



# STEAM

EDUCATION PROGRAM

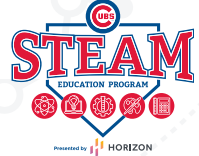


Presented by  HORIZON



**Saturday, May 13<sup>th</sup>, 2023**  
**@ Wrigley Field**

# Event Information



## Event Agenda

**11:00am**

Event Begins

**11:00am – 1:00pm**

STEAM Activities and Student Project Presentations

**11:30am – 12:30pm**

Judging for Student Projects

**1:00pm – 1:45pm**

Interactive Show, Including Demonstrations  
(Sections 9–12 + 109–111)

- STEAM Jobs in Sports
- Fielding Percentage
- Newton's Laws of Motion
- The Geometry of Wrigley Field
- Launch Angle and Exit Velocity

**1:45pm**

STEAM Fair Winners Announced  
(Sections 9–12 & 109–111)

**1:55pm**

Raffle Winners Announced for  
Passport Completion  
(Sections 9–12 + 109–111  
\*\*Passport Drop-Off at Check-In  
Near Horizon Gate\*\*

**2:00pm**

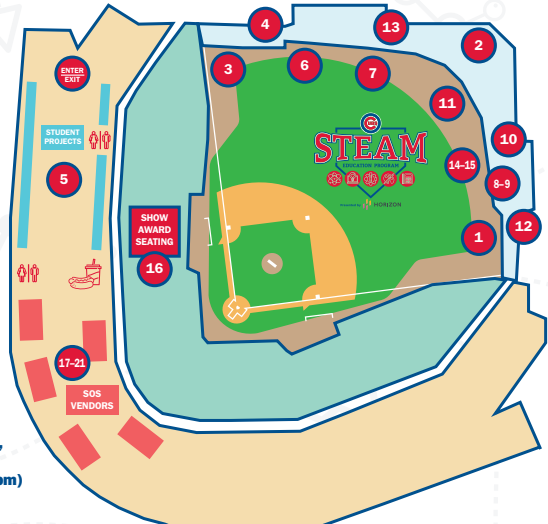
Event Ends

**EVENT  
PAGE**

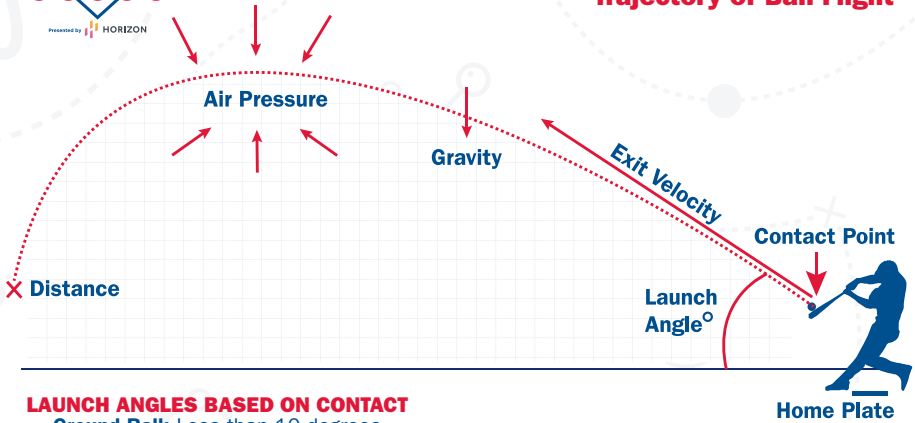


1. Health Science Zone (Location - Warning Track)
2. Gravity Zone (Location - Concourse)
3. Robotics Zone (Location - Warning Track)
4. Elasticity Zone (Location - Concourse)
5. Student Project Zone (Location - Concourse – Judging Starting at 11:30 am)
6. Aerodynamics Zone (Location - Warning Track)
7. Physics Zone (Location - Warning Track)
8. Hitting Zone (Location - Bullpen)
9. Win Reality Zone (Location - Bullpen)
10. Earth Science Zone (Location - Concourse)
11. Reaction Time Zone (Location - Warning Track)
12. Uniform & Stadium Design Zone (Location - Concourse)
13. Pitching Zone (Location - Bullpen)
14. STEM Zone (Location - Warning Track)
15. Recovery Zone (Location - Warning Track)
16. Interactive Show, Including Demonstrations, Raffle & STEAM Fair Awards Zone (Sections 9-12 + 109-111 - Starting at 1:00 pm)
17. Snapology Zone (Location - Concourse)

18. Code Your Dreams Zone (Location - Concourse)
19. Girls 4 Science (Location - Concourse)
20. Mad Science Zone (Location - Concourse)
21. First 5125 HOTH Robotics Zone (Location - Concourse)

