



The exterior angles of a regular pentagon are all **72** degrees

News

When he was a young boy, Neelakantha Bhanu Prakash’s bike collided with a bus, leaving him with a serious head injury that required 70 stitches. He spent the next year at home, doing maths puzzles while he recovered. He also learned to use an abacus, and started to practise performing fast mental calculations. In August he won the gold medal in the Mental Calculation World Championship.¹ Now aged 20, he treats calculating ‘like a sport’, and trains ‘only for an hour every day’, as opposed to the four or five hours he used to practise for when he was younger.



Neelakantha Bhanu Prakash J
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🏆 for India at Mental Calculation World Championship, MSO
 🇬🇧 4 World Records - Fastest Human Calculator
 These are just titles. My vision is to eradicate math phobia in
 🇮🇳 and with @expinfi I reached to over a 2L students this lockdown though a project. There's a long way to go

MIND SPORTS OLYMPIAD 🇬🇧 2020
FASTEST HUMAN CALCULATOR | 4 WORLD RECORDS

GOLD MEDAL

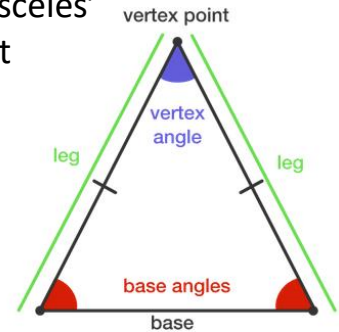
NEELAKANTHA BHANU PRAKASH J

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Maths Word

An **isosceles** triangle is a triangle in which two of the sides are the same length.

The actual word ‘isosceles’ is probably the first strange maths word that children learn at primary school. The word actually comes from the Greek word



ἰσοσκελής (isoskeles), which means ‘equal-legged’; ‘isos’ meaning ‘equal’, ‘skélos’ meaning ‘leg’, and the suffix ‘es’, meaning the word is an adjective. The two equal sides of an isosceles triangle are called the **legs** of the triangle.

If you have any favourite maths words, let us know. Also, if there are any things in maths that don’t seem to have a word for them (I occasionally spot these!), also let us know, and we’ll try to think of one!²

Pair Sums Puzzle

Five numbers are added together in pairs to produce the following answers:

0, 2, 4, 4, 6, 8, 9, 11, 13, 15

What are the five numbers?

Did You Know?

$$\sqrt{3! \times 4!} = 3 \times 4$$

1. No, I didn’t know that was a thing either.

2. I’m actually making a collection of these missing words from maths, so if you do think of anything, please do let us know!

Mental Maths

Neelakantha Prakash can square big numbers very quickly. Being able to square numbers is very useful for doing mental maths. One of the reasons for this is because of **the difference of two squares**.

This is the fact that

$$a^2 - b^2 = (a + b)(a - b)$$

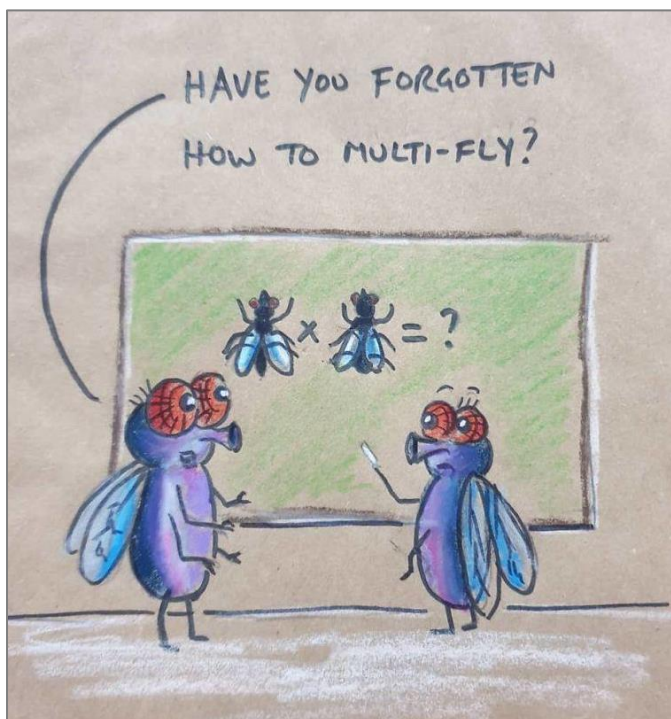
This means that if you need to multiply two numbers that are an even number n apart (for example, 26×28 , where $n = 2$), you can just square the number halfway between them ($27^2 = 729$) and subtract the square of half of n ($729 - 1^2 = 728$).³

If you were asked to do 27×33 ($n = 6$), you would do $30^2 = 900$ and subtract $3^2 = 9$ to get $900 - 9 = 891$.

If you were asked to do 21×29 ($n = 8$), you would do $25^2 = 625$ and subtract 4^2 , so $21 \times 29 = 625 - 16 = 609$.

All you need to do to be able to do this is learn a few square numbers, and then practise for a while!⁴

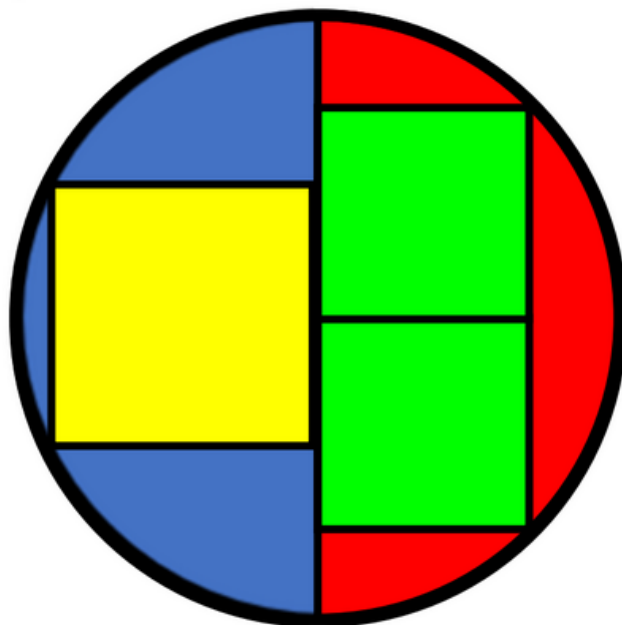
Joke



Chris Smith's Puzzles

Here are two puzzles I've taken from a couple of Chris @aap03102 Smith's recent newsletters.

I've inscribed a yellow square inside one half of a circle and two green squares inside the other half.



Order the blue, green, red and yellow areas, smallest to largest!

Anna writes down a number, A, which has two digits after the decimal point.

She rounds A to one decimal place to form a new number, B.

Then Anna rounds B to the nearest whole number to form a new number, C.

If $A+B+C=1564.95$, find the values of A, B and C.

As always, let us know if you solve any of the puzzles in the newsletter. I will reply to you (eventually!) and you will get house points if your answers are correct! Also, please let us know if you find any puzzles or maths jokes we could use!

3. This is far less complicated than it sounds. Think about it for a few minutes and you'll see.

4. Learning square numbers is also less complicated than it sounds. If you write out the square numbers from 20 to 30, you will immediately start to spot patterns in them that will make them easier to remember.