Welcome to

Math Jeopardy

Brought to you by Math Circles

How to Play

- On the Jeopardy Screen we will have 7 categories to choose from, each with questions that can win you $100 to $500 (with increasing difficulty).
- We will use a random number generator to determine the team that will get to pick the first question, from then on 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

Rules of the Game

1. You will be playing in teams of 5 people, each with a whiteboard and a marker.
2. To answer a question write your answer on the whiteboard and raise it to the instructor.
3. The first team to get the correct answer gains full points, and all other teams to answer correctly gain half points.
4. Each team only gets one try per question (you will not lose points for answering incorrectly).

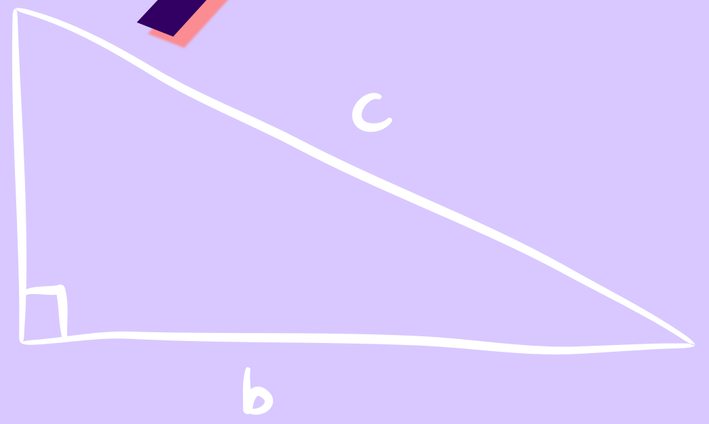
The Daily Double

- There are a total of 4 Daily Doubles hidden around the board
- 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

Let's play

Math Jeopardy

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$



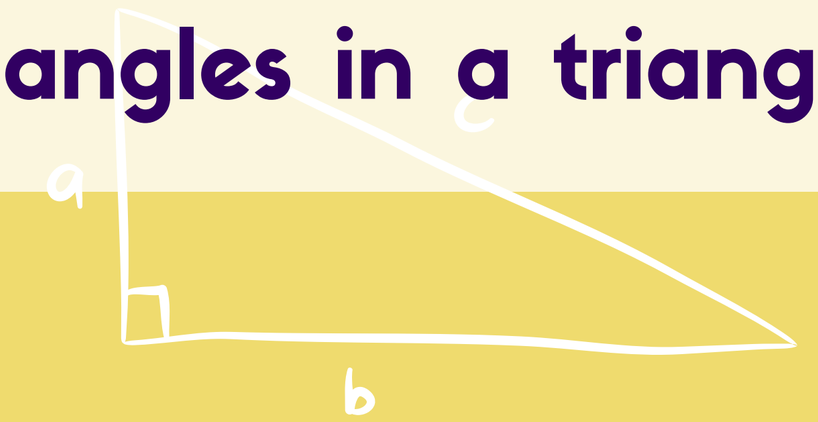
$$a^2 + b^2 = c^2$$

Trigo-nometry	Pigeon-hole Principle	Graph Theory	Poly-nomials	Medical Diagnostic Tests	Continued Fractions	???
$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

Trigonometry $100

Question:

This is the total sum of angles in a triangle



$$a^2 + b^2 = c^2$$

Trigonometry $100

Answer:

What is 180°?

$$a^2 + b^2 = c^2$$

THE Daily Double

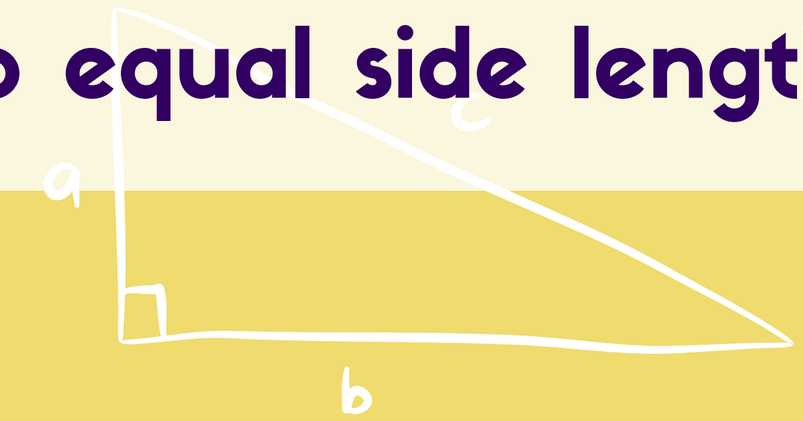
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a^2 + b^2 = c^2$$

