WELCOME TO MATH JEOPARDY!

CEMC

Grade 6 Math Circles

Rules of Jeopardy

- Teams of 5 people, each with a whiteboard and a marker
- Write your answer on the whiteboard and raise it to the instructor
- The first team to get the correct answer gains full points, and all other teams to answer correctly gain half points
- You do not lose points for incorrect responses, but each team only gets one try per question
- The first team to answer correctly picks the next question
- AFTER I finish reading the question, you have a time limit for you to think about it as a team
  - For 100 – 400 level questions, 90 seconds
  - For 500 level questions, 2 minutes

THE DAILY DOUBLE

- There are two daily doubles in each round, which can be extremely beneficial or detrimental to your success!
- If you pick a “Daily Double” slide, you can “bet” extra money
  - If your team has 3000 points, you can bet up to 3000 points (or 100, or 373, or 2999 if you want, but no more than 3000)
  - If you have 0 points and pick a daily double, you can bet up to the regular points for that question
  - If you get it right, you win that many points
  - If you’re wrong, you lose that many points

Optimization	Conics	Newton's Second Law	Inequalities / Absolute Values	Encryption	Matrices	???
$100	$100	$100	$100	$100	$100	$100
$200	$200	$200	$200	$200	$200	$200
$300	$300	$300	$300	$300	$300	$300
$400	$400	$400	$400	$400	$400	$400
$500	$500	$500	$500	$500	$500	$500

Double Jeopardy

Question 1-100

Given two side lengths of a triangle, this sized angle will maximize the area of the triangle.

Answer

What is 90 degrees?

Question 1-200

This area measure is the maximum area of a rectangle with a perimeter of 24 meters

Answer

What is 36 m^2?

Question 1-300

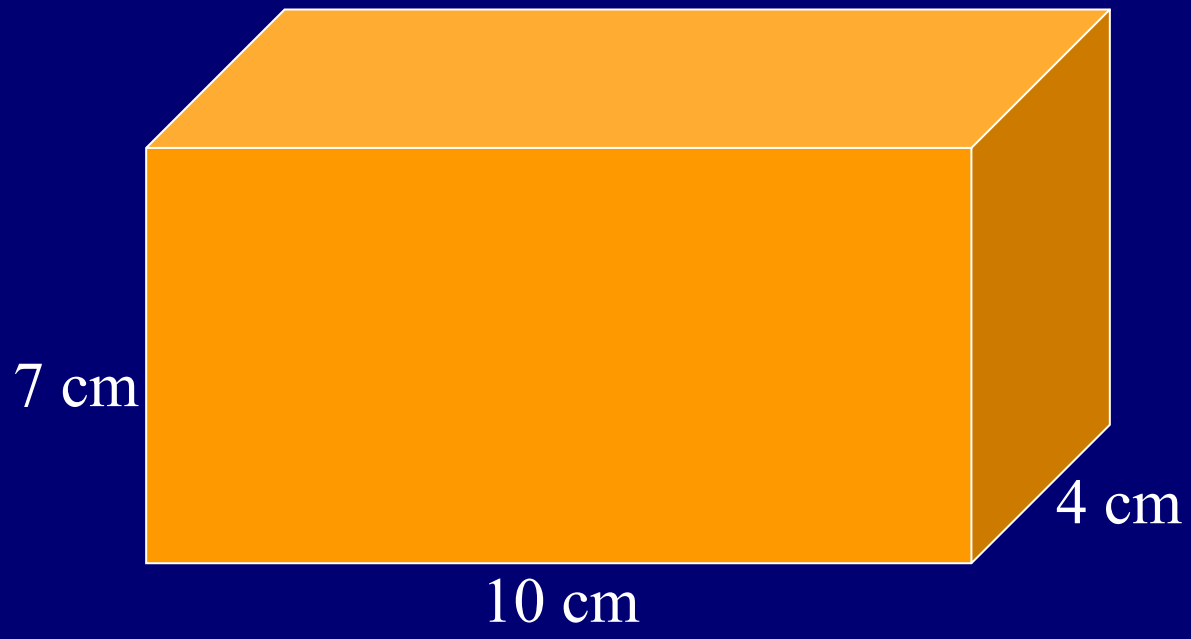
This is the maximum volume of a rectangular prism with a fixed surface area of 150 cm^2

Answer

What is 125 cm^3?

Question 1-400

This is the surface area of the rectangular prism shown here



Answer

What is 276 cm^2?

Question 1-500

A cube is a 3-D version of a square. The 4-D version of a cube is this

Answer

What is a tesseract?

Question 2-100

This theorem states that the six point property holds for any pair of lines

Answer

What is Pappus' Theorem?

Question 2-200

Lines and ellipses are examples of this mathematical object

Answer

What are conic sections?

Question 2-300

If one can choose any six points on a shape and connect them such that the alternating intersections all lie on the same line, the shape has this property

Answer

What is the Six Point Property?

Question 2-400

This number of pins was used to draw an ellipse with string and a pencil

Answer

What is two?

Question 2-500

A square is to a rectangle as a circle is to this object

Answer

What is an ellipse?

