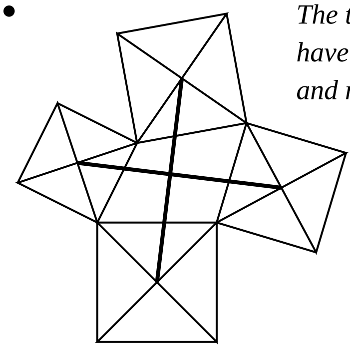
• 19th century Rubik's Cube:

D	**E**	**A**	**D**
P	**I**	**G**	**S**
W	**O**	**N**	**T**
L	**F**	**Y**	

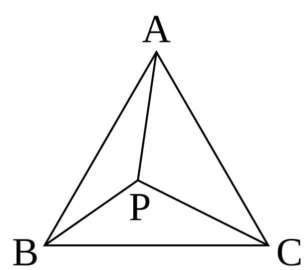
Misspellings and spoonerisms won't ~~lfy~~ fly either.

• $\begin{cases} 153 &= 1^3+5^3+3^3 \\ 370 &= 3^3+7^3+0^3 \\ xyz &= x^3+y^3+z^3 \\ 407 &= 4^3+0^3+7^3 \end{cases}$

• Fun with factorials:
i) $30! = 2652528598121910x8636308480000000$
ii) $2008! = 8643641857671070205255\ldots\ldots y000\ldots000$: How many zeros? What's y?
iii) Is there a number z such that $z! = 314159\ldots\ldots00000$?

• 

The thick line segments have the same length and meet at a right angle

• 

AP = 73, BP = 57, CP = 65
AB = AC = BC = ?

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H		W		A		Y		A		H		?
	O		M		N		P		T		S	
		W		A		Y		A		H		
			M		N		P		T			
				A		Y		A				
					N		P					
						Y						

• $((x^2-2)^2-2)^2-2 = x$

• $\forall n : \sum_{d|n} \varphi(d) = n$

• i) Every group of exponent 2 is commutative. ii) Is the same true for exponent 3?

• For s in the right half-plane $H = \{x+iy \mid x > 0\}$ consider the sum

$$1 - \frac{1}{2^s} + \frac{1}{3^s} - \frac{1}{4^s} + \frac{1}{5^s} - + \cdots$$

i) The sum converges for all s in H (with conditional convergence when $x \geq 1$).
ii) Convergence is uniform in compact subsets of H.
iii) (extra credit) If the sum vanishes [i.e., equals zero] then $\bar{s} = 1 - s$.