RARE MAPS FOR CORRECTORS

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In "Rare Maps For Collectors" in the November **Word Ways**, I presented a mapping between integers and letters for producing "perfect" German number names. However, Hans Havermann in Colloquy has questioned my German spelling. He is right to do so; I have confused German **und** with Dutch **en**, to produce nonsensical bilingual compounds such as **einenzwanzig** instead of **einundzwanzig**.

By coincidence, Ian Stewart, writing in Mathematical Recreations in the March 1994 Scientific American, has independently produced a mapping of his own for the German number names from 1 up to 29 (see below). Like me, Stewart deliberately elects to treat **u** and umlauted **ü** as the same. However, he concludes his column by speculating whether the mapping could be extended to include **"dreizig"**, which would automatically entail all the number names up to 39. I am relieved to note that Stewart's German is as unreliable as my own: it should be **dreissig**. The answer to his question is not only yes, but it is possible to include **vierzig**, thus extending the list up to 49. Among infinitely many solutions, that one using the least highest absolute value (22 as opposed to Stewart's 33) has been identified by computer:

	A	B	C	D	E	F	G	H	I	L	N	O	R	S	T	U	V	X	Z
Stewart	-10	7	-18	9	-1	-2	33	17	-3	14	1	-6	16	4	19	8	-8	13	-7
Sallows	-1	-4	-5	-9	10	-2	22	-7	-3	3	-10	16	5	4	21	19	-8	-22	17

e+i+n+s	=10-3-10+4	= 1	s+i+e+b+z+e+h+n	= 17
z+w+e+i	=17-22+10-3	= 2	a+c+h+t+z+e+h+n	= 18
d+r+e+i	=-9+5+10-3	= 3	n+e+u+n+z+e+h+n	= 19
v+i+e+r	=-8-3+10+5	= 4	z+w+a+n+z+i+g	= 20
f+ü+n+f	=-2+19-10-2	= 5	e+i+n+u+n+d+z+w+a+n+z+i+g	= 21
s+e+c+h+s	= 4+10-5-7+4	= 6	.	
s+i+e+b+e+n	= 4-3+10-4+10-10	= 7	.	
a+c+h+t	=-1-5-7+21	= 8	d+r+e+i+s+s+i+g	= 30
n+e+u+n	=-10+10+19-10	= 9	e+i+n+u+n+d+d+r+e+i+s+s+i+g	= 31
z+e+h+n	= 17+10-7-10	= 10	.	
e+l+f	= 10+3-2	= 11	.	
z+w+ö+l+f	= 17-22+16+3-2	= 12	v+i+e+r+z+i+g	= 40
d+r+e+i+z+e+h+n	= 3+10	= 13	e+i+n+u+n+d+v+i+e+r+z+i+g	= 41
v+i+e+r+z+e+h+n	= 4+10	= 14	.	
f+ü+n+f+z+e+h+n	= 5+10	= 15	.	
s+e+c+h+s+z+e+h+n	= 6+10	= 16	n+e+u+n+u+n+d+v+i+e+r+z+i+g	= 49

Because **vierzig** is 40 and **vier** is 4, z+i+g must equal 36. Therefore, **fünfzig** must always be 5+36, or 41, not 50.