



STEAM

EDUCATION PROGRAM



Presented by  HORIZON



Saturday, May 13th, 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)**

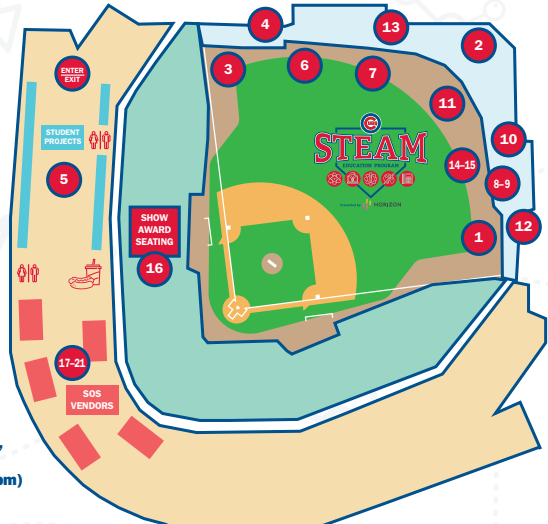
17. Snapology Zone (Location - Concourse)

18. Code Your Dreams Zone (Location - Concourse)

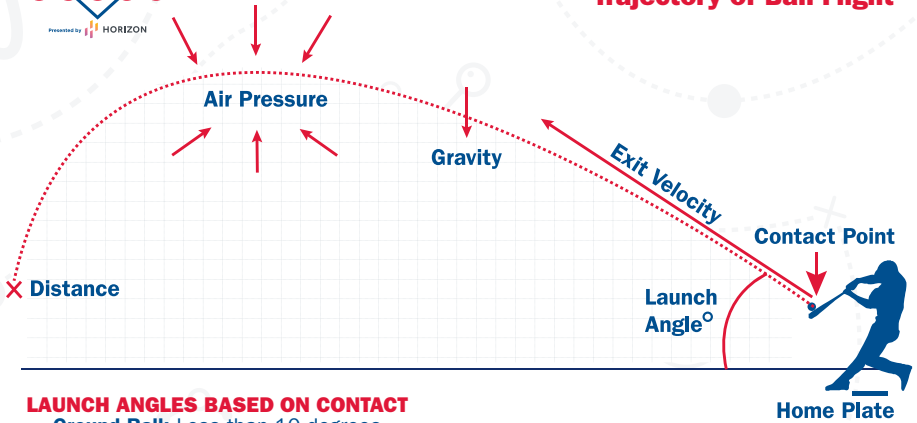
**19. Museum of Science & Industry Zone
(Location - Concourse)**

20. Mad Science Zone (Location - Concourse)

**21. First 5125 HOTH Robotics Zone
(Location - Concourse)**

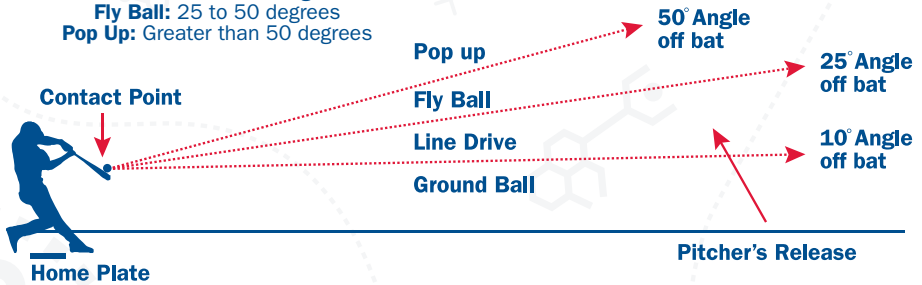


Trajectory of Ball Flight



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.

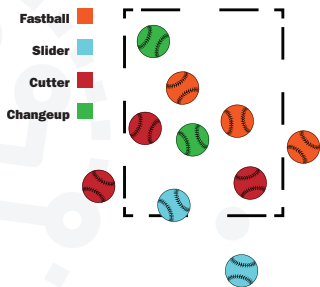
Kind of Ball Thrown	Total Number of Balls Thrown	%
Fastball		
Slider		
Cutter		
Change Up		



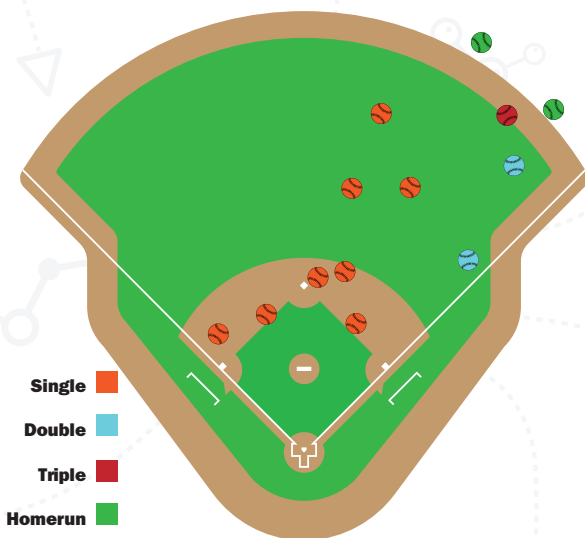
Cody Bellinger

Reference the data and answer the questions below.

