50th Lee Webb Math Field Day

California State University, Bakersfield
Department of Mathematics

March 11, 2023

Round 1

Junior Varsity Math Bowl Round 1 Sample Question

Simplify

$$\frac{2}{2} + \frac{0}{3}$$

Junior Varsity Math Bowl Round 1 Question 1

Two numbers are 12 apart. How far is the smaller one from their average?

Junior Varsity Math Bowl Round 1 Question 2

What is the largest whole number that is less than 1000 and is a power of 5?

Junior Varsity Math Bowl Round 1 Question 3

The squares of the lengths of the legs of a right triangle are 100 and 200. What is the square of the length of the hypotenuse?

Junior Varsity Math Bowl Round 1 Question 4

At a policital caucus, 1/3 of the people supported Honest George. 1/4 supported Aby Baby. 1/5 supported Fantatic Frankie. 1/6 supported Terrific Tom. There were 1200 people all together. How many were uncommitted?

Junior Varsity Math Bowl Round 1 Question 5

The number corresponding to this year, 2023, has a repeated digit. What are the next two numbers that have a repeated digit, that is not 2?

Junior Varsity Math Bowl Round 1 Question 6

Which of the following numbers is divisible by 3?

1234 2345 3456 4567

Junior Varsity Math Bowl Round 1 Question 7

Evaluate

$$23 \cdot 27$$

Junior Varsity Math Bowl Round 1 Question 8

Solve for x:

$$(3x - 8)^{2023} = 1$$

Round 2

Junior Varsity Math Bowl Round 2 Sample Question

With regard to the number 2023, what is the result if you divide the second largest digit by the second smallest digit?

Junior Varsity Math Bowl Round 2 Question 1

Simplify:

$$||7 - 11| - 7|$$

Junior Varsity Math Bowl Round 2 Question 2

What is 20% of 80% of 40% of 60% of 10,000?

Junior Varsity Math Bowl Round 2 Question 3

Danny's Donuts sells 20 varieties of donuts. Lynette wants to buy 3 donuts of different kinds. How many combination choices does she have?

Junior Varsity Math Bowl Round 2 Question 4

What is the area of the largest rectangle that can be inscribed in a circle of radius r ?

Junior Varsity Math Bowl Round 2 Question 5

How many positive even numbers are less than 2000?

Junior Varsity Math Bowl Round 2 Question 6

Simplify:

$$2023^2 - 2022^2 + 2021^1 - 2020^1$$

Junior Varsity Math Bowl Round 2 Question 7

In the year 2000, the International Table Tennis Federation changed the diameter of the tournament table tennis ball from 38 millimeters to 40 millimeters. What percentage of the new radius is the old radius?

Junior Varsity Math Bowl Round 2 Question 8

Find all solutions of

$$13|x^2 - x - 12| + 37|x^2 + x - 20| = 0$$

Round 3

Junior Varsity Math Bowl Round 3 Sample Question

What is half of a third of a fourth of 96?

Junior Varsity Math Bowl Round 3 Question 1

Let C be a circle of area 18. In decimal form, to the nearest hundredth, what is the ratio of the circumference of C to the diameter of C?

Junior Varsity Math Bowl Round 3 Question 2

A right triangle is inscribed in a circle with radius 6.5. the hypotenuse corresponds with the diameter. One of the legs has length 5. What is the length of the other leg?

Junior Varsity Math Bowl Round 3 Question 3

The repeating decimal $0.272727272727272727\ldots$ is equal to what fraction, in lowest terms?

Junior Varsity Math Bowl Round 3 Question 4

Cookie's Old Timey Key-Limey Pie Recipe calls for 3 egg yolks and 4 egg whites. This recipe makes 2 pies. Cookie needs to prepare 100 of these pies – how many dozen egg cartons does he need to buy?

Junior Varsity Math Bowl Round 3 Question 5

A sock drawer has 3 red socks, 3 green socks, and 3 blue sock. Ximin pulls out two socks. What is the probability that they are the same color?

Junior Varsity Math Bowl Round 3 Question 6

What is the area of the largest triangle that can be inscribed in a circle of radius r?

Junior Varsity Math Bowl Round 3 Question 7

Calculate the sum of the numbers in the following array:

$$\begin{bmatrix} 27 & 65 & 12 & 9 & 7 \\ 73 & 35 & 88 & 91 & 8 \end{bmatrix}$$

Junior Varsity Math Bowl Round 3 Question 8

The angles in a regular polygon each measure 150 degrees. How many sides does the polygon have?

Round 4

Junior Varsity Math Bowl Round 4 Sample Question

Today is March 11. What is the next number that ends with a 1 that is prime?

Junior Varsity Math Bowl Round 4 Question 1

How many days have already fully gone by in 2023?

Junior Varsity Math Bowl Round 4 Question 2

A triangle with a horizontal base has area 45. A line perpendicular to the altitude cuts through the triangle 1/3 of the way from the base to the apex. What is the area of the portion of the triangle that is above this line?

Junior Varsity Math Bowl Round 4 Question 3

An octagon is formed from a square of area 1 by marking each side into thirds and then cutting off the corners along the lines formed by these marks. What is the area of the octagon?

Junior Varsity Math Bowl Round 4 Question 4

The first term of a geometric sequence is 25. The common ratio is $\sqrt[3]{2}$. The number 100 is in the sequence. What is index of the number 100? (I.e. where in the sequence is the number 100?)

Junior Varsity Math Bowl Round 4 Question 5

Let $[x]$ denote the greatest integer that is less than or equal to x. Simplify:

$$-([-\pi]+[-\pi/2]+[-\pi/3]+[-\pi/4])$$

Junior Varsity Math Bowl Round 4 Question 6

A regular square pyramid has base length 12 and height 7. What is the distance from the apex to a corner of the base?

Junior Varsity Math Bowl Round 4 Question 7

A latitude line on a map is labeled $N23^{o}15'36''$. This means the line is how many decimal degrees above the equator?

Junior Varsity Math Bowl Round 4 Question 8

A piece of white paper is lined with parallel blue lines that are 10 quirts apart from each other. A coin with radius 1 quirt is tossed and lands randomly on the paper. What is the probability that the coin does not touches a line (assume the lines of infinitesimal thickness)?

See you this afternoon
Varsity Math Bowl
2:15