

# Ye Olde Times Table and prime factorization

Look for patterns.

Circle all of the prime numbers.

Play 'cut out a prime factor and write it down'.

As shown: Cut any of the 12 dots in half to get 2 copies of a 2 by 3 prime grid. And behold: 12 is prime factored as  $2 \times 2 \times 3$

Also shown: The 16 dot square takes 2 cuts to get 2x2 copies of a 2 by 2 grid. And behold: 16 is prime factored as  $2 \times 2 \times 2 \times 2$ .

Shade in all of the numbers that are the products of 2 primes as shown for 15.

How interesting! The perfect squares seem to be separated by the odd integers!

Write each compound number as the product of primes.

1	2	3	4	5	6	7	8	9	10
	2	3	$2 \times 2$	5	$2 \times 3$	7	$2 \times 2 \times 2$	$3 \times 3$	$2 \times 5$
2	4	6	8	10	12	14	16	18	20
2	$2 \times 2$	$2 \times 3$	$2 \times 2 \times 2$	$2 \times 5$	$2 \times 2 \times 3$	$2 \times 7$	$2 \times 2 \times 2 \times 2$	$2 \times 3 \times 3$	$2 \times 2 \times 5$
3	6	9	12	15	18	21	24	27	30
3	$2 \times 3$	$3 \times 3$	$2 \times 2 \times 3$	$3 \times 5$	$2 \times 3 \times 3$	$3 \times 7$	$2 \times 2 \times 2 \times 3$	$3 \times 3 \times 3$	$2 \times 3 \times 5$
4	8	12	16	20	24	28	32	36	40
$2 \times 2$	$2 \times 2 \times 2$	$2 \times 2 \times 3$	$2 \times 2 \times 2 \times 2$	$2 \times 2 \times 5$	$2 \times 2 \times 2 \times 3$	$2 \times 2 \times 7$	$2 \times 2 \times 2 \times 2 \times 2$	$2 \times 2 \times 3 \times 3$	$2 \times 2 \times 2 \times 5$
5	10	15	20	25	30	35	40	45	50
5	$2 \times 5$	$3 \times 5$	$2 \times 2 \times 5$	$5 \times 5$	$2 \times 3 \times 5$	$5 \times 7$	$2 \times 2 \times 2 \times 5$	$3 \times 3 \times 5$	$2 \times 5 \times 5$
6	12	18	24	30	36	42	48	54	60
$2 \times 3$	$2 \times 2 \times 3$	$2 \times 3 \times 3$	$2 \times 2 \times 2 \times 3$	$2 \times 3 \times 5$	$2 \times 2 \times 3 \times 3$	$2 \times 3 \times 7$	$2 \times 2 \times 2 \times 2 \times 3$	$2 \times 3 \times 3 \times 3$	$2 \times 2 \times 3 \times 5$
7	14	21	28	35	42	49	56	63	70
7	$2 \times 7$	$3 \times 7$	$2 \times 2 \times 7$	$5 \times 7$	$2 \times 3 \times 7$	$7 \times 7$	$2 \times 2 \times 2 \times 7$	$3 \times 3 \times 7$	$2 \times 5 \times 7$
8	16	24	32	40	48	56	64	72	80
$2 \times 2 \times 2$	$2 \times 2 \times 2 \times 2$	$2 \times 2 \times 2 \times 3$	$2 \times 2 \times 2 \times 2 \times 2$	$2 \times 2 \times 2 \times 5$	$2 \times 2 \times 2 \times 2 \times 3$	$2 \times 2 \times 2 \times 7$	$2 \times 2 \times 2 \times 2 \times 2 \times 2$	$2 \times 2 \times 2 \times 3 \times 3$	$2 \times 2 \times 2 \times 2 \times 5$
9	18	27	36	45	54	63	72	81	90
$3 \times 3$	$2 \times 3 \times 3$	$3 \times 3 \times 3$	$2 \times 2 \times 3 \times 3$	$3 \times 3 \times 5$	$2 \times 3 \times 3 \times 3$	$3 \times 3 \times 7$	$2 \times 2 \times 2 \times 3 \times 3$	$3 \times 3 \times 3 \times 3$	$2 \times 3 \times 3 \times 5$
10	20	30	40	50	60	70	80	90	100
$2 \times 5$	$2 \times 2 \times 5$	$2 \times 3 \times 5$	$2 \times 2 \times 2 \times 5$	$2 \times 5 \times 5$	$2 \times 2 \times 3 \times 5$	$2 \times 5 \times 7$	$2 \times 2 \times 2 \times 2 \times 5$	$2 \times 3 \times 3 \times 5$	$2 \times 2 \times 5 \times 5$