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**Name:** Take Me Out to the Ballgame

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**Subject:** Math/Geography

**Grade:** 6-8

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**Goal:**

*Students will apply math and geography to a baseball investigation.*

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**Materials:**

- Pictometry Online (<http://pol.pictometry.com/>)
  - Computers for each student or pair of students
  - Take Me Out to the Ballgame Worksheet for each student (see below)
  - Scratch paper
  - Calculator (students)
  - Pencils (students)
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**Expected Duration:** One 40-50 minute class period with homework

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**Objectives**

**Academic Standards:**

Pennsylvania:

2.3.8

Calculate volume, surface area, and degrees of angles; calculate circumference and area of circles, and use a measurement formula to solve for a missing quantity.

2.4.8

Draw inductive and deductive conclusions with mathematical concepts.

7.1.6

Describe how common geographic tools are used to organize and interpret information about people, places, and environment.

**Assessment**

*Student learning will be assessed by their ability to successfully draw accurate diagrams of each park, as well as determine the dimensions of the fictitious ballpark in question.*

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**Student Objectives: (related to assessment)**

*As a result of this lesson, the students will be able to:*

- *Locate five major league baseball parks in the United States*
  - *Draw diagrams of these ballparks, given dimensions*
  - *Calculate ratios*
  - *Determine the dimensions of a new ballpark, given limited information*
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### **Lesson Development**

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**Anticipatory Set**

Have students generate a list of as many professional baseball teams as they can. Now, have students try to name their ballparks. Explain that in this lesson, students will investigate various ballparks from across the United States.

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**Teaching Procedures/Instructional Process:**

1. Have students log onto Pictometry Online via the website <http://pol.pictometry.com/>
4. Distribute the baseball stadium worksheet. Explain to students that they should work on the measurements pertaining to PNC Park first, and can complete the rest of the assignment at home if necessary.
5. Show students how to measure distance using the POL software.
6. Allow students to work independently, or in groups of no more than two, to measure the distances in PNC Park. Allow students to work independently, making sure to offer assistance as necessary.
7. Five minutes prior to the end of the period have students stop working and get ready to head to their next class. Make sure to remind students to complete the worksheet at home, and encourage them to complete the challenge activity.
8. Dismiss students at the bell only if they have cleaned up their work area.

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**Guided Practice/ Monitoring**

Students will measure distances in PNC Park using Pictometry Online.

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**Closure**

Ask students- why do you think ballparks have different dimensions?

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**Independent Practice / HW**

Students will complete the questions on their activity sheet if they have not already completed them.

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**Differentiated Instruction**

Challenge activity provided for students who need enrichment. Give students dimensions of PNC Park if necessary.

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**Content Notes and Questions for Students**

Are all ballparks the same size?

Content Note- Not all ball parks are the same size. Distance between bases is the same, and is determined by MLB. However, outfields are varying in size.

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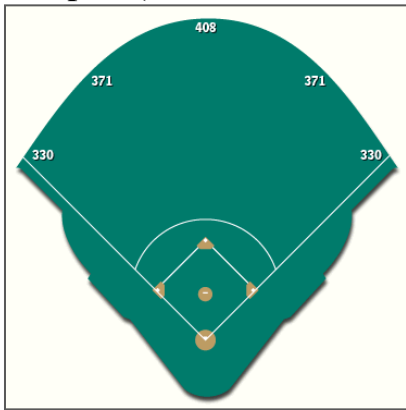
## Take Me Out to the Ballgame...

**Directions:** In order to answer the questions “Are all major league ballparks the same?” we will be doing a mathematic investigation. You are given the field dimensions of five major league baseball parks, along with the area and seating capacity. You will calculate the field dimensions of the sixth stadium. In this assignment you will do the following:

A. Measure the dimensions of PNC Park

B. Draw a scaled model of the playing field in each of these ballparks, given the dimensions.

Sample: (Veteran’s Stadium in Philly)



C. Calculate the ratio of surface area to capacity by dividing the area (in square feet) of the park by the seating capacity.

D. Answer the following question: *If I wanted to construct a ballpark that seated 100,000 people at full capacity, and needed the ratio of area to capacity to be 5:1, what would the area of my ballpark need to be?* You must show all work to receive full credit.

E. Are all baseball fields the same size? Support your answer with data from your findings. Why do you think they are the same/different?

F. Challenge Activity- Answer the following questions: Which team plays in each of these stadiums? In what year did each stadium open? Have other teams played in these stadiums? How is the area of each stadium calculated?

**Fenway Park**

**(Capacity= 37,400)**

**Left Field:** 310 ft (94.5 m)  
**Deep Left-Center:** 379 ft (115.5 m)  
**Center Field:** 389 ft 9 in (118.8 m)  
**Deep Right-Center:** 420 ft (128 m)  
**Right Field:** 380 ft (115.8 m)  
**Right Field:** 302 ft (92 m)  
**Backstop:** 60 ft (18.3 m)  
**Area-** 99,000 sq. ft.

**Camden Yards**

**(Capacity= 48,876)**

**Left Field -** 333ft (101.5 m)  
**Left-Center -** 364ft (110.9 m)  
**Left-Center (deep) -** 412ft (125 m)  
**Center Field -** 400ft (121.9 m)  
**Right-Center -** 373ft (113.7 m)  
**Right Field -** 318ft (96.9 m)  
**Area-** 106,600 sq. ft.

**PNC Park**

**(Capacity= 38,496)**

\*Find these values by logging onto Pictometry online and finding PNC Park in the City of Pittsburgh.\*

**Left Field –**  
**Left-Center -**  
**Left-Center (deep) -**  
**Center Field -**  
**Right-Center -**  
**Right Field –**  
**Area-** 104,000 sq. ft.

**Turner Field**

**(Capacity= 50,096 )**

**Left Field -** 335 ft (102 m)  
**Left-Center -** 380 ft (116 m)  
**Center Field -** 401 ft (122 m)  
**Right-Center -** 390 ft (119 m)  
**Right Field -** 330 ft (100.5 m)  
**Area-** 115,000 sq. ft.

**Rangers Ballpark in Arlington**

**(Capacity= 49,115)**

**Left Field Line -** 332 feet (101 m)  
**Left Center -** 390 feet (119 m)  
**Deep Left Center -** 404 feet (123 m)  
**Center Field -** 400 feet (122 m)  
**Deep Right Center -** 407 feet (124 m)  
**Right Center -** 377 feet (115 m)  
**Right Field Line -** 325 feet (99 m)  
**Backstop -** 60 feet (18 m)  
**Area-** 113,000 sq. ft

**Hubert H Humphrey MetroDome**

**(Capacity= 46,564)**

**Left Field:** - 343 ft (105 m)  
**Left-Center:** - 385 ft (117 m)  
**Center Field:** - 408 ft (124 m)  
**Right-Center:** - 367 ft (112 m)  
**Right Field:** - 327 ft (100 m)  
**Backstop:** - 60 ft (18 m)  
**Area-** 111,000 sq. ft.