Math

Madness

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Tournament Problem Set 1

Tournament Entry Problem: Triple the Square

If you triple the length of the sides of a square, by how many times does the area of the square increase? Include an example.

First Round Problem: Large Cookie

Sandra baked a very large cookie which weighed 10 pounds. Each day she and her friends ate one half of the remaining portion of the cookie. How long will the cookie last?

Second Round Problem: Lightning Laura

Laura ran 100 yards in 14 seconds. To the nearest hundredth, what was her speed in miles per hour?

Quarterfinal Problem: More Money

Jose started a new job with a salary of $45,000 per year. If he gets a 6% raise each year, what will his salary be at the beginning of the 8th year?

Semifinal Problem: Winning Streak

When a baseball team won 5 games in a row its winning percentage increased from 40% to 50%. How many games had the team lost?

Final Problem: Stop Sign Angles

What is the measure of each exterior angle of a stop sign?

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Answer Key

Tournament Problem Set 3

Tournament Entry Problem: Handshake Problem

There are 66 handshakes. Twelve people each shake hands with eleven other people. Twelve times eleven is 132 handshakes. However, half of these handshakes would be repeats so you divide 132 by 2 and end up with 66. The mathematical formula for this type of handshake problem is n x (n-1)/2 where n represents the number of people.

First Round Problem: Count the Squares

There are 30 squares in the figure. If you consider this large square to be a 4 x 4 square with four smaller squares making up each side then you can breakdown the problem in the following manner. There are 16 small squares (1 x 1). There are 9 squares (2 x 2) made up of four small squares. There are 4 squares (3 x 3) made up of nine smaller squares. Finally, there is 1 large square (4 x 4) made up of all 16 small squares. The pattern for solving this type of problem is $4^2 + 3^2 + 2^2 + 1^2$.

Second Round Problem: Four or Less

The probability that the sum of the numbers will be less than or equal to four is 1/54. When rolling three number cubes there are 216 total possible combinations (6 x 6 x 6). Only four of these combinations (1-1-1, 1-1-2, 1-2-1, and 2-1-1) have a sum that is less than or equal to four. The fraction 4/216 can be reduced to 1/54.

Quarterfinal Problem: Free Throw Shooting

Skeeter would have to make 38 free throws in a row. So far he has made about 40.9 percent of 208 free throws or 85 free throws. He has missed 208 - 85 or 123 free throws. If he makes 38 more free throws in a row he will have made 123 and missed 123 free throws and his free throw percentage will be 50 percent.

Semifinal Problem: Long Addition

The sum of the numbers is 500,500. If you look at the set of numbers (1, 2, 3, ……..998, 999, 1000) you can see that adding the first and last numbers will give you a sum of 1,001. The second and the second to last numbers can be added together to equal 1,001 and so on. There will be 500 pairs of numbers whose sum is 1,001. (500 x 1,001 = 500,500)

Final Problem: Greek Travels

Marti first visited Greece in 1993. Let x be the first year Marti visited Greece. The next visit would be x + 5, then x + 10 and so on. The equation is 7x + 105 = 14,056 and x = 1993.

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Math Tournament Bracket

FIRST ROUND | SECOND ROUND | QUARTERFINALS | SEMIFINALS | FINALS | CHAMPION