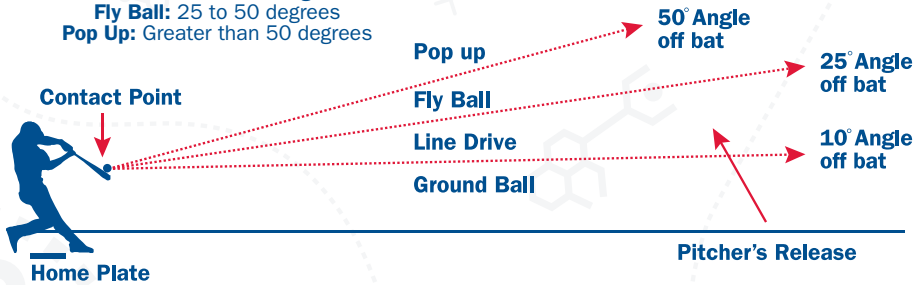


**Trajectory of Ball Flight**



**LAUNCH ANGLES BASED ON CONTACT**

- Ground Ball:** Less than 10 degrees
- Line Drive:** 10 to 25 degrees
- Fly Ball:** 25 to 50 degrees
- Pop Up:** Greater than 50 degrees



**Answer Bank:**

**Trajectory | Homerun | Parallel | Launch | Height | Impact**

- 1** The angle at which a baseball leaves the bat is called the \_\_\_\_\_ angle.
- 2** A ball hit with a launch angle of 10 degrees will travel \_\_\_\_\_ to the ground.
- 3** When the launch angle increases, the \_\_\_\_\_ of the ball's trajectory also increases.
- 4** The path the baseball follows in the air is called its \_\_\_\_\_.
- 5** The force applied to the baseball by the bat is called the \_\_\_\_\_ force.
- 6** A ball hit with a launch angle between 25 and 35 degrees is considered an ideal angle for a \_\_\_\_\_.

# T in STEAM Stands for Technology



## What is Statcast?

A state-of-the-art tracking technology that is used to capture a collection of data to evaluate players.

Each club has **12 hawk-eye cameras** installed around the ballpark. **Five** of those focus on pitch tracking. The other **seven** are dedicated to tracking players and batted balls.

Let's take a look at two examples using two different Cubs player's.



### Marcus Stroman

Reference the data and answer the questions based on the ten pitches thrown.

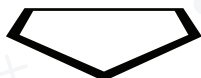
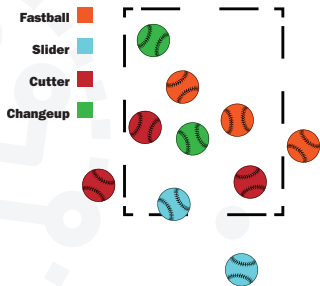
Kind of Ball Thrown	Total Number of Balls Thrown	%
Fastball		
Slider		
Cutter		
Change Up		



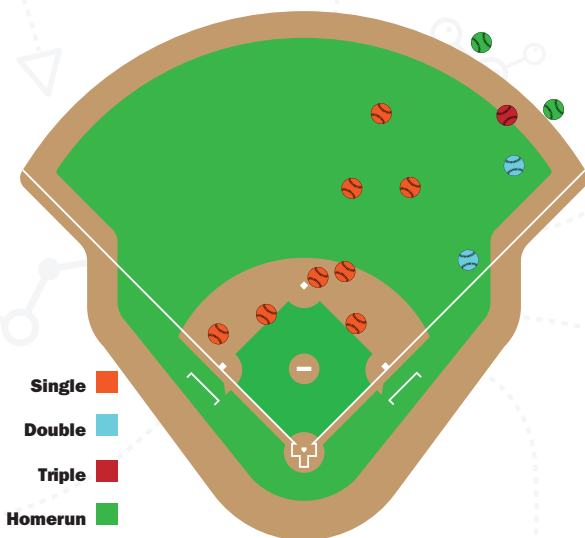
### Cody Bellinger

Reference the data and answer the questions below.

Hits	Total Number of Hits	%
Single		
Double		
Triple		
Homerun		



STATCAST





## E in STEAM Stands for Engineering

### Stadium Design

What are some unique features of Wrigley Field?

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What are your stadium design ideas?

