

Sunday Times Teasers

Teaser 2862

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Algebria's Standard

The Algebrian rectangular flag is highly symbolic. Each of its sides is an even number of inches long and a diagonal divides it into two triangles, one blue and one green, representing its two founding tribes. The length of the diagonal (in inches) is the number of states in Algebria, and the area of the flag (in square inches) is the twentieth century year in which the country obtained independence.

How many states are there in Algebria, and in which year did the country obtain independence?

Løsningsforslag på neste side

Siden l og b er partall blir produktet av dem delelig med 4.

Så må diagonalen være et heltall. Vi har altså:

$$l \times b \in \{1900, 1904, \dots, 1996\} \text{ og } \sqrt{l^2 + b^2} \in \mathbb{N}$$

Jeg laster pythagoréiske tripler inn i regnearket for å sjekke aktuelle kandidater:

=HVIS(OG(A2*B2>1899;A2*B2<2000);A2*B2;"'Uuttafor'"")

=HVIS(OG(A2/2=HELTALL(A2/2);B2/2=HELTALL(B2/2));"Ja";"Nei")

	A	B	C	D	E	F	G	H
1	<i>l</i>	<i>b</i>	<i>h</i>		$1900 \leq h \leq 1996 ?$	<i>l og b partall ?</i>		
2	3	4	5		'Uuttafor'	Nei		
3	6	8	10		'Uuttafor'	Ja		
4	5	12	13		'Uuttafor'	Nei		
5	9	12	15		'Uuttafor'	Nei		
				:				
31	33	56	65		'Uuttafor'	Nei		
32	39	52	65		'Uuttafor'	Nei		
33	32	60	68		1920	Ja		
34	42	56	70		'Uuttafor'	Ja		
35	48	55	73		'Uuttafor'	Nei		
				:				
52	28	96	100		'Uuttafor'	Ja		
53	60	80	100		'Uuttafor'	Ja		
54	20	99	101		1980	Nei		
55	48	90	102		'Uuttafor'	Ja		
				:				
98	99	132	165		'Uuttafor'	Nei		
99	65	156	169		'Uuttafor'	Nei		
100	119	120	169		'Uuttafor'	Nei		

Flagget til Algebraia er 32 tommer bredt og 60 tommer langt. Det gir:

$$\sqrt{32^2 + 60^2} = 68 \text{ stater i Algebraia}$$

$$32 \times 60 = 1920 \text{ (året for selvstendigheten)}$$