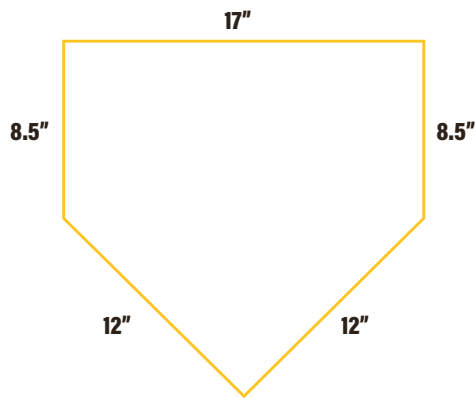


MATH PROBLEMS



1. How many right angles are in a home plate? (see above)
2. What is the perimeter of home plate? (see above)
3. What is the area of home plate? (see above)
4. Chris Paddock threw 7 innings in a 5-3 win. He threw 98 pitches. How many pitches did he average per inning?
5. In the above scenario, Paddock threw Paddock threw 98 pitches, 69 of which were strikes. What percentage of his pitches were strikes?
6. Again, in the above scenario, Paddock allowed 5 hits and 1 walk (BB). What is his WHIP?

WHIP = walks + hits per inning

7. During the 2019 season, Tatis had 334 AB's, 106 H's, 31 BB's, 2 HBP's, and 3 SF's. What is his OBP?

*OBP is "On Base Percentage" and his calculated by:
 $OBP = H + BB + HBP / AB + BB + HBP + SF$*

H = Hits

BB = Walks

HBP = Hit by Pitch

AB = At Bats

SF = Sacrifice Fly

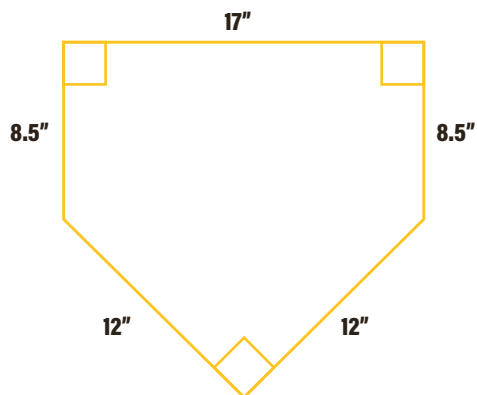
IP = Innings Pitched

8. In 2019, Tatis had 65 Singles, 13 Doubles, 6 Triples, and 22 HR's in 334 AB's. What is his slugging percentage?

Slugging Percentage = Total Bases / AB

9. OPS is on-base + slugging percentage. What was Tatis' OPS in 2019?
10. In 2019 Tatis had 323 attempts in the field and had 18 errors. What is his fielding percentage?

MATH ANSWERS



1. **3 Right Angles**

2. **58"**

$$(17 + 8.5 + 8.5 + 12 + 12) = 58$$

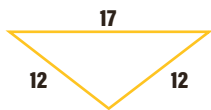
3. **207"**

Split home plate into two shapes to calculate their area:



Rectangle

$$\text{area} = \text{length} \times \text{width} = 17 \times 8.5 = 135"$$



Right Triangle:

$$\text{area} = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 17 \times 12 = 72"$$

$$\text{Area of Home Plate} = 135" + 72" = 207"$$

4. **14 Pitches per Inning**

$$98 \text{ pitches} / 7 \text{ innings} = 14$$

5. **70.4%**

$$69 \text{ strikes} / 98 \text{ pitches} = 70.4\%$$

6. **.85**

$$\text{WHIP} = (\text{BB} + \text{H}) / \text{IP} = (1 + 5) / 7 = .85$$

7. **37.5% - So Tatis gets on base 37.5% of the time!**

$$\text{OBP} = \text{H} + \text{BB} + \text{HBP} / \text{AB} + \text{BB} + \text{HBP} + \text{SF}$$

$$\text{OBP} = (106 + 31 + 2) / (334 + 31 + 2 + 3) = 139/370 = .375,$$

then move the decimal two places to the right to get a %
= 37.5%

H = Hits

BB = Walks

HBP = Hit by Pitch

AB = At Bats

SF = Sacrifice Fly

IP = Innings Pitched

8. **58.9% Slugging Percentage**

$$\text{Slugging Percentage} = \text{Total Bases} / \text{At Bats}$$

$$65 \text{ singles} \times 1 \text{ base} = 65 \text{ Bases}$$

$$13 \text{ Doubles} \times 2 \text{ bases} = 26 \text{ Bases}$$

$$3 \text{ Triples} \times 3 \text{ bases} = 9 \text{ Bases}$$

$$22 \text{ Home Runs} \times 4 \text{ bases} = 88 \text{ Bases}$$

$$197 \text{ total bases; so } 197 \text{ Total Bases} / 334 \text{ At Bats} = .589,$$

then move the decimal two places to the right to get a %
= 58.9%

9. **96.5% On-Base + Slugging Percentage**

$$.589 \text{ (Slugging Percentage)} + .375 \text{ (On-Base Percentage)} = .965,$$

then move the decimal two places to the right to get a % = 96.5%

10. **94.4% Fielding Percentage**

$$(323 - 18) / 323 = 305 / 323 = .944,$$

then move the decimal two places to the right to get a % = 94.4%