

Baseball **Diamond** Geometry

A baseball diamond is a square full of angles, lines and circles. Use the facts below and show your work!

Name _____

Date _____

DIAMOND FACTS

90 ft

 between
bases
(big league)

90°

 each corner
of the square

180°

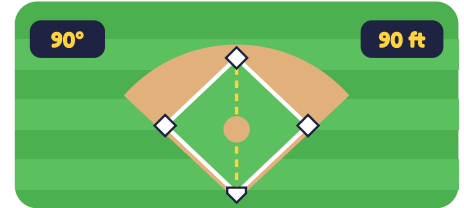
 angles on a
straight line

 $a^2 + b^2 = c^2$

 right
triangles

 $\pi \approx 3.14$

for circles



- 1** On a youth field, the bases are **60 ft** apart. How far does a runner go to circle all 4 bases on a home run?

WORK SPACE

_____ ft

ROOKIE

- 2** A big-league infield is a square with **90 ft** sides. What is its **area**?

WORK SPACE

_____ sq ft

ROOKIE

- 3** The two foul lines meet at home plate at a **right angle**. A hit makes a **35°** angle with one foul line. What angle does it make with the other?

WORK SPACE

_____ °

STARTER

- 4** A ball rolls along a straight chalk line. A fielder's path makes a **128°** angle on one side of the line. What is the angle on the other side?

WORK SPACE

_____ °

STARTER

- 5** The pitcher's mound is a circle with a **diameter of 18 ft**. What is its **circumference**? Use $\pi \approx 3.14$.

WORK SPACE

_____ ft

PRO

- 6** What is the **area** of that 18-ft-wide mound circle? (Hint: find the radius first.)

WORK SPACE

_____ sq ft

PRO

- 7** A coach walks **30 ft** from home plate along the first-base line, then turns at a right angle and walks **40 ft**. How far is she from home plate now?

WORK SPACE

_____ ft

ALL-STAR

- 8** On a big-league diamond (**90 ft** sides), how far does the catcher throw from home plate straight to **second base**? Round to the nearest tenth.

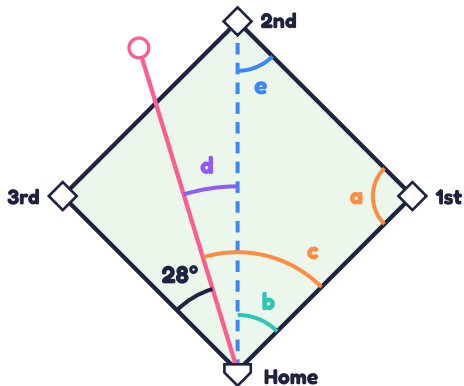
WORK SPACE

_____ ft

CHALLENGE ★

A Angle Finder

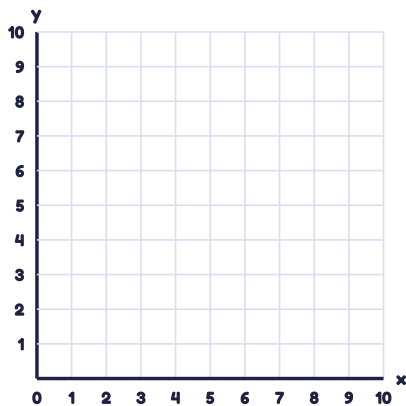
The diamond is a **square**. Use what you know about angles to find each lettered angle. No protractor needed!



- a** Angle **a** is a corner of the square at 1st base.
a = _____°
- b** The dashed line from home to 2nd cuts the corner at home exactly in half. Find angle **b**. **b** = _____°
- c** The hit (pink) makes 28° with the 3rd-base line. Find angle **c**. **c** = _____°
- d** Angle **d** is between the hit and the dashed line. Find it.
d = _____°
- e** Angles in a triangle add to 180°. Use triangle Home–1st–2nd to find **e**. **e** = _____°

B Coordinate Diamond

Turn the field into a coordinate grid for a youth league.



Home (2, 1) **1st** (8, 1) **2nd** (8, 7) **3rd** (2, 7)

- 1** Plot and label the 4 bases. Connect them in order to make the diamond.
- 2** Each grid square is **10 ft**. How long is each side of this diamond?

- 3** The coach puts a cone in the exact **center** of the square. What are its coordinates?

- 4** Find the diamond's **perimeter** and **area**.

C Field Shapes

Area and perimeter around the ballpark.

- 1** A dugout floor is a rectangle **24 ft** long and **8 ft** wide. What is its area?

WORK SPACE

_____ sq ft

- 2** A batter's box is **4 ft** wide and **6 ft** long. How much chalk line goes around it (perimeter)?

WORK SPACE

_____ ft

- 3** A practice plate is a **16 in** by **8 in** rectangle with a triangle on the bottom (base **16 in**, height **8 in**). Total area?



WORK SPACE

_____ sq in

Answer Key (for teachers & parents)

Answers for **Baseball Diamond Geometry**, with the work shown where it helps. Print pages 1 and 2 for students, and keep this page for checking.

Page 1 Problems

- 240 ft** (4×60)
- 8,100 sq ft** (90×90)
- 55°** ($90 - 35$)
- 52°** ($180 - 128$)
- 56.52 ft** (3.14×18)
- 254.34 sq ft** ($3.14 \times 9 \times 9$)
- 50 ft** ($30^2 + 40^2 = 2,500$)
- 127.3 ft** ($90^2 + 90^2 = 16,200$; $\sqrt{16,200} \approx 127.28$)

A • Angle Finder

- a = 90°**
b = 45° ($90 \div 2$)
c = 62° ($90 - 28$)
d = 17° ($45 - 28$)
e = 45° ($180 - 90 - 45$)

B • Coordinate Diamond

- Square with corners** (2, 1), (8, 1), (8, 7), (2, 7)
- 60 ft** (6 squares $\times$ 10)
- (5, 4)**
- 240 ft; 3,600 sq ft**

C • Field Shapes

- 192 sq ft** (24×8)
- 20 ft** ($4 + 6 + 4 + 6$)
- 192 sq in** ($128 + 64$)

Quick score

Page 1 problems	_____ / 8
A • Angle Finder	_____ / 5
B • Coordinate Diamond	_____ / 4
C • Field Shapes	_____ / 3
Total	_____ / 20

Skills practiced

Complementary and supplementary angles

Triangle angle sum

Area and perimeter

Circles

Pythagorean theorem

Coordinate plane

Teaching tip: Problems 7 and 8 use the Pythagorean theorem, usually taught in grade 8. Younger students can skip them or check #7 by drawing it to scale (1 square = 10 ft).