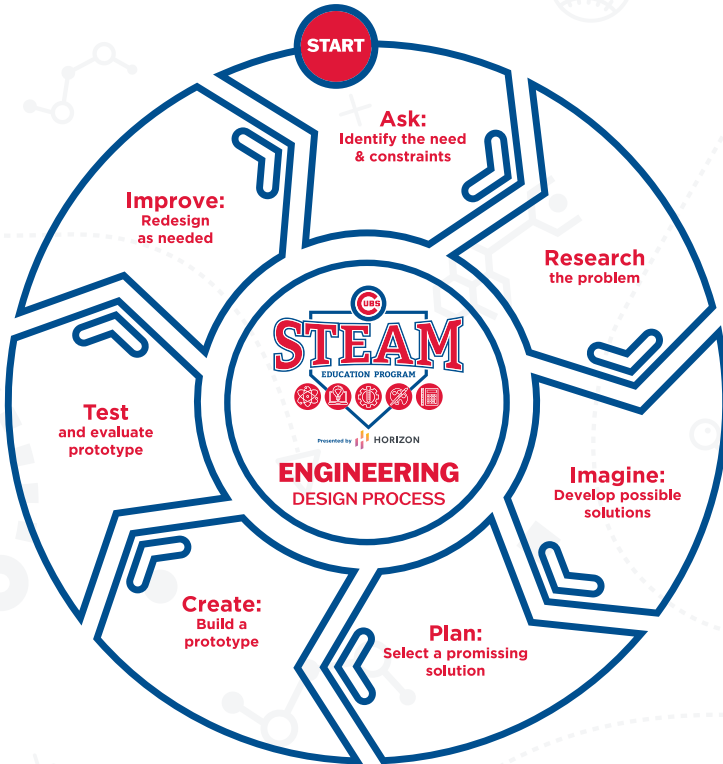
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### STADIUM DESIGN IDEAS



Stadium Capacity



Food



Unique Features



Stadium Features



Number of Parking Spots



Merchandise

## A in STEAM Stands for Arts

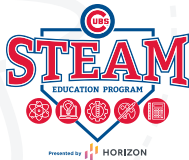


### Coloring Clark

**Full Name:** Clark the Cub **Favorite Color:** Cubbie Blue **Favorite Vacation Spot:** Mesa, AZ  
**Favorite Song:** "Go Cubs Go" of course! **Hobbies:** Practicing my T-ball swing and hanging out with Clark's Crew members! **Favorite Movie:** "Rookie of the Year" **Achievements:** 2016 World Series Champion, 2018 Mascot Home Run Derby Champion



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## M in STEAM Stands for Math

### Build Your Own Roster

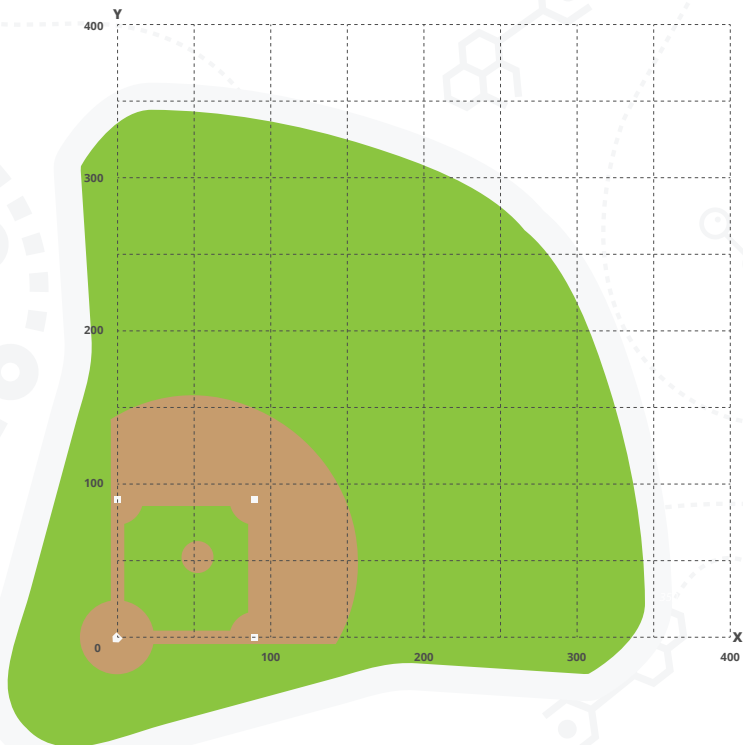
Build your own 15 player roster with a \$150 million budget. Once you have your team built, select the players you want to start by plotting their x/y coordinates on the field below.



QR Code for Roster

- 1 P Pitcher
- 2 C Catcher
- 3 1B First Baseman
- 4 2B Second Baseman
- 5 3B Third Baseman
- 6 SS Shortstop
- 7 LF Left Fielder
- 8 CF Center Fielder
- 9 RF Right Fielder

Player	Position	X,Y Coordinates
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		



## Scavenger Hunt



Visit the different displays to answer the following questions.

- 1 Which of the 6 steps of pitching has the most significant amount of force on the shoulder?  

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- 2 What is the daily recommendation of vegetables to eat on a daily basis?  

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- 3 Which step of the engineering design process focuses on evaluating your prototype?  

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- 4 What is the speed of a baseball or softball pitch that takes .458 seconds to cross home plate?  

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- 5 What are the 4 steps for how your body reacts to a pitch being thrown?  

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- 6 What is a typical range of degree for a line drive that is hit?  

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- 7 How does deep breathing benefit athletes' performance?  

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- 8 Identify one active and passive recovery technique?  

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- 9 How many stitches are on a baseball?  

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