Question 3-100

This is the number of natural laws that Newton originally described

Answer

What is 3?

Question 3-200

This is a quantity with a direction

Answer

What is a vector?

Question 3-300

These two operations cannot be performed between vectors

Answer

What are multiplication and division?

Question 3-400

This is the method of adding and subtracting vectors geometrically

Answer

What is tip to tail?

Question 3-500

This equation describes Newton's Second Law

Answer

What is $F = ma$?

Question 4-100

When labelling strict inequalities on a number line, this type of circle is used as an endpoint

Answer

What is an open circle?

Question 4-200

This is the result after evaluating the expression $|2-6|\times(-4)+1$

Answer

What is -15?

Question 4-300

The solution to the inequality $|x + 7| > 10$ is this pair of inequalities

Answer

What is $x > 3$ or $x < -17$?

Question 4-400

This is the number of solutions to the inequality $\frac{2|x-103\times10|}{3} < -3$

Answer

What is 0?

Question 4-500

The solution to the inequality $|2x + 4| < 12$ is this compound inequality

Answer

What is $-8 < x < 4$?

Question 5-100

This cipher shifts each letter in the alphabet by a constant amount

Answer

What is Shift/Caesar Cipher?

Question 5-200

This cipher lays out the letters of a message in diagonals on a “fence”
(The answer should be the full name)

Answer

What is Rail Fence Cipher?

Question 5-300

If I encode the message “picklepie” using a shift of 5 to the right, I get this

Answer

What is “unhpqjunj”?

Question 5-400

This cipher is used extensively in the modern world to protect things like banking information and communications

Answer

What is RSA?

Question 5-500

The use of these numbers in RSA encryption makes decoding very difficult

Answer

What are prime numbers?

Question 6-100

These two quantities describe the dimension of the matrix

Answer

What is the number of rows and the number of columns?

Question 6-200

This matrix operation flips the rows with the columns

Answer

What is transpose?

Question 6-300

This is an operation which matrices cannot do

Answer

What is division?

Question 6-400

A matrix operation acting on vectors geometrically

Answer

What is matrix-vector multiplication?

Question 6-500

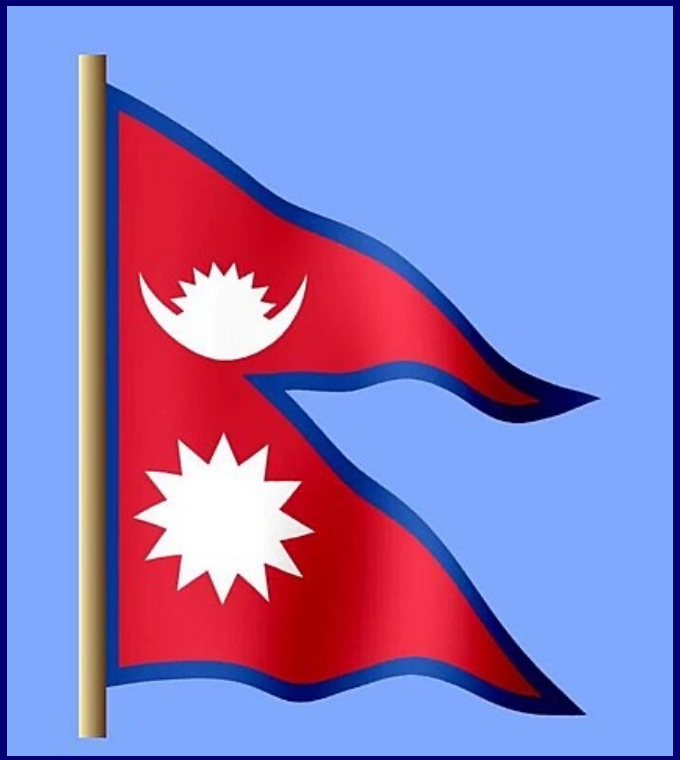
To add and subtract matrices, this condition must hold true

Answer

What is the dimensions must be the same?

Question 7-100

Pictured below is the flag of this country



Answer

What is Nepal?

Question 7-200

These two letters do not appear in the standard periodic table of elements

Answer

What are J and Q?

Question 7-300

This creature is the national animal of Scotland

Answer

What is a unicorn?

Question 7-400

This phobia is the fear of long words

Answer

What is

hippopotomonstrosesquippedaliophobia?

Question 7-500

The folds in this type of hat are represented by the number of ways that an egg can be prepared

Answer

What is a chef’s hat?

DOUBLE JEOPARDY

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$200	$200	$200	$200	$200	$200	$200
$400	$400	$400	$400	$400	$400	$400
$1000	$1000	$1000	$1000	$1000	$1000	$1000

Question 1-200

This shape produces the optimal area of a rectangle with a fixed perimeter

Answer

What is a square?

