

1. List all the prime numbers from 1-50

~~1~~ 2 3 ~~4~~ 5 ~~6~~ 7 ~~8~~ ~~9~~ ~~10~~
11 ~~12~~ 13 ~~14~~ ~~15~~ ~~16~~ 17 ~~18~~ 19 ~~20~~
~~21~~ ~~22~~ 23 ~~24~~ ~~25~~ ~~26~~ ~~27~~ ~~28~~ 29 ~~30~~
31 ~~32~~ ~~33~~ ~~34~~ ~~35~~ ~~36~~ 37 ~~38~~ ~~39~~ ~~40~~
41 ~~42~~ 43 ~~44~~ ~~45~~ ~~46~~ 47 ~~48~~ ~~49~~ ~~50~~

The prime numbers from 1-50 are:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, and 47

Determine if each of the following numbers is prime. If it is not, explain why not.

For a number to be prime, it must have EXACTLY two factors, 1 and itself.

2. 127

PRIME, since its only factors are 1 and 127.

3. 108

NOT PRIME, since $1+0+8=9$ this means 108 is divisible by 9. Because of this, $9 \times 12 = 108$ and 108 is not prime. (it also has more factors)

4. 41

PRIME, since its only factors are 1 and 41.

5. 91

NOT PRIME, since $7 \times 13 = 91$. (There is no shortcut to know this)

6. 1

NOT PRIME, since 1 is neither prime nor composite since the only factor of 1 is 1. (Not exactly two factors)

7. 5,463

NOT PRIME, since $5+4+6+3=18$, so 5,463 is divisible by 9 so 9 is a factor of 5,463. (It also has more factors.)

Find the prime factorization for each of the following numbers.

8.

$36 = 2 \times 2 \times 3 \times 3$
 $36 = 2^2 \times 3^2$

9.

$24 = 2 \times 2 \times 2 \times 3$
 $24 = 2^3 \times 3$

10.

$126 = 2 \times 3 \times 3 \times 7$
 $126 = 2 \times 3^2 \times 7$

11.

$45 = 3 \times 3 \times 5$
 $45 = 3^2 \times 5$

12.

$540 = 2 \times 2 \times 3 \times 3 \times 3 \times 5$
 $540 = 2^2 \times 3^3 \times 5$

13.

$1275 = 3 \times 5 \times 5 \times 17$
 $1275 = 3 \times 5^2 \times 17$