

52nd Lee Webb Math Field Day

California State University, Bakersfield
Department of Mathematics

March 1, 2025

Round 1

Junior Varsity Math Bowl Round 1 Sample Question

Simplify

$$\frac{2}{2} \cdot \frac{0}{5}$$

Junior Varsity Math Bowl Round 1 Question 1

A bowl has 35 green beans and red beans altogether. The number of green beans is 4 times the number of red beans. How many green beans are there?

Junior Varsity Math Bowl Round 1 Question 2

This year number is a perfect square that ends with a 5. How many years from now, will this happen again?

Junior Varsity Math Bowl Round 1 Question 3

A school has red, green, orange, and purple pens available for teachers to grade homework. At present, 46% of the pens are red, 15% are green, 12% are orange. What is the probability that a randomly chosen pen is purple?

Junior Varsity Math Bowl Round 1 Question 4

When Sara flies her plane to Las Vegas, her plane averages 600 mph. On her way back, she averages 400 mph. What is Sara's average speed for the round trip?

Junior Varsity Math Bowl Round 1 Question 5

What is the difference between the largest and the smallest prime factors of 52?

Junior Varsity Math Bowl Round 1 Question 6

Rewrite $0.525252525252\dots$ as fraction in lowest terms.

Junior Varsity Math Bowl Round 1 Question 7

After shuffling, what is the probability that the top 3 cards are all aces? Answer as a fraction in lowest terms.

Junior Varsity Math Bowl Round 1 Question 8

Suppose $f(x)$ is a function that satisfies the functional equation

$$f(5x + 5) = x - 5$$

Evaluate $f(2025)$.

Round 2

Junior Varsity Math Bowl Round 2 Sample Question

What is the difference between the largest and smallest prime factors of 2025?

Junior Varsity Math Bowl Round 2 Question 1

How many real solutions are there to

$$|x^2 + 2| + 3|x^2 + 1| \leq 5?$$

Junior Varsity Math Bowl Round 2 Question 2

What is the 2025th term of the sequence that starts

1, 0, 3, 0, 2, 1, 0, 3, 0, 2, 1, 0, 3, 0, 2, 1, 0, ...

and continues with this pattern?

Junior Varsity Math Bowl Round 2 Question 3

How many weeks are in a leap year?

Answer as a "mixed number" - a whole number with a reduced fraction that is less than 1. E.g. $2\frac{3}{5}$

Junior Varsity Math Bowl Round 2 Question 4

What is the measure, in degrees, of the complement of the supplement of a 115° angle?

Junior Varsity Math Bowl Round 2 Question 5

2025 is a square. What is the smallest cube that is greater than 2025?

Junior Varsity Math Bowl Round 2 Question 6

If one card is drawn randomly from a standard deck, what is the probability that it is a heart or an ace?

Junior Varsity Math Bowl Round 2 Question 7

A circle is inscribed inside a square such that the area of the circle is 16π . What is the perimeter of the square?

Junior Varsity Math Bowl Round 2 Question 8

What is the largest 2 digit number with exactly 4 factors, including itself?

Round 3

Junior Varsity Math Bowl Round 3 Sample Question

In a standard deck, how many cards are not Kings, Queens, or Jacks?

Junior Varsity Math Bowl Round 3 Question 1

Let C be a circle of radius $\frac{1}{2}\pi$. In decimal form, to the nearest hundredth, what is the value of the circumference of C divided by π ?

Junior Varsity Math Bowl Round 3 Question 2

A standard deck is shuffled. What is the probability that the 10th card is a 10?

Junior Varsity Math Bowl Round 3 Question 3

The ratio of the measures of two complementary angles is 7:11. What is the measure, in degrees, of the larger angle?

Junior Varsity Math Bowl Round 3 Question 4

In how many ways can a quarter be changed into dimes, nickels, and pennies?

Junior Varsity Math Bowl Round 3 Question 5

Fifteen dogs have been entered into an ugly dog contest. First, Second, and Third Prizes will be awarded. In how many ways could the awards be presented?

(e.g. in how many ways could the first, second, and third place dogs be selected?)

Junior Varsity Math Bowl Round 3 Question 6

Solve

$$20|x^2 - 5x + 6| + 25|x^2 - 4| = 0$$

Junior Varsity Math Bowl Round 3 Question 7

Calculate the sum

$$\frac{25!}{24!} + \frac{24!}{23!} + \frac{23!}{22!} + \frac{22!}{21!} + \frac{21!}{20!}$$

Junior Varsity Math Bowl Round 3 Question 8

The angles in a regular polygon each measure 179.5 degrees. How many sides does the polygon have?

Round 4

Junior Varsity Math Bowl Round 4 Sample Question

Today is March 1. In "month day" format this is 31, which is a prime number. What is the "month day" for the first day last month whose "month day" is a prime?

Junior Varsity Math Bowl Round 4 Question 1

A square is inscribed inside a circle with circumference 3π . What is the area of the square?

Junior Varsity Math Bowl Round 4 Question 2

How many different combinations of one-dollar and 10-dollar notes are there such that the total value is \$2025?

Junior Varsity Math Bowl Round 4 Question 3

Three lines intersect at points A, B, and C. Relative to triangle ABC, the exterior angle at A has measure 75° and the vertical angle opposite B has measure 45° . What is the degree measure of the triangle's vertex at C?

Junior Varsity Math Bowl Round 4 Question 4

Jack has 8 dogs and he would like to take 3 of them for a walk. How many possible groups of 3 dogs could Jack choose?

Junior Varsity Math Bowl Round 4 Question 5

Suppose that $5^{2z-1} = 125$.
What is 5^z ?

Junior Varsity Math Bowl Round 4 Question 6

Three students each took a test. Their median was 90 and their mean was 82. The range was 28. What are the three scores - list them in increasing order, separated by commas.

Junior Varsity Math Bowl Round 4 Question 7

Suppose

$$2^{-x+2y} = 4$$

and

$$9^{x-y} = 27$$

What is x ?

Junior Varsity Math Bowl Round 4 Question 8

If $xyz = 2025$ and $x + y + z = 47$,
knowing that x, y, z are integers, what
are the values of x, y , and z ?

See you this afternoon
Varsity Math Bowl
2:15