Trigonometry daily double

Question:

This type of triangle has exactly two equal side lengths.



$$a^2 + b^2 = c^2$$

Trigonometry daily double

Answer:

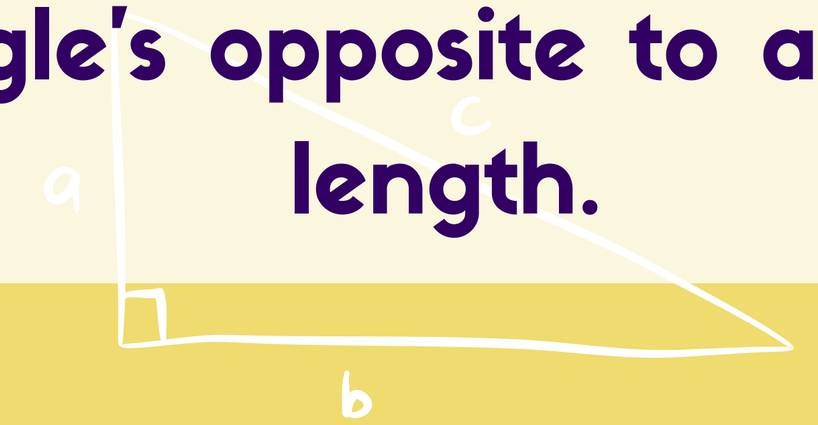
What is an isosceles triangle?

$$a^2 + b^2 = c^2$$

Trigonometry $300

Question:

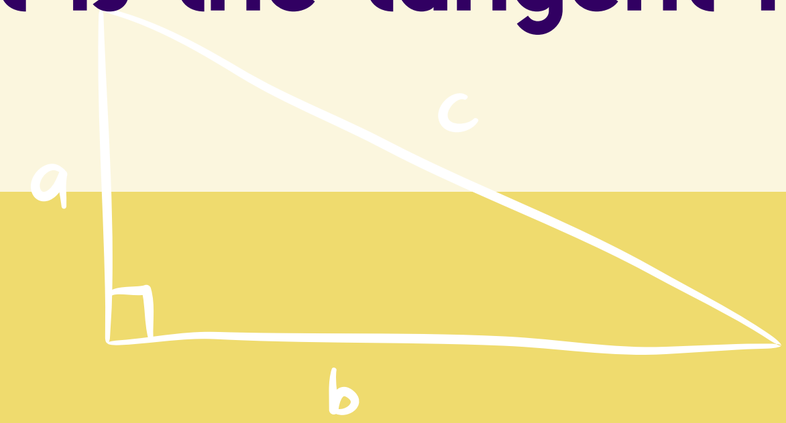
This value is the ratio of an angle in a right triangle's opposite to adjacent side length.



Trigonometry $300

Answer:

What is the tangent ratio?

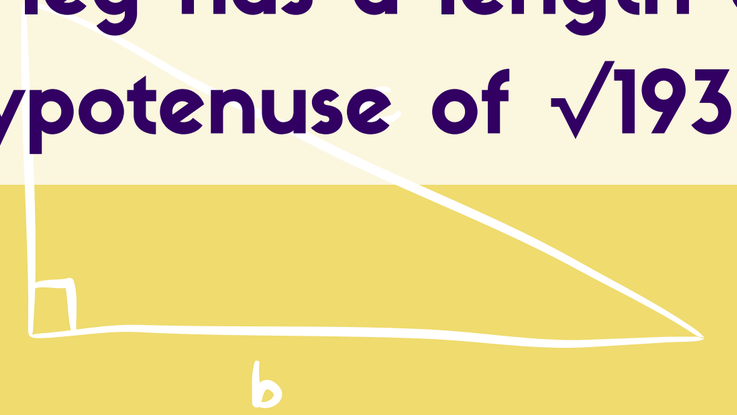


$$a^2 + b^2 = c^2$$

Trigonometry $400

Question:

The leg length of a right triangle whose first leg has a length of 12 and hypotenuse of √193



$$a^2 + b^2 = c^2$$

Trigonometry $400

Answer:

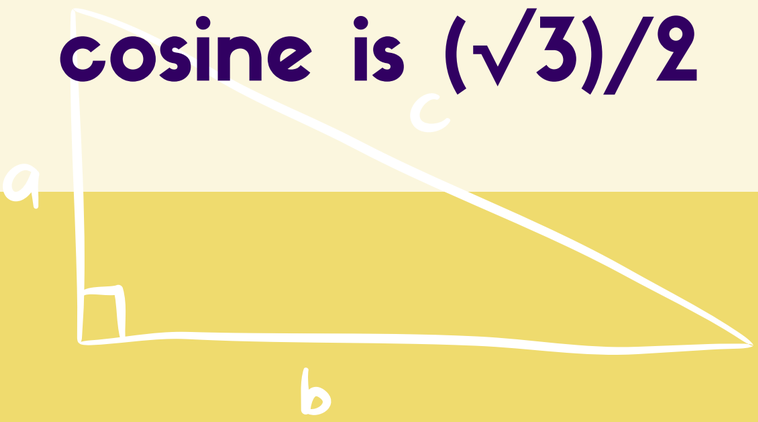
What is 7?

$$a^2 + b^2 = c^2$$

Trigonometry $500

Question:

The smallest positive angle whose cosine is (√3)/2



$$a^2 + b^2 = c^2$$

Trigonometry $500

Answer:

What is 30°?

$$a^2 + b^2 = c^2$$

Pigeonhole Principle
$100

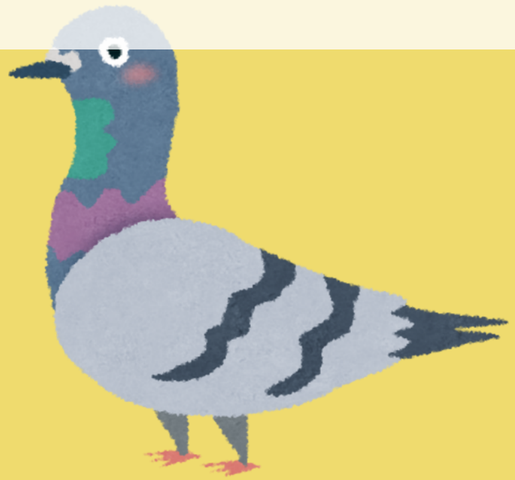
Question:

If there are less categories than items, then the Pigeonhole Principle tells us that one category must contain at least this many items.

Pigeonhole Principle
$100

Answer:

What is 2?



Pigeonhole Principle $200

Question:

If there are 733 (=2×366 + 1) random people in a room, then this is the largest number of people we can guarantee to have the same birthday.

Pigeonhole Principle
$200

Answer:

What is 3?

Pigeonhole Principle
$300

Question:

If there are more items than n times the number of categories, then the Extended Pigeonhole Principle tells us that one category must contain this many items.

Pigeonhole Principle
$300

Answer:

What is n + 1?

THE Daily Double

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a^2 + b^2 = c^2$$

Pigeonhole Principle daily double

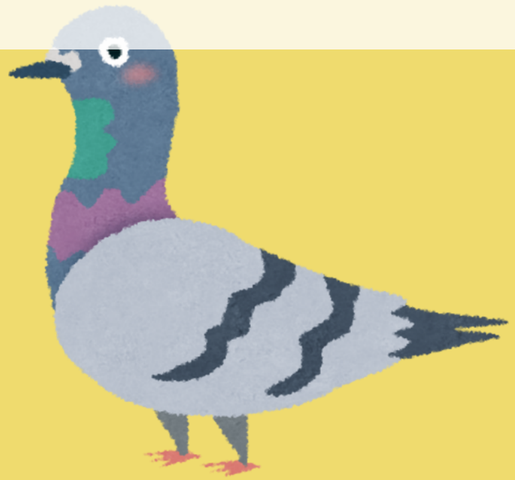
Question:

If there are 10 students in 3 teams, this is the minimum size of the largest team.

