Stat Star questions 2015
(with answers included)

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It will probably be useful to download the document Useful Baseball Info from the website http://www.uccs.edu/~pipes/index/sky-sox-math-day.html in order to provide you with some important information which will help you answer these questions.

1) The Spring Training home of the Sky Sox is Maryvale Park, a few miles west of Phoenix. A one-way bus trip from Maryvale Park to Salt River Fields (the Spring Training home of the Colorado Rockies, a few miles northeast of Phoenix) is 20.75 miles. Suppose the Sky Sox team bus gets 9 miles per gallon, and that gas for the bus costs $2.75 per gallon. To the nearest dollar, how much would the team spend on gas to make five round trips from Maryvale Park to Salt River Fields?
   ANSWER: $63 (actual: $63.40)

2) The place where a batter stands to warm up prior to his At-Bat is called the On Deck circle. There are two On Deck circles on the field. Each On Deck circle has diameter 5 feet. To the nearest foot, how many feet of chalk is required to outline both of the On Deck circles?
   ANSWER: 31 feet

3) While we're on the subject of On Deck circles: suppose that, rather than outlining the two On Deck circles with chalk, the Sky Sox decide instead to completely paint the entirety of both circles with Sky Sox colors. If the special field-friendly paint costs $3.00 per square foot, how much will it cost to paint the two circles?
   ANSWER: $117.81

4) The Warning Track is the dirt area which separates the grass field from the outfield wall (as well as from the grandstands). The shape of the outfield section of the Warning Track is (approximately) a portion of a circle, where the circle has radius 380 feet. Prior to the game, many players use the Warning Track as a place to warm up. If a player wants to run at least three miles during his pregame warmups, how many 'round trip pole-to-poles' would he need to run? (A 'round trip pole-to-pole' means he runs along the Warning Track from the right field foul pole to the left field foul pole, and then runs back.)
   ANSWER: 14 round trips

5) San Francisco Giants' pitcher Madison Bumgarner had an incredible 2014 World Series. His Earned Run Average (over 21 innings pitched) was 0.43. (Wow!) Suppose that Bumgarner is able to pitch with the same effectiveness over the entire 2015 season. If he pitches 200 innings, (approximately) how many earned runs will he allow in all of 2015?
   10 earned runs
6) While we're on the subject of Earned Run Average: suppose that by the end of July, Sky Sox pitcher Nick Additon has already pitched 160 innings, and during that time has allowed 75 earned runs. How many shutout innings would Nick Additon need to pitch from the end of July through the end of the season in order that his Earned Run Average for the season ends up below 3.00? (Can you guess to what math-related word my SpellChecker tried to change Nick's last name?)

ANSWER: 65 innings

7) While we're on the subject of late-season hot streaks: suppose Sky Sox second baseman Pete Orr has collected 114 Hits in 385 At-Bats through the end of August. Suppose also that Pete Orr will get 15 At-Bats during the final weekend of the season. How many hits will he need to get in those 15 At-Bats in order that his Batting Average for the season is at least .300?

ANSWER: 6 hits

8) A baseball diamond is a square. In Little League, the distance from each base (or home plate) to the next base (or home plate) is 60 feet. How far is it from home plate to second base?

ANSWER: just under 85 feet (actual answer: 60√2 feet)

9) During the 2014 Little League World Series, pitcher Mo'ne Davis threw a fast ball which was clocked at 71 miles per hour. If the pitcher's mound on a Little League field is 46 feet away from home plate, how long did it take for the ball to go from Mo'ne Davis' hand to home plate? (Give your answer to the nearest hundredth of a second.)

ANSWER: 0.44 seconds

10) The Sky Sox will play 25 games in the month of May (including two Math Youth Days). The Sky Sox use an average of 28 baseballs per game. If a case of baseballs contains 24 balls, how many cases of baseballs will the Sky Sox need to buy from their baseball supplier in order to have enough baseballs to use in May?

ANSWER: 30 cases