Double Jeopardy

Question 1-400

This is the formula for the volume of any prism

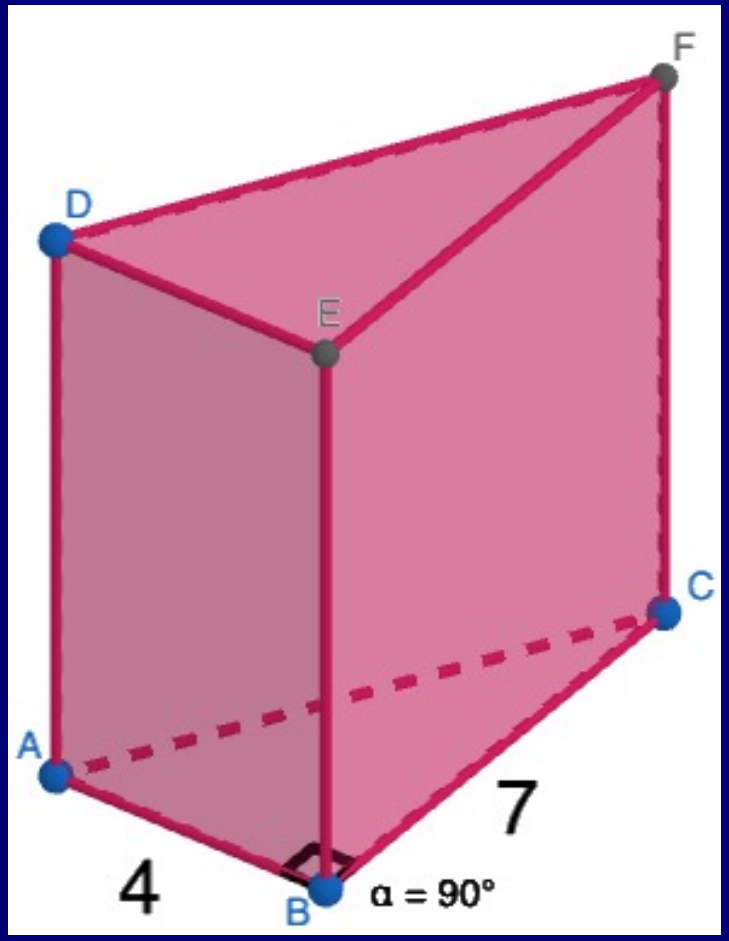
Answer

What is Volume = Area of Base x Height?

Double Jeopardy

Question 1-1000

The triangular prism with a volume of 112 cm^3 and a right-angled base has this height



Answer

What is 8 cm?

Double Jeopardy

Question 2-200

This theorem states that the six point property holds for any conic section

Answer

What is Pascal's Theorem?

Double Jeopardy

Question 2-400

A hypothesis is to a theory as this is to a theorem

Answer

What is a conjecture?

Double Jeopardy

Question 2-1000

These are all of the conic sections

Answer

What are lines, parabolas, hyperbolas, and ellipses?

Double Jeopardy

Question 3-200

Two dimensional vectors live on this specific plane

Answer

What is the Cartesian-plane?

Double Jeopardy

Question 3-400

Adding and subtracting vectors algebraically is done this way

Answer

What is component-wise?

Double Jeopardy

Question 3-1000

This is an operation between vectors that gives us a scalar

Answer

What is the dot product?

Double Jeopardy

Question 4-200

This is the solution to the system of equations

$$2x + y = 1$$
$$x - 2y = 7$$

Answer

What is

$$x = 2, y = -3?$$

Double Jeopardy

Question 4-400

Amelia is shorter than Billy. Billy is taller than Coco. Coco is taller than Amelia. This compound inequality describes these people's heights from tallest to shortest.

Answer

What is Billy > Coco > Amelia?

Double Jeopardy

Question 4-1000

The solution to $|2x + 1| - x > 8$ is this pairs of inequalities

Answer

What is $x < -3$ or $x > 7$?

Double Jeopardy

Question 5-200

This technique is used to help decode many ciphers by counting the how often each letter appears in the encoded text

Answer

What is Frequency Analysis?

Double Jeopardy

Question 5-400

This message was encoded using a shift of 10 to get the following “ojtufwid”

Answer

What is “jeopardy”?

Double Jeopardy

Question 5-1000

This message was encoded using a rail cipher with 5 rails to get “trhsopgaflnnsaiky”

Answer

What is “thanks for playing”?

Double Jeopardy

Question 6-200

Scaling, reflection, translation, and rotation are all types of this

Answer

What are operations encoded in a matrix?

Double Jeopardy

Question 6-400

These are the dimensions of a vector

Answer

What is $n \times 1$?

Double Jeopardy

Question 6-1000

To multiply matrices, this specific condition must hold true

Answer

The dimensions must satisfy $(n \times m)(m \times k)$?

Double Jeopardy

Question 7-200

Mars and Murrie named this famous candy brand

Answer

What is m&m?

Double Jeopardy

Question 7-400

This Canadian city has hosted the Summer Olympics

Answer

What is Montreal?

Double Jeopardy

Question 7-1000

This famous New York skyscraper has 6514 windows

Answer

What is the Empire State Building?

Double Jeopardy

THANKS FOR PLAYING JEOPARDY!!

WE HOPE YOU HAD A FUN MATH CIRCLES EXPERIENCE ☺