Pigeonhole Principle daily double

Answer:

What is 4?



Pigeonhole Principle $500

Question:

Suppose that I have a bag containing 50 red socks and 50 blue socks, and that I pull out socks from this bag without looking. This is how many socks I have to pull out in order to guarantee that 3 socks have the same color.

Pigeonhole Principle
$500

Answer:

What is 5 socks?

Graph Theory
$100

Question:

If two vertices have an edge connecting them, these vertices are _____.

Graph Theory
$100

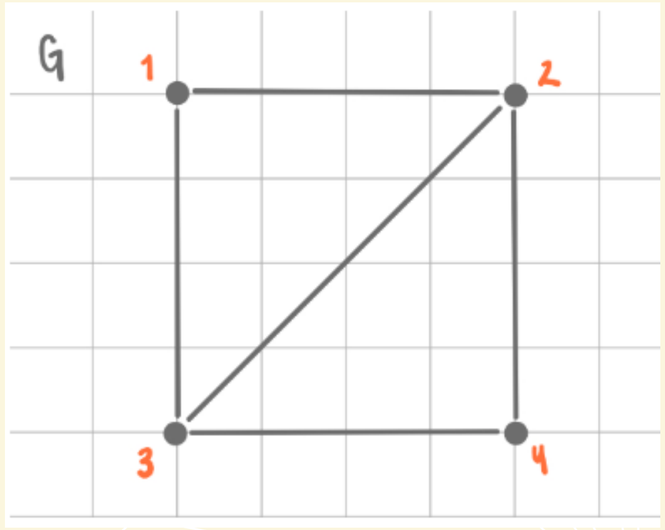
Answer:

What is adjacent/neighbours?

Graph Theory
$200

Question:

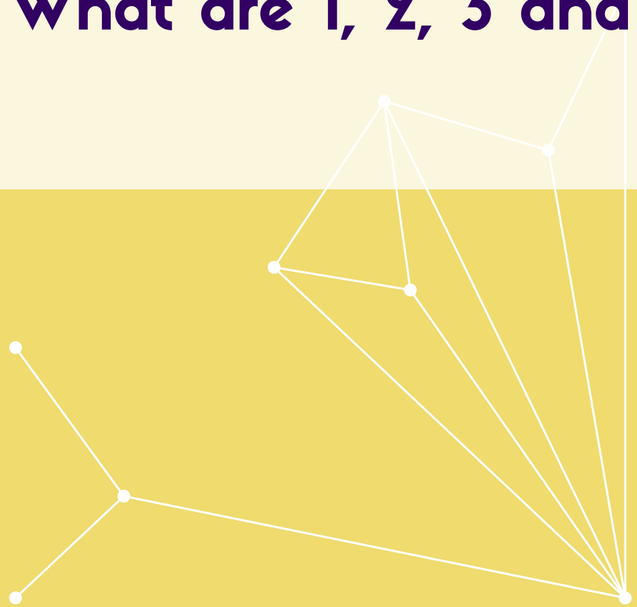
The elements in V(G).



Graph Theory
$200

Answer:

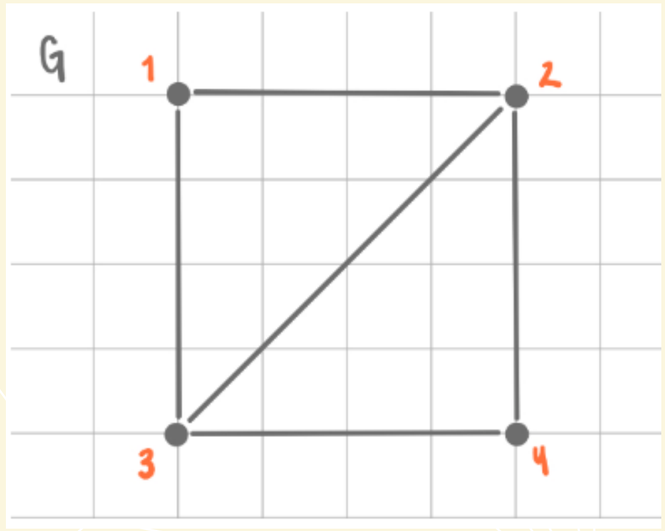
What are 1, 2, 3 and 4?



