

Solution for 4.3 Disc (Answer = WORSHIPPER)

372495888522825522857433022973961008223551794071633159722326644228497710583
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Can be expressed as SEVEN unique prime factors:

89954413 * 5299151939 * 5302144343 * 5963856163 * 4281936962959 * 471069444
2959 * 122514848197837

You will need to use or write a factorisation program to do this.
I used pari-gp to confirm the factors.

Converting the prime factors to base-26 (a=0, z=25) we find:

howard readied regroup thyself underfoot wonderful worshipper

Answer-word: worshipper

But primes are rare! Like dude, how did we get words that are prime in base
-26?

Out of a 189002 word dictionary, 2154 words are prime. "howard" just happen
s
to be one of them! Below is a tiny haskell program I wrote to convert
the dictionary into base-10 and back (to base-26) for primality testing.

```
module Main where
```

```
import Char
main = interact (unlines . map (show . b26toInteger) . map (map toLower) .
lines)
-- main = interact (unlines . map (show . integerToB26) . map read . lines)

b26toInteger :: String -> Integer
b26toInteger = foldl (\a x -> a*26 + toInteger (ord x - ord 'a')) (0)

integerToB26 :: Integer -> String
integerToB26 = reverse . integerToB26'
  where
    integerToB26' 0 = []
    integerToB26' x = (chr (fromInteger (x `mod` 26 + (toInteger
r(ord 'a')))))): (integerToB26' (x `div` 26))
```