Technology - Players



Here is an example of a Spray Chart:



This shows a percentage of where a batter usually hits the ball. In the past, this batter hits the ball to towards the right side of the field 65% of the time and to left side only 17% of the time.

What should the team in the field do with their defenders the next time this batter comes to the plate?





# Technology – Staff



While technology is important to make players on the field the best that they can be, it is also important to the Bisons staff. Here are some examples around the ballpark:

## Bisons Box Office – Ticketing

- Ticket System (computers) – how many tickets are sold/available for each game, track who purchased tickets and when
- Ticket scanners – knowledge of who is in the ballpark and where they are seated, how many tickets were scanned on a game-to-game basis
- Ticket Sales Reports – track trends to understand our market and customers (Percentage of American and Canadian fans, returning/new customers)

If the average attendance is 8,231 people, how many people enter the ballpark over a 75-game season?



These examples help the Bisons staff in Marketing, Sales,  
and Ballpark Security



# Engineering



Engineering around Sahlen Field is geared toward protecting players and fans. Here are a few things to look for while at the game:

## Sahlen Field Foul Ball Protective Netting:

- Total length of netting—about 900 ft
  - Connected by two 45 ft tall poles that are anchored 40 ft underground – help with netting weight and tension
- Netting is at least 30 ft tall all the way around
- There are six tie backs (cables) in the middle of the netting to help support the weight and keep up right.
- Foul balls can still get over the net, so it is important to pay attention!





# Engineering



## Sahlen Field LED Lighting Info:

- Brand new LED light system installed in 2021 – Much brighter and more energy efficient.
- Eight total light poles with 164 individual LED light fixtures.
  - How many total light fixtures are there?
- Light poles are 120 ft tall and can withstand winds over 100 mph
- Light intensity is measured in “fc” or foot-candles. MLB requires minimum lighting of 100 fc in the infield and 70 fc in the outfield.
- Here at Sahlen Field, we are well over those requirements, with an average of 125 fc in the infield and 115 fc in the outfield





# Math



Math is used all over the ballpark – from the stats of the game to the number of tickets sold. You may not have realized it, but Math was involved in each example listed:

- Science – fractions
- Technology – averages, percentages
- Engineering – height, weight, measurements

Baseball is a true numbers game that relies heavily on averages, tendencies, and outcomes. Here are a few more statistics to look for at the game!





# Statistics



- Batting Average (AVG)
  - Calculated by dividing hits by number of at-bats
  - Ex: 3 hits in 10 at bats = .300 avg.
- HR – Home Runs
- RBI – Runs Batted In
- On Base Percentage (OBP)
  - Measures how often a batter reaches base by calculating (hits + walks + hit by pitch) / (at bats + walks + hit by pitch + sacrifice flies)
    - Ex: If a batter has been at bat 127 times, and in that time has made: 32 hits, 7 walks, been hit by a pitch 2 times, and 3 sacrifice flies, then:
      - 32 hits + 7 walks + 2 hit by a pitch is 41.
      - 127 at bats + 7 walks + 2 hit by a pitch + 3 sacrifice flies is 139.
      - 41 divided by 139 is 0.29496
      - Therefore, the batter's on base percentage is .295.





# Statistics



Now let's see if you can calculate:

- **Batting Average**

A player has 89 hits in 303 at-bats.

What is his batting average for this season?

- **On Base Percentage**

A batter has been at bat 243 times, and in that time has made: 76 hits, 19 walks, been hit by a pitch 2 times, and 12 sacrifice flies.

What is his On Base Percentage?





# Game Day Check List



- Game time is 11:05am, gates open at 9:30am
  - Don't be afraid to get here early!!!
  - Games typically last 2.5-3 hours
- Dress accordingly for the weather
  - Sunblock/hats if it's warm + sunny
  - Raincoats/ponchos if there could be inclement weather
  - Plan on attending rain or shine, we will do our best to play the game either way!
- What you can bring
  - Gloves for foul balls
  - Backpacks
  - Bagged lunches
- Be Smart
  - Listen to your teachers' instructions
  - Be careful when crossing the street
  - Don't litter
  - Don't run, be courteous to other fans at the game
- HAVE FUN!!!





# CONGRATULATIONS



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*has successfully completed the  
2023 Buffalo Bisons School Kids Day  
Prep Course!*