Graph Theory
$300

Question:

The degree of 2.



Graph Theory $300

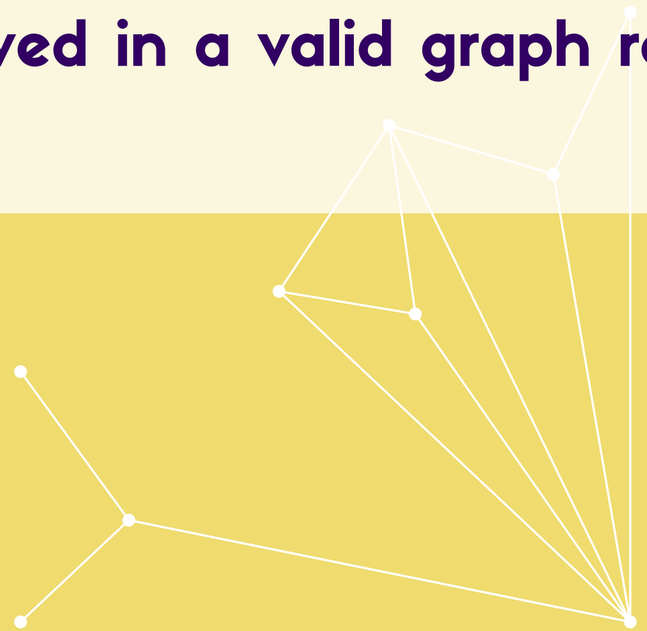
Answer:

What is 3?

Graph Theory
$400

Question:

Preserved in a valid graph relabelling.



Graph Theory
$400

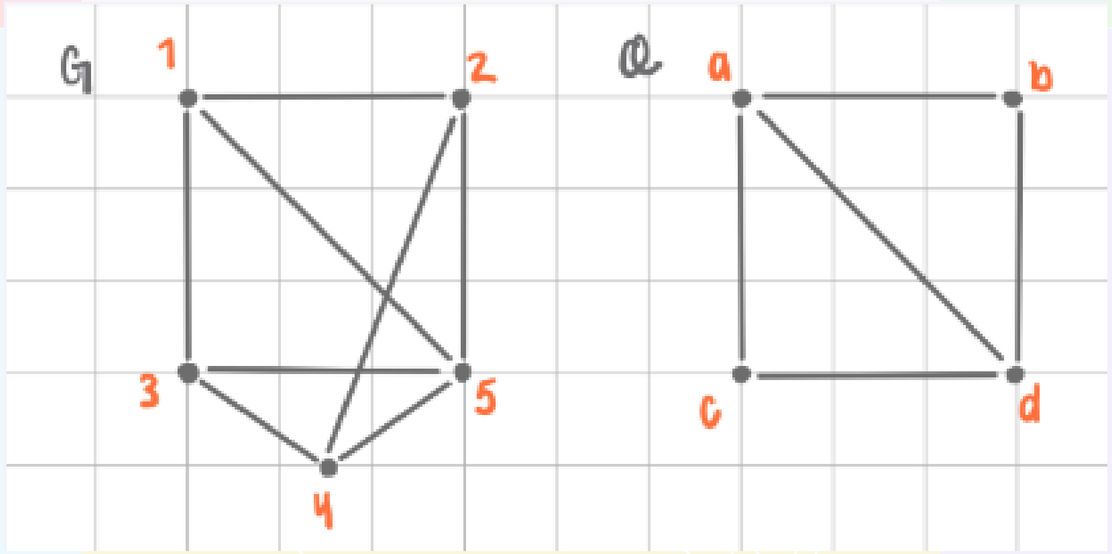
Answer:

What are adjacencies and degrees?

