

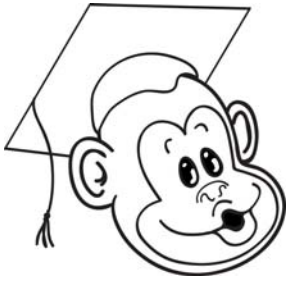


*This brainteaser was written by Patrick Vennebush.*

Assign each letter a value equal to its position in the alphabet ( $A = 1$ ,  $B = 2$ ,  $C = 3$ , ...). Then find the product value of a word by multiplying the values together. For example, CAT has a product value of 60, because  $C = 3$ ,  $A = 1$ ,  $T = 20$ , and  $3 \times 1 \times 20 = 60$ .



How many other words can you find with a product value of 60?



**Solution: aced, act, acta, ado, alae, ale, bob, cade, cat, dace, do, el, lea, od.**

The following are all the ways that 60 can be factored without any factors greater than 26; the corresponding collection of letters is also given. Note that an unlimited number of 1s could be appended to any of these factorizations, so an unlimited number of a's can be added to any of the letter combinations.

Factorization	Letters
$2 \times 2 \times 15$	b, b, o
$2 \times 2 \times 3 \times 5$	b, b, c, e
$2 \times 5 \times 6$	b, e, f
$2 \times 3 \times 10$	b, c, j
$3 \times 20$	c, t
$3 \times 4 \times 5$	c, d, e
$4 \times 15$	d, o
$5 \times 12$	e, l
$6 \times 10$	f, j

From there, it is just a matter of determining which combinations (plus as many a's as you need) will form legitimate words.

Some of the words in the solution list may not be familiar to you, but all of them are listed in ENABLE (Enhanced North American Benchmark LEXicon) and are acceptable words in Scrabble®. Here are definitions for some of the more obscure words in the list.

- acta – document prepared by a notary
- alae – protruding ridge that forms longitudinally on many nematodes (roundworms)
- cade – prickly shrub
- dace – small freshwater fish
- el – elevated railway
- lea – unit of length of thread or yarn
- od – mystic universal force