Hits	Total Number of Hits	%
Single		
Double		
Triple		
Homerun		



STATCAST



- Single ■
- Double ■
- Triple ■
- Homerun ■

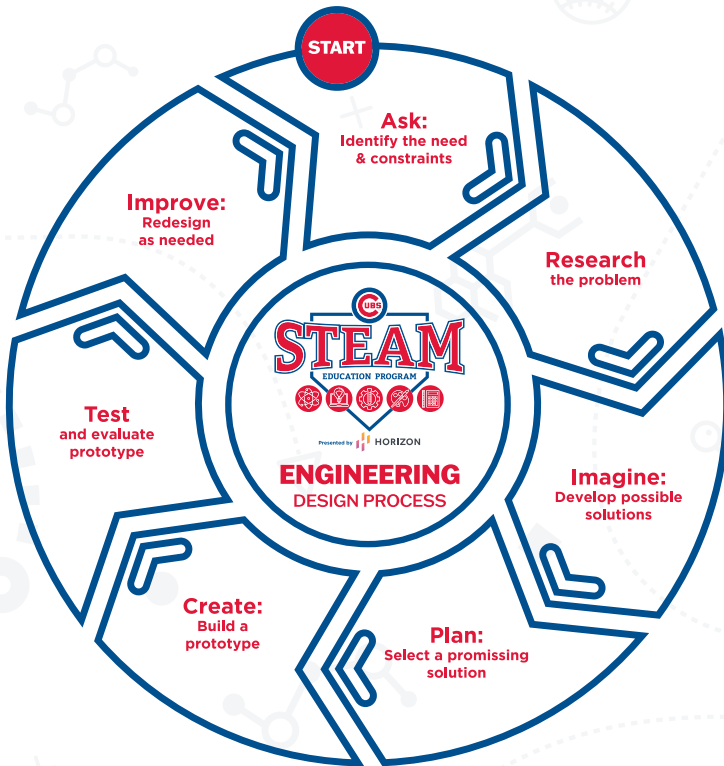


E in STEAM Stands for Engineering

Stadium Design

What are some unique features of Wrigley Field?

What are your stadium design ideas?



STADIUM DESIGN IDEAS



Stadium Capacity



Food



Unique Features



Stadium Features

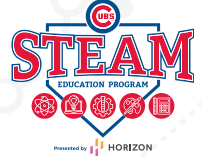


Number of Parking Spots



Merchandise

A in STEAM Stands for Arts

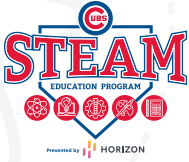


Coloring Clark

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



© 2014 Chicago Cubs. Clark and Chicago Cubs copyrights and trademarks proprietary to Chicago Cubs Baseball Club, LLC. All Rights Reserved.



M in STEAM Stands for Math

Build Your Own Roster

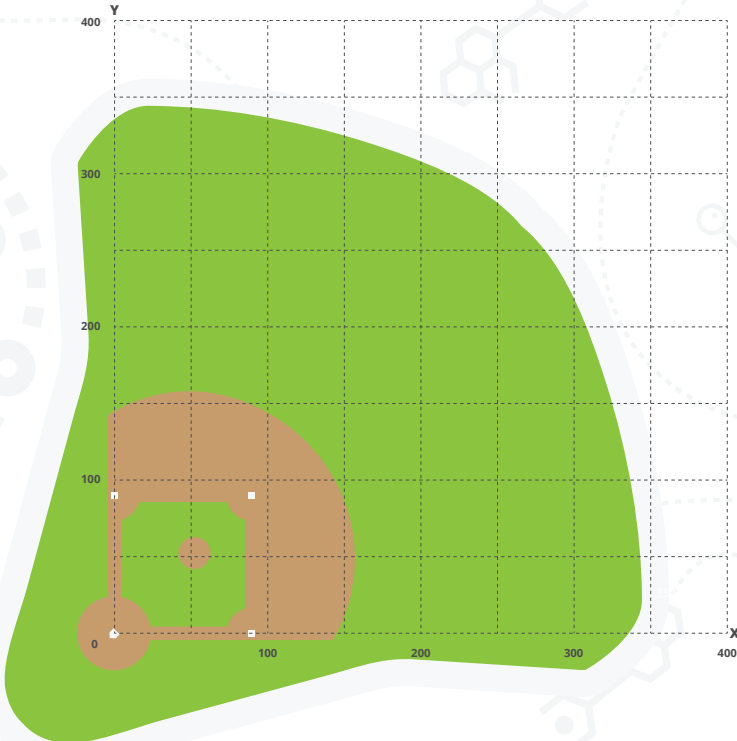
Build your own 15 player roster with a \$150 million budget. Once you have your team built, select the players you want to start by plotting their x/y coordinates on the field below.



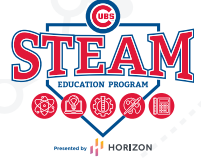
QR Code for Roster

- 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?

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

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

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

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

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

- 7 How does deep breathing benefit athletes' performance?

- 8 Identify one active and passive recovery technique?

- 9 How many stitches are on a baseball?