Graph Theory
$500

Question:

True or False; G and Q are isomorphic



Graph Theory
$500

Answer:

What is False?

Polynomials $100

Question:

These are the only types of terms in a polynomial that can be combined

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Polynomials $100

Answer:

What are like terms?

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Polynomials $200

Question:

This is how the polynomial behaves as x becomes largely positive and largely negative

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Polynomials $200

Answer:

What is the end behaviour?

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Polynomials $300

Question:

The value of b^2-4ac in a quadratic function

$$X = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

Polynomials $300

Answer:

What is the discriminant?

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Polynomials $400

Question:

The root(s) of the function $y=x^2-x-1$

$$X=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

Polynomials $400

Answer:

What is (1 ±√5)/2 (or x=-0.618 and x=1.618)?

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Polynomials $500

Question:

The coordinate(s) of intersection of the functions $y=8x-7$ and $y=x^2+8x-23$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

Polynomials $500

Answer:

What is (-4,-39) and (4,25)?

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Medical Diagnostic Tests
$100

Question:

A test result that incorrectly indicates that you have a particular disease.

Medical Diagnostic Tests
$100

Answer:

What is a false positive?

Medical Diagnostic Tests
$200

Question:

The chance that someone without a disease tests negative.

Medical Diagnostic Tests
$200

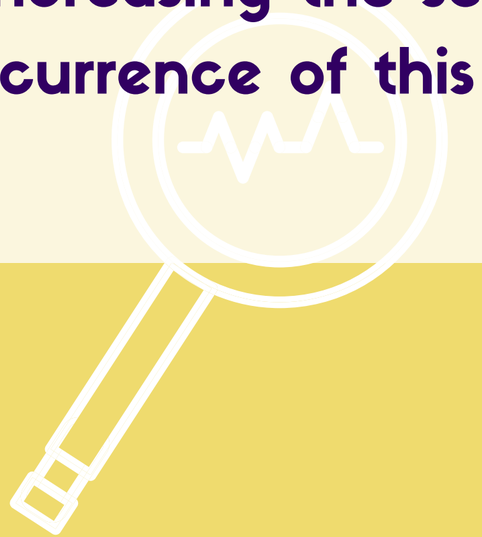
Answer:

What is specificity?

Medical Diagnostic Tests
$300

Question:

For a fixed population of people who either have the disease or don't, increasing the sensitivity of a test will decrease the occurrence of this type of test result.



Medical Diagnostic Tests
$300

Answer:

What is false negative?

Medical Diagnostic Tests
$400

Question:

This is the specificity of the test, if 2 out of every 100 healthy kids tested receive a false positive test result.

Medical Diagnostic Tests
$400

Answer:

What is 98%?

Medical Diagnostic Tests
$500

Question:

A test has a sensitivity of 16%. Out of 50 people who really have the disease, this is how many have a false negative.

Medical Diagnostic Tests
$500

Answer:

What is 34?

Continued Fractions
$100

Question:

True or False; 19391/13813 is a rational number

Continued Fractions
$100

Answer:

What is True?

THE Daily Double

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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Continued Fractions daily double

Question:

True or False; irrational numbers have finite continued fraction expansions.

Continued Fractions daily double

Answer:

What is False?

Continued Fractions
$300

Question:

The rational number corresponding to the finite continued fraction expansion [1, 2]

Continued Fractions
$300

Answer:

What is 3/2?

Continued Fractions
$400

Question:

The continued fraction expansion of pi is _____ (infinite or finite).

Continued Fractions
$400

Answer:

What is infinite?

Continued Fractions
$500

Question:

The rational number corresponding to the finite continued fraction expansion [1, 2, 1]

Continued Fractions
$500

Answer:

What is 4/3?

Mystery Trivia
$100

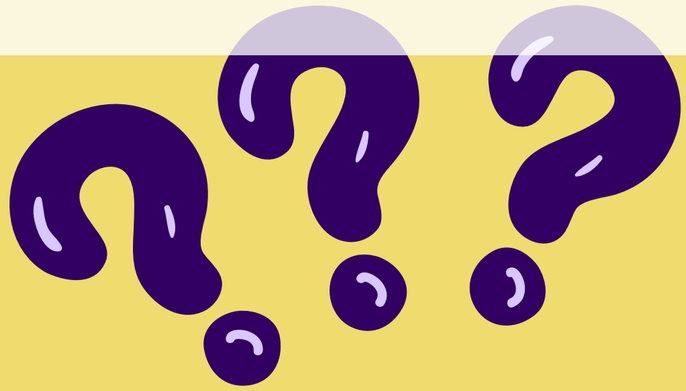
Question:

The letter all odd numbers share

Mystery Trivia
$100

Answer:

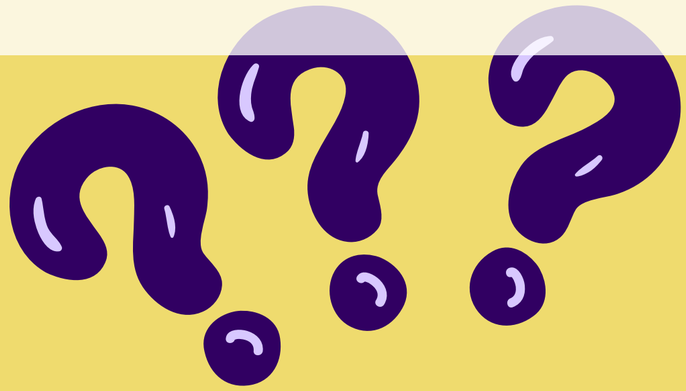
What is e?



Mystery Trivia
$200

Question:

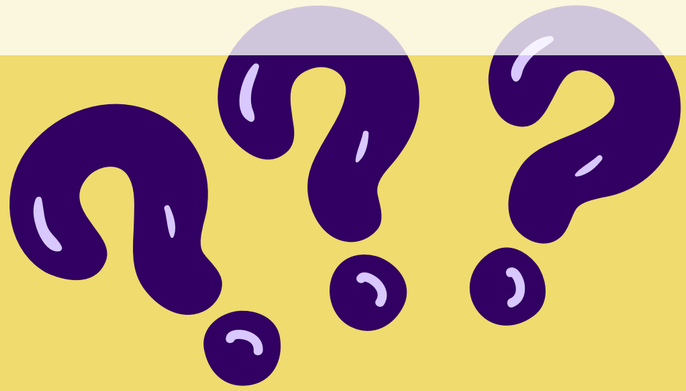
The only number who had the same number of letters as its meaning



Mystery Trivia
$200

Answer:

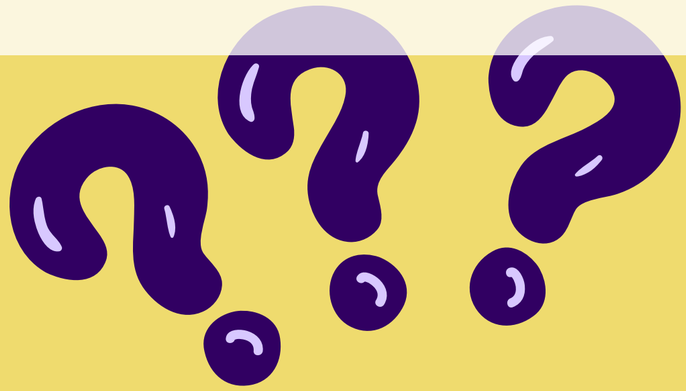
What is FOUR (4)?



Mystery Trivia
$300

Question:

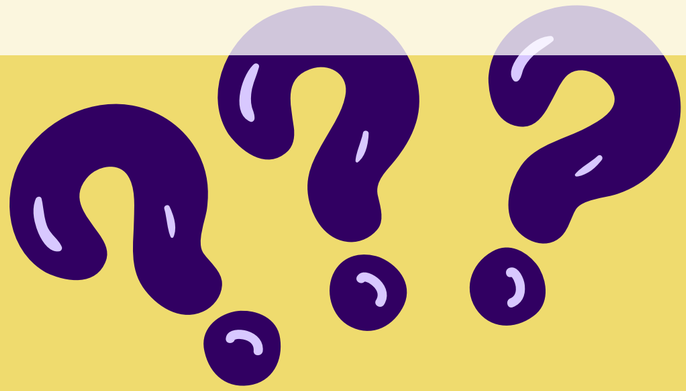
The first positive number to contain the letter "A"



Mystery Trivia
$300

Answer:

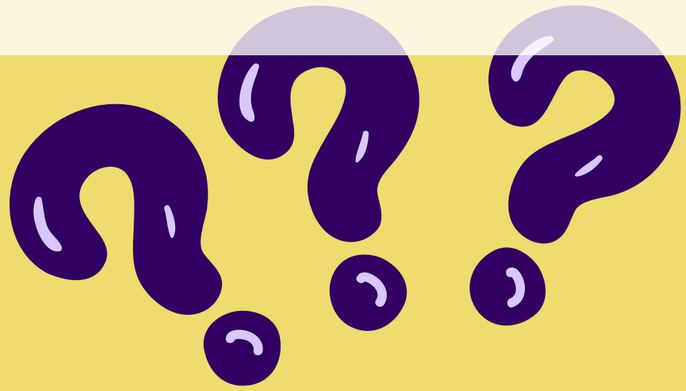
What is 1000 (one thousAnd)?



Mystery Trivia
$400

Question:

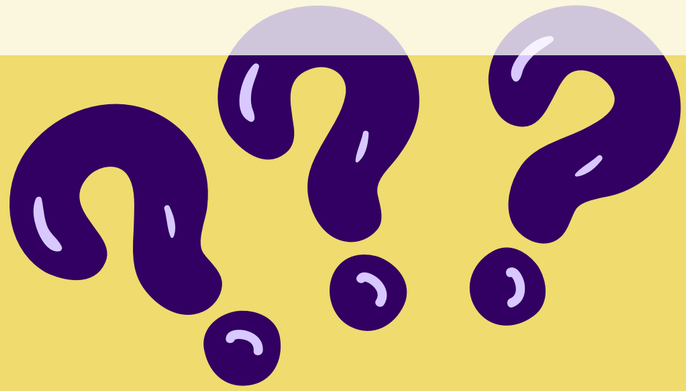
The only number to be equal to twice the sum of its digits



Mystery Trivia
$400

Answer:

What is 18?



THE Daily Double

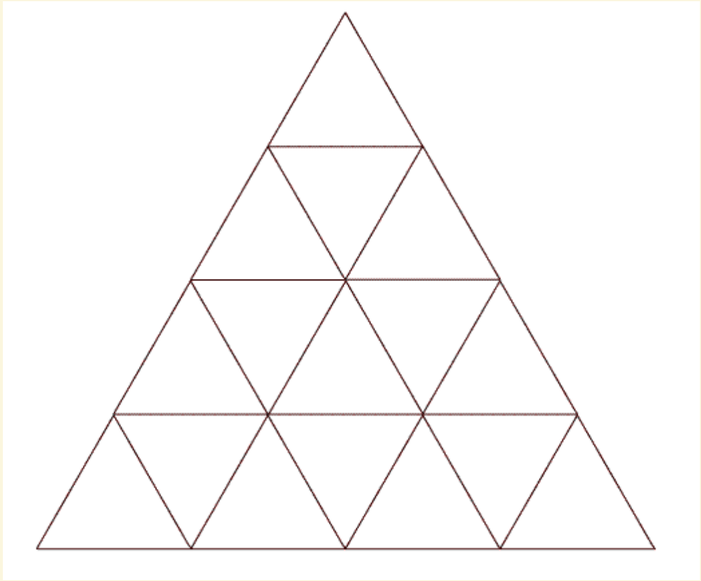
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a^2 + b^2 = c^2$$

Mystery Trivia daily double

Question:

The number of triangles in this triangle



Mystery Trivia daily double

Answer:

What is 27?